

PERSPECTIVAL PLURALITY

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Abstract

Perspectival plurality is the phenomenon according to which certain claims containing multiple predicates of taste can be sensitive to various contextually salient perspectives. For instance, if a father reports on a family holiday in Italy by saying ‘The wine was delicious and the water slide a lot of fun’, the predicate ‘delicious’ – in suitable contexts – must be relativized to the father and ‘fun’ to the kids. The paper argues that perspectival plurality raises severe problems for nonindexicalist semantics of perspectival expressions. Plurality blocks any attempt to justify parameter proliferation by aid of Kaplanian operator arguments, and it frustrates reasonable nonindexicalist strategies to account for syntactic binding. Both arguments must be taken serious: As the second, empirical part of the paper demonstrates with experiments targeting both predicates of personal taste and epistemic modals, perspectival plurality is a genuine feature of ordinary linguistic discourse.

1. Introduction

Over the last decade, linguists and philosophers have extensively debated the semantic properties of predicates of personal taste such as ‘delicious’, ‘tasty’ or ‘fun’. Most agree that an utterance of ‘Spinach is delicious’ depends on a contextually salient standard of taste, a judge or, as I will put it here to minimize commitment, a *perspective*. However, disagreement abounds regarding two features of such claims. Firstly, there is a debate about whether a standard of taste or perspective is drawn from the context of *utterance*, as contextualists argue, or the context of *assessment*, as relativists suggest. Let’s call this the *relevant context* question. Secondly, there is disagreement as to whether the perspective must be conceived as a tacit ‘indexical’ feature of the *content* expressed by the utterance, as suggested by indexicalists, or as a *parameter* in the circumstance of evaluation, as nonindexicalist argue.¹ Let’s call this the *appropriate modelling* question. Here we will principally be concerned with the latter, and hence begin by exploring it in somewhat more detail.

¹ For indexical contextualism, cf. *inter alia* Glanzberg (2007), Stojanovic (2007), Schaffer

On the indexicalist proposal a sentence *S* such as ‘Spinach is delicious’ might differ in meaning depending on the speaker. In John’s mouth it means that Licorice is tasty *for John*. Uttered by Mary, it means that spinach is tasty *for Mary*. On this view, PPTs are standardly taken to designate relations rather than properties.² They carry an implicit argument, which draws a salient perspective from the context of utterance. Alternatively, one might conceive of the perspective-dependence manifesting itself not at the level of *content*, but at the level of *truth*. To elucidate such a nonindexicalist view, assume a simple Kaplanian framework, according to which the *content* of an utterance is determined by a *character* (a sentence type) and a *context*, and where contents are assessed with respect to *circumstances of evaluation*. That is to say, contents are evaluated relative to an n-tuple of parameters initialized by the context of utterance, conventionally featuring a world and a time, but potentially also other parameters such as locations, standards of precision or *perspectives*. A sentence containing a taste predicate can thus turn out true relative to one circumstance, yet false relative to another if their perspective parameters differ. Our example sentence *S*, for instance, might be true with respect to a circumstance including John’s perspective, who likes spinach, yet false with respect to Mary’s, who doesn’t.

There is considerable controversy how best to respond to the *relevant context* and the *appropriate modelling* question. However, the very perspective-dependence of PPTs as such is standardly agreed upon as a brute datum of ‘subjective discourse’. The proposal here is that claims of personal taste containing multiple PPTs must frequently be relativized to multiple, differing perspectives. Consider: ‘We took the kids to an Italian summer resort. The wine was delicious and the water-slide was fun.’ In a context in which a mother is speaking, for instance, it is natural to interpret the wine as delicious for *her*, and the water-slide fun for *her kids*.

Such *perspectival plurality*, I will argue, engenders important implications regarding the *modelling question*. More precisely, perspectival plurality might spell trouble for nonindexical frameworks as regards (i) the justification of parameter proliferation, and (ii) a coherent account of syntactic binding. On many a view, (i) and (ii) constitute two of the most important determinants of the modelling question, if not *the* most important ones. In this article, I will confine myself to a brief exposition of the two worries, and refrain from discussing them in depth. Instead, I want to investigate whether the central empirical premise which fuels the arguments is correct. That is to say, I will

² Cf. for instance Stojanovic (2007) and Schaffer (2009).

investigate empirically whether ordinary English language speakers do indeed interpret sentences like the one above in a multiperspectival fashion.

2. Multiperspectival Claims

2.1 Introducing Plurality

The sentence 'Spinach is delicious' is *monoperspectival*. It features a single predicate of personal taste – 'delicious' – which draws a single perspective from the context of utterance. The relevant perspective is standardly the one of the speaker, though it might, in certain contexts, be that of another salient individual or a group of individuals.³ Even if, say, the *joint* perspective of a group of interlocutors is at stake, it is – for the purposes of this article – still a *single* perspective relative to which the sentence must be interpreted or evaluated. The following sentences, by contrast, contain multiple PPTs and in suitable contexts, I suggest, their interpretation invokes *multiple perspectives*:

(1) 'We took the kids to a resort in Italy this summer. The wine was delicious and the water slide was great fun.'

(2) 'On Halloween, the kids do the rounds. They either get a delicious treat, or else play a silly prank on the neighbours.'

(3) 'Even your vegetarian husband would love the new restaurant. The steaks are of course delicious, but the broccoli burgers are very tasty, too.'

(4) 'At the world chemistry conference, professionals were encouraged to bring their partners. The talks were very interesting and the DIY experiments a lot of fun.'

(5) 'At the educational book fair, every parent bought their kid an informative yet fun new book.'⁴

The above example sentences each contain two distinct predicates of personal taste.⁵ Whereas they all allow for some monoperspectival

³ This point is usually discussed in terms of Lasersohn's (2005) distinction between *autocentric* and *exocentric* perspectives; the former refers to the *speaker's* perspective, the latter to another contextually salient individual or group.

⁴ Examples (1)-(5) and their quantified versions in §4.3 borrowed from [author a].

⁵ The adjective 'informative' from example (5) is not a predicate of personal taste, though it behaves similarly enough to illustrate the issue at stake. 'Informative' is certainly a perspective-dependent predicate, since what is informative to different individuals might

interpretations, I propose that in suitable contexts the most natural reading invokes *multiple* perspectives. Take (1), for instance: The sentence will standardly be interpreted such that the wine is deemed delicious from the parents' perspective, whereas the water slide is fun for the children. Even if the water slide were interpreted as fun for the parents *and* the children, such a perspective still differs from the one invoked by 'delicious' which does not include the children.⁶

One argument in favour of multiperspectival interpretations consists in making the perspectives explicit. Interpreted as suggested, (1) amounts to something like (6) or (7):

(6) 'We took the kids to a resort in Italy this summer. The wine was delicious for us parents, and the water slide was fun for the kids.'

(7) 'We took the kids to a resort in Italy this summer. Jack and I found the wine delicious, and the water slide was fun for the kids.'

Such utterances are in fact natural responses if a misunderstanding arises, as the following exchange demonstrates:

(8) Sally: 'We took the kids to a resort in Italy this summer. The wine was delicious, and the water slide was great fun.'

Kim: 'So you had fun on the waterslide while your kids got drunk?'

Sally: 'That's not what I meant. The wine was delicious for us parents, and the water slide fun for the kids.'

An utterance of (6) is perfectly felicitous and a natural response to Kim's question in (8), which suggests that it is a plausible interpretation of (1). A *plausible* interpretation goes beyond brute syntactic possibility, it requires that the reading make good interpretative sense given the context of utterance and standard human practice – something which (6) certainly does. Since the suggested reading of (1) and (6) are truth-conditionally equivalent,

vary strongly with age, level of education, or focus of inquiry. Perspectival plurality, this suggests, extends beyond PPTs.

⁶ The term 'interpretation' is to be understood in a broad sense here, i.e. in a way that rests agnostic as regards the question whether perspective manifests itself at the level of content (as argued by indexicalists) or as a parameter in the circumstances of evaluation (as argued by nonindexicalists). Strictly speaking, 'interpretation' suggests that we are already working within an indexicalist framework and '(truth) evaluation' that we assume a nonindexicalist framework. To avoid the cumbersome 'interpretation/evaluation', I'll stick with 'interpretation' loosely understood.

and since (6) is a felicitous utterance, it seems clear that (1) can be given the multiperspectival interpretation made explicit in (6).

2.2 Preliminary Objections to Plurality

Some might be tempted to reject perspectival plurality outright. One could, along invariantist lines, suggest that neither 'delicious' nor 'fun' are perspective-dependent in the first place and that the phenomenon of perspectival plurality simply cannot arise. But that is of course not a move available to any of the positions under consideration, all of which agree that PPTs are perspective-dependent, no matter at which level – content or circumstance – this dependence manifests itself.

In the absence of an argument that rejects multiperspectival interpretations wholesale, there still exists the option of explaining away such alleged readings as pragmatic oddities in a piecemeal fashion. However, there is a lot of explaining to do. Even if one excludes implausible interpretations,⁷ (1) allows for a considerable variety of multiperspectival readings that resonate in many an ear (to what extent will depend on the particular context). The wine, for example, could have been delicious for the parents, or the speaker, or the adults at the resort. The water slide could have been fun not only for the kids, but for the kids and the parents, for the kids and the speaker, or else for all the guests at the resort. Already this cautious selection of sensible choices allows for twelve different multiperspectival interpretations.⁸ For every such reading, a felicitous equivalent featuring the different perspectives explicitly in the content can be generated. This is not to say that a pragmatic account is impossible. It merely suggests that it will have to be rather complex or else proceed on a case-by-case basis, and we might be well advised to exhaust the means of truth-conditional semantics first. What is more, if we want to account for perspectives in monoperspectival sentences by aid of semantic means – as most of us do – it is not obvious why pragmatic tools must be invoked when a sentence features more than one PPT.

Here is another potential argument against multiperspectival interpretations: Take the second example, (2), which reads: 'On Halloween, the kids do the rounds. They either get a delicious treat, or else play a silly prank on the neighbours.' Presume that the favoured multiperspectival interpretation is

⁷ As regards (1), the reading according to which only the kids find the wine delicious and only the parents consider the waterslide fun, for instance, makes little sense.

⁸ Twelve readings since there are 3 perspectives for *delicious* (speaker, parents, adults) x 4 perspectives for *fun* (kids, kids and parents, kids and speaker, all guests at the resort).

one according to which the treats are delicious for the children, and the pranks silly according to the neighbours. *Superficially*, the argument would go, this speaks in favour of perspectival plurality, though it doesn't really. Both PPTs are, in fact, dependent on the perspective of their respective *standard target group*. The standard target group of sweets are children, who tend to find them delicious, and (though a somewhat more restricted and specific target group) the standard target group of pranks on Halloween happen to be the neighbours, who tend to find the children's pranks silly. Hence, there is in fact only a single relevant *type* of perspective at stake, namely the standard groups targeted by the respective PPT-object pairs. A sentence like (2), on a nonindexalist approach, must thus be evaluated as true iff its content is true with respect to a world, a time and a set of standard target perspectives,⁹ and as false otherwise.

Alternatively, one might define the relevant type of perspective even more broadly in terms of *generally accepted standards*, that is, standards accepted by most people.¹⁰ Differently put, we would take PPTs to uniformly have a generic reading. (2) would be true iff its content is true with respect to a world, a time and the generally accepted standards for the featured PPTs as applied to the particular objects referred to (i.e. the tastiness of sweets and the silliness of Halloween pranks).

To make either of these approaches work, the pattern must generalize. As regards (1), for instance, one could argue that the standard target groups of wine and water slides are adults and children respectively. Or, to take example (3), the standard target group for steaks are meat eaters, the one for broccoli burgers vegetarians or, possibly, people in general. On the alternative picture favouring a generic reading of PPTs, the utterances would be interpreted relative to generally accepted standards regarding wine, water-slides, sweets etc.

I'm not convinced: True enough, (2) can be understood as a generic claim and might thus be amenable to such an interpretation. But (1) is not – it refers to very specific experiences (tasting *the* wine and having fun on *the*

⁹ For the moment, let's ignore that this proposal goes considerably beyond postulating a non-standard perspective parameter in the circumstances of evaluation, but a set of perspectives and thus pushes for a whole different kind of parameter proliferation than the one ordinarily advanced by nonindexical contextualists and relativists – a proliferation which, as will be argued below, introduces various complications.

¹⁰ Adapting, for instance, Stojanovic's proposal to regain disagreement for monoperspectival taste claims in a contextualist framework. 'Spinach is delicious' on this approach is true if, according to the taste of most people, spinach is indeed delicious.

water slide of *that* resort in Italy – all references are *de re*) undergone by very specific people (the speaker and her family). It would be rather astonishing if, even for ‘episodic’ claims referring to particular experiences, *only* generic interpretations were available. But if non-generic interpretations are available, there is no reason why the perspectives for the different PPTs should *not* come apart.

More importantly: If PPTs are dependent on ‘generally accepted standards’, and if these are understood as, roughly, derived from the judgment of most people, then we run into problems familiar from monoperspectival cases in which an individual’s personal taste is at odds with the populace-at-large.¹¹ Given the tastes of people in general, the claim ‘Frog legs are delicious’ would always have to be evaluated as false (at least if tastes in our world don’t change drastically). However, someone who has just devoured a bowl of such treats seems warranted in asserting the claim (despite knowing full well that his tastes are eccentric) *and* in insisting that the content expressed is true. Hence, one could argue in an attempt to save the proposal, ‘generally accepted standards’ must be interpreted as ‘generally accepted standards of the relevant target group’ – maybe frog leg lovers in this case – which means that the generic interpretation approach collapses into the target group approach.

