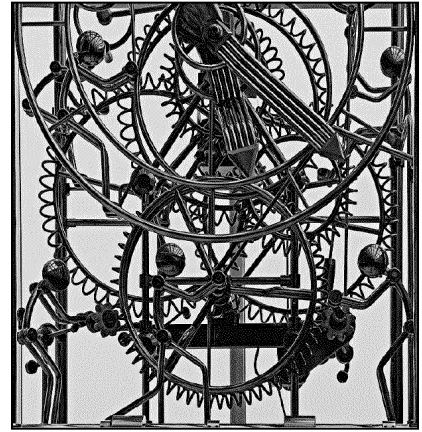


Readings in Complexity Seminar



Tuesday Oct 17 12:15p ISTB1 Rm 402

Discussion Leaders: Andrew Hamilton & Manfred Laubichler

Kirschner & Gerhart's *Evolvability*

Available at: <http://www.pnas.org/cgi/content/full/95/15/8420>

Evolvability is an organism's capacity to generate heritable phenotypic variation. Metazoan evolution is marked by great morphological and physiological diversification, although the core genetic, cell biological, and developmental processes are largely conserved. Metazoan diversification has entailed the evolution of various regulatory processes controlling the time, place, and conditions of use of the conserved core processes. These regulatory processes, and certain of the core processes, have special properties relevant to evolutionary change. The properties of versatile protein elements, weak linkage, compartmentation, redundancy, and exploratory behavior reduce the interdependence of components and confer robustness and flexibility on processes during embryonic development and in adult physiology. They also confer evolvability on

the organism by reducing constraints on change and allowing the accumulation of nonlethal variation.

Evolvability may have been generally selected in the course of selection for robust, flexible processes suitable for complex development and physiology and specifically selected in lineages undergoing repeated radiations.

