

J.A.S. Kelso - Publications

1973

- Kelso, J.A.S. (1973). The nerve compression block as a determiner of behavioral and neurological parameters. (M.S. Thesis, University of Wisconsin, 1973). University of Oregon: Microform Publications, BR295, 152-234.
- Stelmach, G.E., & Kelso, J.A.S. (1973). Distance and location cues in short-term motor memory. *Perceptual and Motor Skills*, 37, 403-406.

1974

- Kelso, J.A.S., Stelmach, G.E., & Wanamaker, W.M. (1974) Behavioral and neurological parameters of the nerve compression block. *Journal of Motor Behavior*, 6, 179-190.

1975

- Kelso, J.A.S. (1975). Planning and efferent components in the coding of movement. PhD Thesis. University of Wisconsin, Madison
- Kelso, J.A.S. (1975). Central and peripheral information in motor control. In W.W. Spirduso & J. King (Eds.), *Motor control symposium* (pp. 101-114). Austin, TX: University of Texas.
- ♪ Kelso, J.A.S., Cook, E., Olson, M.E., & Epstein, W. (1975). Allocation of attention and the locus of adaptation to displaced vision. *Journal of Experimental Psychology: Human Perception and Performance*, 1, 237-245.
- Kelso, J.A.S., Wallace, S.A., Stelmach, G.E., & Weitz, G.A. (1975). Sensory and motor impairment in the nerve compression block. *Quarterly Journal of Experimental Psychology*, 27, 123-129.
- Stelmach, G.E., & Kelso, J.A.S. (1975). Memory trace strength and response biasing in short-term memory. *Memory and Cognition*, 3, 58-62.
- Stelmach, G.E., Kelso, J.A.S., & Wallace, S.A. (1975). Preselection in short-term motor memory. *Journal of Experimental Psychology: Human Perception and Performance*, 1, 745-755.
- Stelmach, G.E., Kelso, J.A.S., & Wallace, S.A. (1975). Preselection in motor control. In D. Landers (Ed.), *Psychology of sport and motor behavior II* (pp. 423-442). State College: Pennsylvania State University Press.

- ♪ **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

- Kelso, J.A.S., & Stelmach, G.E. (1976). Central and peripheral mechanisms in motor control. In G.E. Stelmach (Ed.), *Motor control: Issues and Trends* (pp. 1-40). New York, London: Academic Press.
- Kelso, J.A.S., Stelmach, G.E., & Wanamaker, W.M. (1976). The continuing saga of the nerve compression block. *Journal of Motor Behavior*, 8, 155-160.

Larish, D.D., Desjardins, R., Kelso, J.A.S., Stelmach, G.E., & Wallace, S. A. (1976). Augmenting preselected and constrained movements with afferent information. *Medicine and Science in Sports*.

Stelmach, G.E., Kelso, J.A.S., & McCullagh, P.D. (1976). Preselection and response biasing in short-term motor memory. *Memory and Cognition*, 4, 62-66.

1977

Kelso, J.A.S. (1977). Coding processes and movement control: An integrated approach. In R. W. Christina & D. Landers (Eds.), *Psychology of motor behavior and sport* (pp. 225-242). Champaign, Il: Human Kinetics.

Kelso, J.A.S. (1977). Motor control mechanisms in timing behavior. In R.E. Stadulis, C.O. Dotson, V.L Katch & J. Schick (Eds.), *Research and practice in physical education* (pp. 231-254). Champaign, Il: Human Kinetics.

♪ Kelso, J.A.S. (1977). Motor control mechanisms underlying human movement reproduction. *Journal of Experimental Psychology: Human Perception and Performance*, 3, 529-543.

Kelso, J.A.S. (1977). Planning and efferent components in the coding of movement. *Journal of Motor Behavior*, 9, 33-47.

Roy, E.A., & Kelso, J.A.S. (1977). Movement cues in motor memory: Precuing versus postcuing. *Journal of Human Movement Studies*, 3, 232-239.

