

*3<sup>rd</sup> Conference of the Scandinavian Association for Language and Cognition (SALC III)  
University of Copenhagen, 14-16 June 2011*

“Within and across spaces:  
Towards multi-dimensional models of gesture space”

# **Coordinating and Sharing Gesture Space in Collaborative Reasoning**

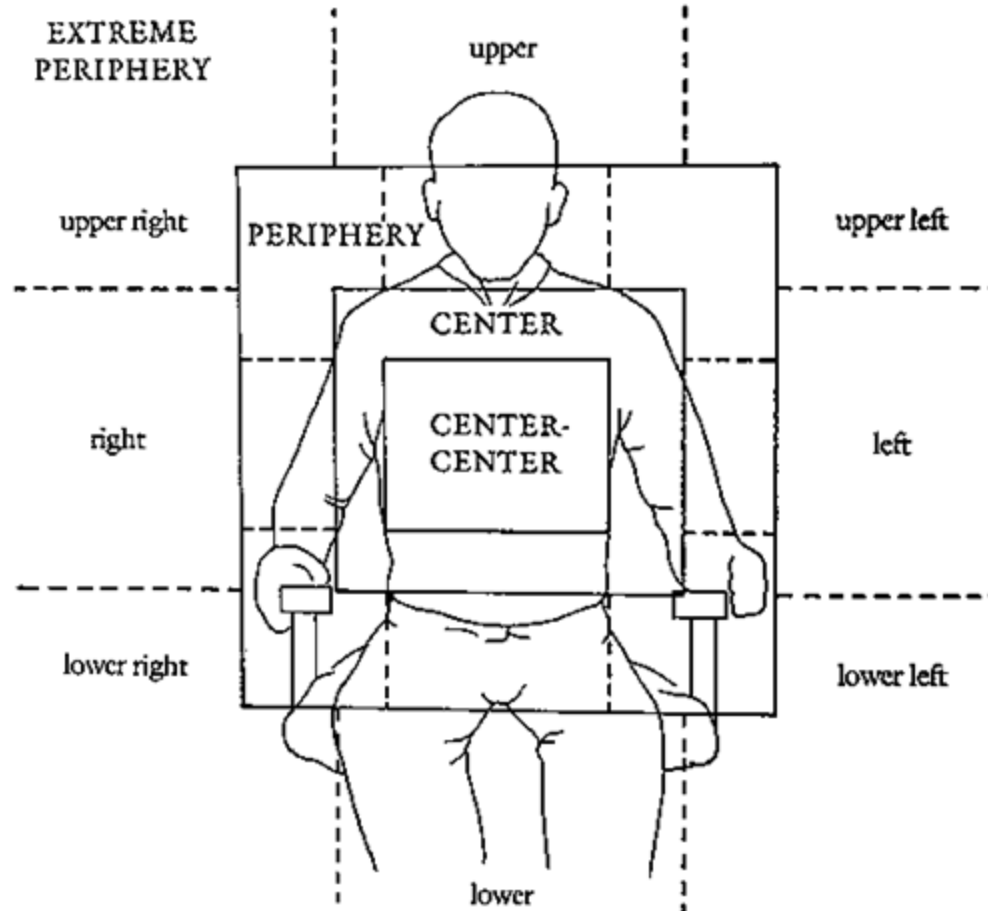
Robert F. Williams



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APPLETON, WISCONSIN

# Gesture Space

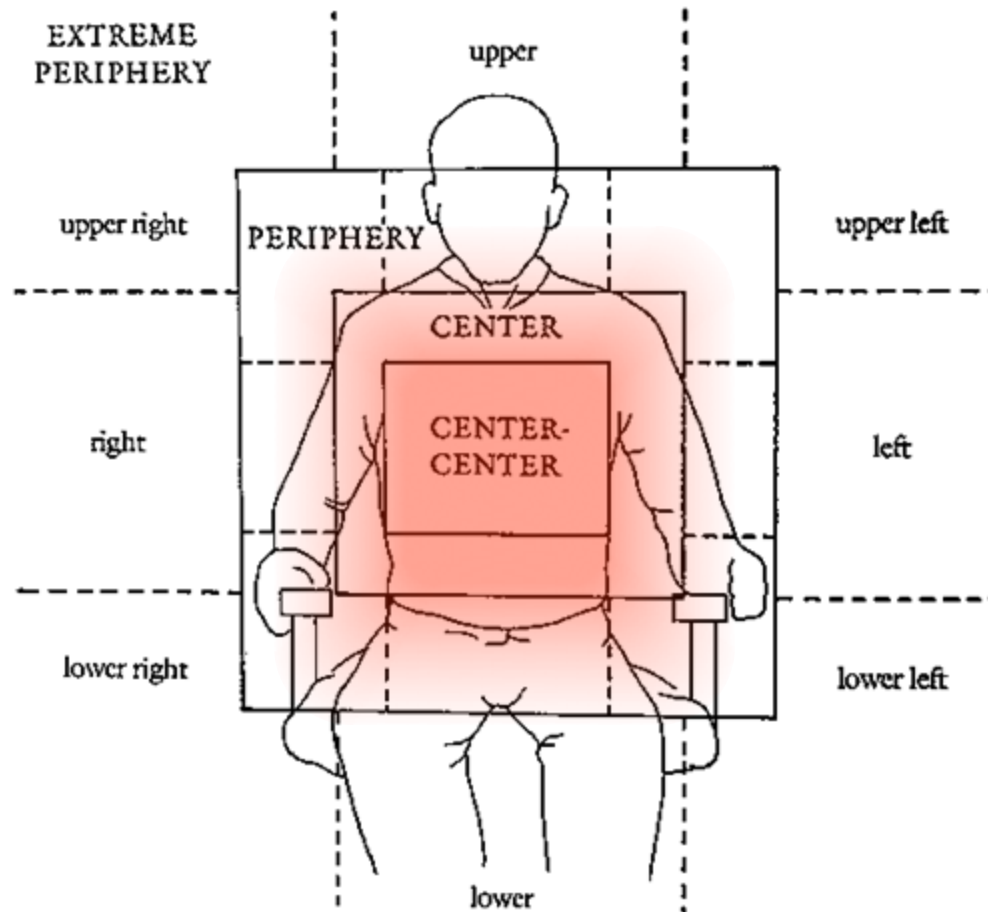
(McNeill 1992: 86)



