Chapter 1 Introducing Models (and This Book)

Reading Response Paper

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The chapter title was well-chosen; the authors did indeed introduce modeling as well as how the book was formatted. Since Dr. Marland had given us his definition of a model on Friday (“a model is a representation of reality for a purpose”) and since I read a very similar definition of what a model is in reading a math textbook yesterday, it was not terribly surprising that the definition the authors of this book gave fell right in line with the other definitions.

What I liked about the discussion on models in the book was that they mentioned models are rarely complete representations; rather they focus on the essential elements of a problem. The authors also pointed out more than once that models are built under time and resource constraints and that if you go through the whole cycle of what you are trying to model (such as reading the whole book to figure out how long it will take you to do so) there is no need for the model. Since I have a background as a computer programmer where the first company I worked for after college taught me to strive for zero errors in a program (and I came very close to this goal in some very complex programs), I was relieved to see that I needn’t try to account for every possibility in a model. I think it could still be difficult to decide exactly what the essentials are for very complex problems.

I think that same background in programming for zero errors and in having had experience eliciting requirements from users will hopefully help me be able to stand back and criticize my own models (though in general I believe it is much easier for most of us to see errors in other people and their models than in ourselves and our work). A paper I read for another class today as well as my work experience tells me that one of the best ways to get around this short-sightedness is to have a small group review your work so that you can revise it then have them review it again (wash-rinse-repeat so to speak). The authors of this book did not state this explicitly, but one could infer that is what they do by reading between the lines and noticing the consistent use of “we” – indicating a team effort.

Determining the purpose of a model is always a tricky business. Users rarely know exactly what they want and are often not facile in knowing how to look at all the possibilities. In real life, you are often modeling (or programming) something about which you know little or nothing so it is very important to be able to help the user requesting your assistance to tell you everything you need to know and to be able to help them see the different sorts of things you may be able to do for them. This is a different sort of team effort in that, unlike asking other programmers or mathematicians to review your work, you are working with someone with a different skill set and knowledge base and both of you are necessary to get a complete description of the problem and possible solutions.

It was also interesting to see how the authors went about approximating the values of the variables/parameters they used in the example of how long it would take to read the book. I feel like having had the first graduate statistics course last semester has primed me for being aware of choosing my sampling method carefully and wisely (not that I will always succeed in this endeavor, but at least I am aware of trying to do so).

Another idea they brought out was variance or margin of error. Here again, taking statistics both last semester and this will help with this. I also took the first two semesters of college chemistry at CVCC (from my husband, which is neither here nor there) and tutored chemistry at CVCC for about 5 or 6 years and one of the questions they used on the Heisenberg Uncertainty Principle (though I think my grasp of the principle is not all it should be) really stands out to me as being related to this idea as well. I think being somewhat familiar with this idea will help me in this course.

There was something in this section of the book I didn’t understand though – and that was why they said (in relation to Fig. 1.6) that “the decision for point A is more robust.” If, as Fig. 1.6 suggests, W (the slope) = 1, then the area on either side (A above and B below) is equal. Changing W to 1.2 makes the area for A < B by the same amount that changing W to .8 makes the area for A > B. So why is A more robust? Although, if one uses the value of 2 for W as in Fig. 1.4, then is A less than B to start with? I definitely need some help with the concept of robust!

Another concept I’m confused about is their use of the word “heuristic.” My dictionary tells me that heuristic means “using experience to learn and improve” especially by trial and error methods. This doesn’t sound very similar to me to their description of heuristic being a rule of thumb.

Yet another thing I am not clear on is what software packages this class is going to use to do modeling. The book mentioned Maple and spreadsheets and I believe our syllabus does as well, yet verbally there has been multiple mentions of using R (which would suit me better anyway as I have more experience with R than the others). I wonder too­­­ if V-Python might not be a useful tool.

I’m very glad that this book uses an active learning approach. This is a topic I have long been interested in and would like to learn to incorporate into any classes I teach. Hopefully I can pick up some ideas not only of how to write a book that incorporates active learning, but also how to promote active learning in a classroom setting. Beyond that, as a student, it is definitely the method of learning that I prefer! It is far more exciting to figure out the answer yourself than to have someone pose the problem and then tell you the answer before you have a chance to think it through on your own. (Does this mean that some part of us clings to our 2-year-old selves, “No I want to do it myself!” stage?) On the flip side, there is nothing more frustrating when I bang my head repeatedly against a problem and I know that someone (like the teacher) knows the answer and isn’t giving me the help I (think I) need to get it (and sometimes I do need the help and sometimes I just need to stew a little more). I think this is an issue that is hard to be certain of from either the student’s or the teacher’s perspective – we don’t know our own minds very well and if that is the case it is most assuredly true that our gaze into someone else’s mind is even hazier!