

Third Sector Research Centre  
Discussion Paper

**Understanding the transfer of resources within and between below the radar community groups using social network analysis – methodological issues**

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## Overview

Over the last decade there has been substantial investment in capacity building in the voluntary sector. This has been applied to both organisational development (Capacity Builders and related initiatives) and individuals (Active Learning for Active Citizenship). At the same time a range of toolkits have been developed and refined (Charities Evaluation Service; 2008) with the aim of enhancing management skills and service quality in smaller voluntary and community organisations.

While the change in Government and the introduction of the concept of 'Big Society' has altered the language of capacity building - an emphasis remains on developing the resources, skills and knowledge in the Third Sector in order to deliver on the social actions and agendas of the 'Big Society'.

Moreover, whilst capacity building within formal organisations has been evaluated (see for example TSRC 2009), much less is known in research terms about the transfer of skills, knowledge and resources within and between small, informal or semi-formal 'below the radar' (BTR) community groups and activities (Phillimore et al 2010).

This discussion paper addresses, in brief, the literature available on social network analysis methodologies, which aims to inform research into resource transfer between BTR groups. The paper begins by outlining the theories and models that exist in mainstream network analysis, and then moves on to consider how these approaches may be useful for potential BTR case studies. Finally, it highlights the challenges of applying these models to BTR research and puts forward a proposal for the design of a tool to be developed for informal network analysis. As a discussion paper, this piece also raises methodological and practical questions for comment and feedback.

## Terminology:

Using "social network analysis" as the primary search term for exploring available literature on relevant methodologies, a number of similar or related models have been exposed, including;

- Network Theory
- Life History Calendar
- Voluntary Associations Life Cycle
- Theory of Social Capital
- Resource Mobilisation Theory
- Organisation Theory
- Life Course Analysis
- Participatory Mapping.

Broadly speaking, these terms can be categorised using their methodological approach and/or analysis technique. For example, the life history calendar and life course analysis both use retrospective closed question surveying and analyse findings through quantitative matrices; while social capital and network theory build on qualitative narratives such as power dynamics, identity and organisation as fundamental features.

It is important to note that while elements of these models can be applied to the study of informal organisations; many of the tools have been designed on the basis that formal social relationships or roles are the binding force in the network. This therefore influences the suitability of their use for BTR network analysis.

It may also be useful to note that the ontological approach to network analysis is structuralism, with the concept of the network intellectually prioritising the relationships between agents over the actions of the agents themselves. This may or may not be significant in developing an innovative methodology for the study of informal community activity.

## Methodologies:

Social network analysis takes a quantitative approach to studying social interaction within a boundary of related agents. There are a number of research designs that allow the study of these relationships - the most prominent of which are laid out below;

*Whole-network Design* (Wesserman and Faust, 1994) – examines sets of interrelated objects or actors that are regarded for analytical purposes as bound in a social collective:

- Information is based around a number of datasets called nodes, with the most common being a one-node data set (the “who to whom” matrix). This observes one set of actors linked by one set of relationships at one time
- The number of sets can be multiplied to match the needs of the study e.g. two sets of actors (e.g. researchers and policy makers) linked by one set of relationships (e.g. professional) at one time. Or one set of actors (e.g. in a family business) linked by three sets of relationships (e.g. personal, financial, professional) at two different points in time

*Egocentric Design* (Marsden, 1987) - focuses on one object or actor and its relationships within its locality:

- A central “object” (ego) is chosen for a specific purpose (e.g. a community centre, a group of volunteers, a local resource) then other numbers of related “objects” (alters) are identified and mapped for their relationship to the ego
- An egocentric network maps often feature as internal clusters within a whole-network map, particularly if the network is large or densely populated
- It can also be used to track the history and estimate the trajectory of a particular network through patterns in relationships

*Cognitive Social Structure (CSS) Design* (Krackhardt, 1987) – measures observed relationships from multiple sources both inside and outside the network:

- Useful for social perception of networks and power relations, particularly using observations from within the network under study
- It generally reflects each network member's perception of the relationships between all actors in the network
- Differences between perceptions of where relationships do, or have, existed is often a point of interest (for example; x perceives a relationship between y and z when neither y or z express the relationship)

