Page Two – Dynamic Equilibrium

by Anne Emerson

This page continues the discussion of economic concepts for general readers. Here, we move from "equilibrium," being no tendency to change in scientific systems (think pendulum clock, stopped), to "dynamic equilibrium," being a steady state in a moving system (think pendulum clock, ticking and telling time when the pendulum swings). Remember, mainstream economic models *need to assume* equilibrium.

Consider a river. Clearly, it moves, or flows. Yet, it may look much the same from day to day, depending on the weather (such as, for example, the amount of rainfall upriver). If we were to develop some math to describe the flow of water in the river, it might describe the behavior of individual water molecules (H_2O molecules, or the very small component parts of water), or it might add up the behaviors of all the water molecules to build the big picture of how the whole river behaves. Or, it might take a short-cut and assume that the behavior of the whole river follows observable patterns, so we don't need to include each molecule.

If you are like Annie, when presented with this challenge - to describe a river in math - you immediately picture all the different ways that water behaves, that contribute to the "big picture." For example, the river has depth; the same volume of water flowing over different depths, depending on the nature of the river bed, will flow at different speeds. It also has width – if the river is deep and wide, it will flow slowly. In places where the same water in the same river flows over "shallow and narrow," the current will be stronger. Think of a Lazy River water park. Picture all the things that affect the way the Lazy River flows around the island at its center. One thing it has that a natural river doesn't have, is a pump to keep the water flowing.

Just as many people don't think in math, so also, few people think in a complex mixture of pictures and math, like Annie. Yet there is a use for weirdos like Annie in the real world, just as there is a use for mathematicians in creating video games and urban infrastructures. Here is one thing that this way of thinking can do:

This fountain is a system of water in motion. It illustrates several properties of systems in motion. For example, we can guess that it looks like this when its pump or pumps are turned on. If the pumps are turned off, the water will stop standing up in each of the raised bowls.

For our purposes, we can say it represents "dynamic equilibrium." That is, as we look at it, it appears to be in a steady state of motion – the water flows, but the overall shape changes very little.

So, what a picture of a fountain can do is serve as a bridge between the abstract reasoning of economists' math, and people who are more accustomed to the real world. I bet that, if I say this fountain can symbolize economic math, and therefore the way that economic theory describes a whole, complex economic system, most of you would relate to that. (If you wanted to, of course… Stay with me…)

Let us imagine that the water flowing around the fountain represents, or symbolizes, money flowing around the economy; also, the shape of the fountain (raised bowls, hidden pipes, etc.) represents the infrastructure – or the physical materials (roads, buildings) that govern the pathways money takes, to flow around the system.

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