



"What is Chaos?"



In physics, chaos is a word with a specialized meaning, one that differs from the everyday use of the word



To a physicist, the phrase "chaotic motion" really has nothing with whether or not the motion of a physical system is frenzied or wild in appearance. In fact, a chaotic system can actually evolve in a way which appears smooth and ordered



Rather, chaos refers to the issue of whether or not it is possible to make accurate long-term predictions about the behavior of the system or why the system behaves in a particular manner.



For every motion there are two forces acting simultaneously – one leads to stability the other leads to instability

Eg.: Force vs Friction, Heat Diffusion vs Surface Tension



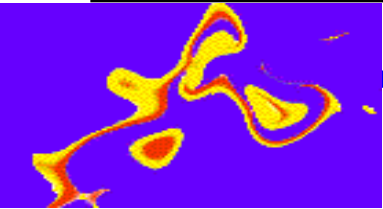
Change of Quantity leads Qualitative Transformation

Eg.: Even a small change in quantity leads to qualitative change in behavior of the system



Negation of Negative for Transforming Performance

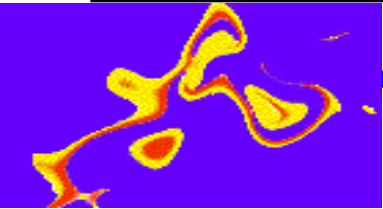
Eg.: Eliminating small imperfections lead to dramatic changes in system performance



Most Systems are Chaotic –

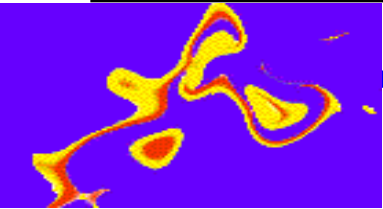
Even very simple systems are chaotic

But there is an order within chaos

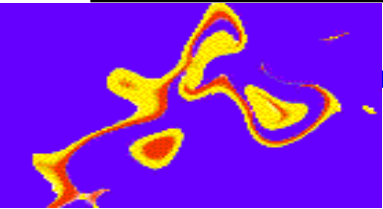


All elements in a Chaotic System are interdependent on each other for functioning.

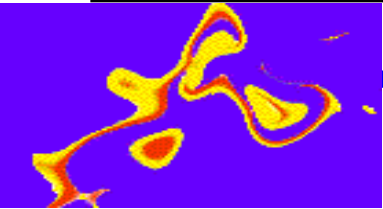
Interactions → most important



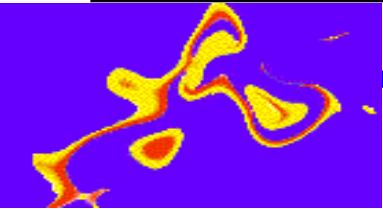
Chaotic Systems are aperiodic



**Chaotic Systems are governed by
non-linear equations**

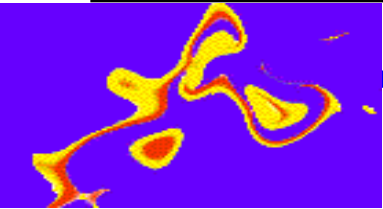


**Chaotic Systems exhibit bi-furcations
and Fractals.**

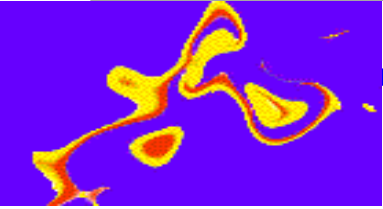


Chaotic Systems exhibit 'sensitive dependence' on initial conditions/initial inputs

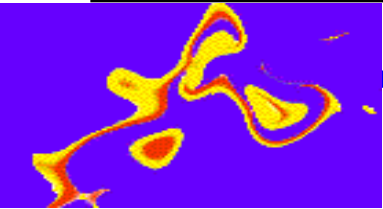
A small change either creates Chaos or Stability



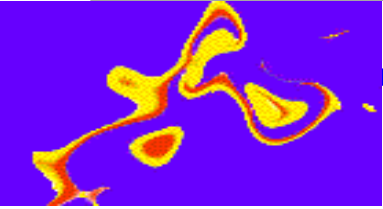
Chaotic Systems are governed by one or more control parameters – a small change can cause the chaos to either appear or disappear



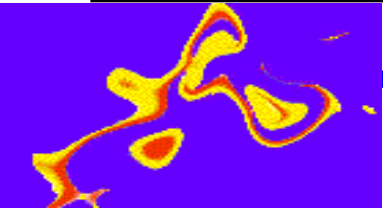
Chaotic Systems operate at far from equilibrium condition (static equilibrium)



**‘Attractors’ alter the behaviour of chaotic systems –
they cause stability or instability in the systems**



**Chaotic Systems are either
dissipative or self organizing**



Observe → Respond → Do

Thank you!

R A P I D

INNOVATION



Thank you!

Keep Walking!

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