*Retrospective Design* – e.g. *Life History Calendar (LHC)* (Axinn, 1999) - 'designed as a method of collecting detailed individual-level event timing and sequencing data':

- Most LHCs use complex matrices to retrospectively report on significant events or changes over time. They are usually formed through a questionnaire that codes the requested data and transfers the data onto a chronologically ordered matrix
- LHCs can be used to visualise the flow of people/organisations through a centre, or the history of one organisation through an area but may have real difficulty to create an interconnected picture or map of relationships and resources across time

## Methods Notes:

Across all of these methodological designs, there are some commonalities, including considerations for setting a network boundary. Many boundary specifications are easy to identify e.g. all students in one school, all managers in one company. However, outside of a fixed boundary, "snowballing" is common as referrals from network members develop. Snowballing is a useful tool in identifying nodes which may otherwise be missed, particularly in informal networks. However, it is necessary to acknowledge that in many cases a "complete" network picture will be not possible, and therefore snowballing may need limiting in order to retain manageable amounts of data.

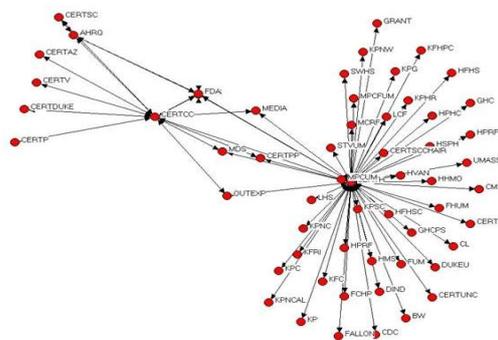
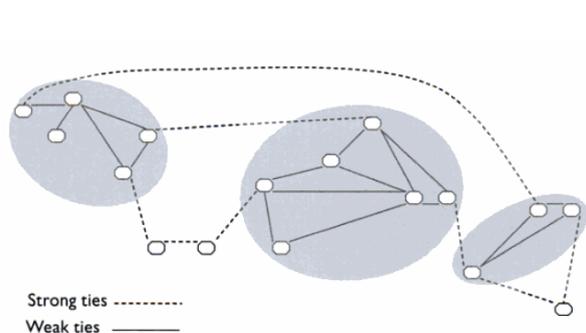
Most social affiliations are identified either by "register" or "recall". Full registers are typically obtainable in formal networks through administration records, rotas, timesheets, payroll, and so on, and will comprise the complete network. Less formal networks may rely on "recall" name generators to identify its members, which can yield massive results. Many studies impose criteria to limit name generators, for example; frequency of contact, timeframe of involvement, proximity to contact, level of familiarity etc.

Interestingly, when complete network mapping is not possible, the idea of partial network design is popular. This method takes sample nodes and maps their relationship within a wider, or more open, population. For example, the "random walk" design (McGrady 1995)

selects a starting point and routes an interconnected chain of relationships through a network without aiming to capture a complete network.

### Application to Below the Radar Community Groups and Activities:

Mapping - Basic maps of networks consist of nodes and linkages, which illustrates ties between agents. These maps reflect direct relationships between nodes and can be useful in identifying the concentration, flow, direction, consistency, dispersion and influence of interaction. This becomes more difficult in informal, voluntary or community based networks, as the structures 'are neither random, nor explicitly ordered' (Gilchrist 2009: 47-48) and are based on relationships rather than roles, as in the study of organisations such as businesses or governments. However, basic commonalities between all types of networks means that standardised practices for visualisation have been developed. Examples of such sociograms are found below (left - Gilchrist 2009:48; right – AHRQ, 2007 “Alabama Network”):



Through the propagation of network analysis in sociology, anthropology, economics, social policy, psychology, communication studies and others; the demand for "user friendly" analysis tools has resulted in increasing availability of computer software to produce matrices and visual illustrations such as maps, sociograms, graphs and charts.

