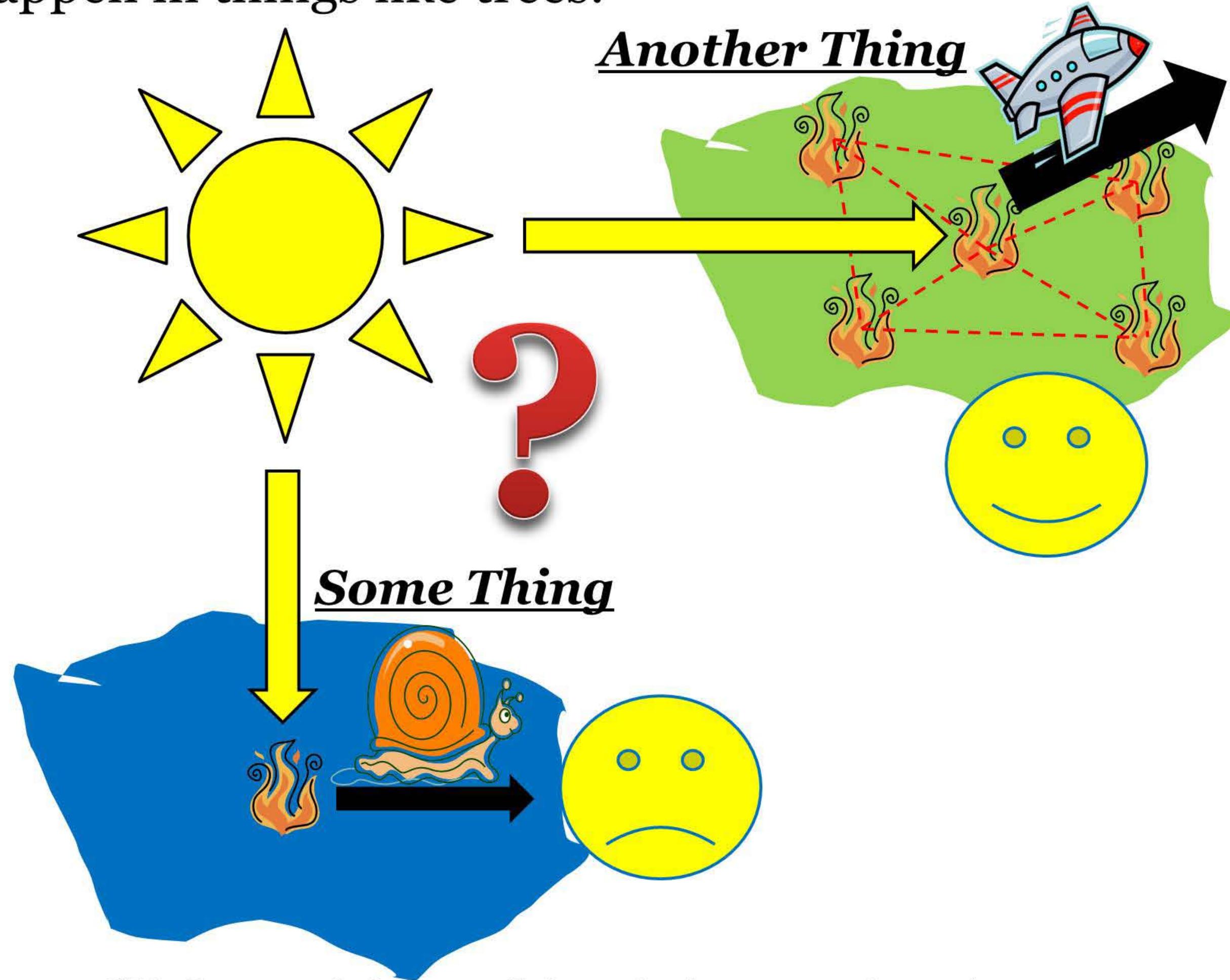


# Is The Same bit of Light Exciting Two (or more) Parts of a Thing at the Same Time?

**When a bit of light hits something, what happens?** Well, one part of the thing could eat up the light and get excited, or a different part of the thing could eat up the light and get excited. When a part of the thing gets excited, it's like it's getting energy from the light or getting hot like the fires in the picture. But, in some very cool cases, two (or more) different parts of the same thing can both eat up the same bit of light, and both get excited at the same time! It's really hard to make a thing which does that, but it does happen in things like trees.

In both ways of light-eating, **the excited part (or parts) of the thing can then move around to other parts of the thing**. But, in the case where the thing has many excited parts at the same time, the excited parts can move around faster. Because we like the excited part of a thing (energy) to move around faster, we want to know more about it, so that we can make the excited parts of other things we make, move around faster and be better and more cool.



**Figuring out** which of those two different ways of light exciting a thing is happening, is very hard. So, we work on looking into ways one could tell, for sure, which way that light exciting a thing is happening: just one part of a thing at a time, or two parts of the same thing at the same time.

We can figure it out by hitting a thing with many different kinds and colors of light: hitting it once and then hitting it again later, and changing the time we wait to hit the thing with light a second time. By looking at the light after the second time it hits the thing (**and after we think about what we're seeing, really hard**), we can tell if two parts of a thing are getting excited at the same time or if just one part of the thing is getting excited.

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