why did it take so long?

now is the right (and exciting!)

moment

- meaning (semantics) back to linguistics
- cognitive linguistics
- theoretical and technological developments in neuropsychology (e.g., fMRI)
- the embodied mind taken (very!) seriously
  - neuroscience (Varela, Freeman, Damasio, Edelman, ...)
  - cognitive semantics (Lakoff, Talmy, Fauconnier, Langacker, ...)
  - philosophy of mind/language (Johnson, Clark)
  - cognitive robotics (Pfeifer, Steels)
  - role of morphology
  - psychology (Thelen, Smith)
- access to relatively cheap
t  - digital audio-video technology
  - motion capture technology

gestures? why gestures?
... some excellent reasons

- speech-accompanying gesture is universal
  - It provides a remarkable “back door” to linguistic real-time cognition (McNeill, 1992; Kita & Sweetser, 2001; Iversen & Thelen, 1999)
- less monitored than speech; largely unconscious
  - Speakers are often unaware that they are gesturing at all (McNeill, 1992)
- astonishing synchronicity with speech
  - Millisecond-precise gesture-to-speech synchronicity, in patterns which are specific to a given language.
- coupled with environment and real-world context
  - highly sensitive to environmental settings (Gudwin,Laboron, Streeck)

gestures? why gestures?
... some excellent reasons

- gesture production doesn’t need the presence of an interlocutor
  - phone conversations, monologues, conversations among congenitally blind (Iversen & Goldin-Meadow, 1998)
- co-processed with speech
  - stutterers stutter in gesture too, impeding hand gestures interrupts speech production (Mayberry & Jaques, 2000)
- affected by similar neurological damage as speech
  - dysfluent aphasics are dysfluent in gesture as well as in speech (McNeill & Pedelty). research with signers show similar results (Hosaka et al., 1998)

gestures? why gestures?
... some excellent reasons

- development
  - gesture and speech develop closely linked (Iversen & Thelen, 1999; Bates et al., 2001)
- provide complementary content to speech content
  - speakers synthesize and subsequently cannot distinguish information taken from the two channels (Kendon, 2000)
- co-produced with abstract metaphorical thinking

why did it take so long?

- Gesture: the forgotten dimension of thought and language
  - experimental psychology?
  - linguistics?
  - cognitive science?
  - philosophy of mind/language?
why did it take so long?
experimental psychology
- behaviorism?
- spontaneous phenomenon
- very hard to operationalize
- overemphasis on written language

why did it take so long?
experimental/cognitive psychology
- getting into the black box
- emphasis on "mental calculations" and algorithms underlying abstract "information processing"
- the (truth-conditional) symbolic logic of the mind
- the body is largely ignored

why did it take so long?
linguistics
- Structuralism (searching for abstract structures…)
- the (over)emphasis on logic and formalisms
- chomskian linguistics: syntax, combinatorics, formal properties
- meaning and semantics are out
- language completely body-less
- overemphasis on written language

why did it take so long?
cognitive science
- born out of body-less computer-based theories
- zeitgeist: overemphasis on
  - symbolic logic
  - algorithms
  - formalisms
  - computable phenomena
  - bodily phenomena seen as "hardware" related (at best) … a matter of implementation
  - little or no interest in real-time phenomena (too hard)
  - fundamental general abstract rules first … everyday cognition is secondary at best

why did it take so long?
philosophy of mind/language
- meaning is the monopoly of analytic philosophy
- zeitgeist, once again: overemphasis on
  - symbolic logic
  - formalisms
  - truth-conditional requirements
  - no interest in real-time phenomena (too hard)
  - absence of experiential body
  - written expressions
- this philosophical approach matches extremely well the early AI enterprise, as well as chomskian linguistics