

Studying Human Behaviour with Virtual Experiments and Participatory Simulation

Problem

Many interesting phenomena emerge as the result of individual choices made by large numbers of interacting people.

To study these phenomena we need to do experiments.

But these can be expensive, impractical, or unethical to carry out in the real world.

Solution

Virtual experiments use simulated scenarios instead of the real world.

Participatory simulation means that only small numbers of human participants are needed. Large populations are created using simulated "bots" who copy the behaviour of the human subjects.

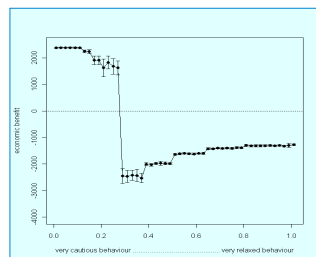
Potential applications

Study of emergent social phenomena such as: epidemic spread – see example below; stock market behaviour; viral marketing; social networks; spread of rumours and news...

Computer gaming

Example: application in epidemiology

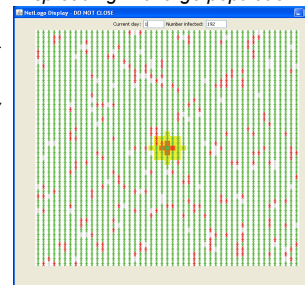
The model shows that the best way to behave in an epidemic is to be very cautious and stay at home until it is over...
But what do people really do?



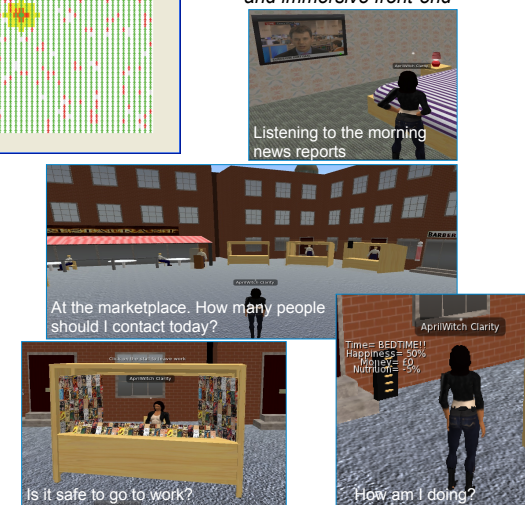
front end presented as a game to be played by experimental subjects



back-end simulation of epidemic spreading in a large population



current work: a more realistic and immersive front-end



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References:

Savi Maharaj, Adam Kleczkowski, *Controlling epidemic spread by social distancing: do it well or not at all*. Submitted to BMC Public Health.

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Adam Kleczkowski, Savi Maharaj, *Stay at home, Wash Your Hands: Epidemic Dynamics with Awareness of Infection*. Summer Computer Simulation Conference, 2010.

Acknowledgements:

Jason Adair's work was funded by a Nuffield Foundation Summer Undergraduate Research Bursary.

Evan Magill and Karla Parusel of the InterLife project kindly allowed us to build on their virtual "land" in Second Life.

We also gratefully acknowledge the support we have had from many other helpful colleagues.

Tools used: NetLogo simulation tool; Second Life; Java; R.