Social network analysis:
Mapping and exploring the network society

Postgraduate course, Spring Semester 2013/14

General information
Course convenor: Gil Viry Gil.Viry@ed.ac.uk
Guest co-lecturers:
Lynn Jamieson Lynn.Jamieson@ed.ac.uk
Jan Eichhorn Jeichhor@staffmail.ed.ac.uk
Credits: 20
Optional course
Course delivery: 5 x 2-hour lectures (classroom teaching) + 5 x 2-hour hands-on computer work (lab) + 1 x 2-hour session for small-group discussions with students about their final essay + 20 hours contact time

Twice-weekly lectures will be delivered over six weeks, in order to facilitate people in continuing professional development and students outwith the University taking the course.

A half-day workshop in week 2 will cover the basics of the SNA software UCINet (data import, data handling and mapping). The workshop will be convened jointly by the course convenor and two organisers of the Social Network Analysis in Scotland Group (SNAS):
Heide Weishaar hweisha1@exseed.ed.ac.uk
Mark Wong M.T.O.Wong@sms.ed.ac.uk
The workshop will also be proposed to SNAS members.
Pre-requisite: no
Resource implications:
Site licence for the UCINet software (agreement from Ian McNeill)
Laboratory room (about 30 computers) for the half-day workshop in the week starting 20th January 2014

Owning programme: MSc by Research in Sociology
Programmes for which it is an optional course (a = agreement from programme director):
MSc by Research in Sociology (Hugo Gorringe) (a)
MSc in Global Social Change (Liliana Riga) (a)
MSc in Science and Technology in Society (Sarah Parry) (a)
MSc by Research in Science and Technology in Society (Robin Williams) (a)
MSc by Research in Public Health Policy (Mark Hellowell) (a)
MSc in Health Systems and Public Policy (Mark Hellowell) (a)
MSc in Social Research (Sotiria Grek) (a)
MSc Policy Studies (Daniel Clegg) (a)
MSC International & Euro Politics (John Peterson) (a)
Course Approach
Articulating social network theory and methods, this course seeks to explore the transformations of social life in contemporary societies characterized by the importance of connectedness and geographic mobility. The course will introduce students to the theories, concepts and measures of social network analysis (SNA) through a mixture of classroom teaching and hands-on computer work. It aims to discuss in particular: (1) to what extent social life is more networked in late modern societies; (2) how SNA is a powerful way of capturing empirically social life; (3) to what extent social networks are more individualized; (4) how physical and virtual mobility play an increasing role in meetings and social relationships. Key notions will be addressed and illustrated through both the discussions of major thinkers and the use of the UCINet software and its visualization program NetDraw on real-world data sets. Emphasis will be placed on sociological/social science research, even though students will be free to choose their own topic/discipline for their final essay. No prior knowledge of social network analysis, math or statistics is assumed for this course.

Course Aims
- Investigate, develop knowledge and think critically about contemporary changes in social life and social networks;
- Be able to apply SNA to the study of social groups as a way to understand and analyse constitutive tensions and interactions between individual agency and social structure;
- Have an advanced critical understanding of the capacity to embark on SNA for future research.

Learning outcomes
By the end of the course, students should be able to:
- Understand the key concepts, theories and measures of social network analysis;
- Understand the strengths and weaknesses of the network approach;
- Use the UCINet software for network data summary and exploratory analysis;
- Conduct a small-scale research project based on SNA.

Transferable skills
Students will develop the skills to:
- Work independently on a research question of their choosing;
- Analyse network/quantitative data and display the results graphically to support their argumentation;
- Write a well-argued essay, based on empirical evidence;
- Develop an original and creative response to complex research questions.
Course Assessment

- 4 series of exercises (out of 5) completed and submitted online to the course convenor, so as to assess that students have learnt how to use SNA tools on UCinNet;

- One 4000 word essay (worth 100% of the total mark), where students will be asked to use SNA on empirical data to critically address a research question in a discipline of their choosing.

