

EMBARGOED
Until Release Date



Dear Jax,
How does a TV make a picture on its screen?
Jennifer Wilson
St. Charles, Missouri

Dear Jennifer,
Televisions turn radio signals into a picture that is drawn slice by slice. Those slices are the lines you see that go back and forth when you look at a TV close up.

Your TV is like a fancy light bulb that can change colors. It's very close to being a fluorescent light bulb. Both make light in pretty much the same way.

You Can make a mind movie to understand how it works.

Jax Place
Jax Place

television: the mind movie

Get all peaceful-like and ask someone to read this in a slow and steady voice while you close your eyes:

Imagine that you are inside the display window of a store. There are people outside looking into the window, and they all want to see something besides you just standing there. You realize that you're holding a huge fire hose with a big brass nozzle. You aim the hose at the window and start moving it back and forth across the window. It's

like a back-and-forth wave. Every time you go back and forth, you lower the nozzle a bit. Imagine now that someone turns

on the hose, and out of your nozzle comes *paint*. You're drawing these back-and-forth lines, and out of the nozzle come spurts of paint. Each blub, blub, blub of the paint is a different color. As you aim the nozzle back and forth, the paint blobs make a picture. The picture is drawn line by line, slice by slice, and your back-and-forth aiming is the thing that makes those lines – makes those slices.

You're getting really good at this and you start doing it faster and faster; so fast that you're drawing a new entire window picture 30 times a second. It's so fast, it looks like one picture, not 30 different ones.

Open your eyes now and think about your TV. The inside of your TV's picture tube is coated with phosphors (FOS-furz). They are chemicals that light up when they get excited. Different phosphors light up with different colors. The thing that excites them is a spray of electrons from an electron gun at the back of the picture tube. It's spraying out electrons, and magnets are aiming them back and forth just like you did in your imagination with the fire hose inside the store's display window.

Your TV draws a complete picture 30 times a second. Each picture is a little different. When we look at different pictures that change that quickly, they seem to move.

If you have a VCR with frame-by-frame advance, You Can slow down a TV picture to a single drawing. That is what we call one *frame*. But that, I think, is a whole separate question and a whole different comic strip.