The proposal that PPTs are uniformly dependent on the relevant target group (and the relevant target group only), however, is implausible for various reasons. Firstly, since the groups of standard water-slide users and standard wine-drinkers, and thus the perspectives invoked, are in fact very different in their composition, insistence on the fact that each can be *referred* to as a ‘standard target group’ (or some such) seems little but verbal trickery. There is not a standard target group *parameter* which gets initialized by the context of utterance, but a *set* of standard target groups, whose elements still must be sensitive to different groups.

Secondly, out of the many plausible readings that could be given to (1), a considerable variety simply defies the attempt to relativize the two PPTs to their standard target groups. For instance, the water-slide might be interpreted to be fun as judged not from the kids perspective only, but as judged from the perspective of the *kids and the speaker*, or the *kids and the parents*. Neither is it plausible to cast these, too, in terms of a ‘standard target group’, nor does the strategy to block such alternative readings hold

¹¹ This is a well-known argument by Lasersohn (2005, p. 652).

much promise since, as we have seen, making the interpretations explicit delivers felicitous claims.

Thirdly, while it is possible to give interpretations of multiperspectival claims that *resist* relativization to homogenous target groups, it is possible to give interpretations in which a certain salient individual *does* fall into a standard target group, but *does not* share its dominant taste. For instance, *the particular water slide* referred to in (1) might be a meagre specimen inspiring no thrills, and might thus not appeal to its standard target group, i.e. kids of the appropriate age. Sally's kids, let's assume, gifted with a sunny disposition that allows them to find excitement even with this substandard piece of pool-equipment do, however, consider the water slide great fun. Now, if PPTs must be interpreted relative to the standards of the appropriate target group, 'The water slide was fun' must be evaluated as false. However, it seems perfectly appropriate – just as in the frog leg example above – that even if Sally knows that most children find the slide boring, she is warranted to make her claim which she rightfully takes to be true relative to the perspective of *her* children. But if she can, and making the perspective explicit further suggests that she can indeed, then a uniform interpretation according to which PPTs must invoke the standard of taste of the relevant target group defies standard linguistic practice.

This much for a preliminary demonstration that sentences featuring various predicates of personal taste *can* – and on perfectly standard occasions presumably *do* – give rise to multi-perspectival readings.

3. Perspectival Plurality and the Operator Argument

In this section and the next, I will briefly address ways in which perspectival plurality bears on the *modelling question* – the question, that is, which divides indexicalists and nonindexicalists. The first consideration regards the need to justify parameters in the circumstance of evaluation, the second focuses on syntactic binding.

According to Kaplan, the extension of an utterance is jointly determined by its content and the circumstance of evaluation, that is, a series of parameters initialised by the context of utterance. Indexicalists and nonindexicalists disagree over whether a standard of taste or perspective is best conceived as a tacit 'indexical' argument in the content of the utterance, or as a parameter in the circumstance. It is hence natural to ask what, if anything, *justifies* the postulation of parameters in the circumstance of evaluation. Addressing this point, Kaplan writes:

The amount of information we require from a circumstance is linked to the degree of specificity of contents, and thus to the kinds of operators in the language. What sorts of intensional operators to admit seems [...] largely a matter of language engineering. It is a question of which features of what we intuitively think of as possible circumstances can be sufficiently well defined and isolated. (1989: 502)

The question of which *parameters* to postulate, this suggests, turns on the question of what types of *operators* exist in a particular natural language. Operators such as 'always' or 'necessarily', according to Kaplan, modify sentential contents – their purpose consists in shifting the time and world relative to which a content must be evaluated. In the case of temporal and modal operators, this purpose can only be fulfilled if sentential contents do *not* standardly include modal or temporal specification. If contents were always time- and world-specific, the corresponding operators would be deprived of any linguistic function. Hence, since operators, like parameters can shift the content of a sentence wholesale, the presence of certain types of operators in a natural language warrants the postulation of a corresponding parameter. As Kaplan writes, for instance, with respect to the time parameter:

If we built the time of evaluation into the contents (thus removing time from the circumstances leaving only, say, a possible world history, and making contents specific as to time), it would make no sense to have temporal operators. To put the point another way, if what is said is thought of as incorporating reference to a specific time [...], it is otiose to ask whether what is said would have been true at another time [...]. Temporal operators applied to eternal sentences (those whose contents incorporate a specific time of evaluation) are redundant. (1989: 503)

Kaplan's *operator argument* can be adapted to motivate parameters beyond the customary ones such as worlds and times. Kölbel (2009), for example, argues that in ordinary English 'for t , p ' (where t designates a person, and p stands for a taste claim) shifts the standard of taste relative to which the content must be evaluated. 'For John, spinach is delicious' is true iff spinach is delicious *for* John. More formally, the suggestion is:

(S1) For all sentences φ and all singular terms α , FOR α , φ is a sentence.

(S2) For all φ , α , w , s and a : if φ is a sentence and α is a personal name referring to a , w is a possible world, and s is a [perspective]: FOR α , φ

is true in a circumstance $\langle w, s \rangle$ iff φ is true in $\langle w, s(a) \rangle$ (where $s(a)$ is a 's [perspective]) (2009, p. 384)

To motivate the proposal, Kölbel argues that there are important similarities between taste and world operators. In (9) and (10), the operators – via shifting of the taste/world features – ensure that the sentences, which would otherwise express contradictions, sound felicitous:

- (9) In possible world W , whales are extinct, but whales are not extinct.
(10) For Anna, whale meat is tasty, but whale meat is not tasty. (2009, p. 384)

Furthermore, locutions in which the FOR operator is combined with quantifying expressions such as 'For everyone, p ' and 'For some people, p ', track the behaviour of the standard modal operators 'possibly' and 'necessarily':

- (11) For some people, Picasso is better than Matisse.
(12) In some possible worlds, the British Empire outlasts the Soviet Union. (2009: 385).

Kölbel's proposal makes a lot of intuitive sense. Problems arise once we turn to more complex sentences which invoke multiple perspective-dependent predicates. One such example is (13), proposed by Cappelen and Hawthorne (2009, p.75), another is (14), which uses the same logic in a sentence that contains two predicates of personal taste (which 'dignified' in (13) arguably is not):

- (13) Maria ate something that was tasty for Anna in a dignified way.
(14) Frank showed John how to cook something tasty for his wife in a fun way.

Both examples admit interpretations according to which the two predicates of interest must be relativized to different perspectives. Though 'tasty' – due to the specifications of the 'for' operator – must be relativized to Anna in (13) and John's wife in (14), 'dignified' or 'fun' can be interpreted with respect to the perspective of the speaker, or one of the other individuals referred to in the sentence. This suggests that 'for' is not a *sentential* operator, but a *predicate* operator. Kölbel (2011: 144), in his discussion of (13), acknowledges this point, and Lasersohn (2008) and MacFarlane (2012) also conceive of 'for' as a predicate operator. Lasersohn proposes that a FOR-operator can 'objectify' a taste-relative phrase p , in so far as it must be interpreted with respect to the explicitly stipulated individual t in structures of

the form ‘for t , p ’ across all contexts. To make matters somewhat more precise, let M stand for a model, c for a context, w for a world, p for a perspective and g for an assignment, and let α be a term and β an intransitive verb, then

$$(15) \llbracket [\beta \text{ for } \alpha] \rrbracket^{M,c,w,p,g} = \llbracket \beta \rrbracket^{M,c,w,a,g}, \text{ where } a = \llbracket [\alpha] \rrbracket^{M,c,w,p,g} \text{ (2008, p. 313)}$$

As Lasersohn’s formalisation illustrates, the scope of ‘FOR’ is restricted: It operates on one determinate PPT. As regards our example (14), for instance, ‘for John’s wife’ operates on ‘tasty’ though it does not impinge upon ‘fun’ which can be relativized to John. This is of course a perfectly appropriate proposal as regards the nature of the operator itself. Problematically, however, defining ‘FOR’ as a *predicate* operator rather than a *sentential* operator casts doubt on the attempt of justifying parameter proliferation along the lines proposed by Kaplan. According to Kaplan, parameters – *just like sentential operators* – shift *sentential* contents. It is in virtue of this very similarity, that the presence of a particular type of sentential operator in a natural language constitutes good grounds for a related parameter in the circumstances of evaluation. However, once such a similarity is abandoned – as is the case when ‘for’ is conceived as a *predicate* operator – it is no longer obvious why the existence of *such operators* should justify the postulation of allegedly corresponding parameters: The behaviour of parameters and predicate operators are radically different. Perspectival plurality, in a nutshell, blocks what is perhaps *the* central argument in favour of parameter proliferation and perspective-neutral contents, and it is not obvious what else could take its place.¹²

4. Perspective Plurality and the Binding Argument

In his plea for nonindexical relativism, Lasersohn (2008) somewhat astonishingly invokes the ‘binding argument’, a move originally devised by Stanley (2000, 2002a; cf. also 2002b) to make a case for *indexicalist* contextualism. Stanley was concerned with unarticulated constituents, that is, propositional constituents not articulated at the surface level of the sentence. These, he suggested, should not be conceived as pragmatically supplied variables, but as implicit arguments, which are part of the syntax of the expression. Lasersohn, by contrast, employs binding to argue *in favour* of

¹² Stanley (2005) argues that the operator argument constitutes the *only* way to justify parameter proliferation, MacFarlane (2009) disagrees. For a brief discussion, see López de Sa (2012). Cappelen and Hawthorne (2009) have somewhat revived interest in operators, cf. for instance Glanzberg (2011) and Soames (2011), Cappelen and Hawthorne (2011), all in the *Analysis* Book Symposium on *Relativism and Monadic Truth*. Cf. also Kölbel (2009, 2015).

parameter proliferation in the circumstance, and *against* the implicit variable approach of indexicalist contextualism.

4.1 Syntactic Binding

Let's take a closer look at binding to begin with. Sentences tend not to carry their syntactic form on their phonetic sleeves, so the presence or absence of syntactic variables is not necessarily revealed by the sentence's surface structure. Claims about the weather are classic examples. For instance:

(16) It's raining.

There is a strong intuition that (16) is about a particular location, standardly the location of the speaker, yet this location is not articulated at the surface level. We might thus have good reason to postulate an implicit location variable at the level of syntax. In deciding, we can exploit a general characteristic of variables, which are not only susceptible to be set by assignment or context, but which may be bound by quantifiers. Testing for bound readings of (16) might thus produce evidence in favour of the presence of a hidden location argument which mandates contextual saturation in the absence of a suitable contextual binder. Consider (17), and its most natural interpretation, (18):

(17) Wherever John goes, it rains.

(18) Whichever place p John goes to, it rains at p .

In (17), the argument goes, the location variable pertaining to the verb 'to rain' is bound by the quantifier phrase. Given a few minor assumptions, this constitutes evidence in favour of the view that meteorological predicates such as 'is raining' carry an implicit location variable, i.e. that said variable is part of their syntax.¹³ When unbound or free, the location variable takes a salient value from the context of utterance, just like ordinary indexicals such as 'I' or 'now' do.

4.2 Index Binding

Binding gets more complex when quantification is involved. Let's return to taste claims and consider (19), which can be interpreted as (20):

(19) Every man rode some ride that is fun.

¹³ The most important, and most controversial assumption is 'semantic innocence': To make the argument work, one must assume that embedding a target phrase under a quantifier is 'innocent' in so far as the former's syntactic structure rests unchanged. The different views regarding innocence, and binding more generally, are surveyed by Sennet (2008).

(20) Every man x rode some ride that is fun for x (not necessarily for the other men, or the speaker, or the listeners.)

In order to account for interpretation (20), indexical contextualists propose the postulation of a perspective (or taste) variable in the syntactic form of ‘fun’ in conjunction with standard lambda abstraction. Things are somewhat more tricky for the relativist: Lasersohn proposes that the quantifier interacts directly with the perspective parameter in the circumstance (or the ‘individual index’, as he calls it).¹⁴ That way, the desired reading, (20), is not explained by reference to a bound variable in the syntactic representation of *fun*. There is, in fact, no *object-language* binding at all on this picture. What is bound is the perspective *parameter*, which is to say that binding takes place at the level of *meta-language*.

Formally, what index binding requires is an additional sentence-abstract-forming operator μ besides the standard Lambda abstractor λ , which enables binding at the level of the object language. This two-tiered abstraction approach allows quantifiers not only to bind object language variables, but also meta-language variables, that is, parameters in the circumstance of evaluation (or ‘index’). Following Lasersohn,¹⁵ let φ be a sentence, pro a covert pronoun much like the overt pronoun *pro*, M a model, c a context, w a world, p a perspective, P a non-empty set of perspectives, g an assignment and $g[x/n]$ a sequence in which x is the n^{th} element and which agrees with g in all other positions. Then object-language binding is defined by (21), and meta-language binding by (22):

(21) $[[\lambda n\varphi]]^{M, c, w, p, g} = \{x \in P \mid [[\varphi]]^{M, c, w, p, g[x/n]} = 1\}$ (2008, p. 313)

(22) (a) If α is a sentence containing at least one occurrence of pro_n , then $\mu n \alpha$ is a sentence abstract.

(b) $[[\mu n\varphi]]^{M, c, w, p, g} = \{x \in P \mid [[\varphi]]^{M, c, w, x, g[x/n]} = 1\}$ ((2008, p. 324)

To illustrate Lasersohn’s approach, let’s reconsider our example sentence from above, here restated, with its default interpretation:

(23) Every man rode a ride that is fun.

(24) Every man rode a ride that is fun [*for him*].

¹⁴ I’ll thus follow Lasersohn in calling this alternative binding procedure *index binding*, despite working with Kaplanian circumstances rather than Lewisian indexes.

¹⁵ Cf. Lasersohn (2008, pp. 309-315) for full detail. The main change consists in substituting Lasersohn’s individual parameter u for a perspective parameter p . Nothing hangs on this. The more general parameter of a perspective simply spares us taking position in the debate regarding the appropriate type of judge.

