File 20101006.0730: Notes from meeting with Dr Martin this morning: I talked about some of the results I have found from simulating economic interactions in a physics-based model both in MATLAB and validating the MATLAB model with a real embodiment. The physical model immeditately showed some interesting unexpected behaviours that are, of course, implicit in the MATLAB model but only show up when the time scale is cranked down to microseconds. For example, when I pull the pin to release the model from its starting position, the real model orbits the final position for a while before settling down to rest. I wonder if I should look for an interpretation of that behaviour in terms of accreditor–accreditor interactions, or whether it is merely an artefact of the physical analogue that should be ignored. I have to think about this. Other aspects of the model that I have to figure out are accreditor position along a continuum of risk tolerance, how to measure an accreditor's 'pulling power' (what I am calling influence) on other accreditors' positions and on risk moving around the game surface, and whether an accreditor's influence is affected by the accreditor's reputation. An accreditor's reputation with other accreditors and data owners is affected by mistakes. An accreditor's reputation with operational sites and with CDS vendors or installers is affected by that accreditor's success at accrediting operational installations. Reputation affects—multidimensionally—influence. Influence is the analogue of spring constant in the model.

Also in the model, damping or friction is currently a mystery. What does it correspond to? Clearly it is necessary, becuase otherwise the system will settle down in a kind of dynamic metastability. (It just occurred to me that perhaps that is a more faithful model of real-world accreditations, which are not static.) A damped system will always settle down to a unique fixed point; I need to talk to a physicist to find out why that is—I believe it, but I can not cite a theorem at present to prove it. I think it relates to the fact that there is no energy input to the system, and damping converts the kinetic energy of the system to thermal energy, so it must converge to a minimum-energy state. I want to borrow a technique from dynamical systems, called a phase space plot, to show that the dynamic metastability of my system converges on a stable attractor orbiting around the ideal (minimum-energy) ground state of an optimised residual risk accreditation.

I asked Dr Martin for advice on how I should handle two related issues in the confirmation report: the fact that the economic interpretation is a recent discovery, and the fact that it was actually a reaction to the difficulty I have had getting US and UK accreditors to talk to me. Dr Jirotka, in my transfer viva, encouraged doing an ethnomethodological study of those accreditors, but when I ran into extreme difficulty with the data, in the interest of time I decided to activate Plan B and get a simulation running that I could run experiments on. I think that was the right thing to do, but I expect to have some explaining to do when I tell Dr Jirotka about it. Dr Martin said there is a school of thought that blind alleys are an important part of science, but people do not really want to read about them. He suggested to put in a hook in the report indicating a change of direction, but not to analyse it in too much detail. Five pages is more of a guideline than anything; if the report is ten pages long that will not upset anyone. Try to show progress as an idealised march towards a finished product, much the way as mathematical proofs are written. Every mathematician knows that the process of getting to a real proof is full of blind alleys. The final proof, however, shows only the best and most direct route to the top.

The report is being written from a risk-management perspective. I can easily think of lots of risks; I do not want to make it appear completely untenable, though. Every risk shown will have a mitigation plan attached. But I would like to show these recent developments as a kind of example of adaptability. I think I can argue successfully with Dr Jirotka that the economic model is a sufficiently interesting and powerful substitute for accreditor interviews. The biggest risk of pushing too hard right now to get accreditor interviews is that I could burn relationships that will be necessary in future for the remainder of the ongoing research programme.

I reported that RM 5.0 received its TSABI accreditation letter yesterday, and on the minor panic that resulted when the developer misread the meaning of some words in the letter and feared that it meant something different. After I explained to them the source of the words (from Chapter 3 of DCID 6/3, relecting the old-school experience of the accreditor as well as the newness of the NIST SP 800-53 criteria), everybody calmed down.

I asked about chapters, and Dr Martin said it is a very positive sign to see draft chapters, or at least a Table of Contents of the dissertation with some idea of what goes in each chapter, at confirmation time. I will write some chapters and TOC, after I finish the confirmation report.

My plan now is to finish the confirmation report, get it to Dr Martin, and once he has given approval, to file the confirmation paperwork and choose a date. Today, I have to finish the DARPA proposal for

Lockheed, as that is my next two years of funding, and I cannot forget about the COMLAB-CS-2010 reviews that I am responsible for. I have to get my UK visa application posted this week too.

I am so tired.

References