Stelmach, G.E., & Kelso, J.A.S. (1977). Memory processes in motor control. In S. Dornic (Ed.), *Attention and performance VI*. Hillsdale, NJ: Erlbaum.

♪ **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

Kelso, J.A.S. (1978). Changing concepts of feedback and feedforward in voluntary movement control. *The Behavioral and Brain Sciences*, 1, 153-154.

Kelso, J.A.S. (1978). Joint receptors do not provide a satisfactory basis for motor timing and positioning. *Psychological Review*, 85, 474-481.

Kelso, J.A.S. (1978). Recall and recognition in slow movements: Separate memory processes? *Journal of Motor Behavior*, 10, 69-76.

Kelso, J.A.S., & Frekany, G.A. (1978). Coding processes in preselected and constrained movements: Effects of vision. *Acta Psychologica*, 42, 145-161.

Kelso, J.A.S., & Norman, P.A. (1978). Motor schema development in children. *Developmental Psychology*, 14 (2), 153-156.

Kelso, J.A.S., & Wallace, S.A. (1978). Conscious mechanisms in movement. In G.E. Stelmach (Ed.). *Information Processing and Motor Control*. New York: Academic Press.

Lee, W.A., & Kelso, J.A.S. (1978). Open and imposed strategies in movement coding. In R.W. Christina & D. Landers (Eds.), *Psychology of motor behavior and sport* (pp. 206-223). Champaign, IL: Human Kinetics.

Stamm, C.D., & Kelso, J.A.S. (1978). Reliability in motor memory. *Journal of Motor Behavior*, 10, 15-23.

Wallace, S.A., Kelso, J.A.S., & Goodman, D. (1978). The preselection effect reconsidered. In R.W. Christina & D. Landers (Eds.), *Psychology of motor behavior and sport* (pp. 224-235). Champaign, IL: Human Kinetics.

1979

Kelso, J.A.S. (1979). Motor-sensory feedback formulations: Are we asking the right questions? *The Behavioral and Brain Sciences*, 2, 72-73.

Kelso, J.A.S., Goodman, D., Hayes, C., & Stamm, C.F. (1979). Movement coding and memory in the developmentally young. *American Journal of Mental Deficiency*, 83, 601-611.

Kelso, J.A.S., Pruitt, J. H., & Goodman, D. (1979). The anticipatory control of movement. In K. Newell & A.C. Roberts (Eds.), *Psychology of motor behavior and sport* (pp. 192-204). Champaign, IL: Human Kinetics.

Kelso, J.A.S., Southard, D. & Goodman, D. (1979). On the coordination of two-handed movements. *Journal of Experimental Psychology: Human Perception and Performance*, 5, 229-238.

♪ Kelso, J.A.S., Southard, D., & Goodman, D. (1979). On the nature of human interlimb coordination. *Science*, 203, 1029-1031.

Lee, W.A. & Kelso, J.A.S. (1979). Properties of slowly adapting joint receptors do not readily predict perception of limb position. *Journal of Human Movement Studies*, 5, 171-181.

♪ **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

Goodman, D. & Kelso, J.A.S. (1980). Are movements prepared in parts? Not under compatible (naturalized) conditions. *Journal of Experimental Psychology: General*, 109, 475-495.

Kelso, J.A.S. & Holt, K.G. (1980). Evidence for a mass-spring model of human neuromuscular control. In C. H. Nadeau, W.R. Halliwell, K.M. Newell & G. C. Roberts (Eds.), *Psychology of motor behavior and sport* (pp. 408-417). Champaign, IL: Human Kinetics.

Kelso, J.A.S. & Holt, K.G. (1980). Exploring a vibratory systems analysis of human movement production. *Journal of Neurophysiology*, 43, 1183-1196.

Kelso, J.A.S., Holt, K.G. & Flatt, A.E. (1980). The role of proprioception in the perception and control of human movement: Toward a theoretical reassessment. *Perception & Psychophysics*, 28, 45-52.

Kelso, J.A.S., Holt, K.G., Turvey, M.T. & Kugler, P.N. (1980). Coordinative structures as dissipative structures II. Empirical lines of convergence. In G. E. Stelmach & J. Requin (Eds.), *Tutorials in motor behavior*. Amsterdam: North Holland.