In order to avoid tacit indexicals corresponding to 'for him' in the syntax of 'fun', the additional sentence-abstract-forming parameter μ can be put to use:

(25) $[[\text{every man}]_{\mu_1} [[\text{some}[\text{ride that } \lambda_2[\text{pre}_2 \text{ is-fun}]]] \lambda_3 [\text{pre}_4 [\text{rode-pre}_3]]]]$ (2008, p. 325)

On this view, the universal quantifier phrase binds the perspective parameter in the circumstance, which allows us to account for the preferred interpretation, i.e. (24), without recourse to any variables in the syntactic representation of the PPT.

4.3 Limitations of Index Binding

Despite its technical ingenuity, index binding has less expressive power than variable binding, as Lasersohn acknowledges. As regards claims containing multiple PPTs, the variable approach allows each PPT to be assigned to a *different* perspectives. In index binding, on the other hand, a *single* perspective is bound by the quantifier phrase. Take the following example, discussed by Lasersohn (2008, p. 325), which can be interpreted in (at least) four different ways:

(26) Every man gave some woman a fun ride and a tasty dish.

(26a) Every man gave some woman a ride and a dish, which were tasty and fun according to the speaker.

(26b) Every man gave some woman a ride and a dish, which was tasty and fun according to each man.

(26c) Each woman received a ride and a dish, which were tasty and fun according to her standards.

(26d) Every man gave some woman a ride fun by his standards, as well as a dish tasty according to her standards.

Readings (26a)-(26c) are readily accounted for by index binding, since they all invoke but one type of perspective. As Lasersohn suggests, this dovetails nicely with a central trait of relativism:

[In index binding] we are employing a single, systematic parameter, relative to which all denotations are assigned; and if an operator manipulates this parameter, it will do so for all expressions in its scope.

The intuition behind this pattern can perhaps be expressed this way: In a relativist theory, in order to assess a sentence for truth or falsity, one must adopt a stance – that is, truth assessment is always done from a particular perspective. Operators in the sentence may shift the perspective from which truth assessment is to be done, or quantify over such perspectives; and when they do so, the relevant perspective must be adopted for the entire scope of the operator. Because such operators shift the perspective from which truth is assessed, rather than shifting the denotation of some particular expression like a pronoun, they cannot selectively shift only certain items in their scope. (2008, p. 326)

This is correct as far as it goes. Problems arise as regards (20d), however, where the two PPTs must be interpreted with respect to *different* types of perspectives. Flexible variable binding can account for this reading: The tacit perspective arguments of 'fun' and 'tasty' must be bound by 'every man' and 'every woman' respectively. Index binding, with its 'one stance for all' requirement, however, cannot account for (20d). Lasersohn is unconcerned by this, since 'the sentence [i.e. (26)] *cannot mean* that each man gave some woman a ride that was fun for him, and a dish that was tasty for her' (2008, p. 325), which he takes to 'show that [predicates of personal taste] cannot have arguments freely chosen from a set of pronouns similar to *pro1, pro2, pro3,...*' (2008, p. 326)

Problematically, however, Lasersohn's observations *show* nothing of this sort. What they do show, is that by means of index binding the relativist can accommodate a considerable number of interpretations of claims involving multiple predicates of personal taste – namely, all the ones in which the various PPTs are relativized to a *single* perspective. What these observations also show, is that index binding squares well with some central characteristics of the relativist's general position. However, it is not shown that the limited expressive power of index binding is *sufficient*, let alone that 'predicates of personal taste *cannot* have arguments freely chosen from a set of pronouns'.

I agree with Lasersohn that interpretation (26d) of his example sentence (26) sounds awkward, and that it is safe to say that this multiperspectival interpretation is – excessive context-finessing aside – not available. However, this does not mean that claims involving multiple PPTs *never* allow for perspectival plurality. In fact, in the examples (1) – (5) provided above, the multi-perspectival reading is not only felicitous but the dominant interpretation. Naturally, the examples can be modified to include quantifiers

so as to produce sentences analogous to (26) where multiperspectival interpretations such as (26d) are, however, *not* inappropriate:

(27) On Halloween, every child would play a silly trick on some adult or else get a delicious treat.

(28) Every steak-lover took some vegetarian friend to the Sunday barbecue for some tasty ribeyes and delicious corncoobs.

(29) On father's day, the fair comes to town. Every dad goes to the fairground with some kid to taste the delicious local brews and try out the fun new rides.

(30) Every historian took some engineering friend along to the university's open day, which was renowned for its exciting new robots and its highly interesting history talks.

In keeping with what was said in the opening sections, a perfectly plausible interpretation of (27) relativizes the predicate 'silly' to the victims of the Halloween pranks (the adults) and 'delicious' to the recipients of the treats (the children). On the indexicalist approach, the perspective variable of 'silly pranks' would thus be bound by 'some adult', whereas the perspective variable of 'delicious treats' would be bound by 'every child'. In suitable contexts, similar multiperspectival interpretations exist for the other example sentences. Problematically for the nonindexical relativist, index binding does not have the expressive resources to accommodate such multi-perspectival interpretations. The relativist logic, according to which *one* stance must be adopted for the *entire* sentence, requires that all PPTs be relativized to a single perspective.

In sum, variable binding, probably the best sort of evidence in the quest for resolving the syntactic modelling question,¹⁶ demonstrates precisely the opposite of what Lasersohn sets out to show. It is *not* the case that sentences invoking multiple PPTs *cannot* have multiperspectival readings because they 'cannot have arguments freely chosen from a set of pronouns' (2008, p. 236). Quite to the contrary: Multiperspectival readings often make good interpretative sense and, it seems, *only* variable binding succeeds in accounting for them.

¹⁶ Though cf. Recanati (2002) as well as Cappelen and Hawthorne (2007) for arguments to the effect that binding over-generates.

5. Motivating Empirical Inquiry

The operator argument and the argument from binding play a central role in the 'context wars' (Kent Bach) that have characterized linguistics and philosophy of language over the last few decades. I have suggested that with respect to both arguments, multiperspectival plurality constitutes at least strong *prima facie* evidence in favour of an indexicalist over a nonindexicalist semantics. Naturally, nonindexicalists have some room for manoeuvre. In the following, I will focus on what I consider the potentially most damaging objection against the line of thought here proposed, namely, a flat-out denial that the phenomenon of perspectival plurality exists in ordinary language. For this purpose it is helpful to briefly recapitulate what has so far been established.

5.1 The Shared Empirical Premise

Perspectives, according to nonindexical relativism, do not affect the content but are parameters in the circumstances of evaluation. For each sentence – as Lasersohn explicitly highlights – there is a *single* relevant perspective relative to which the truth of the sentential content must be evaluated, which commits relativism to the following constraint:

Uniqueness of Perspective Constraint (UPC): A sentence has to be evaluated for truth relative to one and only one perspective of a certain kind.¹⁷

The complications that arise for index-binding and Kölbel's operator argument regarding taste are at root due to the relativist's commitment to UPC, a constraint inconsistent with the empirical phenomenon of perspectival plurality. This can be seen most clearly in the following schematic representation of the two main arguments so far presented:

Multiperspectival Taste Claims & The Operator Argument

(P1) The Operator Argument presupposes the UPC, i.e. that a sentence has to be evaluated for truth relative to one and only one perspective.

(P2) Perspectival plurality with regards to taste claims is inconsistent with the UPC.

(P3) There is good evidence that perspectival plurality with regards to taste claims is a genuine feature of natural language.

(C) Hence, the postulation of perspective parameters in the circumstance cannot be justified by means of an Operator Argument.

¹⁷ Cf. [author b].

Multiperspectival Taste Claims & Binding

(P1) Index Binding presupposes the UPC, i.e. that a sentence has to be evaluated for truth relative to one and only one perspective.

(P2) Perspectival plurality with regards to taste claims is inconsistent with the UPC.

(P3) There is good evidence that perspectival plurality with regards to taste claims is a genuine feature of natural language.

(C) Hence, syntactic binding regarding taste predicates cannot appropriately be accounted for by nonindexicalist theories.

The premise I want to investigate in the following one is P3, that is, the empirical premise. A simple assertion that the various examples given above are best interpreted in a multiperspectival fashion does not mean that ordinary language speakers, in suitable contexts, actually *do* interpret them thus. As discussed, Lasersohn himself suggests precisely the opposite in his treatment of sentence (26). To repeat, I do agree with Lasersohn's assessment that – as concerns (26) – a multiperspectival interpretation makes little sense. We do not, however, have good reason to generalize from a single case to the nonexistence of perspectival plurality *tout court*, as Lasersohn does. Still, the examples here given might raise eyebrows, too, and to construe a convincing case, the empirical premise must be tested by means of experimental semantics. To this we will turn in the following sections, though I'd like to briefly touch upon a final point – the scope of perspectival plurality – before we do so.

5.2 The Scope of Plurality

It is not hard to see that both arguments potentially generalize to other parameter candidates. Take the various fields that parameter proliferators consider fertile territory: Epistemic modal claims, for instance, whose truth is considered relative to an epistemic perspective, aesthetic judgments, which must apparently be evaluated relative to an aesthetic perspective, or applications of the verb 'to know' which are deemed sensitive to standards of precision. If there is evidence that, for instance, modal claims can be multiperspectival, similar arguments from perspectival plurality will cast doubt on adding an epistemic perspective parameter to the circumstances.

Preliminary evidence is not hard to come by. Consider the following case: Mister Smith teaches biology to young children at school. In one of the first lessons he asks whether anyone knows what type of species whales are. Ben raises his hand and answers 'Whales are fish.' Mary disagrees and responds 'Whales are mammals.' Mister Smith says:

(31) 'So whales might be fish or they might be mammals.'

Smith himself knows that whales are mammals, so a monoperspectival autocentric interpretation makes little sense. One possible, if not the only plausible reading of his utterance invokes multiple exocentric perspectives: The first occurrence of 'might' is relative to what Ben believes, the second to what Mary believes. Since perspectival plurality is not limited to taste predicates, but also arises with regards to epistemic modals, nonindexicalists will face similar arguments against the postulation of a corresponding *epistemic* perspective parameter. In all likelihood examples can be construed for other currently trendy parameters – relating, for instance to an aesthetic or moral perspectives – that are to bolster the case for nonindexical semantics, too.

6. First Experiment: Taste Claims

We'll have a detailed look at one vignette, the Italy scenario, to explain the basic experimental set-up. The same set-up was used for a variety of different scenarios, which I will not discuss in detail, once the procedure is clear. Consider the following case, which gives a bit of background to one of our examples from above:

Italy Scenario

Imagine the following situation: Sally is a single mum with two children aged 6 and 8. On the first day of school after the summer holidays, she has a little chat with the teacher at school and says: 'Over the summer I went to a holiday resort in Italy with the children. The wine was delicious and the water slide was a lot of fun.'

The participants of the experiment were asked to respond to two different, separately presented questions, Q1a and Q1b, both of which had the same set of answers (the order was randomized).

Q.1a: In your opinion, for whom was the wine delicious?

Q.1b: In your opinion, for whom was the water slide fun?

(Choose the option which best agrees with your intuitions.)

- For Sally.
- For the children.
- For Sally and the children.
- For the teacher.
- For the teacher and Sally.
- For people in general.

The aggregate number of participants choosing the *same* answer for both questions constitutes evidence *for* a monoperspectival understanding of the target sentence. The aggregate number of subjects choosing *different* answers constitutes evidence *against* a monoperspectival understanding.

In comparison to this *two-step* procedure, a further experiment used a different response mechanism involving a single step. After being presented with the Italy scenario, participants had to respond to the following question instead:

Q.2: We would like to know how Sally's claim should be understood. We are particularly interested in the question for whom the wine was delicious, and for whom the water slide was fun in Sally's assertion. Which of the following options best captures your intuition?

- The wine was delicious for Sally and the water slide was fun for the kids.
- The wine was delicious for the kids and the water slide was fun for Sally.
- The wine was delicious for Sally and the water slide was fun for Sally.
- The wine was delicious for the kids and the water slide was fun for the kids.
- The wine was delicious for both Sally and the kids, and the water slide was fun for both Sally and the kids.
- The wine was delicious for people in general, and the water slide was fun for people in general.

This one-step procedure can be used to compare the total number of monoperspectival v. multiperspectival interpretations chosen. It thus allows us to double-check the results from the two-step experiments. What is more, the single step procedure reveals *which* of the individual readings ordinary language speakers deem the most appropriate.

6.2 Participants

119 participants ($f=45$) were recruited on Amazon Mechanical Turk to complete a paid Qualtrics survey. The responses of participants who failed an attention test, who were not native English speakers, or who changed their response more than 10 times (suggesting automated input) were discarded. For the first part of the two-step question, the minimum response time for full comprehension was set to 25 seconds. For the one-step question, which involved slightly more reading, the minimum response time was set to 30 seconds.¹⁸ All responses submitted in less time were discarded. For the two-

¹⁸ In order to determine adequate minimal response times, I tested three responsible subjects for each question. They were asked to read the entire text and answers, to respond only once they had fully understood both, yet to try and complete the whole task as quickly as they possibly could.

step question, 63 datasets ($f=21$) remained; for the one-step question, 75 ($f=28$) remained.

6.2 Materials

Besides the Italy scenario, two further vignettes involving predicates of personal taste were used, drawing on the Halloween and the Restaurant examples from above. Each came equipped with a choice of at least six contextually plausible perspectives (in the two-step set-up) or interpretations (in the single-step set-up).

Halloween Scenario

Imagine the following situation. Frank lives in New York and explains to Heidi, his new neighbor from Germany, what happens on Halloween. Frank says to Heidi: 'On Halloween, the kids dress up and knock on the doors of the neighbors. They either get a delicious treat, or else they play a silly prank on the neighbors.'