Course outline

*Week 1: The rise of the network society*

A powerful way of making sense of the complexity of the social world is to analyse connections between people as social networks. Friendship, love, ideas, money, power or even disease pass through and are shaped by networks. In this introductory lecture, major thinkers about the network society will be introduced. The history of social network analysis will be briefly presented. We will examine contemporary changes in social relationships and the tension between individuality and social structure. In particular, we will discuss the idea that social groups in a diverse society are less defined by predetermined criteria or as an institution, but rather by a set of interdependencies and relationships. We will show to what extent the form, spatial extent and nature of social groups are less taken for granted and should be more built and negotiated by actors. The network theories will be linked to the more general debates about individualisation, individualism, detraditionalisation and globalisation. Based on ideas of connectedness and embeddedness, we will examine how the network approach constitutes a critique of the individualisation thesis and can be a fruitful way to capture social relationships beyond single institutions and local communities. The structural balance and cognitive balance theories will be briefly discussed to better understand the triadic nature of social interaction. Wellman’s concept of ‘networked individualism’ stemming from mobile technologies will be examined. Finally, the strengths but also the limitations of the network approach will be discussed.

Readings:


Week 2: Half-day workshop run by the Social Network Analysis in Scotland Group (SNAS) about Network data handling and network embeddedness on UCINet

Students will be introduced to the fundamentals of SNA methods and network data via hands-on computer work on the software UCINet/NetDraw. In the first half of the workshop, network data collection, validity, visualization, and mathematical/computer representation will be discussed and practiced in a computer lab. Student will be asked to participate in a small survey about the connections existing within the class to better understand how to collect real-world network data and import them into UCINet. Students will be familiarized with the notions of nodes, edges, arcs, attributes, complete networks, personal/ego-centered networks, adjacency matrix, node degree and node neighbourhood.

In the second half of the workshop, students will learn how to do basic transformations of social networks and basic mathematical operations on matrices of network data (adjacency matrices). Students will start detecting and describing the structural properties of social networks by examining on UCINet the cohesion of real-world social networks. Network data management, descriptive statistics and the measures of density, reciprocity and transitivity of connections will be covered.

Readings:


Week 3: Social capital and social inequalities

Based on readings, students will be familiarized with the concept of social capital in its various forms. After a brief discussion on the nature of capital and various theories of capital, the lecture will particularly focus on social capital stemming from embedded resources in social networks. In particular, the differences between bonding and bridging social capitals will be discussed and illustrated through empirical research. The lecture will outline that social dynamics are not only characterized by support or trust relationships, but also by
power and conflict relationships. We will pay particular attention to inequalities in social capital. Various studies on friendship, power, influence, communication, trust and control within small groups will be used as illustration. Notions like network closure, structural holes, brokerage and tertius gaudens strategies will be discussed.

Readings:

Week 3: Centrality, power and prestige
We will first introduce the relational approach of power and different measures of centrality. Students will then practically apply measures of node centrality and network centralisation through hands-on computer work on real-world data. Degree, eigenvector, closeness and betweenness centrality/centralisation will be calculated and interpreted. Findings will be discussed in the light of the concept of social capital exposed during the previous lecture.

Readings:
Week 4: Communities, homophily and small world

How many and what people do we know? In this lecture, we will provide some answers to these fundamental questions about social life. The more classical notions of social group and community will be related to and transposed into a network approach. We will discuss the controversial Dunbar’s number, Simmel’s theory of social circles and the small world problem, often referred to as six degrees of separation. In particular, we will address the notions of overlapping communities, homophily, multiplexity, fragmented networks, network closure and their social consequences such as segregation or stratification. Based on empirical findings, we will also examine the changing nature of social networks over time and the life course. As a class exercise, students will be asked to upload their own social network (e.g. their Facebook social network) into UCINet and visualize it. By including some basic features of their contacts, they will be asked to reflect on the social diversity/homophily of their network.

Readings:


**Week 4: Cohesive subgroups analysis**

Based on hands-on computer work, students will learn how to detect and interpret cohesive subgroups of a variety of networks. The clustering and blockmodelling procedures on UCINet will be used. Students will be familiarized with the notions of cliques, plexes, components, cut-points, factions and core/periphery structure. Findings will be particularly discussed in the light of the notions discussed during the previous lecture.