Kugler, P.N., Kelso, J.A.S., & Turvey, M.T. (1980). Coordinative structures as dissipative structures I. Theoretical lines of convergence. In G.E. Stelmach & J. Requin (Eds.), *Tutorials in motor behavior*. Amsterdam: North Holland.

Zimmermann, G., Forrest, K. & Kelso, J.A.S. (1980). A reinterpretation of the effects of delayed auditory feedback on articulation. *Journal of the Acoustical Society of America*, 68, S102-S103.

Zimmermann, G., Kelso, J.A.S. & Landers, L. (1980). Articulatory behavior pre and post full-mouth tooth extraction and total alveoloplasty: A cinefluorographic study. *Journal of Speech and Hearing Research*, 2, 630-645.

1981

Kelso, J.A.S. (1981). Contrasting perspectives on order and regulation in movement. In A. Baddeley & J. Long (Eds.). *Attention and performance, IX*. Hillsdale, NJ: Erlbaum.

♪ Kelso, J.A.S. (1981). On the oscillatory basis of movement. *Bulletin of the Psychonomic Society*, 18, 63.

Kelso, J.A.S., Holt, K.G., Rubin, P. & Kugler, P.N. (1981). Patterns of human interlimb coordination emerge from the properties of non-linear oscillatory processes: Theory and data. *Journal of Motor Behavior*, 13, 226-261.

Kelso, J.A.S. & Reed, E. (1981). Motivating muscles: The problem of action. *Contemporary Psychology*, 26, 181-182.

Kelso, J.A.S. & Tuller, B.H. (1981). Toward a theory of apractic syndromes. *Brain & Language*, 12, 224-245.

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

1982

Davis, W.E. & Kelso, J.A.S. (1982). Analysis of 'invariant characteristics' in the motor control of Down's syndrome and normal subjects. *Journal of Motor Behavior*, 14, 194-212.

Kelso, J.A.S. (Ed.). (1982). *Human Motor Behavior: An Introduction*. Hillsdale, NJ: Erlbaum (still in print)

Kelso, J.A.S. (1982). Epilogue: Two strategies for investigating action. In J.A.S. Kelso (Ed.), *Human motor behavior: An introduction*. Hillsdale, NJ: Erlbaum.

Kelso, J.A.S. (1982). Exploring the design logic of the motor system through kinematic analysis. Keynote Paper, VII Commonwealth and International conference: Sports Sciences, Brisbane, Sept. 1982. *Australian Journal for Health, Physical Education and Recreation*, 96, 17.

- Kelso, J.A.S. (1982). From functional synergies to synergetics. Keynote Address, VII Commonwealth and International Conference: Sports Sciences (Kinesiological Section), Brisbane, Sept. 1982. *Australian Journal for Health, Physical Education and Recreation*, 96, 17-18.
- Kelso, J.A.S. (1982). Introduction to the process approach to understanding skilled movement. In J.A.S. Kelso (Ed.), *Human motor behavior: An introduction*. Hillsdale, NJ: Erlbaum.
- Kelso, J.A.S. (1982). Old problems and new directions in motor behavior. *Contemporary Psychology*, 28, 8-11.
- Kelso, J.A.S. (1982). Overview of skilled performance: Coming to grips with the jargon. In J.A.S. Kelso (Ed.), *Human Motor Behavior: An introduction*. Hillsdale, NJ: Erlbaum.
- Kelso, J.A.S., & Clark, J.E. (Eds.). (1982). *The development of human movement coordination and control*. New York, London: John Wiley.
- Kelso, J.A.S. & Saltzman, E.L. (1982). Motor control: Which themes do we orchestrate? *The Behavioral and Brain Sciences*, 5, 554-557.
- Kelso, J.A.S., Tuller, B. & Fowler, C.A. (1982). On the functional specificity of articulatory control and coordination. *Journal of the Acoustical Society of America*, 72, S103.
- Kugler, P.N., Kelso, J.A.S., & Turvey, M.T. (1982). On coordination and control in naturally developing systems. In J.A.S. Kelso & J.E. Clark (Eds.), *The development of human movement coordination and control* (pp. 5-78). New York, London: John Wiley.
- Tuller, B. H., Kelso, J.A.S. & Harris, K.S. (1982). Interarticulator phasing as an index of temporal regularity in speech. *Journal of Experimental Psychology: Human Perception and Performance*, 8, 460-472.
- Tuller, B., Kelso, J.A.S. & Harris, K.S. (1982). On the kinematics of articulatory control as a function of stress and rate. *Journal of the Acoustical Society of America*, 72, S103. Also *Haskins Laboratories Status Report on Speech Research*, SR-71/72, 81-88.
- Tuller, B.H., Harris, K.S. & Kelso, J.A.S. (1982). Stress and rate: Differential transformations of articulation. *Journal of the Acoustical Society of America*, 71, 1534-1543.