Q.1a: Who finds the pranks silly?

Q.1b: Who finds the treats delicious?

(Choose the option which best agrees with your intuitions.)

- The neighbors.
- Frank.
- The children.
- Heidi.
- Frank and Heidi.
- The children and the neighbors.
- People in general.

Q.2: We would like to know how Frank's claim should be understood. We are particularly interested in the question for whom the treats are delicious, and according to whom the pranks are silly. Which of the following options best captures your intuition?

The seven available responses took the form 'The treats are delicious for x , and the pranks are silly according to y '. The three multiperspectival responses, where the first perspective value stands for x and the second for y were: (1) the kids / the neighbors, (2) the neighbors / the kids, (3) the kids / Frank. The monoperspectival responses, where both values were identical, invoked (4) the perspectives of Frank, (5) the kids, the (6) neighbors, and (7) people in general.

The Restaurant Scenario, structurally equivalent to the Italy and the Halloween scenarios read thus:

The Restaurant Scenario

Imagine the following situation: John's wife is vegetarian. He himself loves meat, and rarely eats a dish without meat. John and his wife have discovered a new restaurant in

town where they are both happy. John recommends the restaurant to his friend Paul, who also loves meat, and who, just like John, is married to a vegetarian. John says: 'You should have dinner at the new restaurant. The steaks are delicious, and the broccoli burgers are very tasty, too.'

Q.1a: For whom do you think the meat is delicious?

Q.1b: For whom do you think the broccoli burgers are tasty?

(Choose the option which best agrees with your intuitions.)

- For John.
- For John and Paul.
- For John and his wife.
- For Paul and his wife.
- For the wives.
- For people in general.
- For John's wife.
- For Paul's wife.
- For Paul.

Q.2: We would like to know how John's claim should be understood. We are particularly interested in the question for whom the steaks are delicious, and for whom the broccoli burgers are tasty. Which of the following options best captures your intuition?

The structure of the seven available responses took the form 'The steaks are delicious for x , and the broccoli burgers for y '. The multiperspectival responses presented used the following values: (1) John/his wife, (2) Paul/his wife, (3) John and Paul/their wives; the monoperspectival responses used (4) John, (5) Paul, (6) John and Paul, or (7) people in general.

6.3 Procedure

Each scenario had two conditions: One-step and two-step. In the two-step condition, participants had to ascribe a relevant perspective to each of the two PPTs *separately*. In the one-step condition, participants were asked to choose a complete interpretation of the sentence that featured explicit perspectives for *both* PPTs. All participants were first randomly assigned a two-step condition of one scenario, and thereafter (again randomly) a one-step condition of *another* scenario. That way no participants had to respond to both conditions of a single scenario. All scenarios featured at least 6 different choices of perspective (two-step), or at least 6 different interpretations (one-step). Importantly, in all three one-step conditions the monoperspectival interpretations *outnumbered* the multiperspectival interpretations, thus favouring the former in (blunt) statistical terms. Differently put, the experiments were set up in a manner that *favoured* the position I am arguing against.

6.4 Results & Discussion

6.4.1 Aggregate Results

In the two-step condition, participants were asked to assign a perspective to each PPT separately. If both PPTs were assigned the same perspective out of the two identical response sets – no matter which – the overall response counted in favour of a *monoperspectival* interpretation. If the two PPTs were assigned different perspectives, they counted towards a *multiperspectival* interpretation. In all three scenarios, the percentage of multiperspectival responses outnumbered the monoperspectival ones either comfortably (Halloween: 55% v. 45%) or dramatically (Italy: 91% v. 9%, Restaurant 96% v. 4%), as illustrated in Figure 1.¹⁹ Sceptics regarding plurality would expect monoperspectival interpretations to *significantly exceed* multiperspectival readings. Quite to the contrary, multiperspectival interpretations dominated monoperspectival ones in all three scenarios, and significantly so in the Italy and the Restaurant case.²⁰ In the one-step condition, the situation was similar. The multiperspectival interpretations outnumbered the monoperspectival readings in all three scenarios (Halloween: 52% v. 48%, Italy: 74% v. 26%; Restaurant: 76% v. 24%), cf. Figure 2, in two cases significantly so.²¹

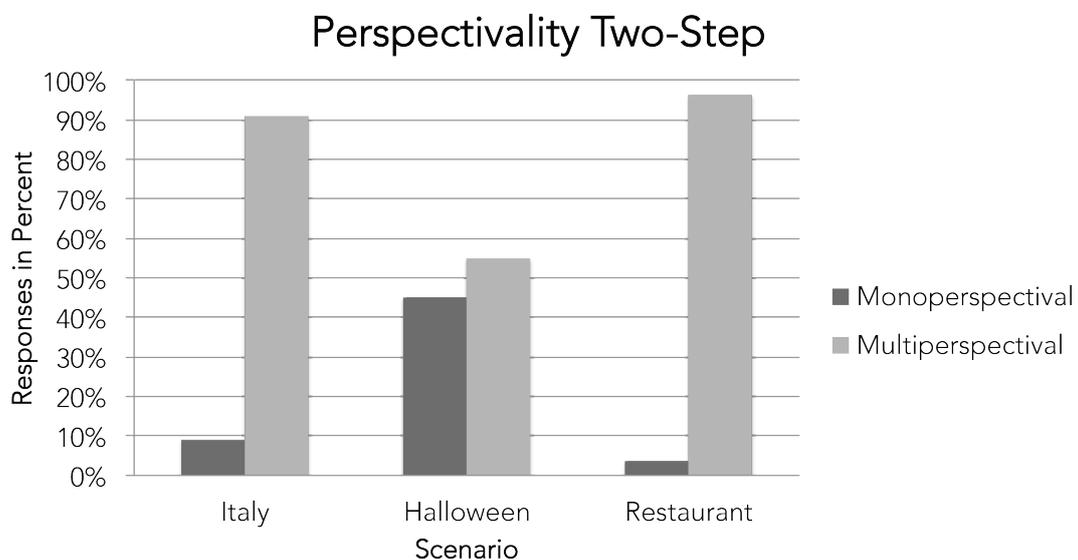


Fig. 1: Monoperspectival v. multiperspectival interpretations across scenarios, two-step procedure

¹⁹ The results are reported in full detail in Appendix 1.

²⁰ Pearson χ^2 goodness-of-fit test for *Italy* $\chi^2(1,22)=14.727$, $p<.001$, for *Halloween* $\chi^2(1,20)=.200$, $p=.655$, for *Restaurant* $\chi^2(1,28)=24.143$, $p<.001$. The fact that the difference is *not* significant in the Halloween case does not pose a problem for my argument: It merely says that a multiperspectival interpretation is *as plausible* as a monoperspectival one.

²¹ Pearson chi square goodness-of-fit test for *Italy*, $\chi^2(1,23)=5.261$, $p=.022$, for *Halloween*, $\chi^2(1,27)=.037$, $p=.847$, for *Restaurant*, $\chi^2(1,25)=6.760$, $p=.009$.

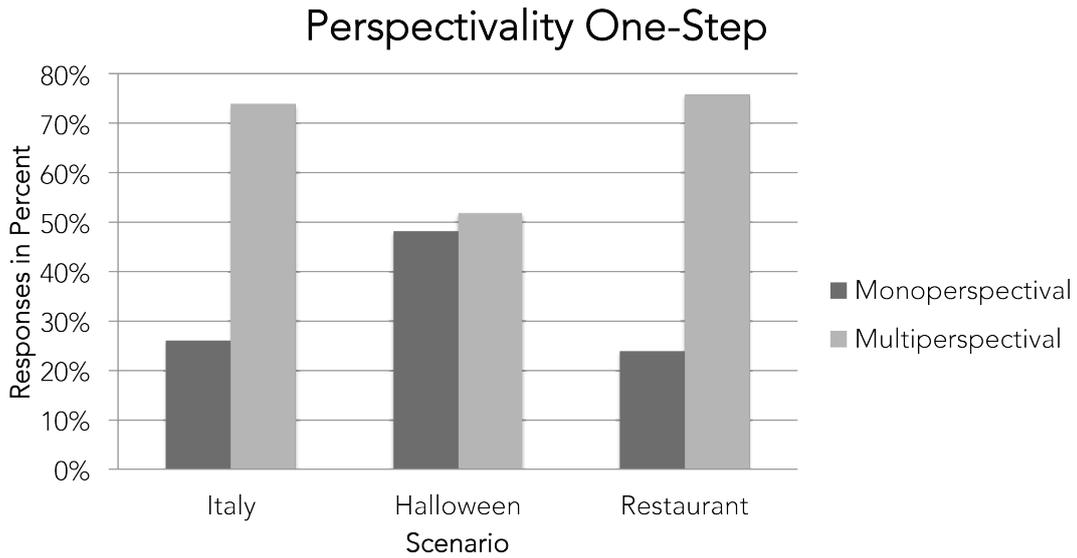


Fig. 2: Monoperspectival v. multiperspectival interpretations across scenarios, one-step procedure

6.4.2 Dominant Readings

We can dig a little deeper, and see which particular interpretations fit the intuitions of the participants best. In the Italy scenario there is a single dominant interpretation. Sally's claim 'The wine was delicious and the water slide was a lot of fun' was predominantly (74%) interpreted in ways that saw 'delicious' relativized to Sally's perspective, and 'fun' to the perspective of her children. All other interpretations reached less than 10%. The dominant *monoperspectival* interpretations relativized both PPTs to Sally (9%) or to both Sally and the kids (9%). The full results are represented in Figure 3.

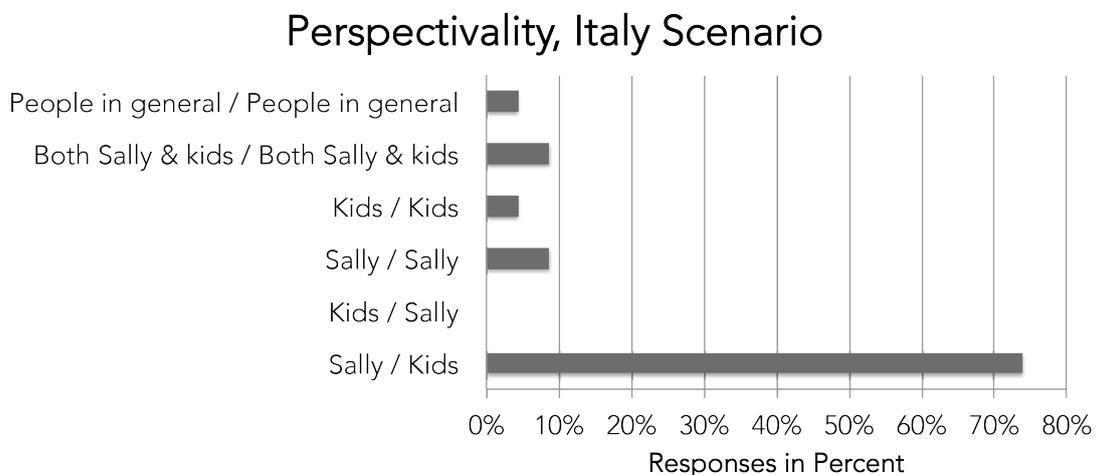


Fig. 3: Sally says: 'The wine was delicious and the water slide was a lot of fun.'

As regards the Halloween Scenario, the results are less decisive. There are two dominant interpretations accounting for about a third of the total responses each. One is multiperspectival (the treats are delicious for the kids, the pranks silly according to Frank), the other one monoperspectival (both PPTs invoke the perspective of people in general). Another multiperspectival interpretation, according to which the treats are delicious for the kids, and the pranks silly according to the neighbours, accounted for a significant number of responses (19%), followed by another monoperspectival reading which found both PPTs dependent on the kids' perspective (cf. Figure 4). Even though – in contrast to the Italy scenario – there is no *single* strongly dominant multiperspectival response, the data makes a rather convincing case in favour of the existence of multiperspectival readings too.

Perspectivity, Halloween Scenario

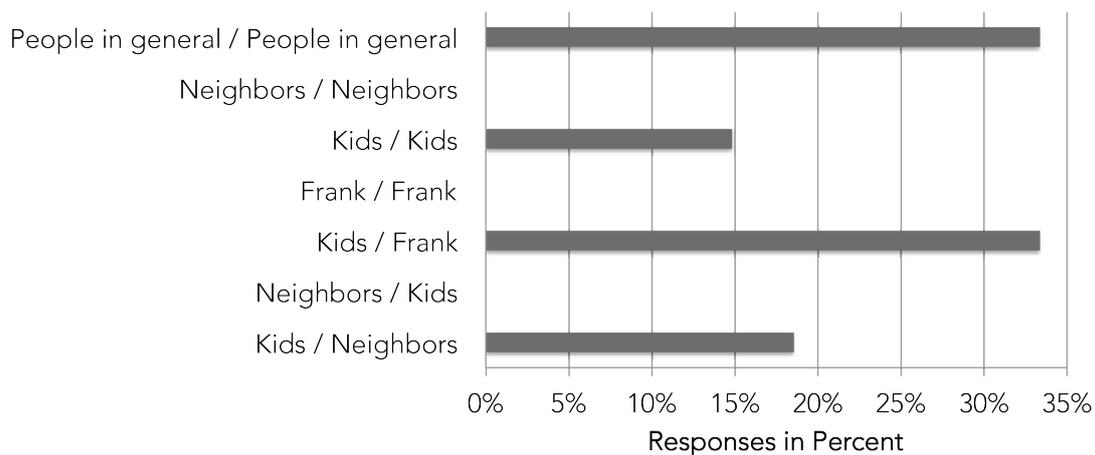


Fig. 4: Frank says: '[The kids] either get a delicious treat, or else they play a silly prank on the neighbors.'

