Abstract submission: special issue of *Journal of Policy Research in Tourism, Leisure and Events*

‘Equality and Diversity in the Professional Events Sector’

Article title: ‘Social network analysis and the hunt for homophily: diversity and equality within festival communities’.

Author: David Jarman (d.jarman@napier.ac.uk, +44 131 455 4399)

Institution: Edinburgh Napier University, The Business School, Craiglockhart Campus, Colinton Road, Edinburgh, EH14 1DJ

Twitter: @dsrjarman

ORCID ID: [orcid.org/0000-0002-6004-9813](http://orcid.org/0000-0002-6004-9813)

Word count (including abstract and headings): 6,538, plus references section

**Abstract**

Diversity and equality at a Scottish volunteer run arts festival are explored in this paper, through survey based social network analysis and follow-up interviews. Together they provide an overview of the festival’s network structure, and rich evidence of the experiences of individuals in different parts of the network. UCINET software is used to analyse relationships between volunteers, and attribute data based on their demographics, engagement with the festival, and responses to Likert type statements on the study’s main themes. Interviewees were sampled as a function of their network centrality, aggregated across a range of measures. A core-periphery network structure was revealed, focused on seven central individuals with established commitments to the organisation. This configuration outweighed alternative arrangements, including the functional departments that interviewees cited as being important to their relationships to the festival. Homophily, the propensity to associate with others with whom we are similar, is explored against ‘status’ definitions (such as age and gender) and ‘value’ (including beliefs and attitudes). Peripheral interviewees were shown to have less detailed knowledge of the festival’s relationships with its neighbourhood, but a clearer sense of how the festival had benefited them personally. Members of the core group were representative of the broader network on a number of attributes apart from country of birth, with evidence that better communication from core to periphery could benefit the overall organisation in its mission to represent a diverse mix of influences.

**Keywords**

festival; homophily; social network analysis; SNA; diversity; equality; UCINET

**Introduction**

Festivals are collective endeavours uniquely placed to study social diversity and equality, and these themes can be better described and interpreted through the use of social network analysis (SNA). This paper uses ‘whole network’ research methods (Scott 2017, p. 74) to study a volunteer run arts festival in Scotland, to investigate the inherent diversity of its organising team, seeking social structures and hunting for homophily. The annual festival is young enough that key founders remain involved, yet has seen dynamic growth that has drawn new contributors to the team, and extended its reach into social and cultural communities across its host city. A diverse range of art forms are included each year (music, film, visual arts, spoken word and theatre predominate), yet consistent values of inclusion, ambition and expression are present throughout its ten days. This multiplicity of activity, much of it by local artists, represents the potential of the creative industries to ‘provide insights into and solutions for the pressing social and economic challenges’ recognised by both practitioners and policy makers (Asia-Europe Foundation (ASEF) 2014, pp. ii-iv).

Stakeholder relationships feature prominently in festival and event research (Getz & Page, 2016), yet broad stakeholder classifications are undermined by the diversity of their members. The clarity of ‘audience’, ‘employee’ or ‘volunteer’ groupings overlooks what divides as well as unites their members, for we are all individuals (Chapman et al., 1979). In the research below survey data and interviews reveal similarities and differences across the team’s network, seeking to contribute finer granularity and detail to the analysis of social relationships among a festival’s contributors. This in turn has implications for the understanding and identification of different forms of social diversity and equality, and their impacts on the functioning and management of such organisations. More broadly, individual identity contextualised by postmodern global connectivity has its place in the events literature (Richards & Palmer, 2010; Andrews & Leopold, 2013; Richards 2015b). The influence of the one on the many can be magnified as never before, and festival organisations must reflect this in their planning, management and delivery (Martin & Cazarre, 2016).

Through a survey, UCINET software (Borgatti, Everett, & Freeman, 2002) and targeted interviews, this paper responds to the following research questions:

- How can the festival’s network structure best be described, and is there evidence of defined subgroups or a core-periphery relationship?

- What evidence of homophily can be found within the festival’s social network, and if present what appears to have caused it?

Consideration of homophily and subgroups features regularly in social network analysis literature (Christakis & Fowler, 2010; Prell 2012; Borgatti, Everett, & Johnson, 2013; Scott 2017). From homophily comes the phrase ‘birds of a feather flock together’, seen among humans who ‘select’ others who are like them in one or more ways. The closely related function of ‘diffusion’ occurs when ‘people’s beliefs, attitudes and practices come about in part because of interaction with others’ (Borgatti et al., 2013, p. 134). Processes of homophily therefore influence diversity within a social network, and SNA can reveal the extent of its presence. The direction of causality can be harder to ascertain from a survey alone, either flowing from the individual to their network or vice versa, and targeted interviews have therefore informed this paper. Analysis of subgroups within the broader network also draws from both forms of data. Prell identifies a cohesive subgroup where ‘a high proportion of the actors… share strong, direct, mutual, frequent or positive ties’ (Prell 2012, p. 151): these networks within a network inform discussions on equality and power in the (re)negotiation and delivery of a festival’s objectives and actions. The literature and primary research below explore social diversity and equality as both a contextual environment for festivals and an influence on their delivery, assessing the validity of SNA methods in revealing life within the networked festival.

**Literature review**

In the following literature review initial consideration is given to ways diversity and equality affect relations between festivals and their host communities. This is followed by reflections on SNA as a possible means to understand such social relationships, with particular focus on homophily as an explanation for both individual and collective actions that in turn affect festival management decisions.

