

I believe there is a lot to be learned from Molly's example about systems and especially how one goes about brainstorming a solution for a new or existing system. Working through a system and/or letting a system exist through time changes it. Can a system be static? From what I have learned so far, my answer would be not for an extended period. If a system stays static and does not change for a while, I do not think it is truly a system. Most things we are examining, however, do experience transformation. The extent to which these changes are realized is extremely uncertain.

The first topic I want to wrestle with is the concept of delays and how they seem to be what makes life challenging. A world without delays would be a lot more straightforward. I wanted to ponder the idea of some things that would be different without time delays. As an Operations Management major, a lot of my initial answers revolved around work in that field. Businesses constantly must forecast demand in order to meet inventory requirements. Without a significant delay from when the product was made to when it was needed, lots of warehousing, transportation, and inventory problems and costs would be avoided. Additionally, from a sustainability perspective, the world would be much different if one realized the consequence of their actions simultaneously to committing that action. If humans could see where the plastic bag they littered would end up, would that change what their actions were in that moment? I think that a good portion of the population is morally guided and would indeed change their ways with the absence of delays. When faced with the reality of an act at the exact moment it is made, people would be better stewards of the environment in my opinion. In Molly's case, the concept of a time delay led her group to miss the possibility of overabundance. If that delay was removed, she could have realized her current solution had flaws. Flaws caused by delays are part of what make systems challenging.

Changing the boundaries of a system changes the definition of the problem because it magnifies the subtle differences one element has on the whole system. As we have begun to observe in class, everyone has their own interpretation of how a system works. These differences are observed given the same boundaries or instructions. In the Potato Farm example, the boundaries were not entirely clear, leading to even more ambiguity among classmates. Combining the already vast difference in personal views on a system with a lack of stated boundaries creates an infinite amount of possibilities in what the system could look like. Removing or adding one element has exponential effects on those possibilities and the definition of the problem. From class, some groups added the elements of the economy, some the labor of the workers, some the effects on the environment. Conversely, some groups removed lots of the elements other groups had chosen to include and took a simpler approach to the problem. With these widely ranging boundaries, we experienced five very different systems. The same was likely true in Molly's case. What her team noticed and worked to fix may have been different than what an alternative group may have done. It has become clear that boundaries (often chosen) are indeed a critical part in defining the system and can have a great effect on defining the problem.

We have discovered that boundaries define the system and even the problem it is working to fix; what we also must realize is how changing the problem then also changes what we consider success and failure. Once the problem changes, our outlook on how to fix that problem must consequently change as well. In Molly's case, they were able to change the boundaries of the system resulting in abundant tomato growth. By "increasing" the boundary in this example, they changed the very problem they were trying to fix: from helping farmers grow tomatoes again to managing the huge stock of tomatoes that resulted. Success was first defined as growing tomatoes, but when that happened, Molly and her colleagues realized the definition of success had changed as well. They had failed, in their eyes.

By producing too many tomatoes, the market was flooded with this stock and farmers that had spent many hours tending to the crop, had done it all for nothing. What once seemed like success, had turned into failure because their view of the system and the problem had changed.

What I have discussed is both the exciting and terrifying part of a system: uncertainty. We are uncertain how the system will react, how changing the boundaries effects its very nature, or how we do not even know what success for that system truly is. For this reason, changing one's view of the system either by adding more people, changing the boundaries, or simply working through the system, creates new problems to solve. Those who are problem solvers must be so in love with this idea of systems thinking.