Simulating Society
Digital Social Research: Methods Options - Group B

Academic Year: 2016-17, Hilary Term
Day and time: Weeks 6-9, Fridays 11:30-13:30
Location: TBC

Course Conveners
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Course Objectives
When do people participate in politics? How do extreme opinions survive? Why does racial segregation occur? This course is designed as an introduction to a technique which pretends to answer some of these simple and yet fundamental social questions: agent based modelling [ABM]. ABM is a technique which aims to reproduce a given collective social behaviour (e.g. the emergence of a social movement) through computational simulations of frequent, repeated interactions between individuals with certain dynamic attributes (e.g. people with different opinions getting together to discuss a political debate and eventually reach consensus). It is a technique with a long history in the social sciences, but also one that is gaining new popularity as emerging stores of socially generated big data allow for more realistic, validated models.

Students taking the course will be exposed to the fundamental theories and principles behind ABM, as well as learning the basics of a commonly used simulation package (Netlogo) through hands on lab sessions. Each week, a classic model will be introduced, simulated and critiqued, allowing us to explore some of the fundamental building blocks of social behaviour such as how people modify their opinions in discussion with others, or when they decide to join a social movement. We will see how subtle variations in starting conditions and preferences can have major knock on effects to eventual outcomes, and how these processes are mediated by the structure of social relations. The course as a whole will also tease out the methodological implications of using ABM, how it can be used to inform policy making, and how crucial questions around validity can be addressed through data generated by the social web by presenting and discussing examples of current research.

No prior mathematical or programming background is required for the course. The focus will be on learning the main concepts through simple interactive models which can be installed on student's laptops. The evaluation will also focus on the ability to critically evaluate such models within a social science framework, hence students will not be expected to learn programming or advanced maths during the course.

Learning Outcomes
By the end of the course, students will:

- Understand the theory underpinning agent based modelling, and hence be able to critically evaluate its use in social science research.
• Have a hands on grasp of the use of the Netlogo simulation package, including some exposure to Netlogo programming (though the focus will be on interacting with existing models rather than creating them).

• Understand how to empirically validate an agent based model using socially generated big data.

**Note**
Students should note that over the course of the year, small changes may be made to the content, dates or teaching arrangements set out in this reading list, at the course provider's discretion. These changes will be communicated to students directly and will be noted on the internal course information website.

**Key readings**
These readings provide introductions to the use of agent based modelling for the study of social phenomena.


**Summative Assessment**
Students will be assessed through a 2,500 word essay. For this essay, students will be required to download an ABM from a list provided, get it running, and use it to help answer a social science research question by experimenting with theoretically relevant parameters. As part of the essay, students will be expected to critically evaluate the model and suggest both areas for improvement and potential ways of validating the model (though they will not be expected to perform the validation). Note: students will not be expected to build their own model from scratch, though this will be a possibility for those interested in doing so.

The summative essay is due on **Friday of Week 10 of Hilary Term by 12:00 noon**, and should be submitted via Weblearn. The essay should also be submitted electronically by 5:00 pm on the same day to teaching@oii.ox.ac.uk. The essay should follow the normal OII formatting guidelines.

**Submission of Summative Assignments**
The summative assignment for this course is due on Friday of Hilary Term Week 10 (24 March) by 12.00pm and should be submitted electronically via the Assignment Submission WebLearn Site. The assignment should also be submitted electronically by 5:00 pm on the same day to teaching@oii.ox.ac.uk. If anything goes wrong with your submission, email teaching@oii.ox.ac.uk immediately. In cases where a technical fault that is later determined to be a fault of the Weblearn system (and not a fault of your computer) prevents your submitting the assessment on time, having a time stamped email message will help the Proctors determine if your assessment will be accepted. Please note that you should not wait until the last minute to submit materials since Weblearn can run slowly at peak submission times and this is not considered a technical fault.
Full instructions on using WebLearn for electronic submissions can be found on Plato under General Information. There is also an FAQ page on the Assignment Submission WebLearn Site.

Please note that work submitted after the deadline will be processed in the standard manner and, in addition, the late submission will be reported to the Proctors' Office. If a student is concerned that they will not meet the deadline they must contact their college office or examinations school for advice. For details on the regulations for late and non-submissions please refer to the Proctors website at https://www.admin.ox.ac.uk/proctors/examinations/candidates/.

Any student failing this assessment will need to follow the rules set out in the OII Examining Conventions regarding re-submitting failed work.

List of Topics

**Week 1: The threshold model of collective behaviour**
In this introductory session we will look at one of the most well-known mathematical models of collective behaviour: Granovetter's threshold model. In this model, Granovetter describes how different people respond differently to the emergence of social movements or other types of political mobilisation, with some people more willing to join movements which are just starting out whilst others preferring to wait until they are established.

**Required Reading:**

**Optional Reading:**

**Week 2: Opinion Dynamics**
How do societies form opinions on issues? And how many different opinions and points of view form? In this week we will explore models which show how a small number of fixed positions can coalesce from a large group of initial possibilities, and how the structure of social interactions affects this process.

**Required Reading:**

**Optional Reading:**
**Week 3: Spreading and Social Contagion**

How do new ideas and ideologies diffuse in a social system? What are the similarities between social contagion and the spread of diseases? We will explore how models of actual infections can be used to mirror the spread of norms, beliefs and ideas, and how the complex topology of our social networks affects and controls these contagion processes.

**Required Reading:**

**Optional Reading:**

**Week 4: Social organisation and segregation**

The formation of urban ghettos is well known in: but are the ghettos and isolated parts of cities formed by conscious discrimination (e.g. from real-estate agencies), or was it the self-organised result of the preferences of residents to have neighbours of the same group? In this week we discuss a classic model describing how the fundamental geographical organisation of social life emerges. We will also tackle the role of language in social segregation.

**Required Reading:**

**Optional Reading:**