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Cummington St., Boston, MA 02215. *Communication by Means of Controlled Dynamical System
Motions*. Preliminary report.

In both the natural world and in competitive team sports, individuals communicate with each other by means of actions. These types of communications are typically dependent on context in that a particular motion or gesture will indicate something related to the current activity. Motions will frequently be executed so as to be maximally apparent to fellow team (or herd) members while at the same time revealing little or nothing to adversaries. This talk will describe current research on communication-through-action in which controlled dynamical systems play the role of a communications medium. In the context of linear time invariant input-output systems, we shall describe the design of inputs that steer the state of a system in prescribed ways while at the same time encoding information that may be decoded from observed output. The talk will also mention results on the design of motion-based communication for autonomous robot vehicles in which information is transmitted from one vehicle to another by means of controlled relative motion patterns. Finally, making direct contact with the theme of the session, we shall mention connections with quantum communication. (Received September 01, 2008)