

Assigned Reading Response:

System Dynamics

The two papers I read about System Dynamics were “Systems Thinking & the itthink Software Better Mental Models, Simulated More Reliably” and “The Potential of System Dynamics”. From these two articles I gather a large amount of information regarding how system dynamics works, how to begin thinking about problems in a way which is described by system dynamics, and some sub categories that fall under system dynamics.

From the two reading I think that the slinky example was perhaps the most eye opening moment where it becomes clear what is used as the system and how the cause and effect relationships that we normally use to view the world may not describe the system itself. To explain myself further, I found it interesting that the system that was being modeled visually was a slinky held by the top ring. When the hand was removed from the bottom gravity would pull it down and the slinky would begin oscillating. But it is not the hand holding the slinky or the forces of gravity pulling the slinky that makes it oscillate. It comes from the inherent properties of the slinky itself and therefore it is these properties we should consider when doing models for a slinky.

From the article about the potential of system dynamics I found that the descriptions about the different thinking skills were very insightful. These skills highlighted not only the skills required to build these types of models but also gives a good explanation as to the types of models that a System Dynamics model would work well with. I found this article to also be very insightful as to the uses and ability of system dynamics. The article explains that in order to have system dynamics be effective “system dynamics must both be well-informed and used correctly”. Their example of the hospital discharges or the workforce planning systems are great examples of the usability of system dynamics.

From the perspective of the proponents of system dynamics I understood their argument for it to be that system dynamics is a strategic tool that can be used to model a large variety of cases. The use of system dynamics models have been seen in healthcare on the local and national scale. From the reading I feel that the underlying cases described by the article on potential of system dynamics the proponents of system dynamics truly feel that the ability to model situations lies primarily on the people building the model; as long as you can create a mental model than you can build a system dynamics model.

I feel that while the proponents of system dynamics present their limitations on the topic they do not cover the full basis and their predictions on the models are maybe too high. System Dynamics I believe is a great tool for understanding behavior but it is also limited to the system being modeled. The reliability of the model depends on a lot of factors and even the best simulations cannot correctly simulate all aspects of human interactions, as in the case of human models. For example, all models involving airplane travel would have broken down on 9/11/01. While these are special circumstances I feel it is important to capture a true error methodology and a way to measure the accuracy of a model. Also, the outcomes should never be treated as absolute but as potential outcomes, possible with a high degree of likelihood.

In the articles about system dynamics I feel that they were missing a large enough variety of use cases to really express how it can be used across fields. For example the article which focused primarily on healthcare situations could have also shown how these types of models might apply at other companies or in other situations; or at least shown a similar type of model for a different industry. Also, I feel it would be personally interesting to see how these models could be simulated in different ways, such as in parallel or for long runs with many cases checked.