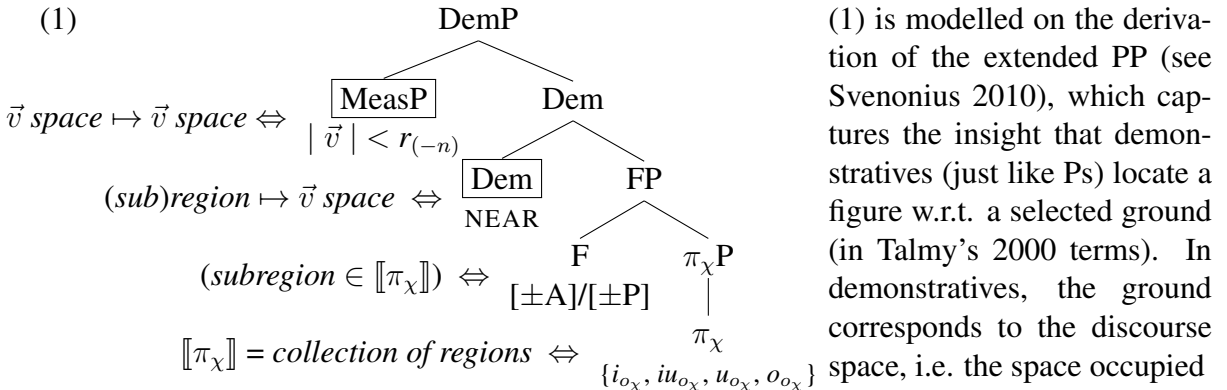# Integrating deictic co-speech gestures in demonstratives

Silvia Terenghi (Utrecht University)

Background. It has been long speculated that gestures are intimately related to the expression of (exophoric, i.e. spatially used) demonstratives, at least starting from Bühler 1934. However, only recently has research started delving more into the issue, concluding that correlations in use of demonstratives and deictic co-speech gestures ('DCSGs': e.g. manual pointing, head/chin pointing, eye gaze) do subsist: in some languages, the co-occurrence of exophoric demonstratives and DCSGs is mandatory (Diessel & Coventry 2020: 6); demonstratives and gestures are temporally aligned, hinting at their joint cognitive origin (Mesh *et al.* 2021: 3); whenever pointing gestures are not available, rates of use of demonstratives decrease (Diessel & Coventry 2020: 6–7). Studies available to date have been mostly carried out from an informal, communicative-oriented point of view: in this paper, I wish to integrate their converging conclusions in a formal analysis of demonstrative forms. Concretely, I propose that DCSG spell out part of the internal structure of demonstrative forms, and that, as such, they are fully integrated within the syntax of demonstratives, under a multi-modal spell-out approach.

Assumption: DemP's internal structure. The present proposal is built on the internal structure for demonstrative forms advanced by Author (2021, *submitted*), summarised in (1).

(1)

$$\vec{v}\ space \mapsto \vec{v}\ space \Leftrightarrow$$
$$| \vec{v} | < r_{(-n)}$$

$$(sub)region \mapsto \vec{v}\ space \Leftrightarrow$$

$$(subregion \in [\![\pi_\chi]\!]) \Leftrightarrow$$

$$[\![\pi_\chi]\!] = collection\ of\ regions \Leftrightarrow$$

DemP
— MeasP, Dem
— Dem (NEAR), FP
— F [±A]/[±P], π_χP
— π_χ $\{i_{o_\chi}, iu_{o_\chi}, u_{o_\chi}, o_{o_\chi}\}$

(1) is modelled on the derivation of the extended PP (see Svenonius 2010), which captures the insight that demonstratives (just like Ps) locate a figure w.r.t. a selected ground (in Talmy's 2000 terms). In demonstratives, the ground corresponds to the discourse space, i.e. the space occupied by the discourse participants (speaker: *i*, hearer: *u*, other(s): *o*; their power set is called π and space is referred to as χ; cf. Harbour 2016), and is denoted by π_χ in (1). The ground may be further specified as the location of a given discourse participant (e.g. the speaker: see English *this X* 'X (is) near me'), yielding the deictic centre for demonstrative forms: this specification depends on the person features ('±A[uthor]' and '±P[articipant]') encoded under FP in (1) and on their composition with π_χ, as per Harbour's (2016) action-on-lattice approach to person systems. The deictic centre defined at FP level is construed as the origin of a set of vectors that point to the centre's vicinity, as denoted by the NEAR function introduced by Dem (the figure is located at the end of these vectors; see Author, *submitted*, for details). Thus, Dem yields a vector space: its boundaries are determined in each pragmatic context and can be formalised as an upper limit imposed onto the vectors' length (*r*, introduced by MeasP; see Zwarts' 1997 treatment of vicinity for the P *near*); if a language makes distance-oriented distinctions in demonstratives (see Anderson & Keenan 1985; e.g. Old English *that—yon*), MeasP introduces additional length limits (*n*) that result in different classes of vectors (e.g. one whose length does not exceed r_{-n}, and one whose length is comprised between r_{-n} and *r*).