1983

- Goodman, D., & Kelso, J.A.S. (1983). Exploring the functional significance of physiological tremor: A biospectroscopic approach. *Experimental Brain Research*, 49, 419-431.
- Goodman, D., Kobayashi, R.B., & Kelso, J.A.S. (1983). Maintenance of symmetry as a constraint in motor control. *Canadian Journal of Applied Sports Sciences*, 8, 238.
- Harris, K.S., Tuller, B., Bell-Berti, F., & Kelso, J.A.S. (1983). Some temporal rules in speech production. *Journal of the Acoustical Society of America*, 73, S66.
- Kelso, J.A.S., Putnam, C.A., & Goodman, D. (1983). On the space-time structure of human interlimb coordination. *Quarterly Journal of Experimental Psychology*, 35A, 347-375.
- Kelso, J.A.S., & Tuller, B. (1983). "Compensatory Articulation" under conditions of reduced afferent information: A dynamic formulation. *Journal of Speech and Hearing Research*, 26, 217-224.

- Kelso, J.A.S., Tuller, B. H., & Harris, K.S. (1983). A 'dynamic pattern' perspective on the control and coordination of movement. In P. MacNeilage (Ed.), *The production of speech* (pp. 137-173). New York: Springer-Verlag.
- Saltzman, E.L., & Kelso, J.A.S. (1983). Skilled actions: A task dynamic approach, *Haskins Laboratories Status Report on Speech Research, SR-76*, 3-50.
- Saltzman, E.L., & Kelso, J.A.S. (1983). Toward a dynamical account of motor memory and control. In R. Magill (Ed.), *Memory and control of motor behavior* (pp. 17-38). Amsterdam: North Holland.
- Tuller, B., Kelso, J.A.S., & Harris, K.S. (1983). Converging sources of evidence for relative timing in speech production. *Journal of Experimental Psychology: Human Perception and Performance*, 9, 829-833.
- Tye, N., Zimmermann, G., & Kelso, J.A.S. (1983). "Compensatory articulation" in normal and hearing-impaired speakers: A cinefluorographic study. *Journal of Phonetics*, 11, 101-115.