“can be visualized as a shallow disk in front of the speaker, the bottom half flattened when the speaker is seated ... the fore-aft dimension is shorted”

# Gesture Space

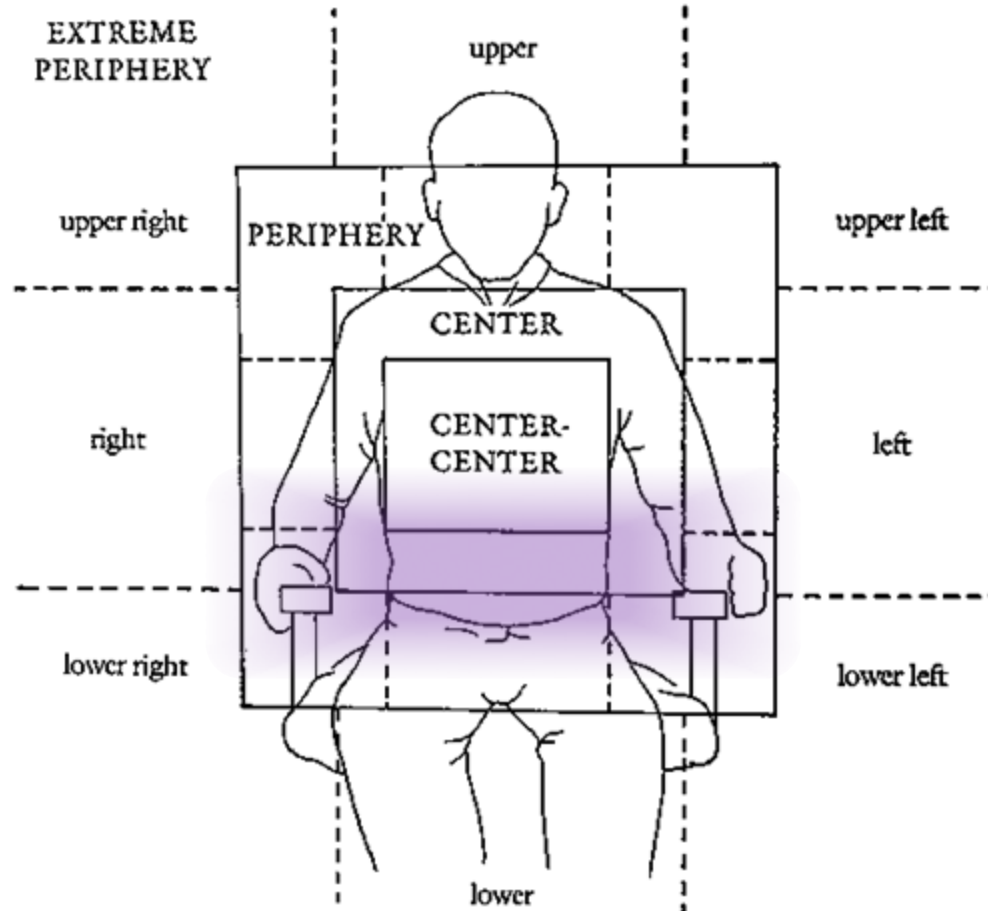
(McNeill 1992: 86)