Proposal: DCSGs = vector + measure. In this paper, I propose that DCSGs spell out the vectorial component of demonstrative forms (NEAR function in Dem) and its related MeasP (boxed in (1)). ① Spelling out Dem: DCSGs are physically anchored in one of the discourse atoms (the speaker, i.e. a specific subregion of π_χ: i_{o_χ}) and plainly instruct on the direction of the vectors which start at that discourse atom and lead to the referent; as such, they substantially embody the spatial component of DemP. ② Spelling out MeasP: Besides introducing

the direction of the relevant vectors, DCSGs also typically encode those vectors' length: this is shown by the fact that the employment of demonstratives and DCSGs is sensitive to differences w.r.t. the scale of the context in which the referent is located (co-occurrence rates increase as the scale grows and as the distance of the referent rises; the pointing arm in manual gestures tends to be higher as the distance of the referent increases; see Mesh *et al.* 2021), which suggests that DCSGs explicitly inform of the length of the vectors involved in the derivation of demonstrative forms, as encoded in MeasP.

As such, DCSGs can be argued to be fully integrated in the spell-out of demonstrative forms (exposing both the vectorial component and its length modifications), which in turn explains the correlation between demonstratives and DCSGs. For instance, the spell-out of a demonstrative paradigm such as the Standard Italian one can be construed as follows (where ☞ indicates any guise of DCSGs and assuming that a $[u\phi]$ probe is located high in the DemP):

(2) $[_{\text{DemP}}[_{\text{FP}}[_{\pi_\chi}\text{que-}]\text{st-}]\text{ø-o}]$ (*this*) $[_{\text{DemP}}[_{\text{FP}}[_{\pi_\chi}\text{que-}]\text{ll-}]\text{ø-o}]$ (*that*)
      $\pi_\chi\text{-}[+\text{Author}]\text{-}☞\text{-SG.M}$ $\pi_\chi\text{-}[-\text{Author}]\text{-}☞\text{-SG.M}$

Further consequences. The current proposal captures some other observations about demonstratives; here, I focus on endophoricity and diachrony, and on acquisition.

① Endophoricity and diachrony. Endophoric demonstratives are used in non-spatial functions (anaphoric, discourse, recognitional; see Diessel 1999) to refer to the (intra)linguistic context: their use is however not compatible with DCSGs, as they do not refer to the extralinguistic context. Pending a comprehensive typology of the relations between exophoric and endophoric demonstratives, it should be noted that at least in some languages the two are formally identical, despite bearing a different interpretation: this follows if multi-modal spell-out is indeed restricted to exophoric demonstratives, while in endophoric ones Dem is null. In turn, this may provide further grounds for the widely held hypothesis (see Diessel 1999: Chapters 5–6, *i.a.*) that endophoric demonstratives are the first stage in the grammaticalisation of demonstratives (which eventually results in other vector-less forms: e.g. Ds, pronouns, Cs, *etc.*): as the Dem head of endophoric demonstratives is null (and as such difficult to learn), its loss is likely and would further naturally entail the loss of the demonstrative syntax of the form.

② Acquisition. The proposal that Dem is spelled out by DCSGs is compatible with the role of DCSGs in the (early) acquisition of demonstratives (as described by Diessel 2006, Iverson & Goldin-Meadow 2005, Ozçalişkan & Goldin-Meadow 2005, Clark 1978, *i.a.*): as demonstratives are partly spelled out by DCSGs, proto-declarative DCSGs might imply the acquisition of the internal structure of DemP. Likewise, the absence of DCSGs in endophoric demonstratives predicts their later acquisition, according to the facts. Moreover, the acquisition of different demonstrative forms shows cross-linguistic differences (see e.g. Diessel & Coventry 2020): interestingly, in languages which display a hearer-oriented demonstrative ('that near you'), that form is acquired last. Crucially, in hearer-oriented forms, the deictic centre is shifted from the speaker to the hearer, making the location of the hearer (u_{o_χ}) the starting point for the relevant set of vectors: as a consequence, the accompanying DCSG does not embody the actual direction and length of the relevant vectors, but can be rather conceived of as the conventionalised realisation of the Dem head, independently of the actual vectorial component.

Selected references. Diessel 2006. Demonstratives, joint attention, and the emergence of grammar. *Cognitive Linguistics* 17. 463–489. [*Includes reff. to*: Anderson & Keenan 1985; Bühler 1934; Clark 1978; Diessel 1999; Iverson & Goldin-Meadow 2005; Ozçalişkan & Goldin-Meadow 2005] • Diessel & Coventry 2020. Demonstratives in spatial language and social interaction: An interdisciplinary review. *Frontiers in Psychology* 11. 3158. • Harbour 2016. *Impossible persons*. MIT Press. • Mesh *et al.* 2021. Effects of scale on multimodal deixis: Evidence from Quiahije Chatino. *Frontiers in Psychology* 11. 3183. • Svenonius 2010. Spatial P in English. In Cinque & Rizzi (eds), *Mapping Spatial PPs: The Cartography of Syntactic Structures*, vol. 6, 127–160. OUP. [*Includes reff. to*: Talmy 2000; Zwarts 1997]