Gestures, demonstratives, and the attributive/referential distinction

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In this paper we present a decompositional analysis of demonstratives and their accompanying (pointing or iconic) gestures that explains their observed semantic/pragmatic behaviour as a result of the interplay of verbal and gesture semantics. To this end, we relate the study of speech-accompanying gestures (e.g. McNeill 1992, Kendon 2004) to discussions about multidimensional meanings (e.g. Potts 2005, 2012) and argue that (1.) by default, gesture meaning enters into composition as non-at-issue material, and that (2.) demonstratives are semantically vacuous and only function as 'dimension shifters' from the non-at-issue to the at-issue dimension. By analyzing the gesture as a rigid concept we end up with Kaplan's analysis of demonstratives + pointing gesture. Furthermore, we derive the similarity based analysis of Umbach & Gust (t.a.) for German *so*, but again in our approach it is not *so* which is responsible for the similarity, but the interplay of gesture and speech.

Data. Consider an utterance of (1) with a simultaneous iconic gesture indicating an oval object (where bracketing indicates co-occurence of speech and gesture).

(1) *Peter bought [a casserole]* 'oval' gesture.

The verbal and gestural meaning together communicate that Peter bought a casserole and that this casserole is oval. However, we argue that the gestural meaning contribution comes as *non-at-issue* meaning. For instance, gestural meaning cannot be directly denied, but only by a marked discoursive interruption (cf. (2a) as responses to (1)). Furthermore it projects across operators as negation. Hence, negation cannot target the gesture meaning contribution such that (2b) is an incoherent piece of discourse. This is in contrast to (2c), where the gesture meaning is replaced by verbalized at-issue information, thus yielding a coherent piece of discourse.

(2) a. *#That's not true, the casserole isn't oval./Hey, wait a minute, the casserole isn't oval.*

b. *I would never buy [a casserole]* 'oval' gesture. *# Lasagna noodles do not fit in there.*

c. *I would never buy an oval casserole. Lasagna noodles do not fit in there.*

Interestingly, if a demonstrative like German *so* (roughly: *such/like that*; cf. Ehlich, 1986) is added, gesture information does become at-issue. In fact, the gesture contribution in (3a) can be denied by the direct denial in (2a). Likewise, the German variant of (2b) with *so* in (3b) renders it synonymous to (2c).

(3) a. *Peter hat sich [so eine Auflaufform]* 'oval' gesture *gekauft.*

'Peter bought [such a casserole] 'oval' gesture'.

b. *Ich würde niemals [so eine Auflaufform]* 'oval' gesture *kaufen.*

Da passen Lasagneblätter nicht rein.

'I would never buy [such a casserole] 'oval' gesture. Lasagna noodles do not fit in there.'

We thus propose that *so* acts as a 'dimension shifter' (contrary to what Potts, 2005, and many others claim to exist): it shifts non-at-issue meaning to the at-issue dimension. In the same vein, demonstratives such as German *dies-* and English *this/that* make gestural meaning at-issue that is non-at-issue otherwise, when co-occurring with a definite. In a situation where the speaker/gesturer S and the addressee A own a square casserole and A has lent that casserole to Peter one observes the following:

(4) S: *Did you lend Peter [the casserole]* 'oval' gesture? A: *#No./Yes (, but it is square).*

A truthful answer of A must be affirmative, despite the fact that S' gesture does not match the shape of the casserole. Hence the gestural meaning contribution is not part of the question proper, but non-at-issue information. In a situation where S and A own two casseroles, an oval and a square one, and A again has lent the square casserole to Peter, a truthful answer of A must be negative:

(5) S: *Did you lend Peter [this casserole]* ₍'oval' gesture₎? A: *No (, but the square one)./#Yes.* Here the question is understood as synonymous to '*Did you lend Peter the oval casserole?*'. In other words, what has been non-at-issue information in (4) has been shifted to the at-issue dimension in (5) by, as we claim, the demonstrative. Therefore, while German *so ein N* is the shifted version of *ein N*, we regard *dieser/this/that N* as the shifted version of *der/die/das/the N*.

Analysis. We assume that there is no crucial difference between iconic and pointing gestures: both refer to an *intended referent* **g**. For instance, gesturing an oval shape is a means to refer to a (possibly abstract) oval object just like pointing to an oval object is a means to refer to this object itself (or another object that is related to it via some salient functional relation; Nunberg, 1993). Formally, we propose to let a gesture denote the *rigid designator to the intended referent*.

This intended referent **g** relates to the co-occurring speech signal in different ways. A gesture co-occurring with a noun indicates that **g** exemplifies the noun (cf. Fricke, 2007; Lücking, 2012), ie. that it is in the noun's denotation. Co-occurence with a determiner expresses a type of similarity with the discourse referent introduced by the determiner. We claim that if the determiner is indefinite, it is similarity with respect to some contextually salient feature(s) (cf. Umbach & Gust, to appear, for uses with German *so*), if it is definite, it is strict identity. Crucially, all these gestural meaning contributions come as non-at-issue meanings.

For the formal analysis we use AnderBois's et al. (to appear) uni-dimensional, dynamic system, which keeps track of the dynamics of discourse referents (i.e. variables over individual concepts) as well as propositional variables p and p^{cs} used to account for the division of at-issue and non-at-issue meaning, respectively, as indicated by corresponding subscripts on predicates. Given the gesture referent **g**, we let $\ulcorner$☞ **g**$\urcorner$ be a corresponding formal language expression that is interpreted as the individual concept with value **g** for all possible worlds. Our formal representation of (1) comes down to (6) (assuming that the intended referent **g** is an oval shaped object)[1].

(6) $[x] \land x = \text{PETER} \land [y] \land \text{CASSEROLE}_p(y) \land$

$$\underline{[z] \land z = \ulcorner ☞ \mathbf{g} \urcorner} \land \text{SIM}_{p^{cs}}(y, z) \land \text{CASSEROLE}_{p^{cs}}(z) \land \text{BUY}_p(x, y)$$

The interpretation of (6) as spelled out in AnderBois et al. comes down to a proposal to add the information that Peter (x) bought a casserole (y) to the context set, while it *imposes* onto the context set (in AnderBois et.al. words) (1.) that the casserole y is similar to the intended gesture referent **g** and (2.) the intended referent is a casserole.

As argued above, German *so* in (3) acts as a dimension shifter. We thus derive for (3a) the same interpretation as before with the decisive difference that the similarity introduced via occurrence of gesture and indefinite determiner is at-issue (i.e. ... $\land$ SIM$_p(y, z) \land$ ... in (6)). Hence, the similarity between gesture referent and the verbally introduced casserole becomes part of the proposal which explains why the denial in (2a) is coherent in this case.

In (4) we find a definite and hence similarity is strengthened to identity. Our proposal hence predicts that the information that the addressee has lent the casserole to Peter is at-issue information (in the proposition underlying the question), while the gestural contribution that the casserole is identical to the intended referent is non-at-issue. In (5) the identity of the casserole and the intended referent comes out as at-issue information, thus explaining the negative response in the given situation.

Selected References. AnderBois et al. (to appear). At-issue Proposals and Appositive Impositions in Discourse. *JoS*. ● Fricke (2007). *Origo, Geste und Raum Lokaldeixis im Deutschen*. Berlin und New York: de Gruyter ● Nunberg (1993). Indexicality and Deixis. L&P 16:1. ● Umbach & Gust (to appear). Similarity Demonstratives. *Lingua*.

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[1]In these representations, $[x]$ stands for a reset of assignments at position x and meaning contributed by the gesture is underlined. We omit certain details of the formal system that are not essential to the understanding of our main ideas.