Title: Turbulence transition in shear flows: what can we learn from pipe flow?

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According to textbook wisdom, flow down a pipe becomes turbulent near a Reynolds number of about 2000. This simple statement misses many subtleties of the transition: the absence of a linear stability of the laminar flow, the sensitive dependence on perturbations that sometimes succeed and sometimes fail to induce turbulence and the unexpected observation that the turbulent state, once achieved, is not persistent but can decay. All these observations are compatible with the formation of a strange saddle in the state space of the system. I will focus on four aspects: on the appearance of 3-d coherent states, on the boundary between laminar and turbulent flows, on the information contained in lifetime statistics and the connection to spatio-temporal chaos. The properties observed in pipe flow suggest a generic structuring of state space in flows where turbulent and laminar flow coexist.