iconics

# Gesture Space

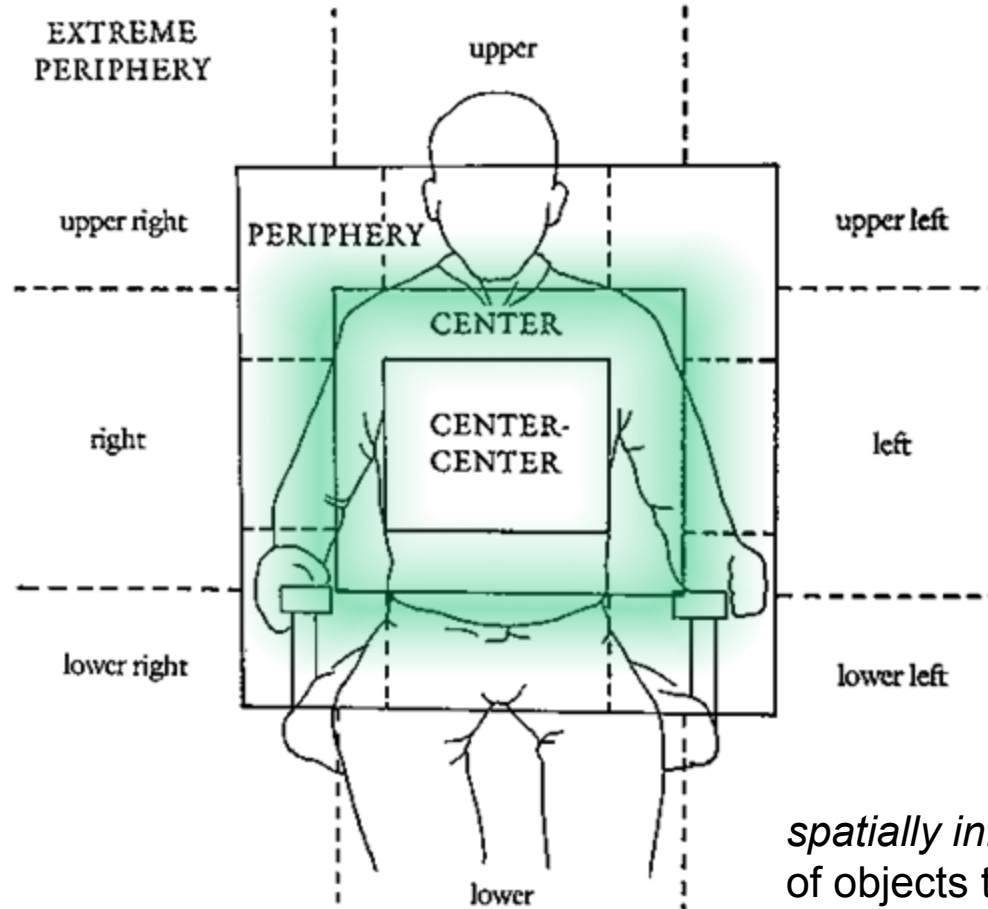
(McNeill 1992: 86)



metaphorics

# Gesture Space

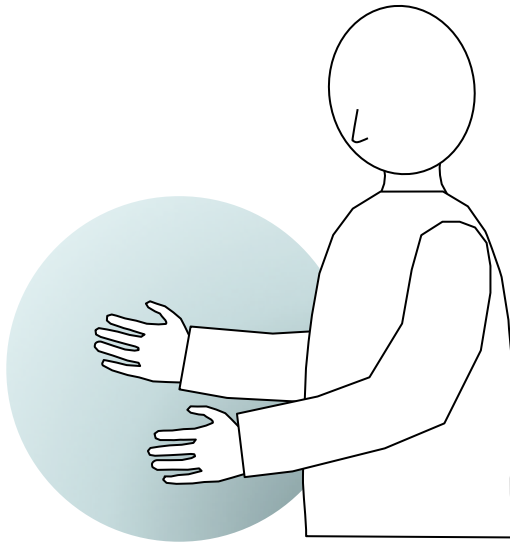
(McNeill 1992: 86)



deictics

*spatially inflected* in the direction of objects to which they refer (or of surrogates or tokens for abstract or non-present entities) (Kendon 1994: 312)

# Gesture Space: Viewpoint Shifts



***Observer***



***Character***

May vary along two dimensions:

- Scale: *model (in front)* vs. *life-sized (surrounding)*
- Role: *objective depicter (hands)* vs. *subjective characterizer (whole body)*

# Gesture Space: Viewpoint Shifts

(Streeck 2009: 207; describing findings from Sauer 2003: 221)

