YOUR BODY IS LOCKED PRECISELY WITH YOUR SPEECH

by Karen Voght

Boston University's radio show, recorded online in 1970, "*Your body's locked precisely with your speech*". You can't break out of this no matter what you do. Your eyes even blink in synchrony with your speech." Movements appear to begin, change, or end on the same film frame that a new vowel or consonant begins – within about four-hundreths of a second in the new sound. **"The synchrony of the listener with the speaker is just as good as my own synchrony with myself." An auditory-motor reflex in the central nervous system might allow, even force, a listener's movements to synchronize with a speaker's voice far faster than any conscious reaction time.** "We're almost in auditory touch. When I speak to you, my thoughts are translated into muscle movements an and then into airways that hit your ear, and your eardrum starts to oscillate in absolute synchrony with my voice. In essence there's no vacuum between us – it takes only a few milliseconds for a sound to register in the brain stem, 14 milliseconds for it to reach the left hemisphere."

For over three decades, William Condon and his colleagues have been studying **the rhythmic structure of human speech communication.** They make films of people interacting and then do a frame-by-frame analysis of body motions and speech sounds. **They have discovered two kinds of synchrony, self synchrony and interactional synchrony. Self synchrony is the relationship between a person's speech patterns and their body movements: head, shoulders, arm and hand gestures, and so on. Interactional synchrony is about the relationship between the listener's body and the speaker's voice.**

In both self synchrony and interactional synchrony this hierarchical structure is reflected in the synchronized movements. Larger gestures, perhaps of the whole arm, will track phrases while smaller gestures, such as finger movements, will track words or phonemes. Furthermore, infants exhibit near-adult competence at interactional synchrony within 20 minutes of birth. Since the human auditory system becomes active three or four months before birth, we may become entrained to speech patterns in utero. **Condon and others have also investigated interactional synchrony in children suffering from various pathologies, including dyslexia and autism. Here they find multiple entrainment**. They have observed dyslexic children whose the right side would entrain within the normal 42-millisecond period, while the left side would entrain with the same sound at a delay of 100 to266 milliseconds. Autistic children were similar, except that it is the right side that is delayed. **The ability to match one's movements to another's seems to be a condition of normal interaction with others. When this capacity is hampered, as it is in dyslexia and autism, communication is compromised.** Synchrony creates a space of communicative interaction, a coupling between two brains in which they can affect one another's internal states.

Condon, W. S. & Sander, L. W. (1974b) Neonate movement is synchronised with adult speech: interactional participation. *Science* 103: 99-101.
Condon, Williams S. (1970). "Method of micro-analysis of sound films of behavior." Behavior Research Methods, Instruments & Computers, 2(2), pp51-54.