In the Restaurant scenario, John's utterance 'At the new restaurant, the steaks are delicious, and the broccoli burgers are very tasty, too' had two dominant interpretations, both multiperspectival. According to the first one, the steaks are delicious for John, and the broccoli burgers for his vegetarian wife (40%). According to the second, the steaks are delicious for the speaker (John) and his interlocutor (Paul), and the broccoli burgers for their vegetarian wives (36%). These readings are trailed by two monoperspectival interpretations according to which both PPTs must be relativized either to people in general, or John, the speaker (12% each), cf. Figure 5.

Perspectivity, Restaurant Scenario

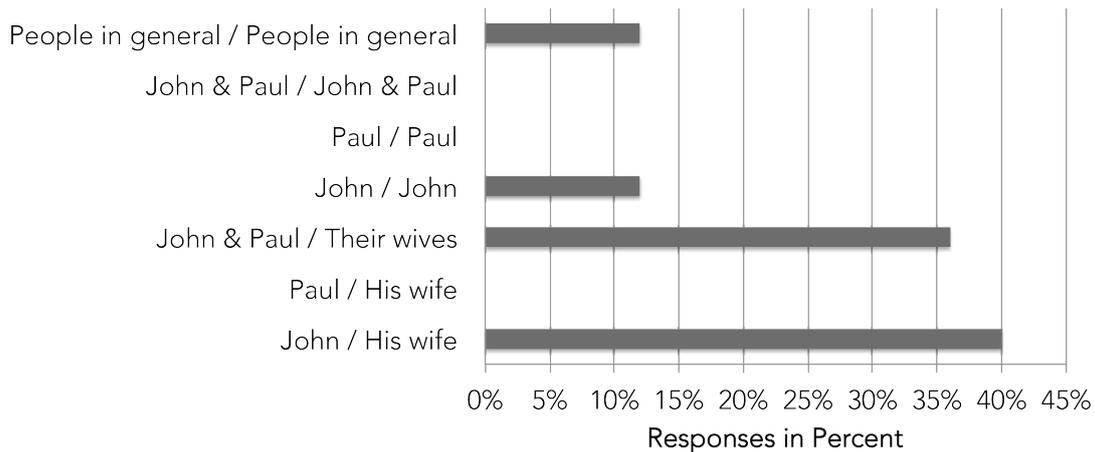


Fig. 5: John says: '[At the new restaurant,] the steaks are delicious, and the broccoli burgers are very tasty, too.'

Do claims involving multiple predicates of personal taste adhere to the uniqueness of perspective constraint, i.e. must such claims be interpreted in a way that invokes one and only one contextually salient perspective? The data for all three scenarios testifies to the contrary – and rather decisively so. In every scenario the dominant interpretation is a multiperspectival one, and in all three scenarios the aggregated multiperspectival interpretations account for the majority of responses. This pattern is particularly pronounced for the Italy and Restaurant scenarios in which the target claims are interpreted in multiperspectival fashion by at least 70% (one-step) or 90% (two-step) of the respondents. As regards claims of personal taste, then, we have solid grounds to treat multiperspectival interpretations as a perfectly standard feature of ordinary language.

7. Second Experiment: Epistemic Modal Claims

A similar experiment was run for epistemic modal claims, also featuring three different scenarios. In each of the scenarios, the protagonist utters a claim involving multiple occurrences of epistemic 'might'. The question asked whether the latter are best interpreted as relative to a *single* contextually salient epistemic perspective, or rather to two *different* ones. The set-up paralleled the one of the previous experiment. Again, each scenario was tested by aid of a one-step procedure in which participants had to pick a complete interpretation from a selection of options, and a two-scenario in which they had to pick an appropriate perspective for the two occurrences of 'might' one at a time.

7.1 Participants

120 participants (f=43) were recruited on AMT to complete a paid Qualtrics survey online. The responses of participants who failed an attention test, who were not native English speakers, or who changed their response more than 10 times (suggesting automated input) were discarded. For the first part of the two-step question, the minimum response time for full comprehension was set to 30 seconds. For the one-step question, which involved slightly more reading, the minimum response time was set to 35 seconds.²² All responses below these values were discarded. For the two-step question, 84 datasets (f=32) remained, for the one-step question, 83 (f=32) remained.

7.2 Materials

Below are the three scenarios, questions, and possible responses used:

Election Scenario

Jones is the anchorman of an Evening News TV Program. Baker, a Democrat, is running for senator in Vermont. The polls are closed. The votes are being counted and the race is tight. Jones connects with Baker's campaign manager who says: 'It's rather clear by now that Baker has won.' Straight afterwards, Jones connects with the spokesman of the Senate, who says 'As far as I know, nothing is decided yet.' Summing up, Jones says 'Baker might be the new senator of Vermont, and he might not be.'

Q.1a: We are interested in how Jones's claim should be understood. Relative to whose information should we interpret the first part of the sentence (i.e. 'Baker might be the new senator')?

Q.1b: Relative to whose information should we interpret the second part of the sentence (i.e. 'he might not be')? Choose the option which best agrees with your intuitions.

- Relative to what Baker's campaign manager knows.
- Relative to what the spokesman of the Senate knows.
- Relative to what the anchorman knows.
- Relative to what Baker's campaign manager and the spokesman of the Senate know.
- Relative to what all three men know.
- Relative to what people in general know.

Q.2: We would like to know how Jones' claim should be understood. We are particularly interested in the two occurrences of the word 'might' and whose information they refer to. Which of the following interpretations suits your intuition best?

The six available responses took the form 'Baker might be the new senator (according to x) and he might not be (according to y)'. The multiperspectival

²² The minimum response time for both conditions was set higher than in the PPT experiments, because the scenarios involve more text. The test subjects asked to respond as fast as possible once they had fully understood the scenarios and questions took slightly more time. The average response time for the modal scenarios for all subjects also exceeded the average response time for the PPT scenarios by around five seconds.

responses used the following values: (1) campaign manager / spokesman of the senate, (2) spokesman of the senate / campaign manager, (3) anchorman and campaign manager / anchorman and spokesman of the senate. The monoperspectival responses invoked the perspectives of (4) the anchorman, (5) all three men and (6) people in general.

Biology Scenario

Mister Smith teaches biology to young children at school. In one of the first lessons he asks whether anyone knows what type of species whales are. Ben raises his hand and says 'Whales are fish.' Mary is of different opinion and says 'Whales are mammals.' Mister Smith says: 'So whales might be fish or they might be mammals.'

Q.1a: We would like to know how Mister Smith's claim should be understood. We are particularly interested in the two occurrences of the word 'might' and whose information they refer to. According to whose information might whales be fish?

Q.1b: According to whose information might they be mammals? Please choose the option that best fits your intuition.

- According to Ben's information.
- According to Mary's information.
- According to Mister Smith's information.
- According to Mister Smith's, Ben's and Mary's information.
- According to the information of people in general.
- According to the information of the class.

Q.2: We would like to know how Mister Smith's claim should be understood. We are particularly interested in the two occurrences of the word 'might' and whose information they refer to. Which of the following interpretations suits your intuition best?

The seven possible responses took the form 'Whales might be fish (according to x) and they might be mammals (according to y)'. The multiperspectival readings used the perspectives of (1) Ben / Mary, (2) Mary / Ben, (3) Ben and Mr Smith / Mary and Mr Smith, the monoperspectival ones focused on (4) Mr Smith, (5) Mary, Ben and Mr Smith, (6) the class and (7) people in general.

Shell Game Scenario

Luca and Stef see a man playing the shell game. He puts three cups face down, slips a coin under one of them and shuffles them in plain view. When he is finished, he lines up the three cups in a row and asks Luca and Stef under which one the coin is. Luca says: 'The coin is under the left cup.' Stef says: 'The coin is under the right cup.' The man says: 'So the coin might be under the left cup, or it might be under the right cup.'

Q.1a: We are interested in how the claim of the man should be understood. Relative to whose information should we interpret the first part of the sentence (i.e. 'The coin might be under the left cup')?

Q.1b: Relative to whose information should we interpret the second part of the sentence (i.e. 'The coin might be under the right cup')?

Choose the option which best agrees with your intuitions.

- Relative to Luca's information.
- Relative to Stef's information.
- Relative to the man's information.
- Relative to the information of all three.
- Relative to the information of people in general.
- Relative to Luca's and Stef's information.
- Relative to the man's and Luca's information.
- Relative to the man's and Stef's information.

Q.2: We would like to know how the man's claim should be understood. We are particularly interested in the two occurrences of the word 'might' and whose information they refer to. Which of the following interpretations suits your intuition best?

The seven responses to choose from took the form 'The coin might be under the left cup (relative to x's information) or it might be under the right cup (relative to y's information). The multiperspectival readings were (1) Luca / Stef, (2) Stef / Luca, the monoperspectival readings used the perspective of (3) the man, (4) Luca, (5) Stef, (6) Luca, Stef and the man, and (7) people in general.

7.3 Procedure

As in the previous experiment, each participant was first randomly assigned the two-step condition of one of the scenarios, and thereafter the one-step condition of another scenario. All scenarios featured at least 6 different choices of perspective (two-step condition) or 6 different interpretations (one-step condition), with up to three more for certain scenarios. In the one-step conditions the monoperspectival conditions once again outnumbered the multiperspectival ones, statistically tilting the odds in favour of the position argued against.

7.4 Results & Discussion

7.4.1 Aggregate Results

As regards the two-step results, the responses interpreting the two occurrences of 'might' with regards to different interpretations were once again aggregated to a set of multiperspectival readings, those interpreting them with respect to a single perspective into a set of monoperspectival readings. For all three scenarios, the multiperspectival readings were more frequent. In the Election scenario (53% v. 47%) and the Shell Game scenario (53% v. 47%) the difference was marginal, in the Biology Scenario it was rather pronounced (77% v. 23%), cf. figure 6.^{23 24} In the one-step condition,

²³ Detailed results are presented in Appendix 2.

²⁴ Pearson chi-square goodness-of-fit test for *Election* $\chi^2(1,32)=.125$, $p=.724$, for *Biology* $\chi^2(1,22)=6.545$, $p=.011$, for *Shell Game* $\chi^2(1,30)=.133$, $p=.715$. Again, the fact that the

the results are even more decisive. The percentage of multiperspectival readings considerably outnumbered monoperspectival interpretations in Election (88% v. 12%), Biology (78% v. 22%) and Shell Game (54% v. 46%), cf. figure 7.²⁵

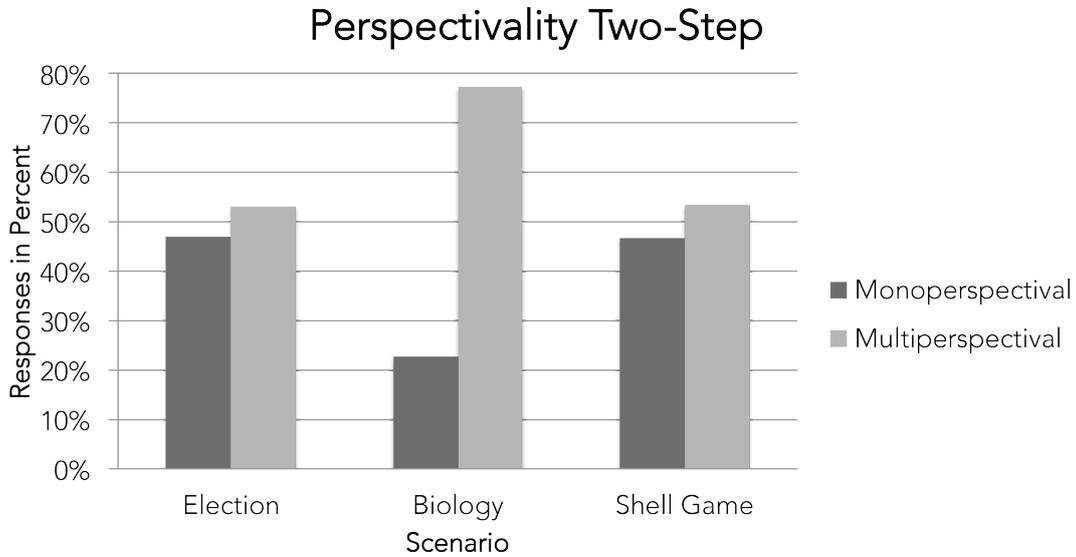


Fig. 6: Monoperspectival v. multiperspectival interpretations across scenarios, two-step condition

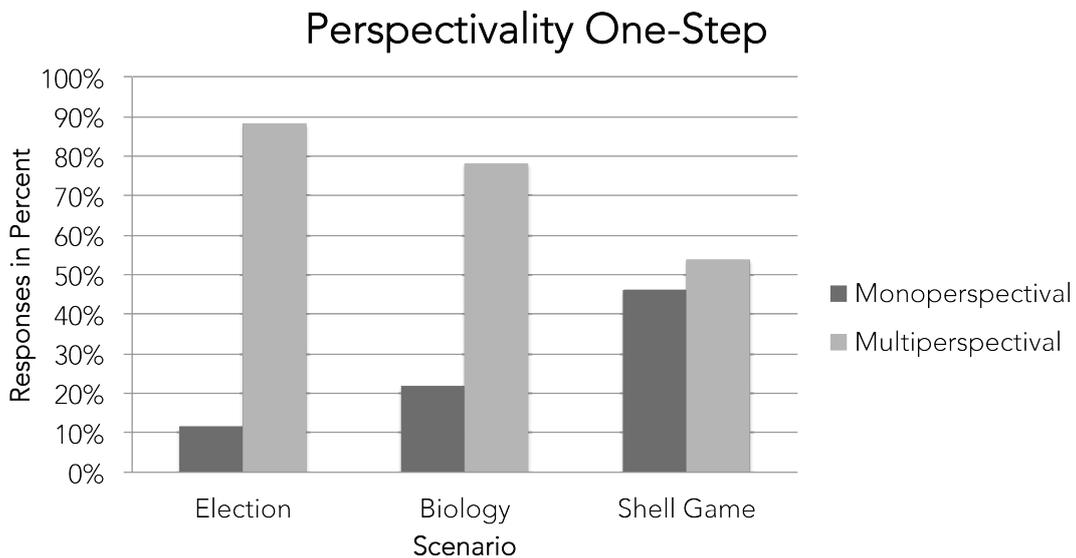


Fig. 7: Monoperspectival v. multiperspectival interpretations across scenarios, one-step condition

difference is *not* significant in the *Election* and *Shell Game* merely means that a multiperspectival interpretation is as *plausible* as a monoperspectival one.