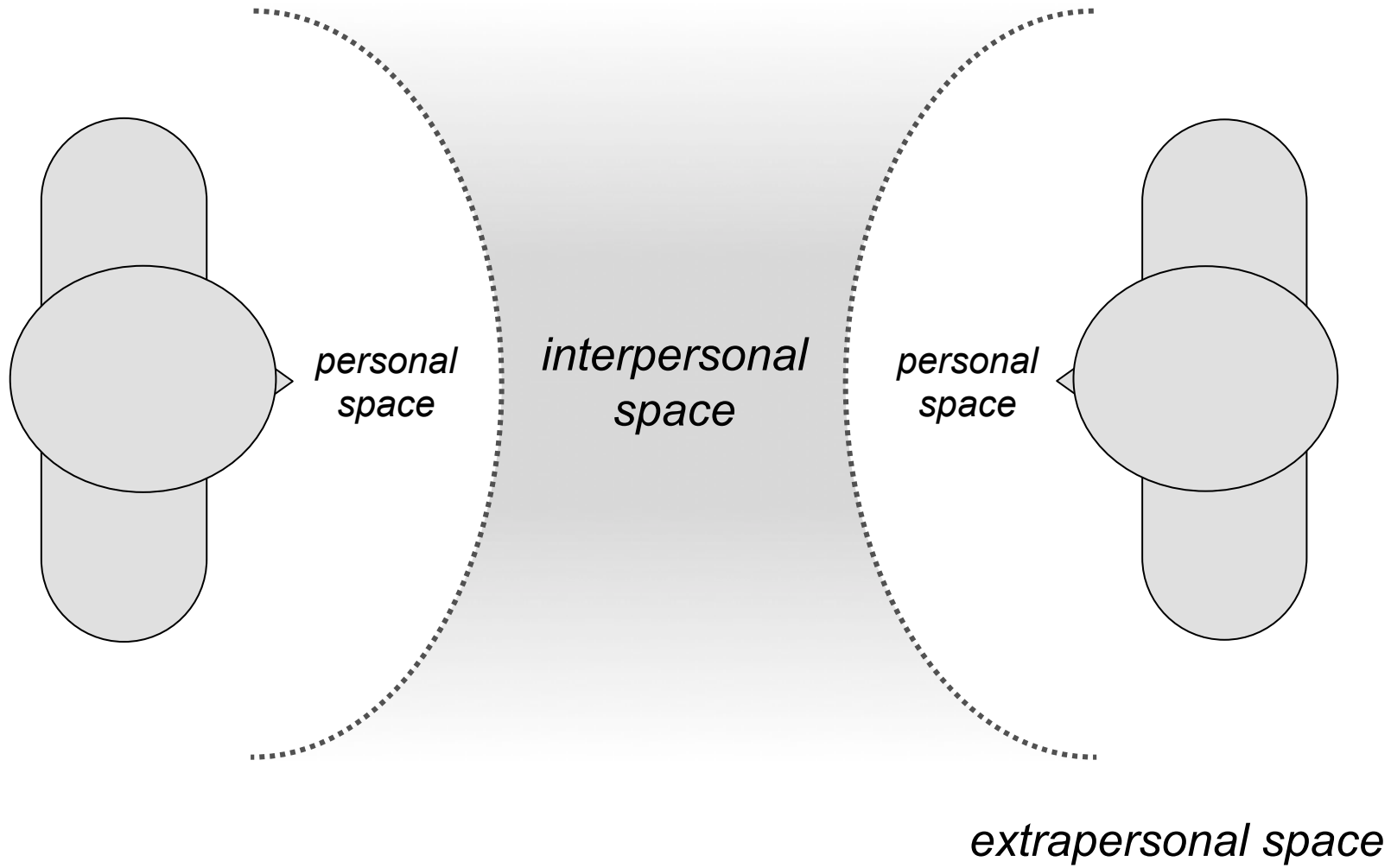
“When individuals assume a mimetic viewpoint, they reenact events and conditions as if they were characters inside the spaces they describe. When they assume an analytic viewpoint, they assume a position outside of, above, or at a distance from the events, actions, and situations they observe. This distance is displayed by the speaker’s body: mimetic gestures frequently take place in the plane of the body, i.e., laterally. Analytic gestures take place at arm’s length from the observer, as if the hands were detached from the body, self-sufficient organs of representation.”

Speakers alternate between viewpoints in narratives to:

- “re-enact and re-experience their own intense emotional involvement in situations...and to give an empathetic display of their...actions,” and to
- “analyze these same actions within an objectively construed context.”

# Gesture Spaces

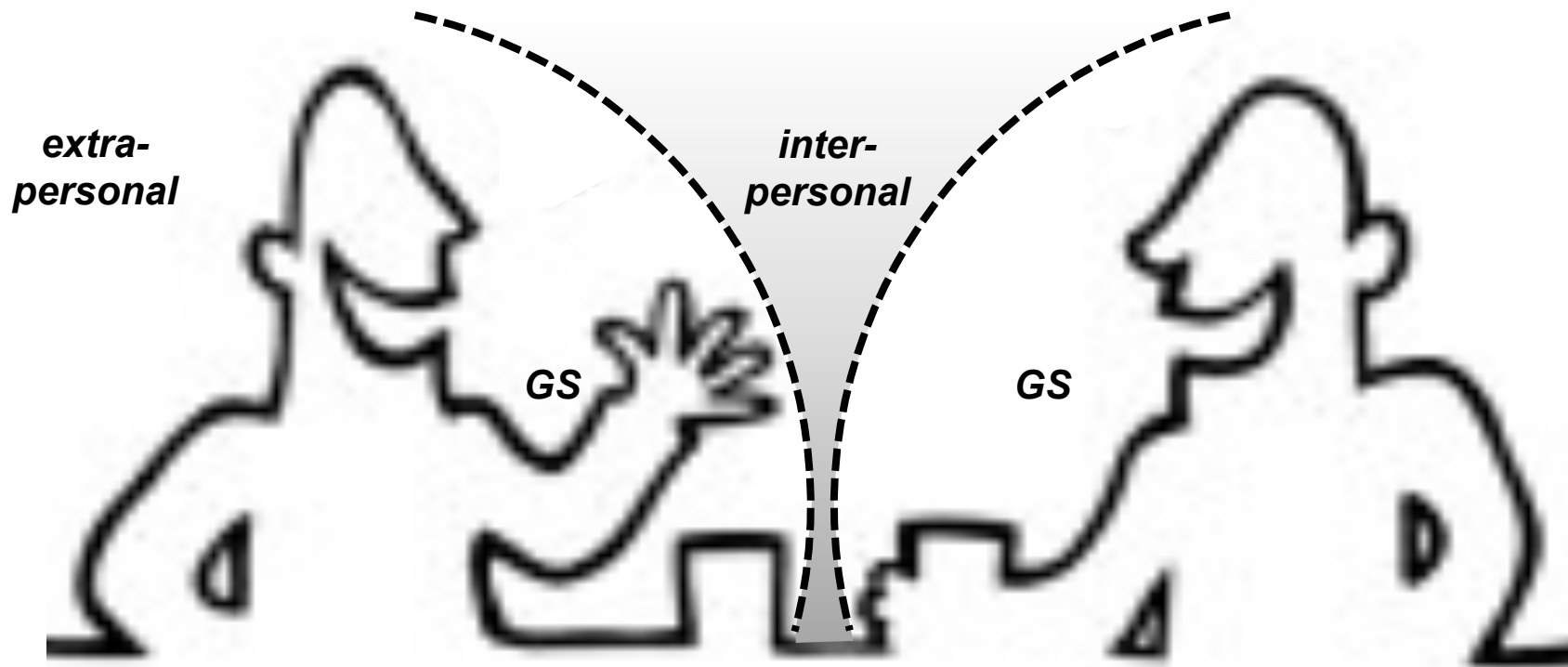
(adapted from Sweetser & Sizemore 2008)





