SNA Workshop, Kassel, 25-29 June, 2012

DAY 1 – 15th June, 2012

LITERATURE: SNA, Wasserman and Faust (1999) – Bible of SNA, the math and formulas behind it…
- Duality of Groups (important paper, briger, 70s)
- Social network analysis, 2nd edition (David knoke, Song Yang), SAGE

Introduction to Social Network Theory and Analysis

▪ Social capital and Social Network
▪ The social network perspective
▪ Network study design
▪ Fundamental concepts in social network theory and analysis
▪ Introduction to UCINET
▪ Exercises in UCINET

Social Capitan and Social networks
1. Does being connected to people matter?
2. Does belonging to a group of people or to an organisation matter?
3. Why is the notion of social capital so popular? Why does it work?

1st study - Diffusion of Innovation
▪ Coleman, Katz and Menzel (1957) – one of the first, classical study that structure and social relations matter!
▪ Study on doctors using new drugs – Doctors were asked three questions:
▪ who they talk to, from whom they seek advice from (time frame in which doctors will use new drugs/innovation), whom they go to dinner with…
▪ Attributes of the doctors + social networks of the doctors
▪ Those popular adopt innovation faster
▪ isolated doctors are going to delay their use of innovation
▪ the structure of friendship matters, in this case I using innovation – it matters more then personal attributes!

Comment: Social Network Theory (book published last year, Alan Dali, editor/SNA in educational change) / Filipa has it

2nd study – Centrality, connection and commitment: the role of social networks in a school-based literacy initiative
▪ the study examines the socio-organisational conditions in which a literacy initiative takes place
▪ SNA as a diagnostic tool
▪ If teacher are not connected, innovation projects will probably not get through…are those project effective? A lot of money is invested before social structure is analysed and diagnosed
▪ They used SNA as a diagnostic tool before they put the new literacy project in place!
▪ Analysis of centrality ranks of coaches-to-be in this new literacy project

3rd study – Pusser, Slaughter and Thomas (2006)

- Ties and Bound (Thomas previous interesting paper)
- Playing the Board game: An Empirical Analysis of University Trustee and Corporate Board Interlocks
- Security exchange commission – data base, publically available record
- Shared membership in university boards shapes HE – shapes organisational structures, mostly connected with resources that are coming to the university with corporate partners being board members
- Public institutions are not interrelated with their surrounding as private universities are – finding patterns in social structure to understand the mechanisms that facilitate some processes or inhibits them – private institutions depend more on their external environment and that have to be more connected- having more connections doesn't mean you have an easy access to those resources – important to think critically, important to contextualise!

Comment:
- Surveys are becoming obsolete, there are networks and ways to collect various data, we have to (re)think the ways of collecting data we need for our study
- You have to think about the theory, what is actually going on behind the concepts we are using, how can we contribute to the field and not only use fancy statistics and graph

Social Capital and Social Networks

- Bourdieu (1986) – The Forms of capital (3 basic forms of capital/categories: social, cultural, economic, + symbolic); aggregation of all the (tangible and intangible) resources to reproduce power, to reproduce or gain some power, advantage

- Coleman (1988) – Social capital in the Creation of Human capital (trust, norms, rules, and information channels; exchanging social capital also to maintain status quo, or to gain some kind of advantage); talks about exchange, concentrate on the idea of closure;

- **Nan Lin (1990)** – Access to occupations through Social Ties + Building a network Theory of Social Capital

  o he is the first authors that we can attribute to a definition being very clear on combining social capital and social networks;
  o **social capital are resources embedded in social network;**
  o he is changing a perspective: it is not about carrying social capital, having it or not, social capital is embedded in social network – BIG conceptual shift – not carrying a suitcase of social capital, but embedded it within different social networks – resources embedded in your network matter!!!
  o Shift from personal attributes to social structure – resources that I have access to matter, and they actually determine weather I am going to

find a job (for example) or not…it is not because of me being a female, young, with no experience, but structure of my network matters, as well as resources

Linking Social capital and Social Networks (Moody and Paxton – paper from readings)

- Only 4,5% of abstracts for articles on social networks mention social capital, and just about 2% of those on social capital explicitly mention social networks
- A promising place for bridging across the literature is to combine the **structure of networks** with **the content of social capital** to better model the substantive outcomes of interest to both

The Social Network Perspective
- SNA focuses on examining interdependencies
- Study of patterns in social structure is what matters
- Daniel Macfaralne – one of the liders in the field (Sociology of Education):
    o SNA can be use to AUGMENT topics
    o SNA can help us to RECONCEPTUALIZE research topics
    o SNA can help us to REVOLUTIONIZE the field

What is A Network?
- A set of actors (nodes, points, vertives)
    o Individuals
    o Collectivities
    o Set of ties and relationships – different ties and relationship
        ▪ Directed or undirected
        ▪ Valued on presence/absence
        ▪ Set of ties constitute a social relations
        ▪ Different relations have different structures and consequences