Before selecting the mapping software however, the requirements of the research must be matched to the most applicable research method. The potential uses of the models above for analysing BTR networks are outlined thus;

For networks that are centred around a single node; the egocentric network design is most useful. It can be used to identify the agents involved in a network which may not have a fixed boundary, and can also establish the closeness or strength of relationship between nodes, in relation to a central point, in order to map a network at a micro-level.

Conversely; whole-network design, or a sociocentric approach, takes a broader look at a complete set of social organisations within a fixed boundary. When a boundary can be easily demarcated, this model is valuable in identifying the total number and type of relationships that exist at a fixed point in time between nodes. It can also reveal where points of interaction are concentrated and the degree of network centrality.

When a complete network cannot be identified or if an “ego” case study is inappropriate; random network sampling may be employed, particularly for informal network relationships. The “random walk” is a useful method for tracking a single resource or relationship through time/space, and may reflect common patterns through a social network, including physical paths through communities or regions.

The Life History Calendar provides a practical retrospective tool for the temporal mapping of significant events or relationships of an individuals or groups. It plots using a matrix the patterns of life events at an agentic level then uses statistical analysis to draw conclusions from a larger population dataset. Recall techniques used in this model also provide a helpful tool for helping respondents to recognise and recall interesting data when formal records may be lacking.

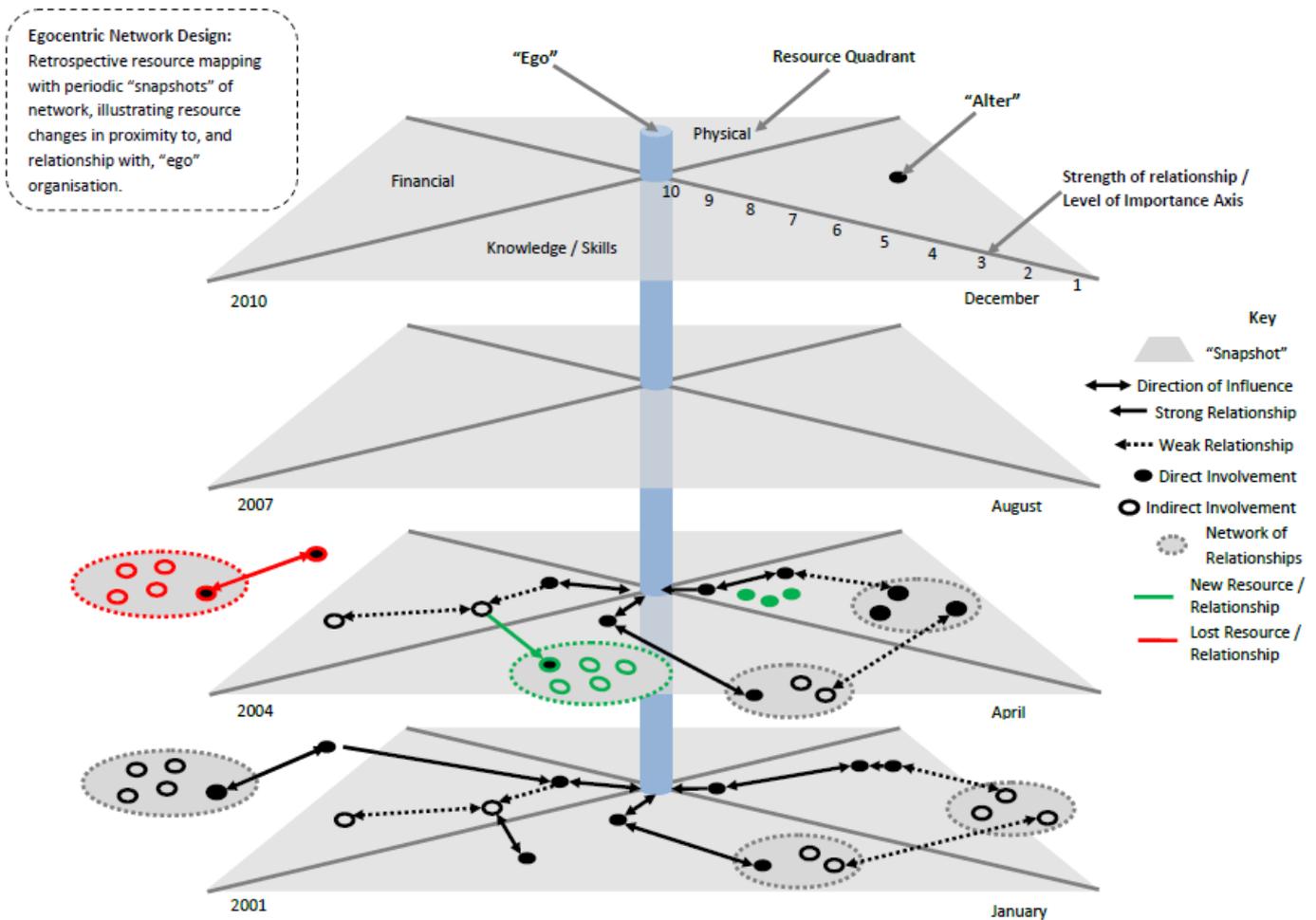
In order to establish the type and intensity of relationship within informal social networks, Cognitive Social Structure design (CSS) provides a method to collect network member perceptions of social networks. Self-expressed reporting on social networks does not aim to discover all linkages, but to illustrate the most significant. The CSS model itself can be used either as the prime methodology or simply as a tool for collecting data.