# Gesture Spaces

(adapted from Sweetser & Sizemore 2008)



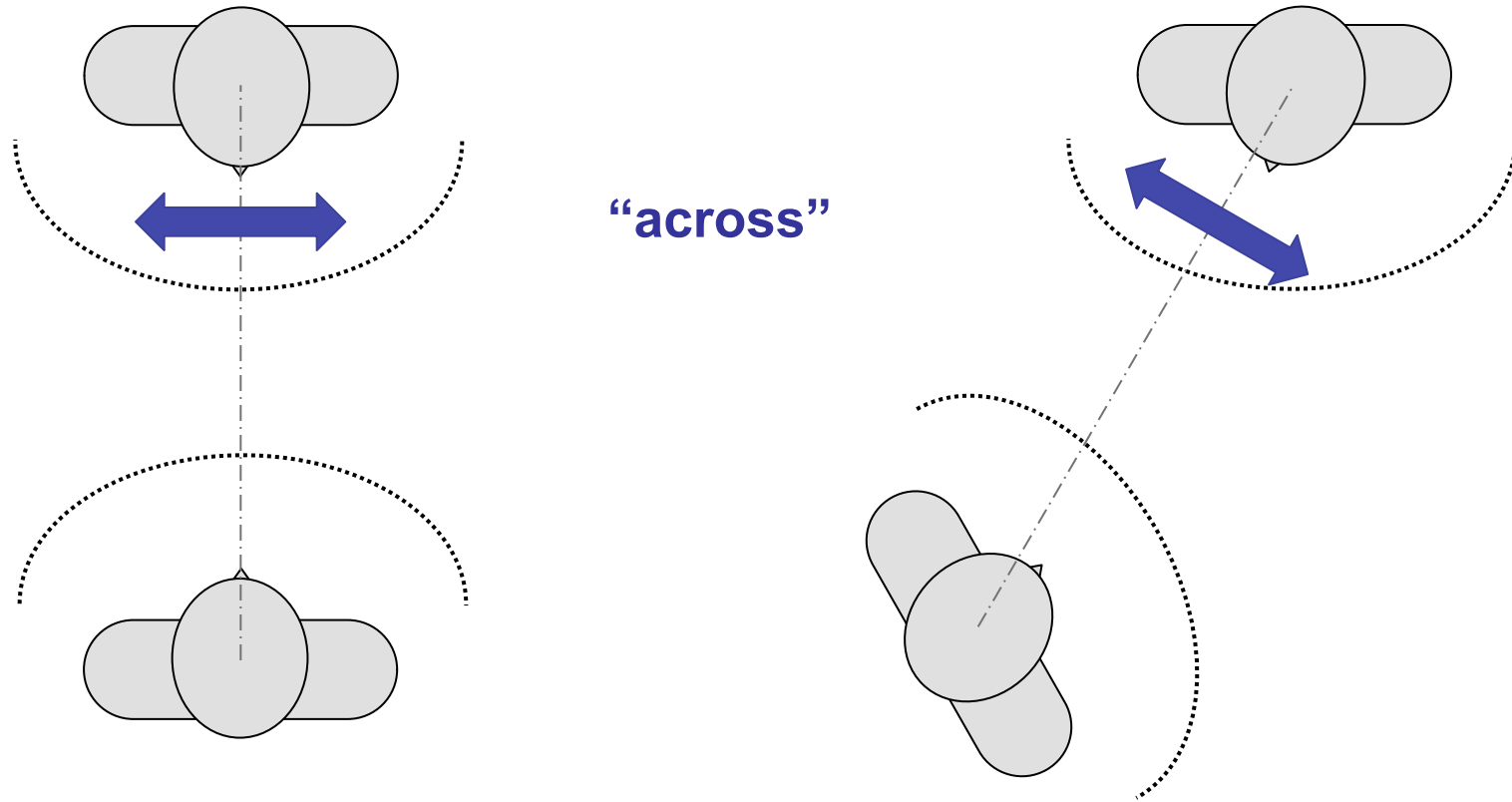
# Gesturing in Interpersonal Space

(Sweetser & Sizemore 2008)

- Interlocutors reach into interpersonal space to regulate the interaction:
  - To claim or hold the floor (*“Listen...”*)
  - To mark solidarity (shared goals or affect)

