

ELASTIC REBOUND THEORY

Concept: Stress builds up on a fault till it breaks. This is known as the elastic rebound theory.

Objectives: Students will

- illustrate elastic rebound theory
- be able to state how the release of built up stress causes earthquakes

Materials:

- Students

Procedure:

1. Have students line up face to face with their hands in front of them, palm to palm. Each group represents one side of a fault.
2. Have students in each line take a step to the right keeping their hands in contact with and sliding by the students across from them.

Result: *Students' hands should slide easily by each other.*

Discussion: *Ask students if this type of movement would cause an earthquake. Smooth surfaces slide easily and generally do not produce quakes.*

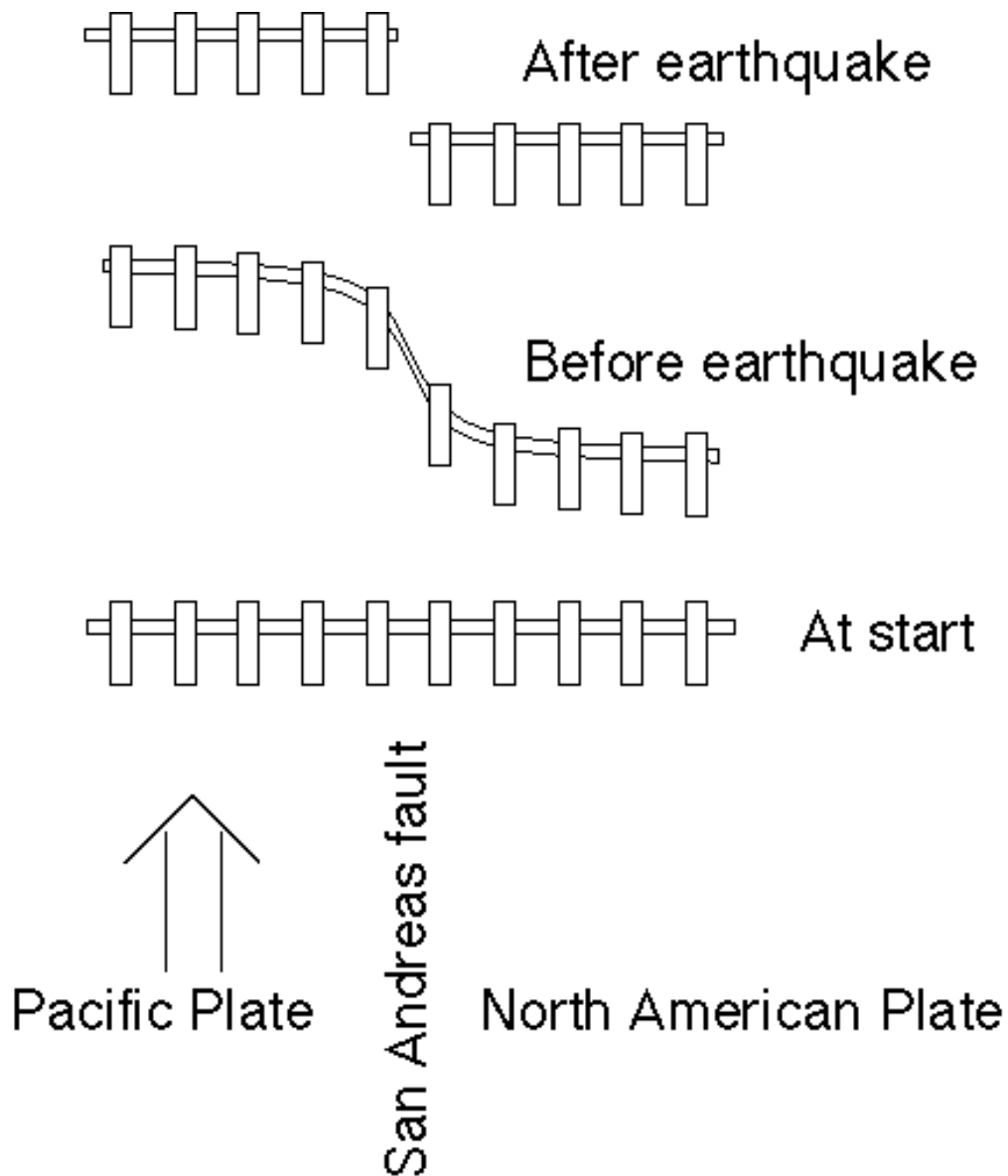
3. Have students on either side of the fault interlock their fingers. Ask them to move very slowly to the right, just past the point where they can stay locked together easily. Just before they have to let go, yell "EARTHQUAKE."

Result: *The sudden release of energy should cause the youth to stumble and possibly tumble.*

Discussion: *Ask students if this feels more like how an earthquake would happen. This simulates the build up and stress release of an earthquake, known as elastic rebound theory. Tectonic movement, whether it is a divergent, convergent, or transform boundary, causes the plates to move and build up stress. The more stress built up the greater the quake magnitude.*

Ask them to think of other materials that have similar properties. Examples include salt water taffy, rubber bands, or cheese on a pizza.

The following drawing shows how a fence in California that straddles the San Andreas fault illustrates elastic rebound. As the Pacific Plate slowly slides by North America, it bends the fence until enough stress builds and the fault moves, moving the fence with it.



Drawing from: <http://quake.wr.usgs.gov/info/1906/reid.html>