Why might it be useful to initialize a model in steady state, even if the target system is not actually in steady state?

This is a debugging technique used to trim out variables in order to isolate a programmatic bug in the spirit of Occam’s razor. A philosophical “razor” is a template that allows one to eliminate false explanations. Occam’s razor is applied to dueling hypotheticals and simply states that one should elect for the explanation with the fewest assumptions. Here we are eliminating an expected variation in order to create an expected output. If the output varies from the expectation, the source of the variation will make itself apparent by the removal of “assumed correct” output and replacing it with “known state” output.

An example might be a population oscillation which will obfuscate erroneous factors. If you replace a variable with a constant in order to stabilize the output from a given formulae, you can notice the beginnings of variations from the expected output. It becomes a simple task of event tracing to locate the offending line of code, then a task of elimination to select the exact error within the line. If it is a synergistic error (an error compounded by another error), any subsequent errors will present themselves by repetition of this cycle until none remain.

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Phino Fernandez posted Feb 25, 2018 2:32 PM

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This is going to be a rather short response because I don’t know how to expand on it much. But the only use I can think of is for verification purposes. It allows you to simplify a model’s behavior so that you can more easily make hypothesis about the models expected behavior to make sure you both understand the model and didn’t make a mistake. To put it simply, to help you with debugging.

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You are absolutely correct. In order to expand, I might ask; "how do you apply this or read the results?" It sounds like you understand the process, but this process has two faces. One application will allow verification, and failing a passed verification; the other application will allow you to isolate the offending code. You could describe the difference between the two, in light of the action being the same. You accomplished the most important piece to me; including both verification and debugging in your post.

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