²⁵ Pearson χ^2 goodness-of-fit test for *Election* $\chi^2(1,34)=19.882$, $p<.001$; for *Biology* $\chi^2(1,23)=7.348$, $p=.007$, for *Shell Game* $\chi^2(1,26)=.1154$, $p=.695$.

7.4.2 Dominant Readings

A closer look at the results for the various individual readings in each scenario solidifies the emerging pattern. In the Election scenario, the multiperspectival reading according to which the first occurrence of 'might' must be interpreted with regards to the campaign manager's information, and its second occurrence with regards to the spokesman of the Senate, was strongly dominant (65%). The second most chosen option (anchorman & manager for the first 'might', anchorman & spokesman of the Senate for the second 'might') is also a multiperspectival reading (18%).

Perspectivity, Election Scenario

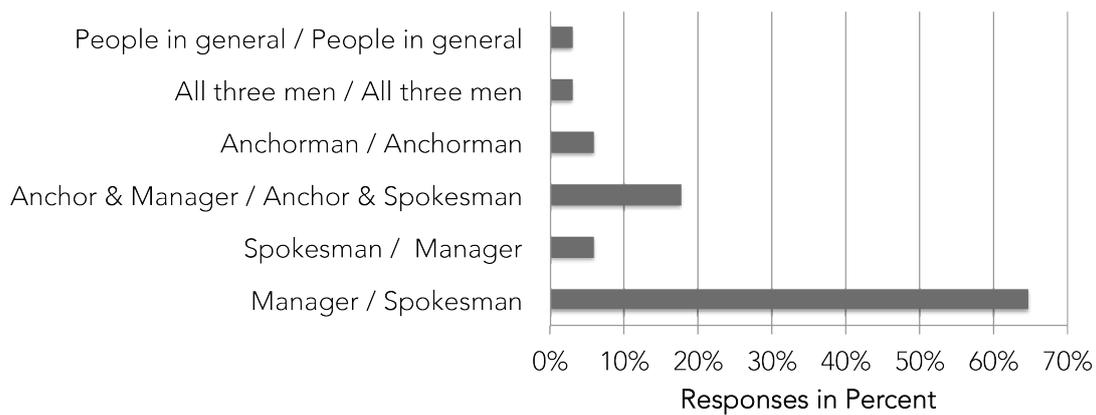


Fig. 8: The Anchorman says: 'Baker might be the new Senator of Vermont, and he might not be.'

As regards the Biology Scenario, the teacher's utterance 'Whales might be fish and they might be mammals' is predominantly relativized to Ben's (first 'might') and Mary's (second 'might') epistemic perspectives (61%). In second place we find another multiperspectival reading (Ben & Smith / Mary & Smith, 13%) as well as a monoperspectival one (both occurrences of 'might' are relativized to the class's epistemic perspective, 13% for each), cf. figure 9. Once again, we have strong evidence in favour of perspectival plurality and against the UPC.

Perspectivity, Biology Scenario

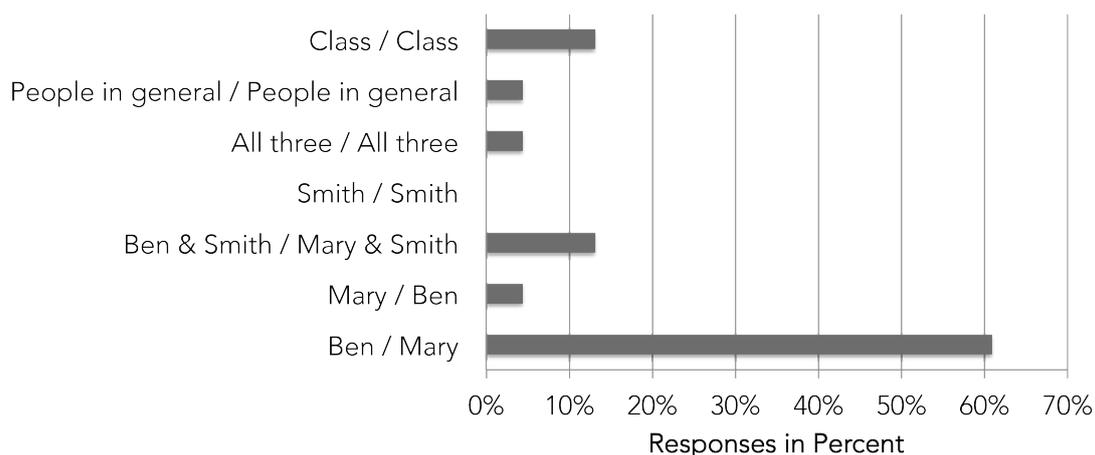


Fig. 9: Mr Smith says: "So whales might be fish or they might be mammals.'

The aggregated results of the Shell Game scenario might be seen as making the least convincing case in favour of perspectival plurality. Here the multiperspectival readings taken together only marginally exceed the aggregated monoperspectival ones (53% v. 47% in the two-step condition, 54% v. 46% in the one-step condition). However, as the breakdown for the one-step results demonstrates, there is, once again, a single strongly dominant interpretation which manifests perspectival plurality. 54% of the participants think that the man's utterance 'So the coin might be under the left cup, or it might be under the right cup' is best interpreted with respect to Luca's information as regards the first 'might', and Stef's as regards the second (cf. figure 10). The considerable aggregate level of monoperspectival readings, by contrast, falls into *four* different interpretations invoking a single perspective only, none of which attracts even half as many votes as the dominant multiperspectival one.

Perspectivity, Shell Game Scenario

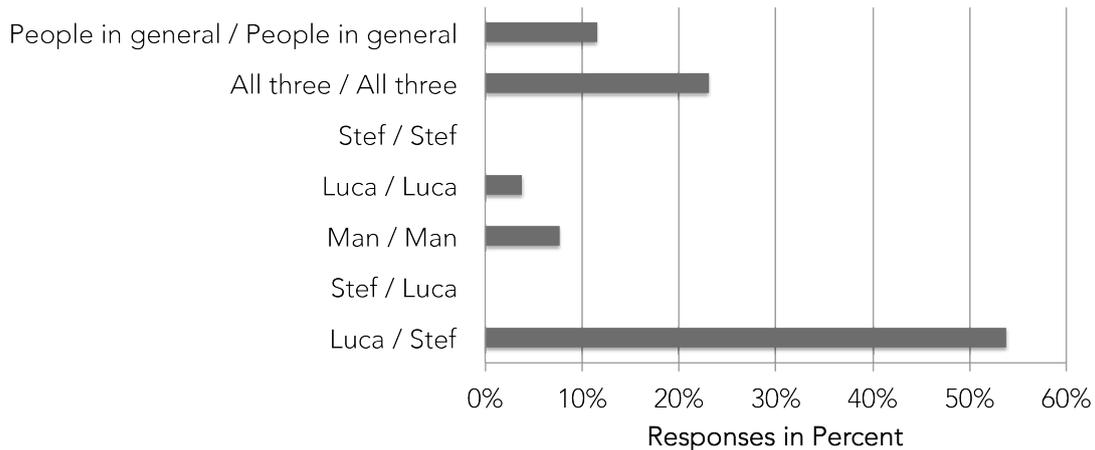


Fig. 10: The man says: 'So the coin might be under the left cup, or it might be under the right cup.'

The results paint a clear picture: For the given scenarios, multiperspectival interpretations are not only perfectly plausible, but dominant both in terms of aggregate levels and with regards to the single most chosen interpretation. The uniqueness of perspective constraint appears to be false. But can the data be trusted?

8. Potential Objections

In the following I will discuss two potential objections that might legitimately be raised against the results here presented. In the section thereafter, I'll present further experiments which, I hope, set these worries to rest.

8.1 Inappropriate Experiments

A reasonable worry to raise regards an apparent *task confusion* on behalf of the participating subjects. Though the experiments explicitly ask for the most appropriate interpretations of the target sentences, one could argue, the participants actually engage in a *different*, much more simple task. Hurried, or over-eager to get things 'right', they pursue a task not unlike Cinderella's: Sorting the most salient objects (lentils and ash) into the appropriate pots (the bowl and the trash). Given that the examples strongly privilege a multiperspectival interpretation, the objection might go, participants are biased in the simple *sorting task* they are engaged in. But since the sorting task is not actually the more sophisticated task of assigning the most plausible interpretation to the utterance, the data proves nothing as regards the latter. Take the first PPT example: The two dominant perspectives are Sally's and the kids. In a simple 'what goes where' understanding of the

experimental task, Sally's perspective is associated with the delicious wine, and the kids' perspective with the fun water-slide. But whether such an interpretation actually makes sense – a problem that particularly afflicts the two-step procedure, in which the matching-up occurs piece-meal – is another, more complex question that cannot thus be tested.

This objection misses the mark. First of all, in every single scenario, there is a variety of perspectives relative to which each PPT can be interpreted. In the Italy scenario, Sally (the speaker), the teacher (the interlocutor), and the kids (the protagonists) as well as the group perspective of Sally and the kids ('we' in Sally's utterance) are explicitly mentioned. The same is the case for every single other scenario. If the point is supposed to be that, despite the fact that a variety of perspectives are explicitly *mentioned*, only two are *salient* (for instance the one of Sally on the one hand and the kids on the other, because *they* underwent the *experience*)²⁶ then one would expect these perspectives to be extremely dominant in the results. Differently put, if the Cinderella objection were on the right track, the results should display considerably more uniformity in so far as the only two salient perspectives are assigned near-universally to the respective PPTs (or occurrences of 'might') that they most naturally combine with. But they don't. In various scenarios (Halloween, Election, Shell Game) roughly 45%²⁷ of the interpretations are *monoperspectival*: Not the predicated pattern if the experimental set-up is alleged to rule such interpretations out from the get-go.

If the objection were on the right track we would also expect a *single* multiperspectival reading to be clearly dominant in each of the scenarios. Yet again in half the scenarios (Halloween, Restaurant, Election), there were at least *two different* multiperspectival with roughly 20% of total responses. In the Restaurant scenario, for instance, the two near-equally popular multiperspectival readings differed with regards not only to one, but *both* perspectives (John / His wife, 40%, John & Paul / Their wives; 37%, cf. Figure 5 above). What this shows is that there is nothing wrong with the experimental set-up: The task was *understood* as one of judging the plausibility of different interpretations and not as a simple sorting exercise. Given that there is no problem regarding the experimental design, when

²⁶ Justifying the alleged exclusive salience of only two amongst various mentioned perspectives of course already doesn't work for the Halloween example and other generic ones, since here no particular experience is at stake, and hence the perspectives of experiencers cannot thus be privileged.

²⁷ These results hold for all three scenarios, for both the one-step and the two-step conditions, except the election scenario, where the monoperspectival readings in the one-step condition were considerably lower.

there *is* a single, strongly dominant multiperspectival reading (such as in the Italy and Biology scenarios) we are well-advised to deduce that there are simply *no plausible alternatives*.

One way to reinforce this point is to demonstrate that the exact same experimental set-up delivers data in favour of monoperspectival interpretations in cases where these are semantically plausible. As discussed in the opening sections, Lasersohn, for instance, argues that 'Every man gave some woman a fun ride and a tasty dish' can take a variety of monoperspectival interpretations, but 'the sentence *cannot mean* that each man gave some woman a ride that was fun for him, and a dish that was tasty for her' (2008, p. 325). I agree. Now, if the proposed experimental set-up is adequate, its results should confirm such predictions. Similarly, if the scenarios above are modified such that their inherent logic is no longer active, i.e. if the PPTs no longer naturally scramble for distinct perspectives, then the multiperspectival readings should no longer be dominant. We could, for instance, replace 'delicious wine' with 'delicious food' and the 'fun water-slide' with the 'fun beach', so that neither of the latter privileges a particular perspective. If the experimental set-up is indeed innocuous, then the change of two nouns should suffice to reverse the pattern of multiperspectival dominance. Neither food nor beaches are associated with a particular target audience, and so the fact that monoperspectival interpretations are more plausible than multiperspectival ones should manifest itself in the results. Two experiments along these lines are reported in section 9.

8.2 Question Framing

Another quibble might be voiced as regards the formulation of the question. It is inappropriate, one might argue, to ask the participants *directly* how they would interpret the target sentence. Instead, it would be preferable to collect evidence regarding favoured interpretations *indirectly*. This could be done via a truth value judgment task. In the Italy scenario, for instance, another person such as the teacher could report to a third person what Sally said, invoking a particular interpretation. The participants could then be asked to judge whether what the teacher said is *true*. Or else, they could be asked whether the teacher's claim was *appropriate*, thus revealing whether the use of a particular interpretation is deemed acceptable. If the interpretation is implausible, the teacher's claim will be judged false or inappropriate, if the interpretation is plausible it will be judged true or appropriate.