Readings:


**Week 5: Mobility, communication technologies and distant social relationships**
The issue of social life in the context of increasing spatial mobility requirements and behaviours will be examined. We will first show how social ties in contemporary societies are built and maintained based not only on proximity, but also distance, with facilitated access to transportation and communication systems. Based on empirical research, the lecture will expose to what extent social relationships survive great distances, as well as the capacity of mobile individuals to adapt their ways of building and maintaining their social ties. We will stress that moving (and its corollary geographical distance) may be seen for individuals both as an obstacle for keeping social ties and an opportunity to free themselves from their network of origin, ascribed relationships and roles. In the light of recent (but still sparse) research, the lecture will expose the role of new communication technologies, allowing people to be connected at any time and place. We will discuss how these technologies may lead to continuous monitoring, but also offer new spaces of autonomy and intimacy. As a class exercise, students will be asked to describe and interpret the spatiality of their own social networks, by including the geographical location of their contacts. To do so, they will reflect on their significant experiences of spatial mobility (moving to another region or town) and those of their contacts.

Readings:


Week 5: (two-mode) affiliation networks

Affiliation networks capture connections at two different levels of analysis: groups and people (macro-micro levels). In doing so, affiliation networks capture the dual nature of social life: Individuals, by their agency, create social structures while, in turn, social structures shape individual behaviours and attitudes. In this lecture, classical examples of real-world 2-mode networks like director interlocks, national power structures and other collectivities sharing members will be analysed and interpreted. Students will learn how to use Galois Lattices (Concept Explorer software) for the visualization of 2-mode networks, as well as correspondence analysis and 2-mode blockmodeling to analyse them.
Readings:


Hanneman, R. A. Riddle, M. Introduction to social network methods. Chapter 17. http://faculty.ucr.edu/~hanneman/nettext/


Week 6: Contemporary relationships: between individuality and connectedness

In this last lecture, we will return to the main issue raised at the beginning of this course about the tension between increasing individualism and vitality of social relationships in late modern societies. Contrary to the alarmist thesis that people are isolated, individualized and lacking in strong and enduring relationships, we will present empirical findings demonstrating the diversity and significance of personal communities. In late modern societies, solidarity and social support appear rather to be of paramount importance to face adversities and challenges that actors experience over time and places.

Readings:


**Week 6: Special session for one-to-one or small-group discussions with students about their final essay**

Students should have taken the initiative to meet with the course convenor before this session to discuss the topic of their final essay and the network data used. During this week 6 session, students will meet individually with the course convenor to report progress and discuss any difficulties encountered in their projects for the final essay.
**Online resources**

On-line textbook of Robert Hanneman and Mark Riddle introducing many of the basics of SNA on UCINet
http://faculty.ucr.edu/~hanneman/nettext/

www.analytictech.com

Wiki about the Pajek Software, including data sets
http://pajek.imfm.si/doku.php
http://pajek.imfm.si/doku.php?id=data:pajek:index

Data on the net
http://3stages.org/idata/

Online course of David Knoke on SNA Theories & Methods
http://www.soc.umn.edu/~knoke/pages/SOC8412.htm

Online course of John Scott
http://www.analytictech.com/mb119/tableof.htm

What is social network analysis? by John Scott
http://www.ncrm.ac.uk/TandE/video/RMF2012/whatis.php?id=f37f16c

Online course of Giorgos Cheliotis
http://fr.slideshare.net/gcheliotis/social-network-analysis-3273045

Official site of the International Network for SNA (INSNA)
http://www.insna.org/

Wikipedia on SNA
http://en.wikipedia.org/wiki/Social_network

**Funny things linked to SNA**

Find your Erdős number
http://www.oakland.edu/enp/

Six degrees of Kevin Bacon
http://www-distance.syr.edu/bacon.html

App to capture and visualise your Facebook network
https://apps.facebook.com/nameofyourapp/

About the Dunbar’s number
http://en.wikipedia.org/wiki/Dunbar%27s_number