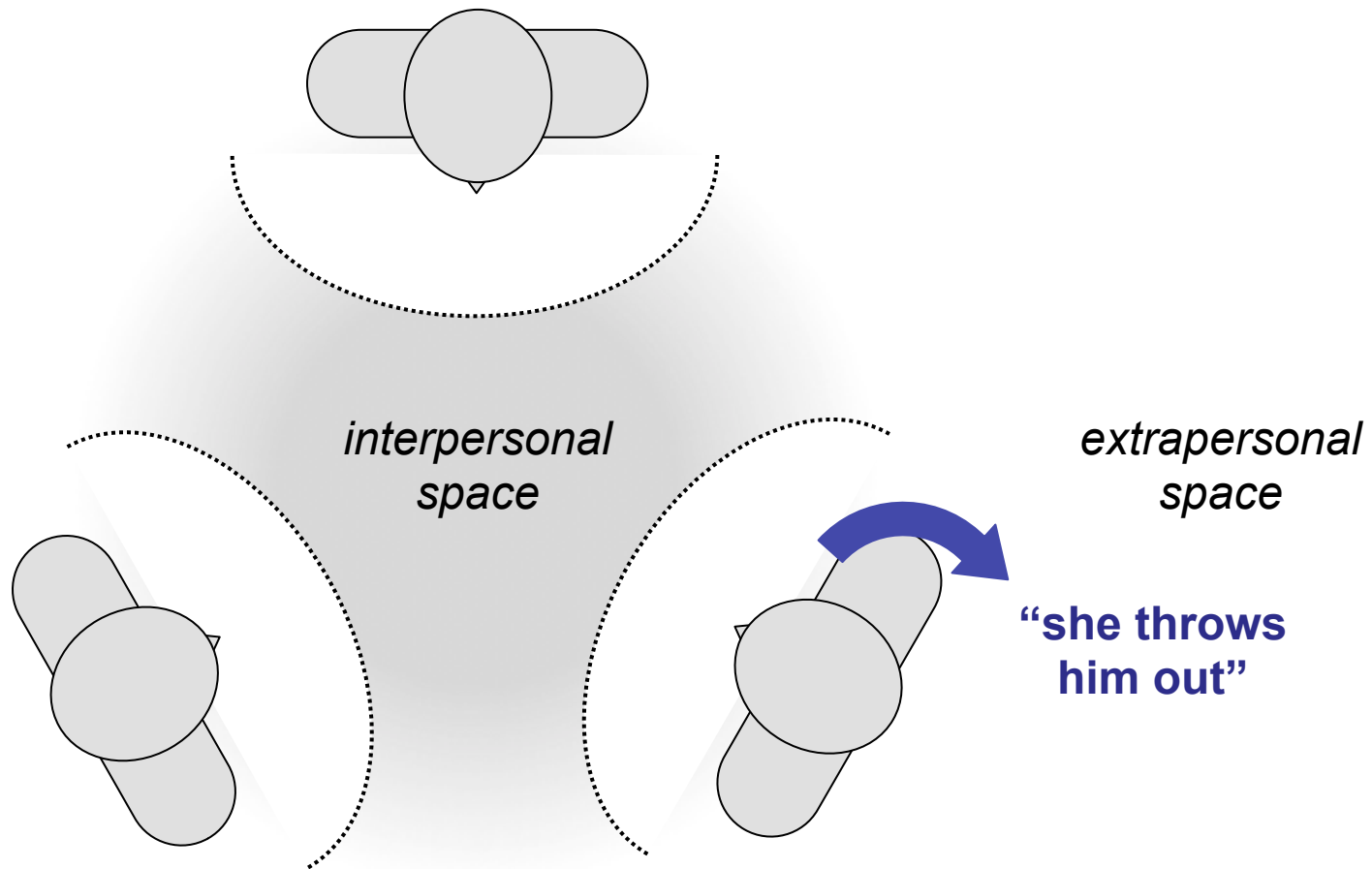
# Alignment of Gesture Spaces

(adapted from Özyürek 2000)



