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Comdig issue: [2000.09](#):

### **The Sound Of Many Hands Clapping**, [Nature](#)

Self-organization of complex systems can take place in space and/or in time and lead to the emergence of order parameters with coherent behavior of the interacting subsystems. Collective behavior of humans such as singing in a group is one classical example of social temporal organization in humans. One example of self-organized spatio-temporal behavioral pattern is the "wave" observed frequently in US football stadiums.

Neda et al. studied an even simpler group activity: the applause of theater and opera audiences in Romania and Hungary. In their description of the self-organized transition from fast, incoherent clapping to slower, synchronized clapping the authors do not mention the cultural information content in the different clapping patterns which provides an explanation for the psychological motivation for the transitions: Whereas fast, incoherent clapping is a signal for appreciation of the performance, coherent, rhythmical clapping in many places in Europe is a collective message from the audience to the performers, a request for an encore. The increasing frequency (see fig. 1e of Neda et al.) of the clapping is a measure for the urgency of the request and it culminates in a transition back to noise as when the performer re-appears to deliver the encore.

One interesting result is that at the onset of synchronized clapping the period approximately doubles (1:2 mode locking in terms of non-linear oscillators) before it slowly decreases to basically the frequency of incoherent individual clapping. How much of this phenomenon is cultural convention is not clear. But according to fig. 1f-g in the same paper, individuals (in Rumania/Hungary) knew what to do when asked to produce the two different types of clapping: approximately three claps per second when ask to clap as if they were part of a regular applause and about half that rate when asked to clap in the form of rhythmic applause.

It would be interesting to repeat the same experiment with an audience of a different cultural background under controlled experimental conditions. For instance from the work of Kelso's group we would expect that clapping frequency can act as natural bifurcation parameter of coordinated behavior.

- [The Sound Of Many Hands Clapping](#), Nature, Z. Néda, E. Ravasz, Y. Brechet, T. Vicsek, A.-L. Barabási
- [Synchronized Clapping a Primal Desire?](#), Jennifer Viegas, Discovery.com News

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