



"In my lit classes, the **STELLA** software turns thin air into solid ground. With it, students guide themselves to a position of understanding. This is what the utopian curriculum lodged in every teachers dream demands as an outcome."

-- Pamela Hopkins, English Teacher

Barriers and Opportunities

To many, literature and computers simply don't mix. Literature is about feeling, emotion, and inherently qualitative relationships. Computers are linked to rationality, analysis and quantitative relationships. And, ne'er the twain shall meet.

Until now! Anyone who's ever sought to disentangle the web of leitmotifs operating in a Shakespearean drama, puzzle through the inter-character dynamics in a Dickens novel, or divine the themes unfolding in a Beckett or Pinter play, is very much aware of the exquisitely intricate web of interrelationships which give great literary works their timeless quality. Complex? Yes. But interrelationships like these *can* be understood. They *can* be analyzed. They even can be what-iffed! And the computer can help.

The **STELLA**® software is a tool that enables non-quantitatively oriented people to capture inherently qualitative relationships in a very rigorous manner. Using the **STELLA** software, any set of interrelationships is laid out as a diagram. This process lets you see what you're thinking. And, as you diagram, the **STELLA** software works behind the scenes, *automatically* generating the equation framework that you'll need to simulate the relationships that you're laying out. The rest of the relationships can be sketched in.

Great literature is great in part because of the multiplicity of equally valid alternative interpretations for any given work. Using the **STELLA** software, students and faculty alike can rigorously explore a wide range of alternative interpretations.

Case Study

The Setting: Any English Lit Course

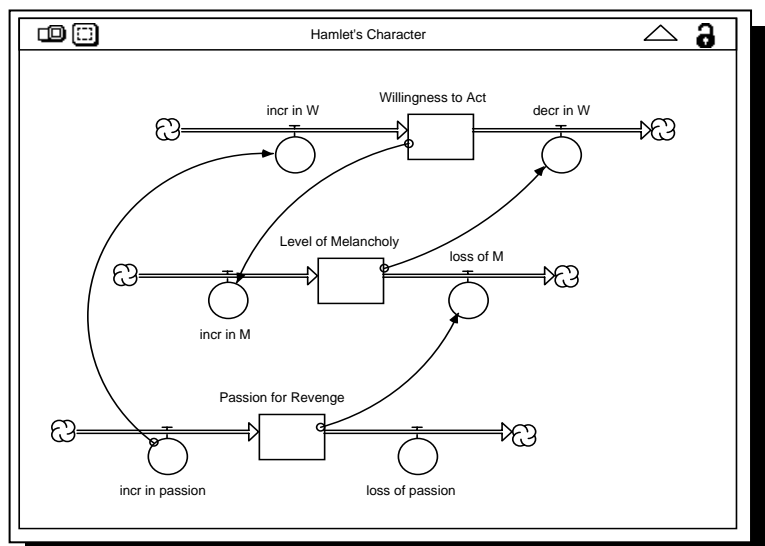
The Topic: Hamlet

The Challenge: Exploring alternative interpretations

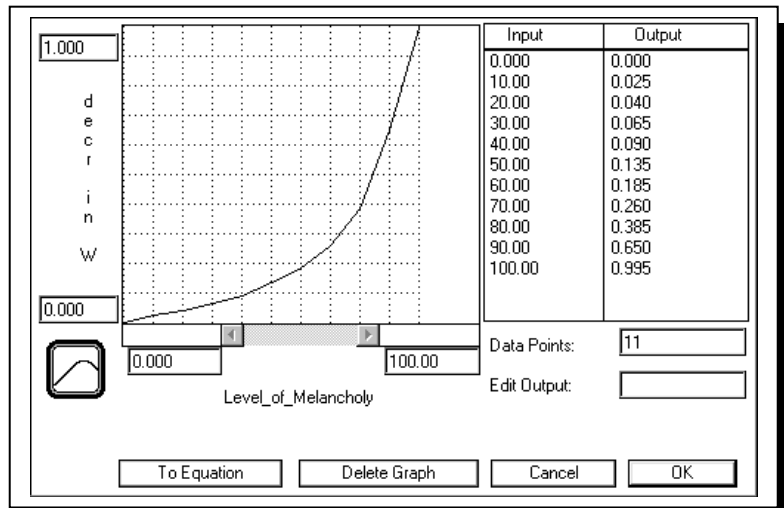
Background: Hamlet is one of the most widely read of Shakespeare's plays. Many explanations for why Hamlet "waited so long" to do in the foul Claudius have been advanced. There is, of course, no one "right" answer to this question. It is useful, however, to have some framework for pursuing a discussion of the alternatives. A **STELLA** model can be used to provide a "laboratory setting" for conducting a careful examination of these alternatives.

