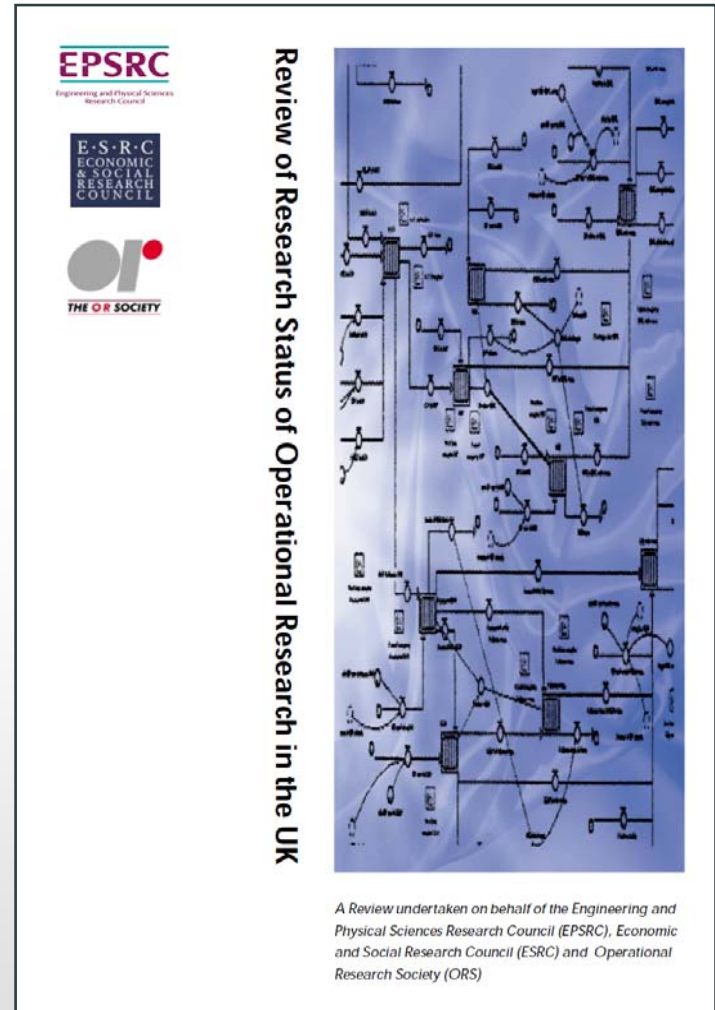


HEALTH WARNING!
academics using simulation
can seriously damage your
health

Sally Brailsford

The problem

- **EPSRC/ESRC Review of UK OR Research in 2004 identified health OR as one of the UK's strengths**
- **Massive international academic literature: Ovid search in 2007 found 176,320 hits, expanding at the rate of 30 papers per day**
- **Review papers (1976 to 2007) all report lack of implementation: simulation is not used as routinely in healthcare as in other industries**



The image shows the cover of a report titled "Review of Research Status of Operational Research in the UK". On the left side, there are three logos: the EPSRC (Engineering and Physical Sciences Research Council) logo, the ESRC (Economic and Social Research Council) logo, and the logo for The OR Society. The main part of the cover is a large, complex network diagram with many nodes and connecting lines, set against a blue background. The title "Review of Research Status of Operational Research in the UK" is written vertically on the right side of the cover. Below the cover, there is a caption: "A Review undertaken on behalf of the Engineering and Physical Sciences Research Council (EPSRC), Economic and Social Research Council (ESRC) and Operational Research Society (ORS)".

For example.....

“... we were unable to reach any conclusions on the value of modelling in health care because the evidence of implementation was so scant.”

Fone D, Hollinghurst S, Temple M et al. Systematic review of the use and value of computer simulation modelling in population health and health care delivery. J Publ Health Med 2003; 25: 325-335.

So what's going on?

- Pockets of success: high-level policy models, advising Government departments, WHO etc
- UK Department of Health models: a mixed story
- Jobs for the boys (PWC, McKinsey et al)
- Otherwise, a highly fragmented picture of one-off pseudo-consultancy academic projects carried out with a local hospital/HMO/PCT
- Simul8 Corp.'s *Scenario Generator* – an interesting approach

So what are we doing wrong?

- **Conflicting objectives**
- **Culture clash**
- **Data, data, everywhere**
- **“Not invented here”**

Conflicting objectives



I need to publish my research in peer-reviewed journals. My performance is appraised in terms of citations, research grants awarded, etc. Therefore I need to produce complicated, sophisticated models which demonstrate theoretical advances and can take several years to develop

I need a simple answer to my problem which I can understand and explain to my manager. I'd really prefer the model to run in Excel, and I need the answer next week!



Cultural issues

- “Caring professions” – people not production lines – inbuilt distrust of IT systems and computer models
- Clash between traditional clinical hierarchy and new management hierarchy: distrust of management initiatives
- Political and financial pressures, leading to fire-fighting, staff stress and resistance to change



Data

- **Data historically of poor quality: legacy and incompatible computer systems are common**
- **Data collected for accounting and monitoring purposes (league tables and performance targets) rather than for useful modelling**
- **Better (smarter, easier) tools are needed for handling and manipulating large datasets**
- **Opportunity for IBM here?**



Not invented here syndrome

- **Why does everyone say client/user involvement in model development is so essential?**
- **How similar are hospital processes? Can we build generic models?**
- **Are all physicians offices, hospital clinics or Emergency Departments basically the same? If so, why are there so many different models in the literature?**

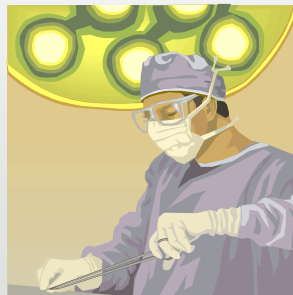
Challenges for academia

- Addressing the real problems
- Developing truly generic models acceptable to all users
- Enabling users to develop their own models, tailored to their own organizationl – ownership is key
- Balancing user-friendliness with scientific rigor and validity



Challenges for practitioners

- Pooling resources and working together (with universities and industry, but most of all, each other)
- Overcoming cultural issues
- Resistance to change
- Implementing robust, practical data collection systems



The way forward

- A paradigm shift is required, but....
 - The potential benefit is almost unlimited
 - The market is massive and the rewards obvious
 - The key resources are already in place: a constant stream of bright, highly motivated students leaving university wanting to change the world for the better
- What are we waiting for?