J.A.S. Kelso - Publications

1973


1974


1975


♫ This was the first experimental demonstration that the old theory of touch educating vision is not necessarily true. It depends on how people allocate attention to one modality or another. We performed these experiments as part of a course on Experimental Perception at the University of Wisconsin, Madison.

1976


1977


♫ Using functional deafferentation techniques, this was one of the first demonstrations of the equilibrium point hypothesis of motor control in human beings. The latter is now considered one of the dominant theories of how humans control voluntary movement.

1978


1979


Using high speed photography and frame-by-frame analysis (before the age of computers) this was the first study to show how the brain controls complex movements of the two limbs as a single functional unit

1980


1981


♫ First report of nonequilibrium phase transitions in human sensorimotor behavior suggesting that brain and behavior are self-organized.

1982


1983


1984


First demonstration that the speech control system uses sound (language)-specific synergies
A paper that is said to have caused a ‘paradigm shift’: Showed for the first time in a simple experimental system how patterns of human behavior may form, stabilize and change spontaneously in a self-organized manner, and connects experimental observations to emergent cooperative phenomena in physics and the mathematical tools of nonlinear dynamical systems.

1985


The HKB model has become the ‘standard model’ of coordination. It derived emergent spontaneous patterns of coordination in Kelso (1984) and the pattern dynamics by nonlinearly coupling the individual component parts—the first root of the theory of coordination dynamics

1986


First verification of predictions of the theory that human behavior is governed by self-organizing coordination dynamics

1987


♫ Early application of the theory of self-organizing coordination dynamics to infant sensorimotor development

1988


♫ First demonstration (and theory) of how intentions modulate and are modulated by pattern dynamics—the so-called second “informational” root of coordination dynamics

♫ Major article in Science, cited over 1000 times.

1989


**1990**


>* Introduced new paradigm for studying sensorimotor coordination and a symmetry breaking term into the HKB model that led to new concepts and predictions*

**1991**


♫ The introduction of the concept of metastability as central to neural and behavioral coordination dynamics

♫ The first reported demonstration of nonequilibrium phase transitions in the human brain

1992


Operationalizes new conceptual tools of coordination dynamics for human sensorimotor learning (see also Zanone & Kelso (1997) and Kelso & Zanone (2002).

Shows that the same coordination dynamics governs brain activity (measured using large scale SQuID array) and human behavior

1993


♫ Revealed the underlying dynamics of apparent motion in visual perception

1994


Categorical speech perception is strongly affected by context, which can be captured by nonlinear coordination dynamics

1995


On the occasion of the 50th anniversary of Erwin Schrödinger’s “What is Life?”

1996


1997


1998


Shows how brain and behavior can be captured by the same (velocity-sensitive) variables and spatiotemporal coordination dynamics

1999


Lays out the conceptual, methodological and theoretical tools for connecting levels of brain and behavioral organization


From a conference held at Wiks Castle and The Nobel Institute. Discusses the philosophical consequences of the science of coordination dynamics and its relation to other notions of complexity

2001


Invited encyclopaedia article laying out the basic concepts of coordination dynamics and how these have infiltrated the social, behavioral, economic, and cognitive sciences

The broader implications of the metastable coordination dynamics of brain and behavior

2002


2003


2004


Dhamala, M., Assisi, C.G., Jirsa, V.K., Steinberg, F.L., & Kelso, J.A.S. (submitted) Multisensory integration engages different brain networks


Lagarde, J., & Kelso, J.A.S. (submitted) Binding of movement, sound and touch: Multimodal coordination dynamics.