1984

- Bateson, E.-V., & Kelso, J.A.S. (1984). Remote and autogenic articulatory adaptation to jaw perturbations during speech: More on functional synergies. *Journal of the Acoustical Society of America*, 75, S23-24.
- Browman, C.P., Goldstein, K., Kelso, J.A.S., Rubin, P., & Saltzman, E.L. (1984). Articulatory synthesis from underlying dynamics. *Journal of the Acoustical Society of America*, 75.
- ♪ Kelso, J.A.S. (1984). Phase transitions and critical behavior in human bimanual coordination. *American Journal of Physiology: Regulatory, Integrative and Comparative*, 15, R1000-R1004.
- Kelso, J.A.S., Bateson, E.-V., Saltzman, E.L., & Kay, B. (1984). A dynamic analysis of reiterant speech production. *Journal of the Acoustical Society of America*, 75.
- Kelso, J.A.S., & Tuller, B. (1984). A dynamical basis for action systems. In M.S. Gazzaniga (Ed.). *Handbook of Cognitive Neuroscience* (pp. 321-356). New York: Plenum.
- Kelso, J.A.S., & Tuller, B. (1984). Converging sources of evidence for common dynamical principles in speech and limb coordination. *American Journal of Physiology 246: Regulatory, Integrative and Comparative*, 15, R928-R935.
- ♪ Kelso, J.A.S., Tuller, B., Bateson, E.-V., & Fowler, C.A. (1984). Functionally specific articulatory cooperation following jaw perturbations during speech: Evidence for coordinative structures. *Journal of Experimental Psychology: Human Perception and Performance*, 10, 812-832.
- Kelso, J.A.S., with W. Ritter, M. Kutas, & Schiffman, R. (1984). Preparatory processes: considerations from a theory of movement. In E. Donchin (Ed.), *Cognitive Psychophysiology*, (pp. 201-219). Hillsdale, NJ: Erlbaum.
- Tuller, B., & Kelso, J.A.S. (1984). The timing of articulatory gestures: Evidence for relational invariants. *Journal of the Acoustical Society of America*, 76(4), 1030-1036.
- ♪ **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

- ♪ Haken, H., Kelso, J.A.S., & Bunz, H. (1985). A theoretical model of phase transitions in human hand movements. *Biological Cybernetics*, 51, 347-356.
- Kelso, J.A.S., Bateson, E.-V., Saltzman, E., & Kay, B. (1985). A qualitative dynamic analysis of reiterant speech production: Phase portraits, kinematics and dynamic modeling. *Journal of the Acoustical Society of America*, 77, 266-280.
- Kelso, J.A.S., & Scholz, J.P. (1985). Cooperative phenomena in biological motion. In H. Haken (Ed.), *Complex Systems: Operational approaches in neurobiology, physics and computers*. Springer-Verlag: Berlin.
- Kelso, J.A.S., & Tuller, B. (1985). Intrinsic time in speech production. *Journal of the Acoustical Society of America*, 77, S53. Also *Haskins Laboratories Status Report on Speech Research SR-81*, 23-39.
- Munhall, K. G., & Kelso, J.A.S. (1985). The role of similarity analysis in understanding movement. *Journal of Motor Behavior*, 17, 493-498.
- Munhall, K.G., & Kelso, J.A.S. (1985). Phase-dependent sensitivity of perturbation reveals the nature of speech coordinative structures. *Journal of the Acoustical Society of America*, 78, S38.
- Saltzman, E.L., & Kelso, J.A.S. (1985). Synergies: Stabilities, instabilities and modes. *The Behavioral and Brain Sciences*, 8, 161-163.
- Scholz, J.P., Turvey, M.T., & Kelso, J.A.S., (1985). Naturalizing the context for SMA function. *The Behavioral and Brain Sciences*, 8, 582-583
- Vatikiotis-Bateson, E.V., & Kelso, J.A.S. (1985). A dynamic analysis of Japanese reiterant speech. *Journal of the Acoustical Society of America*, 78, S38.
- Warren, W.H., & Kelso, J.A.S. (1985). Work group on perception and action. In W. H. Warren & R.E. Shaw (Eds.), *Persistence and change: Proceedings of the First International Conference on Event Perception*, (pp. 269-282). Hillsdale, NJ: Erlbaum.
- ♪ 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

- Harris, K.S., Tuller, B., & Kelso, J.A.S. (1986). Temporal invariance in speech production. In J. Perkell & D.H. Klatt (Eds.), *Invariance and variability of speech processes*. (pp. 243-252). Hillsdale, NJ: Erlbaum.