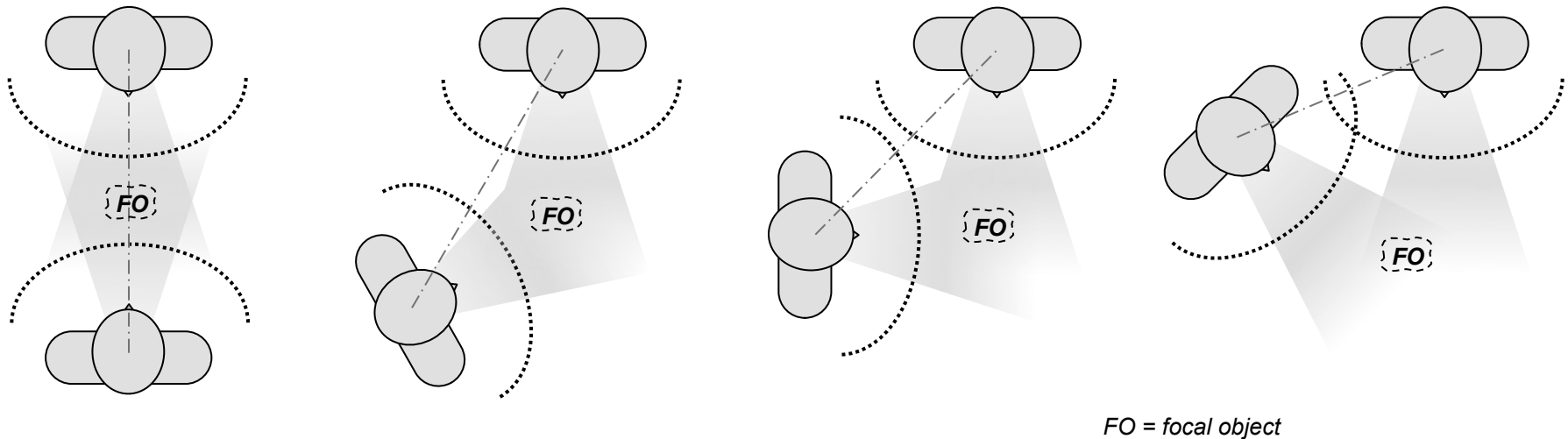
# Alignment of Gesture Spaces

(adapted from Özyürek 2000, Sweetser & Sizemore 2006)



# Mutual Orientation

(Fricke 2007, Furuyama 2000, Goodwin 2000, Streeck 2009, et al.)



## Orient to:

- each other
- depictive gestures (in air or on surface)
- focal object in local space (map, diagram, etc.)
- distant objects in view or beyond (e.g., giving directions)

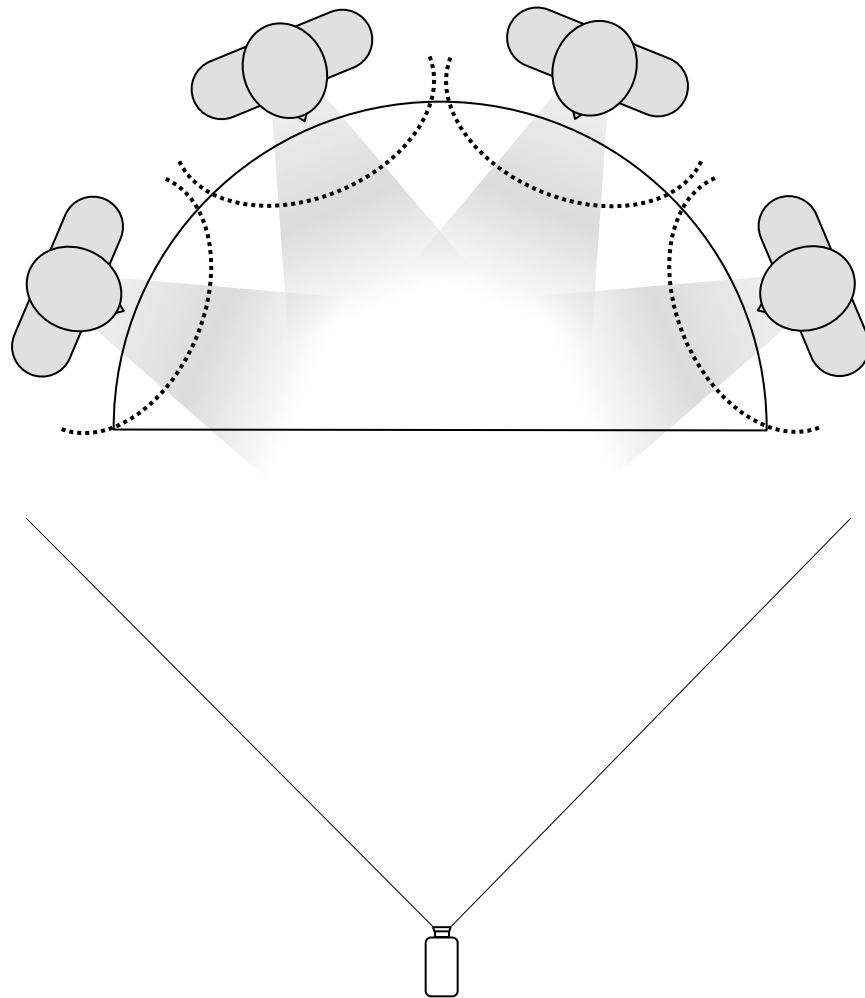
# Reaching into Others' Gesture Space

- Interlocutors may reach into another person's gesture space when:
  - gesturing over a focal object (map, diagram, etc.)  
(Goodwin 1994, 2007; Streeck 2009)
  - indexing a virtual object (established by other's placing gesture) or a surrogate (other's body-part-as-object)  
(Fricke 2007, et al.)
- Reaching into another's space is more likely when:
  - the focal side of the other's gestures is visible (e.g., during origami instruction)  
(Furuyama 2000)

# Study of Collaborative Reasoning

- Groups of 3 to 4 undergraduates
- Asked questions about causes of:
  - seasons
  - phases of moon
  - tides
- Instructed to:
  - discuss until they agree
  - explain their answer

# Set-up





# Collaborative Model-Building

- Introducing facets with speech and gesture
- Fitting facets together
- Testing emergent models



What causes the seasons?