### Proposed Methodological Design:

Based on the research above, it appears that no mainstream model provides an adequate enough tool for illustrating how resources within a network (including people, skills, knowledge, finance etc.) alter over time. They either present a picture of a network from a number of perspectives at one point in time or provide a temporal perspective for a single individual or group which is expanded to cover a number of datasets. Moreover, existing models do not sufficiently account for the often transitory nature of informal groups, networks and relationships, and provide little scope for incorporating qualitative data that may be captured when researching this fluid sector.

Below is a proposal for the initial design of a "family tree" sociogram that could prove useful in describing and analysing resource changes within BTR networks over time. On the basis that in-depth case studies are a valuable means of gaining insight into BTR activity; this model uses a longitudinal “egocentric” design which can either be applied retrospectively or in real time. It is designed to identify resource nodes within a network ("alters" around an "ego") and then measure a) the strength of relationship between the nodes b) the level of importance of the resource within the network (its "closeness" to the ego) and c) the direction of influence, or flow, of resource transfer. It can also be used to identify interesting alters for potential follow-up, which could themselves develop into egos for new case studies.

An example of how a family tree could potentially look is provided below;



The method used to map our network resource "family tree" is as follows;

- Select a case ("ego") and probe using recall techniques to record all resources ("alters") currently involved in the organisation and where they came from (repeat retrospectively for at least 2 further significant points in the organisation's history)
- Categorise "alters" into resource types e.g. financial, technological, legal, human etc.
- Use closed question surveying to identify ego-alter relationship for three dimensions - importance of resource / strength of relationship / direction of influence
- Design mapping tool to provide visual representation of how alters have changed, been gained, or lost, over significant points in time
- Use visualisation to identify and track interesting cases for further qualitative investigation

In terms of practical considerations, the development of a computer programme to deliver this map would be the optimal resource for an accessible tool to study informal social networks. Alternatively, establishing a manual method could be achieved fairly easily with basic statistical analysis software to code the data and create the initial matrices.

## Discussion:

The current paper aims to generate discussion on the methodological challenges presented by social network theory in understanding resource transfer within and between BTR groups. It also raises questions of the policy and practice relevance of a research design which aims to enhance understanding in this field.

Key questions include:

- Can the family tree methodology proposed make a new contribution to understanding resource transfer within ‘the sector’?
- How might the research interact with, and inform, policy – Capacity Building/Big Society?
- What are your experiences of working around/researching skills knowledge and resource transfer in small community groups?
- What do you see as the key research challenges of using and adapting social network theory in a ‘below the radar’ context?
- How best might the data gathered be recorded and presented?

**Feedback your thoughts to Amy Burnage – [a.burnage@bham.ac.uk](mailto:a.burnage@bham.ac.uk)  
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