I fail to see on what *grounds* the formulation used could be called into doubt. Though alternative, indirect, methods have been recommended to me, I

have never heard a single plausible justification *why* such methods are preferable. The formulation used in experiments 1 and 2 is unambiguous, simple and clear, and 'to interpret', 'interpretation', 'reading', 'how to understand sentence S' etc. are all ordinary language locutions. So it escapes me why one should, in asking people which reading best agrees with their intuition, or sounds most plausible to them, not read off precisely what is literally asked for. But to pre-empt these and similar worries, I ran the Italy scenario in the suggested alternative ways. The results are reported in section 10 and 11.

9. Monoperspectival Dominance

One way to counter the Cinderella worry consists in demonstrating that the experimental method employed delivers results that favour monoperspectival readings when such readings are more appropriate. To test this, the Italy scenario was adjusted in the ways proposed above. The words 'wine' and 'water-slide' were replaced by 'food' and 'beach' to favour a monoperspectival reading.

9.1 Participants

92 (f=36) participants were recruited on AMT to complete a paid Qualtrics survey online. Speed-clickers ($t < 30s$), excess clickers ($n > 10$), non-native speakers and subjects failing an attention task were filtered out. 74 datasets remained (f=28).

9.2 Materials

Two new scenarios were devised. The adapted Italy scenario read:

The Italy Scenario (revised)

Imagine the following situation: Sally is a single mum with two children aged 6 and 8. On the first day of school after the summer holidays, she has a little chat with the teacher at school and says: 'Over the summer I went to a holiday resort in Italy with the children. The food was delicious and the beach was a lot of fun.'

Q: We would like to know how Sally's claim should be understood. We are particularly interested in the question for whom the food was delicious, and for whom the beach was fun in Sally's assertion. Please choose the interpretation that fits your intuition best.

- The food was delicious for Sally and the beach was fun for the kids.
- The food was delicious for the kids and the beach was fun for Sally.
- The food was delicious for Sally and the beach was fun for Sally.
- The food was delicious for the kids and the beach was fun for the kids.
- The food was delicious for both Sally and the kids, and the beach was fun for both Sally and the kids.
- The food was delicious for people in general, and the beach was fun for people in general.

Lasersohn's example, which favours a monoperspectival reading, was turned into the following scenario:

Fair Scenario

Every fall, the fair comes to town. John went and reports to Peter who couldn't go: 'Every man gave some woman a fun ride and a tasty dish.'

Q.: We would like to know how John's claim should be understood. We are particularly interested in the question for whom the rides were fun and for whom the dishes were tasty. Please choose the interpretation that fits your intuition best.

- The rides were fun according to the women, and the dishes were tasty according to the women.
- The rides were fun according to the men, and the dishes were tasty according to the men.
- The rides were fun according to John, and the dishes were tasty according to John.
- The rides were fun according to people in general, and the dishes were tasty according to people in general.
- The rides were fun according to Peter, and the dishes were tasty according to Peter.
- The rides were fun according to the women, and the dishes were tasty according to the men.
- The rides were fun according to the men, and the dishes were tasty according to the women.

9.3 Procedure

Each participant was randomly assigned one of the two scenarios. Except for the substitution of 'wine' and 'water-slide' with 'food' and 'beach', *Italy₂* listed the same readings as the original *Italy* scenario. The question of the Fair experiment listed seven responses, most of which were adapted directly from Lasersohn's discussion (Lasersohn, 2008, p. 325).

6.4 Results

As expected, in both scenarios the aggregate monoperspectival interpretations (*Italy₂*: 74%; Fair: 85%) significantly exceeded the multiperspectival interpretations (*Italy₂*: 26%; Fair: 15%).²⁸ Figure 11 plots the data for both scenarios as well as the results for the original *Italy* scenario from experiment 1, which favoured a multiperspectival reading. For the two *Italy* scenarios, we see a near-symmetric, significant²⁹ reversal of the mono/multi ratio. This suggests that the experimental method works exactly as it should: When the target sentence and context favour a multiperspectival interpretations, this is born out experimentally, when it doesn't – as in *Italy₂*

²⁸ Pearson goodness-of-fit test for *Italy₂*, $\chi^2(1,34)=23.059$, $p<.001$; for *Fair* $\chi^2(1,40)=19.600$, $p<.001$.

²⁹ A Pearson chi-square test reveals a significant relation between chosen interpretation and condition (*Italy₁* v. *Italy₂*), $\chi^2(1,57)=25.519$, $p<.001$, Cramer's V = .669.

or, as Lasersohn correctly predicted as regards the Fair scenario – the participants predominantly interpret the claims as monoperspectival.

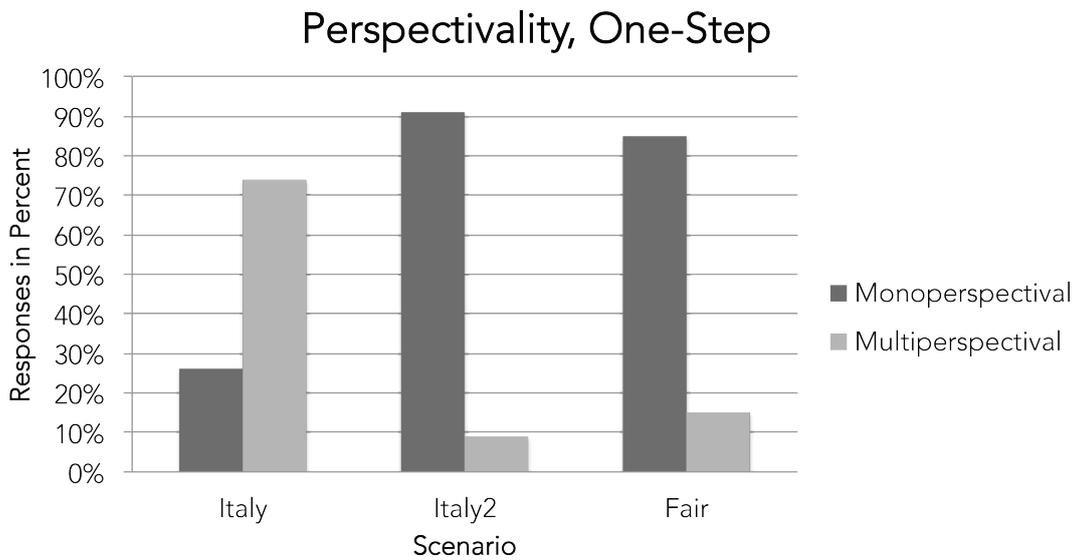


Fig. 11: Monoperspectival v. multiperspectival interpretations across scenarios, one-step procedure

Figure 12 breaks down the responses for Italy₂, again in contrast to the original Italy scenario. In Italy, the interpretation chosen by over 70% of the respondents associates the delicious wine with Sally’s perspective and the fun water-slide with the perspective of the kids. In Italy₂, the dominant interpretation, again reflecting over 70% of the responses, is monoperspectival. Both the delicious food and the fun beach are interpreted as relative to the joint perspective of Sally and her kids.

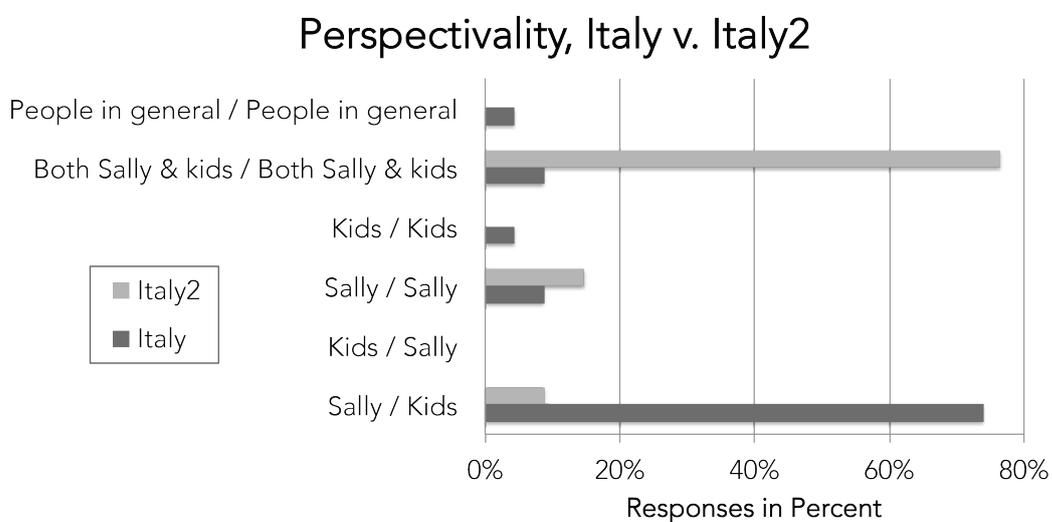


Fig. 12: In Italy, Sally says: 'The wine was delicious and the water-slide was a lot of fun.' In Italy₂, Sally says: 'The food was delicious and the beach was a lot of fun.'

Figure 13 shows that the target sentence of the Fair scenario is understood predominantly in the sense of one of three monoperspectival readings: The rides were fun and the dishes tasty according to John, the speaker (30%), they were fun and tasty according to the women (25%), or else according to people in general (18%). Neither of the two possible multiperspectival interpretations finds grace with more than 10% of the total participants.

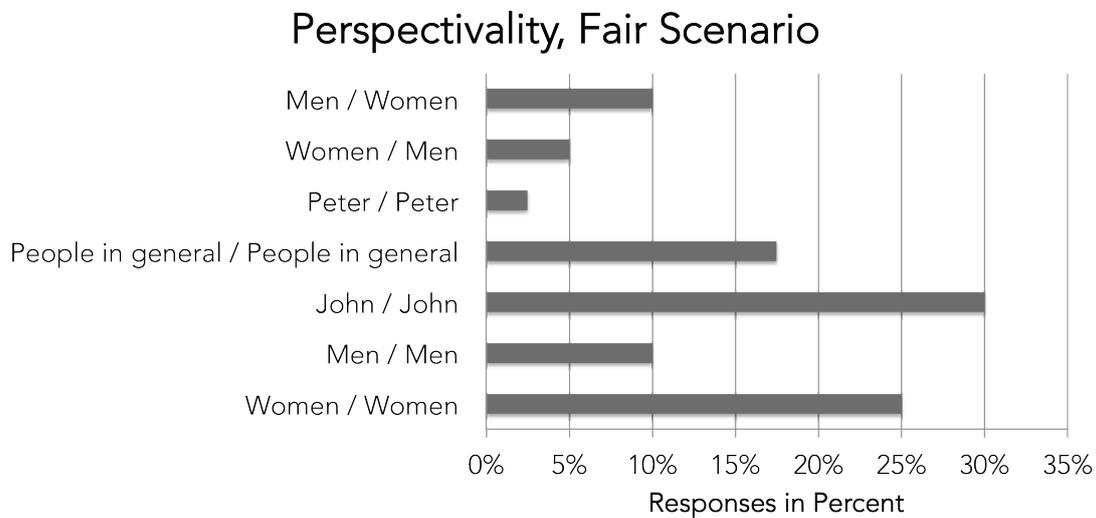


Fig.13: John says to Peter: ‘Every man gave some woman a fun ride and a tasty dish.’

The experimental method seems to work fine: Feed in a monoperspectival sentence, and it will get interpreted in a monoperspectival fashion, feed in a multiperspectival one, and it will get interpreted in a multiperspectival fashion.

10. Alternative Question Framing: ‘appropriate’

Rather than asking how the participant would *interpret* Sally’s utterance, one can ask how *appropriate* it is for someone else – for instance the teacher – to use a particular interpretation in a report. That way the participant is not directly confronted with the task of assigning an interpretation to Sally’s utterance. Instead, the speaker’s preferred interpretation(s) are revealed *indirectly* in the process of assessing whether another person has correctly reported what they take Sally to have said.

7.1 Participants

91 (f=32) participants were recruited on AMT to complete a paid Qualtrics survey. Non-native speakers and speed-clickers (t<40s) were filtered out, and

so were those who failed an attention test or changed their responses many times ($n > 13$). 56 datasets ($f = 22$) remained.

7.2 Materials and procedure

The original Italy scenario from experiment 1 was amended: The teacher reports to her husband what Sally has told her. In her report, she is invoking one of the possible interpretations Sally's utterance can be given. Participants were then asked to rate how appropriate they found the teacher's claim on a Likert Scale ranging from 1 (completely inappropriate) to 7 (completely appropriate). There were eight conditions, which differed in terms of the interpretation of Sally's claim invoked in the teacher's report.³⁰ Here is one example:

Imagine the following situation: Sally is a single mum with two children aged 6 and 8. On the first day of school after the summer holidays, she has a little chat with the teacher at school and says: 'Over the summer I went to a holiday resort in Italy with the children. The wine was delicious and the water slide was a lot of fun.'

Imagine the teacher comes home and tells her husband that Sally took her kids to Italy over the summer. How appropriate do you find each of the following statements of the teacher?

(1 = completely inappropriate, 7 completely appropriate)

'Sally said that the wine was delicious for her, and that the water slide was a lot of fun for the kids.'

Each participant was presented with a random selection of four different reports.

7.3 Results

Except for the nonsensical multiperspectival interpretation (according to which the kids find the wine delicious and Sally the water-slide fun), all the teacher's reports invoking a multiperspectival interpretation of Sally's claim were deemed highly appropriate: The *Adults at resort / Kids at resort* reading had a mean rating of 6 (SD: 1.3), the *Sally / Kids* reading 6.1 (SD: 1.0) and the *Sally / Sally & Kids* reading 6.4 (SD: 0.9).³¹ The two plausible

³⁰ The choice of responses was slightly enlarged and featured four monoperspectival interpretations (*Sally*, *The kids*, *Sally and the kids*, *People in general*) as well as four multiperspectival readings (*Sally / The kids*; *The kids / Sally*; *Sally / Sally & the kids*; *The adults at the resort / The kids at the resort*).