- Heuer, H., Fromm, C., Brunia, C.H., Kelso, J.A.S., & Schmidt, R.A. (Eds). (1986). *Generation and modulation of action patterns*. Experimental Brain Research Supplement, Springer-Verlag.
- Kay, B.A., Munhall, K.G., Bateson, E.-V. & Kelso, J.A.S. (1986). A note on kinematic data processing. *Haskins Laboratories Status Report, SR-8*, 291-303.
- Kelso, J.A.S. (1986). Mainstreaming movement science. *Haskins Laboratories Status Report on Speech Research*. Invited commentary on Berkinblit, M.B. Feldman, A. G. *Behavioral and Brain Sciences*.
- Kelso, J.A.S., (1986). Pattern formation in multidegree of freedom speech and limb movements *Experimental Brain Research Supplement, 15*, 105-128.
- Kelso, J.A.S., Saltzman, E.L., & Tuller, B. (1986). The dynamical perspective on speech production: Data and theory. *Journal of Phonetics, 14*, 29-59.
- Kelso, J.A.S., Saltzman, E.L., & Tuller, B. (1986). Intentional contents, communicative context and task dynamics: A reply to the commentators. *Journal of Phonetics, 14*, 171-196.
- ♪ Kelso, J.A.S., Scholz, J.P. & Schöner, G. (1986). Nonequilibrium phase transitions in coordinated biological motion: Critical fluctuations. *Physics Letters A, 118*, 279-284.
- Kelso, J.A.S., Tuller, B., & Harris, K.S. (1986). A theoretical note on speech timing. In J. Perkell & D.H. Klatt (Eds.), *Invariance and variability of speech processes*. (pp. 263-267) Hillsdale, NJ: Erlbaum.
- Schöner, G., Haken, H., & Kelso, J.A.S. (1986). A stochastic theory of phase transitions in human hand movement. *Biological Cybernetics, 53*, 247-257.
- ♪ **First verification of predictions of the theory that human behavior is governed by self-organizing coordination dynamics**

1987

- Kay, B.A., Kelso, J.A.S., Saltzman, E.L., & Schöner, G. (1987). The space-time behavior of single and bimanual rhythmical movements: Data and a limit cycle model. *Journal of Experimental Psychology: Human Perception and Performance, 13*, 178-192.
- Kelso, J.A.S. (1987) "Mechanisms" of dynamic pattern generation in perception-action systems. *International Society for Ecological Psychology, 3*, 5-6.
- Kelso, J.A.S. (1987). Toward a physical theory of biological movement coordination. *American Society of Biomechanics Proceedings of the 11th Annual meeting*.
- Kelso, J.A.S., & Kay, B. (1987). Information and control: A macroscopic basis for perception-action coupling. In. H. Heuer and A.F. Sanders (Eds.), *Tutorials in Perception and Action*, Hillsdale, N.J: Erlbaum.
- Kelso, J.A.S. & Schöner, G. (1987) Toward a physical (synergetic) theory of biological coordination. *Springer Proceedings in Physics, 19*, 224-237.
- Kelso, J.A.S., Schöner, G., Scholz, J.P. & Haken, H. (1987). Phase-locked modes, phase transitions and component oscillators in coordinated biological motion, *Physica Scripta, 35*, 79-87.

- Kelso, J.A.S., Schöner, G., Scholz, J.P., & Haken, H. (1987). Nonequilibrium phase transitions in coordinated movements involving many degrees of freedom. *Annals of the New York Academy of Science*, 504, 293-296.
- Kelso, J.A.S., & Tuller, B. (1987). Intrinsic time in speech production: Theory, methodology and preliminary observations. In E. Keller and M. Gopnik (Eds.), *Sensory and motor processes in language*. Hillsdale, NJ: Erlbaum.
- Saltzman, E.L., & Kelso, J.A.S. (1987). Skilled actions: A task dynamic approach. *Psychological Review*, 94, 84-106.
- Scholz, J.P., Kelso, J.A.S. & Schöner, G. (1987). Nonequilibrium phase transitions in coordinated biological motion: Critical slowing down and switching time. *Physics Letters A*, 8, 390-394.
- ♪ Thelen, E., Kelso, J.A.S., & Fogel, A. (1987). Self-organizing systems and infant motor development. *Developmental Review*, 7, 39-65.
- Thelen, E., Skala, K.D. & Kelso, J.A.S. (1987). The dynamic nature of early coordination: Evidence from bilateral leg movements in young infants. *Developmental Psychology*, 23, 179-186.
- ♪ **Early application of the theory of self-organizing coordination dynamics to infant sensorimotor development**