Step 1: Map. When using the **STELLA** software, the first step in getting a grip on the underlying relationships generating a particular dynamic phenomenon is to lay out the accumulations and flows that make up the system of interest.

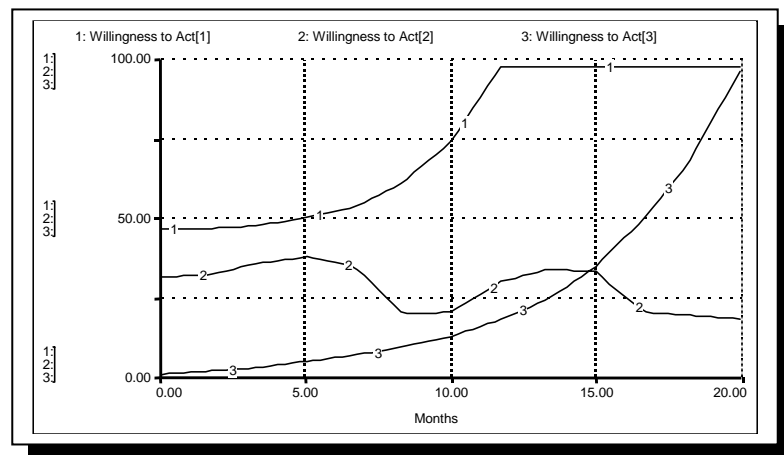
In this case, the principal accumulations are all psychological, as opposed to physical, in nature. These accumulations are used to represent several of the alternative hypotheses about Hamlet's character. The inflows to, and outflows from, the various accumulations are linked via "wires" indicating interrelationships. By experimenting with alternative connections between the set of accumulations, it's possible to examine a number of alternative hypotheses concerning the genesis of Hamlet's behavior.



Step 2: Model. Once the basic “plumbing” of a system is laid out, the next step is to model. In this case, this means including things like how quickly Willingness to Act might build up as Passion of revenge surges. One convenient way to represent these kinds of relationships is via the **STELLA** software’s graphical function (illustrated at right). The relationship shown at right indicates how “decrease in willingness to act” is assumed to change with increases in the Level of Melancholy. The hypothesis being represented clearly is that melancholy sharply reduces one’s willingness to act.



Step 3: Simulate. After the diagram is outfitted with your assumptions, you can now see what patterns of behavior over time are implied by the relationships you’ve laid out. You can animate your diagram, choose from two types of plots, or generate tabular output. In this illustration, a plot is used to show what happens to three “different” Hamlets’ Willingness to Act over the course of the play. Hamlet 3’s Willingness builds slowly, yet continuously, then explodes! Hamlet 1 begins at a higher initial level of Willingness, then proceeds rather quickly to action. Hamlet 2 vacillates, and never really acts. Understanding the personality makeup of each of these Hamlets, and working to decipher what the implications of each makeup might be for the outcome of the play, can stimulate some very interesting discussions!



Step 4: Celebrate! As this brief illustration suggests, simulation holds tremendous promise for literary analysis. The exercise of “what-iffing” a great novel, play, or short story can tease out a far deeper understanding than merely analyzing what *did* unfold. And, with tools like the **STELLA** software, rigorous what-iffing is accessible to virtually anyone.