A cross-linguistic approach to the formal features of recurrent gestures: shrugging in 5 languages

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The role of recurrent gestures in the human "interaction engine" (Levinson, 2006) have a diachronic and a synchronic component: 1) they are the result of the gradual sedimentation of our shared sensory-motor system; 2) they are a constructive locus to explore the pragmatic functions of gestuality (Ladewig 2014, Müller 2017). The recurrence of specific gestures within a community and across communities is a perfect illustration of their semiotic productivity. The stabilization of their formal features is necessary for each recurrent gesture to remain distinctive.

The aim of this paper is to uncover the formal components of the conventionalization of recurrent gestures, provided by the kinesiological bases that structure symbolic gestures. We thus illustrate how the joint limits of at least one of the segments (head, shoulder, arm, forearm, hand or fingers) and conformational constraints between segments, are key to the stabilization of gestures' form either as postures or as gestural trajectories.

We focused on a specific composite gesture, the shrug, in order to conduct a cross-linguistic kinesiologic description. The analyses were conducted on a collection of prototypical shrugs captured in context in English, French, Russian, German and French sign language. This collection includes German, French and Russian adult data from the *Polimod project* (Cienki & Irishkhanova 2018), longitudinal and cross-sectional family data in English, French, French sign language from the *CoLaJE project* (Morgenstern & Parisse, 2012), as well as public debates found online in English, German and French.

In order to identify the formal and functional invariant features of this composite gesture, we annotated all the extracts using a kinesiological coding system based on formal features and on the function of the gestures in context (Boutet 2001; Boutet & Morgenstern 2016).

Our results indicated that they are associations between the uses of specific formal components and specific functions across languages. In the framework of comparable situations however, there are typological differences in the use of the various segments (hand, arm, fore-arm, hand, shoulder, head), in their combination and their amplitude.

The very extensive composition of the shrug, which comprises the open fingers, hands, arms, lifted shoulders and the tilting of the head, is supported by an association between form and meaning. Thus, throughout young children's gestural development over time, shrugs are first used to refer to absence with the hands (palm up and extension of the forearm), then affective stance ("I don't care" with the forearms, shoulder lift) and then epistemic stance (with head tilts). On a formal and structural level, a core feature of the shrug can be located at the articulation of the arm. It consists of the joint movement of an extension (towards the rear) and of an abduction (towards the top and the side). It circulates along the upper limb in both directions. As the flow of the gesture ascends to the shoulders, it is transferred into a shoulder lift. As it descends to the palms, it is transferred into an exterior rotation of the forearms (opening gesture) and into an extension that ends in a supination and a palm up configuration.

This study of a recurrent gesture illustrates how the conformational constraints between segments can restrict and structure the formal/physiological expansion of recurrent gestures by enclosing them in a stabilized frame. Human physiology and the productivity of its constraints are a key factor in the conventionalization of gestures and thus in the dynamic process that transforms sensori-motor experience into symbolic communicative representation via continual human interaction.

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