³¹ Agreement with all interpretations was significantly above the midpoint; one-sample t-test for *Sally/Sally&Kids*, $t(30) = 14.597$, $p < .001$, 95% CI [2.081; 2.758], *Sally/Kids*, $t(22) = 10.048$, $p < .001$, 95% CI [1.656; 2.518] *Adults at resort / Kids at resort*, $t(24) = 7.746$, $p < .001$; 95% CI [1.467; 2.533].

monoperspectival readings were also deemed appropriate reports, though mean agreement was at least a whole point less pronounced. The rating for the report invoking the perspective of *people in general* for both PPTs was 5 (SD: 1.7), the one invoking *Sally's* perspective for both was 5.1 (SD: 1.7)³², cf. Figure 14. Importantly, the dominant multiperspectival reading (*Sally / Sally & The Kids*) was deemed significantly more appropriate than the dominant monoperspectival one (*Sally*).³³

Appropriate Report, Italy Scenario

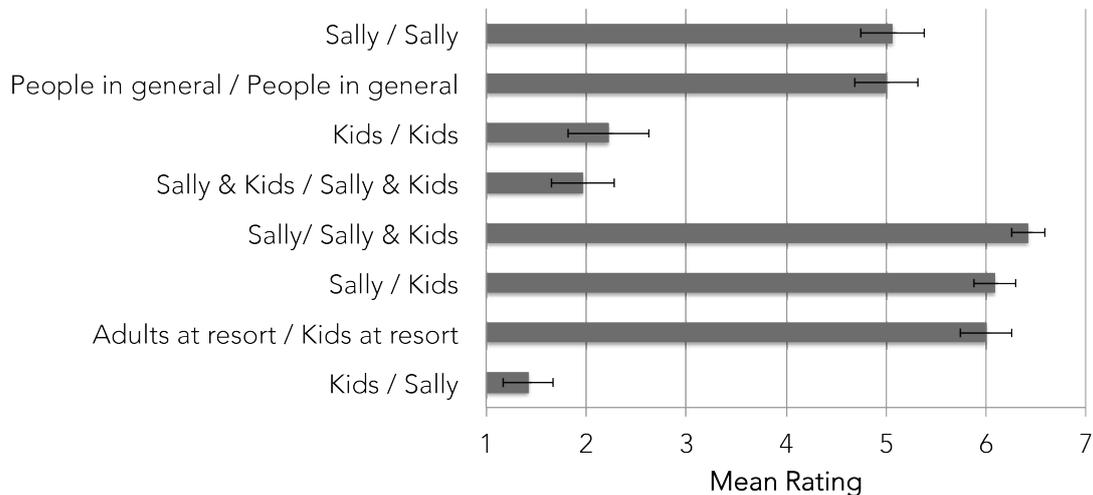


Fig. 14: Mean agreement with the claim that the teacher's report 'Sally said that the wine was delicious [for x] and the water-slide fun [for y]' is *appropriate*. Error bars denote standard error of the mean.

The data is perfectly in tune with the previous findings: The sensible multiperspectival readings are deemed more appropriate than the sensible monoperspectival readings. The alternative question formulation and data-gathering mechanism produces results consistent with the findings of the original Italy experiment. What is more, in this experimental set-up a Cinderella objection simply *cannot* apply – the participants had to rate *four* reports on a Likert scale rather than choose a *single* preferred interpretation – yet the multiperspectival interpretations are, again, considered the most plausible ones.

³² Agreement with all interpretations was significantly above the midpoint; one sample t-test for *Sally*, $t(29)=3.395$, $p=.002$, 95% CI [0.424, 1.709], *people in general*, $t(27)=3.154$, $p=.004$, 95% CI [0.349; 1.651].

³³ To allow for an independent samples t-test, Excel's randomization function was used to remove duplicates. The difference between the two readings was significant, $t(45)=3.400$, $p=.001$, 95 % CI [0.5358;2.0932]. Alternative deletion procedures, e.g. the removal of all duplicates within one condition, left the result strongly significant.

11. Alternative Question Framing: 'true'

A final experiment varied the design of the previous experiment in terms of one respect only: Rather than asking participants whether the teacher's report was *appropriate*, they were asked whether they agreed or disagreed with the claim that the teacher's report was *true*.

8.1 Methods & Materials

The scenarios again stipulated that Sally's interlocutor, the teacher, reports to her husband what Sally told her earlier that day. The eight conditions, differing in terms of how the teacher interpreted Sally's claim were identical with the ones of the previous experiment. Participants were asked to respond whether they agreed or disagreed with the teacher's report on a 7-point Likert scale ranging from 1 (completely disagree) to 7 (completely agree). Each participant was randomly assigned a single condition.

8.2 Participants

181 (f=67) participants were recruited on AMT to complete a paid Qualtrics survey online.³⁴ Non-native speakers and speed-clickers ($t < 25s$) were filtered out, and so were subjects who failed an attention test or changed their responses more than ten times, suggesting automated input. 139 datasets (f=54) remained.

8.3 Results

The overall trend of the results for the original Italy scenario is similar to the one in which participants had to assess whether the teacher's report was *appropriate*, though the mean ratings were uniformly less pronounced. Again, the three interpretations that registered the highest level of agreement were multiperspectival, invoking the perspectives of *Sally / Sally & the kids* (MR: 5.4; SD: 5.5), *Sally / The kids* (MR: 5.3; SD: 1.1) and *Adults at the resort / Kids at the resort* (MR: 4.9; SD: 1.7), cf. figure 15. The levels for all three interpretations were significantly above the midpoint.³⁵

³⁴ Why so many subjects? In the previous experiment participants had to judge how *appropriate* the teachers report were. Nothing stands in the way of judging the appropriateness of various such reports. Assessing to what extent various reports of the same speech act are *true*, however, might raise worries (justified or not) whether in judging one report as *true* forces one to judge the other reports as *not true*. To spare the participants quandaries of this kind (and us the potentially distorted input), every participant only had to judge the truth of a single report.

³⁵ One-sample t-test for *Sally/Sally & Kids*, $t(20)=4.130$, $p=.001$, 95% CI [0.684;2.078], for *Sally/Kids*, $t(18)=5.427$, $p<.001$, 95% CI [0.806;1.825], for *Adults at resort/ Kids at resort*, $t(19)=2.438$, $p=.025$, 95% CI [0.127;1.673].

The monoperspectival interpretation invoking *Sally's* perspective for both PPTs had a mean rating of 4.5 (SD: 2.0), the one invoking *People in general* also had a mean rating at 4.5 (SD: 1.7). Since neither rating is significantly above the midpoint,³⁶ participants neither agree nor disagree with the monoperspectival interpretations. Once again, the results confirm those of the original Italy experiment, so that methodological doubts should by now be convincingly ruled out. Just like all previous sets of results, the present ones, too, speak strongly in favour of multiperspectival interpretations of the target claim.

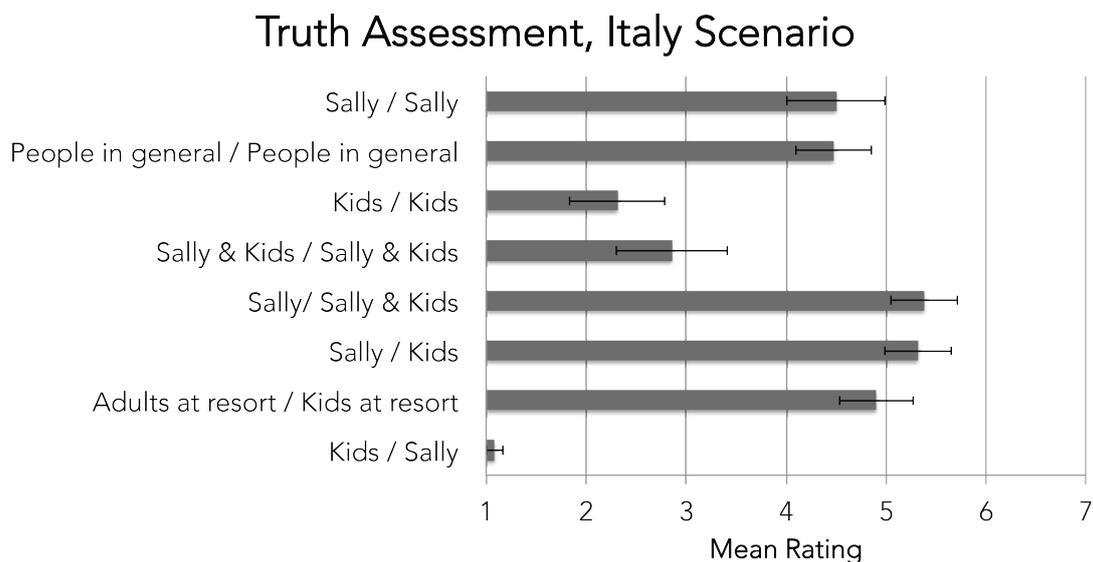


Fig.15: Mean agreement with the claim that the teacher's report 'Sally said that the wine was delicious [for x] and the water-slide fun [for y]' is *appropriate*. Error bars denote standard error of the mean.

9. Conclusion

A series of five experiments provides evidence in favour of perspectival plurality regarding taste claims on the one hand, and epistemic modal claims on the other. In all six scenarios tested, the aggregate responses favour multiperspectival readings over monoperspectival ones, according to either of the experimental methods used (one-step/two-step). For every single scenario, the breakdown of the responses revealed that the reading judged *most* appropriate was a multiperspectival one. In half of the cases said reading was deemed the most appropriate one by over 60% of the participants.

³⁶ One-sample t-test for *Sally/Sally* $t(15)=1.017$, $p=.325$, 95% CI [-0.548;1.548], for *People in general/People in general* $t(20)=1.268$, $p=.219$, 95% CI [-0.307;1.260].

The experimental methodology was subject to rigorous testing. Holding the set-up fixed, yet switching the target sentence to one most reasonably interpreted in monoperspectival fashion (Italy₂, Fair) produces exactly the predicted result: Data strongly in favour of a monoperspectival reading of such a sentence. The methodology, this is to say, does not nudge participants towards perspectival plurality. Altering the experimental set-up from a *direct* interpretation task to an *indirect* one in which another person's reading of the target claim is assessed, produces data consistent with the original results. This is the case both as regards a classic truth-value judgment paradigm, and a variation invoking the question whether the report was 'appropriate'.

Having confirmed the adequacy of the results for the Italy scenario twice over, methodological doubts should be conclusively dispelled. The experimental design is solid, and the data is decisive. Perspectival plurality is a genuine feature of ordinary language discourse and deserves careful assessment. If the considerations in the opening sections are correct, then plurality spells trouble for nonindexicalists to justify parameter proliferation by aid of operator arguments, and to account for syntactic binding. At the very least, the burden of proof – proof either that there is a reasonable pragmatic account of perspectival plurality or that the phenomenon can be accommodated in a nonindexicalist semantic framework – is now solidly in the nonindexicalist's camp.

Appendix 1: Complete results, two-step conditions, claims of personal taste

	Sally	Kids	Sally & kids	Teacher	Teacher & Sally	People in general	TOTAL
Delicious	95%	0%	5%	0%	0%	0%	100%
Fun	5%	23%	73%	0%	0%	0%	100%
Monoperspectival	5%	0%	5%	0%	0%	0%	9%
Multiperspectival	91%	0%	0%	0%	0%	0%	91%

Table 1: Results for the Italy scenario, two-step procedure

	Neighbors	Frank	Kids	Heidi	Frank & Heidi	Kids & neighbors	People in general	TOTAL
Delicious	10%	30%	25%	5%	0%	10%	20%	100%
Silly	0%	10%	65%	0%	0%	10%	15%	100%
Monoperspectival	0%	10%	20%	0%	0%	5%	10%	45%
Multiperspectival	10%	20%	5%	5%	0%	5%	10%	55%

Table 2: Results for the Halloween scenario, two-step procedure

	John	John & Paul	John & wife	Paul & wife	The wives	People in general	John's wife	Paul's wife	Paul	TOTAL
Steaks tasty	7%	57%	0%	0%	0%	11%	0%	0%	25%	100%
Broccoli tasty	0%	0%	0%	0%	57%	7%	11%	25%	0%	100%
Monoperspectival	0%	0%	0%	0%	0%	4%	0%	0%	0%	4%
Multiperspectival	7%	57%	0%	0%	0%	7%	0%	0%	25%	96%

Table 3: Results for the Restaurant scenario, two-step procedure

Appendix 2: Complete Results, two-step conditions, epistemic modal claims

	Manager	Spokesman	Anchorman	Manager & spokesman	All three men	People in general	TOTAL
First 'might'	19%	3%	28%	22%	16%	13%	100%
Second 'might'	3%	25%	22%	16%	9%	25%	100%
Monoperspectival	0%	3%	19%	6%	6%	13%	47%
Multiperspectival	19%	0%	9%	16%	9%	0%	53%

Table 4: Results for the Election scenario, two-step procedure

	Ben	Mary	Smith	Ben & Mary	People in general	The Class	TOTAL
First 'might'	59%	5%	18%	0%	14%	5%	100%
Second 'might'	5%	64%	18%	5%	9%	0%	100%
Monoperspectival	0%	0%	14%	0%	9%	0%	23%
Multiperspectival	59%	5%	5%	0%	5%	5%	77%

Table 5: Results for the Biology scenario, two-step procedure

	Luca	Stef	Man	All three	People in general	Luca & Stef	Man & Luca	Man & Stef	TOTAL
First 'might'	37%	3%	17%	20%	13%	10%	0%	0%	100%
Second 'might'	0%	47%	10%	13%	17%	13%	0%	0%	100%
Monoperspectival	0%	3%	10%	10%	13%	10%	0%	0%	47%
Multiperspectival	37%	0%	7%	10%	0%	0%	0%	0%	53%

Table 6: Results for the Shell Game scenario, two-step procedure

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