1988

- Buchanan, J.J., Kelso, J.A.S., & DeGuzman G.C. (1988). Further phase transitions in biological coordination: Rhythmic movement in 3-Dimensions. In Kelso, J.A.S., Mandell, A. & Shlesinger, M.F. (eds.), *Dynamic patterns in complex systems*, World Scientific, Singapore.
- Jeka, J.J. & Kelso, J.A.S. (1988). Dynamic patterns of multilimb coordination. In Kelso, J.A.S., Mandell, A. & Shlesinger, M.F. (eds.), *Dynamic patterns in complex systems*, World Scientific, Singapore.
- Kelso, J.A.S. (1988). Dynamic Patterns. In Kelso, J.A.S., Mandell, A.J. & Shlesinger, M.F. (eds.), *Dynamic Patterns in Complex Systems*, World Scientific, Singapore.
- Kelso, J.A.S. & DeGuzman, G.C. (1988). Order in time: How the cooperation between the hands informs the design of the brain. In H. Haken (Ed.), *Neural and Synergetic Computers*, Springer, Berlin, pp. 180-196.
- Kelso, J.A.S., & Munhall, K.G. (Eds.), (1988) *R. H. Stetson's Motor Phonetics: A Retrospective Edition*. College Hill Press, San Diego.
- Kelso, J.A.S., Mandell, A.J., Shlesinger, M.F. (Eds.), (1988). *Dynamic Patterns in Complex Systems*. World Scientific, Singapore.
- ♪ Kelso, J.A.S., Scholz, J.P. & Schöner, G. (1988). Dynamics governs switching among patterns of coordination in biological movement. *Phys. Lett.A*, 134, 8-12.
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- Kelso, J.A.S., & Schöner, G. (1988). Self-organization of coordinative movement patterns. *Human Movement Science* 7, 27-46.
- Nittrouer, S., Munhall, K.G., Kelso, J.A.S., Tuller, B., & Harris, K.S. (1988). Patterns of interarticulator phasing and their relation to linguistic structure. *Journal of the Acoustical Society of America*, 84, 1653-1661.
- Schöner, G. & Kelso, J.A.S. (1988). A synergetic theory of environmentally-specified and learned patterns of movement coordination. I. Relative phase dynamics. *Biological Cybernetics* 58, 71-80.
- Schöner, G. & Kelso, J.A.S. (1988) A synergetic theory of environmentally-specified and learned patterns of movement coordination. II. Component oscillator dynamics. *Biological Cybernetics*, 58, 81-89.
- ♪ Schöner, G. & Kelso, J.A.S. (1988) Dynamic pattern generation in behavioral and neural systems. *Science*, 239, 1513-1520. Reprinted in K. L. Kelner & D. E. Koshland, Jr. (Eds.), *Molecules to Models: Advances in Neuroscience*, pp 311-325.
- Schöner, G. & Kelso, J.A.S. (1988). A dynamic pattern theory of behavioral change. *Journal of Theoretical Biology*, 135, 501-524.
- Schöner, G. & Kelso, J.A.S. (1988). A dynamic pattern theory of learning and recall. *Neural Networks*, 1.
- Schöner, G. & Kelso, J.A.S. (1988). A theory of learning and recall in biological coordination. In Kelso, J.A.S., Mandell, A. & Shlesinger, M.F. (eds.), *Dynamic patterns in complex systems*, World Scientific, Singapore.
- Schöner, G., & Kelso, J.A.S. (1988). Dynamic patterns of biological coordination: Theoretical strategy and new results. In *Dynamic Patterns in Complex Systems*, Kelso, J.A.S., Mandell, A.J. & Shlesinger, M.F. (Eds.) World Scientific, Singapore pp. 77-102.
- Zimmerman, G., Brown, C., Kelso, J.A.S., Hurtig, R. & Forrest, K. (1988). The association between acoustic and articulatory events in a delayed auditory feedback paradigm. *Journal of Phonetics* 16, 437-451.

♪ **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.**

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