*rotation of earth*

*angle of axis*

*moon / sun / planetary bodies*

*magnetic fields*

*hours of sunlight*

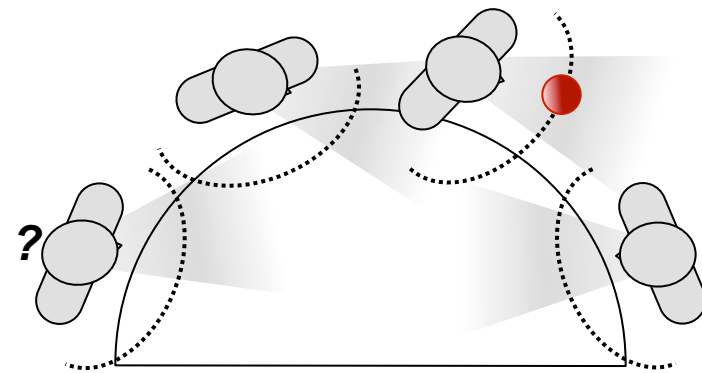
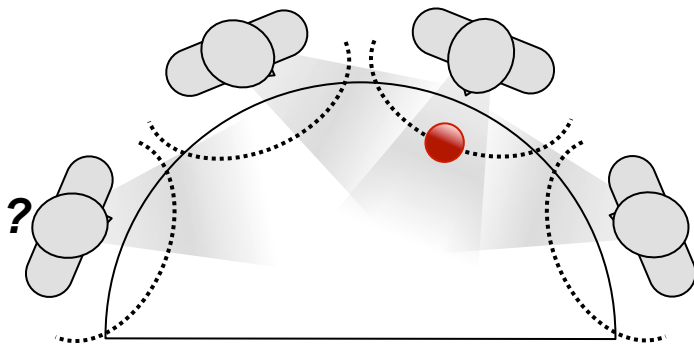
*orbit around sun / position & distance*

*earthquakes / geological phenomena*

# Appropriating Others' Gestures



# Re-aligning Gesture Space to Share Vantage Points



# From Personal to Collaborative Space

*using  
personal  
space*



*starting  
collaborative  
space*



# From Personal to Collaborative Space

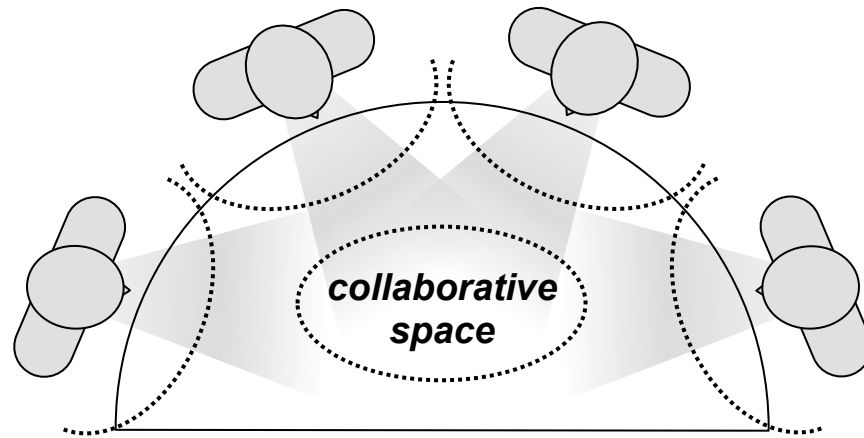
*entering  
collaborative  
space*



*working in  
collaborative  
space*



# Emergence of Collaborative Gesture Space



# Gesturing Collaboratively



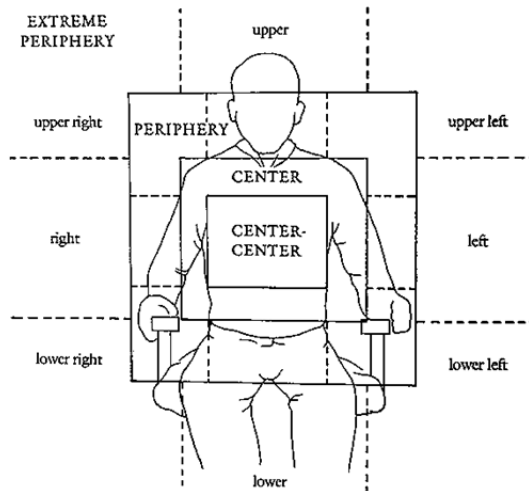
# Using Multiple Gesture Spaces

- Use of *personal space* to introduce facets and to consider facets introduced by others
- Emergence of *collaborative space*
  - Move into *collaborative space* to jointly build model
  - Retreat to *personal space* to reconsider facets
- Concern for alignment of gesture spaces when taking up or sharing ideas



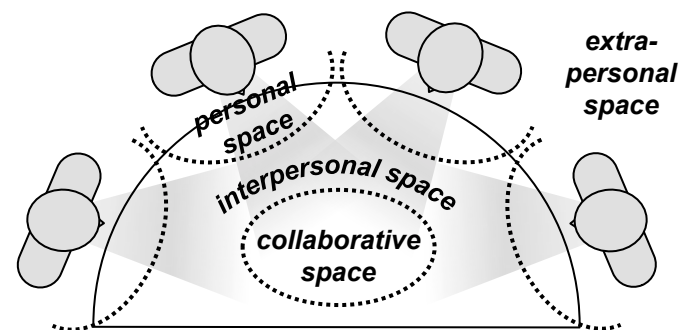
# Adding Dimensions to Gesture Space

(Goodwin 2000: 88)



“McNeill (1992: 86) defines gesture space only with reference to the body of the party producing the gesture.”

“The present data allows us to expand his notion of gesture space and go beyond the body of the party making the gesture to focus on a multi-party interactively sustained space that provides a framework for common orientation and the production of meaning.”



# Selected References

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