



2010

MASSACHUSETTS CLEAN TECHNOLOGY AWARDS

A Program from The Foresight Project Inc; www.theforesightproject.org



Region II: Central
Massachusetts

Riona Reeves: Gibbons
Middle School,
Westborough

Clean Tech:
In Sync with Chaos

About Me

I am thirteen years old and in the eighth grade at Gibbons Middle School, located in Westborough, MA. I have a younger brother, Raymond, and a dog, Sophie. I enjoy math, science, art, and history. I was a part of the Gibbons math team for two years, and am also the editor of the school year book.

I have been a girl scout since first grade, and I play the cello in the school orchestra. When not doing math, science, and other extra work, you can find me outdoors: playing lacrosse, field hockey, swimming, and hiking. I also love orienteering, swimming, and hot air balloons.

What I really like to do to relax is chasing Sophie and playing fetch.

My Project

My project, "In Sync with Chaos", concentrates on chaos theory. Chaos theory is a relatively new area of science, which focuses on non-periodic, deterministic behavior. Certain circuits, such as the Chua's circuit, can generate this form of behavior and help us to understand it better.

My project focuses on how resistance levels can affect the form of chaotic output.

[Editor's Note: The casual deterministic concept of science was summarized by Laplace in the early 1800's, who believed that once we know all of the variables and the equations expressing the laws of science determine behavior and therefore, we can predict exactly what will happen, out to infinity.

20th Century physics changed all that, when Heisenberg and others discovered quantum mechanics and the uncertainty principle. Many scientists, including Einstein, felt that we were missing something - "God does not play dice!" he said. However, we are learning that in complex, interaction systems - from quantum mechanics to animal populations, to climate science, extremely small changes can lead to surprisingly different, and unpredictable, results, perhaps taking the system into a periodic, or exponential, or a "chaotic" non-repeating pattern. Understanding more about the non-linearity of the world that we live in is the challenge of today's science.]