MATRICES+MATRIX – information we enter into UCINET; any operation in UCINET is based on matrices (exercise from power point: we can present three different networks from 1st example: base on individual actors, on actors+institution, on institution+institutions)

- SNA may be defined as the disciplines inquiry into the pattering of relations among social actors, as well as the pattering of relationships among actors at different levels of analysis
- Granovetter (1973) – strength of weak ties (very important paper and very influential theory) – the strength of tie is determined by…probably linear combination of emotional intensity, reciprocity and mutual confining)
- It is very important how you define a tie – strong tie: a frequency of interaction / trust /
- The more weak ties you have, the more likely you're going to find job (access to different resources)

- The more you define the ties, actors and relationship, greater possibility you will have answers to the nature of ties (weak/strong)
- The strength on Internet Ties (new paper published)

- **centrality** – location/position of an actor within the network – it really matters, has different implications and consequences (Freeman, 1979)

- **principle of homophily** (McPherson, Smith-Lovin and Cook, 2001) – homophily can be base don so many different, not only racial elements, like religion, economic status

- **"It's not what you know but who you know**" - **Who you know defines What you know"**

How do I design a study on SNA?
- qualitative or quantitative?
- BOTH!!!
- You can not have one without the other
- survey and questionnaires, archives, observations, diaries, interviews, electronic traces, experiments, any text data (social media – twitter, facebook…SNA of text data/text-mining strategies), ethnography, interviews…
- different level of analysis – basic units + aggregations (micro and macro analysis)
- example of a researcher - Immauel Lasega, one of the best in the field (he always starts with observations before doing any kind of SNA)

Fundamental Concepts:
- Actor
- Ego

Types of Networks:
- depending a lot on the research questions, context of the study
- Important questions: Who are actors? Ties? Boundaries?

- **One-mode complete networks**
  - Actors
  - Relations
  - Actor attributes
  - Very difficult to collect data, to have one complete network, issue of boundaries, how are we going to study this issue; up to cca 20 people it is OK and feasible to collect data

- **Two-mode network**
  - Two sets of actors
  - One set of actor and of set of event
  - Relations
  - Actor attributes

o Actors (individuals, organisations, countries) affiliated to events (getting a class together, publishing together…almost anything can be se as an event) – e.g. board of trustees connected with corporate partners

- **Ego-centred networks**
  o Focal actor (called ego)
  o Ask ego about his/her ties
  o Ego and his/her attributes
  o These are also known as personal networks
  o We use an ego network as a way of solving the problem/challenge of complete network – select egos (traditional random sampling techniques to choose focal actors)

WALKS – TRAILS – PATHS

WALKS - most general definition of distance, you can repeat nodes and lines
TRAILS – can repeat nodes, but not lines!
PATH – no nodes or lines are repeated
- we want to find the shortest distance
- distance – the most important concept (the shortest path) – most formula are based on the distance concept
- geodesic distance – a shortest path between two nodes is referred to as a geodesic

1. **CENTRALITY**
   - Identification of the "most important" actors in a social network
   - Measure properties of "actor location" in a social network
   - Actors who are "most important" are usually located in a strategic position in a network
   - Different measures of centrality (degree centrality)
   - "who is the most important actor in a network?" – depends…on our research questions, what we are studying, on the context of our study…
   - **degree centrality** – only counts the number of ties (an actor with a high degree centrality is in direct contact or in adjacent with many other actors)

2. **DENSITY**
   - from 0 to 1 (low to highly connected network)
   - it is almost impossible to have 100% density in the network (it is almost impossible to get everybody connected with everybody)
   - have to go back to theory and to mechanism to analyze to context of the interactions (e.g. 0.167 or 16.7% can be pretty highly dense network depending on your research study – trace it to trust and closure – the more connected people are the closure network is…it is not good for the diversity, actually you do not want all people to be connected with everybody…so low dense network is not automatically a bad result…CONTEXTUALISATION is very important!!!

3. **CLIQUES/SUBGROUPS**
   - subgroup that is highly and very intense connected
   - very specific definition in SNA – it has to be very highly connected
   - everyone has to be connected with everyone for SNA/UCINET to do a clique analysis

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DAY 3, June 27th 2012

- QAP (Quadratic Assignment Procedures) correlation and Regression
- Affiliation Network
- Key Actor Analysis (Regression using centrality measures)
- Text mining techniques using Social Media data

QAP (Quadratic Assignment Procedures) correlation and Regression
   - correlation between two networks with the same actors (one-mode networks)
   - e.g. professors who are friends, publish together / professors who publish together are friends – the limitation of correlation (you know that linear correlation exists, but can not know the causality – are they friends because they have been publishing together or vice versa)

   - 1st step computing – actor by actor in two matrixes (for the whole network)
   - 2nd step computing – changing the matrix to recreate hundreds of random permutations of rows and columns are computed while recalculating the correlation measures
   - if the random matrix (permuted one) is as strong as the observed one, the observed one just happened by chance
   - the idea is to find the structure in the data and to observe them…

   - you need to matrixes: valued and binary network (tie-1/0 and frequency/relation, some kind of the tie measurement)