*Social diversity and equality, in the management and operating contexts of festivals*

Festivals are subject to myriad divisions in their content and appeal (Smith 2009): from high arts and democratised culture, to multicultural, ethnic or mainstream creative work, popular carnivals and queer celebrations. They can simultaneously unite like-minded people and thrive at the fault lines of contemporary society, accentuating cohesive cultural groups in a field of social diversity. ‘Mela’ festivals take this on board, as ‘overt displays of the rightful existence of communities and culture rather than their being viewed as separate, alien or “other”’ (Kaushal & Newbold, 2015, p. 215). Festivals as social markers encourage or deny cultural exchange, just as physical boundaries highlight borders between one set of cultural norms and another (MacLeod 2014). Events in border regions can demonstrate local distinctiveness and independence, though also be subject to negotiated hegemony by powerful local minority interests (Smith 1993). On this evidence festivals are markers in the evolution of societies, revelling in the complexities of negotiated social interaction and identity, litmus tests for the state of relations within and between communities. The current research aims to demonstrate how social network analysis can reveal social groupings and identify links between them, establishing the grounds for further data collection as outlined below.

Festivals play a part in the larger story of local diversity, emphasising a need to better understand the factors on which this is based, and how it can affect their management. In Derby, the steering group of a one-off celebratory festival failed to include or adequately consult local authorities or community groups (particularly those generally not fluent in English); this exercise of undemocratic power saw broad initial support ebb away (Clarke & Jepson, 2011). Bristol’s place-marketing driven Festival of the Sea facilitated the marginalisation and expulsion of two ‘traveller’ communities, partly orchestrated through the letters pages of the local newspaper (Atkinson & Laurier, 1998). In northern Australia and in Kansas, festivals have encapsulated debates over who controls local identity and culture, reflecting on efforts to include Aboriginal and Native communities in each case (Duffy 2000; De Bres & Davis, 2001). These two papers comment on the extent to which women, ethnic minorities and other groups are seeing their experiences reflected more visibly over time (in Australia), or being ‘left without a voice’ (in Kansas) (2001, p. 333). Finally, research from Korea demonstrates how underrepresented groups capitalised on a festival’s attempts to broaden its appeal to international markets, encouraging innovations that marginalised groups stand to benefit from (Jeong & Santos, 2004). As this work demonstrates, the impacts of social diversity on festivals reveal themselves in a variety of ways. West’s earlier work on ‘the new cultural politics of difference’ highlights many of the same themes, as emblems of individual and collective identity, engaged in negotiations of power and dependency (West 1990). The SNA research outlined below seeks to make sense of these overlapping bases of identification, recognising their significant contributions to each volunteer’s motivations to invest in a collective project.

The examples noted above also link diversity to place, where exposure to the ‘other’ highlighted above by Kaushal & Newbold (Kaushal & Newbold, 2015) is therefore primarily a local consideration, albeit part of a broader narrative. Indeed connections between the local and the global go via individuals, where ‘community-based festivals appear to tie together issues of personal choice, identity, status, alienation and culture’ (Derrett 2003, p. 43). Appealing to modern consumers with diverse backgrounds and sets of values presents festivals as opportunities to integrate diverse communities, to become ‘the face of local democracy’ and generate social capital (2003, p. 38; Richards & Palmer, 2010). Glasgow’s West End Festival parade, which transforms a central thoroughfare into a permeable zone for an array of performers, participants and pedestrians (Stevens & Shin, 2014), blurs geographic and temporal boundaries: the distinctions between observers and the observed are negotiable, and everybody is welcome.

Volunteer-run festivals face particular challenges when recruiting from the local community, from attracting appropriate skills and experience, to providing rewards their contributors value (Autissier 2015; Getz & Page, 2016). It follows that attracting a broad mix of participants has inherent appeal, particularly in light of evidence that social diversity and equality can make both organisations and people ‘smarter’: individuals are pushed to explain their ideas more effectively, potentially leading to ‘better decision making and problem solving’ through collaboration and negotiation (Phillips 2014). UK public policy encourages social equality through anti-discrimination legislation on a series of ‘protected characteristics’, including age, marriage status, disability, race and sex ("Discrimination: Your Rights," n.d.). Meanwhile sector specific efforts are focused on organisational culture, governance and management approaches, such as the Equality Challenge Unit’s work in Higher and Further Education ("Scottish Colleges: The Equality Challenges," n.d.). Capturing the latent potential of a diverse group of people (festival volunteers, for example) has its challenges and rewards. Events hold out the potential to develop social capital within the host community though, through celebration, improved social cohesiveness, and the development of local resources (Arcodia & Whitford, 2006). Quinn concurs with this, while recognising that festivals can also reflect pernicious social inequalities, as when rarefied urban ‘islands’ of culture appear as distinct zones separated from the rest of the city, presenting a privileged and ‘sanitised’ image of the host destination (Quinn 2005, p. 936). The challenges associated with promoting diversity and equality are recognised by policy makers and festival producers alike, yet the legal, moral and operational impetus to do so carries considerable weight.

*Festivals, homophily and the structure of social networks*

Homophily is ‘the conscious or unconscious tendency to associate with people who resemble us’ (Christakis & Fowler, 2010, p. 17), suggesting ‘that people like to form ties with others who are similar to themselves or that they are influenced by others to whom they are connected (or both)’ (Crossley et al., 2015, p. 14). These processes can be played out at events, as seen when sports fans are drawn together at matches because of their mutual interest in a team (Lock & Heere, 2017); this in turn can correlate with other shared characteristics, from active sports participation (Mehus 2005) to a predisposition for crowd violence (Spaaij 2014). Co-attendance at events also has the potential to encourage changes in beliefs and practices, as seen through the knowledge exchanges facilitated by business conferences (Henn & Bathelt, 2015). For McPherson et al homophily limits our social worlds and divides society, it restricts the information we receive and the people we are able and inclined to associate with (McPherson, Smith-Lovin, & Cook, 2001). They distinguish between ‘status homophily’ (including race, sex and age) and ‘value homophily’ (relating to ‘values, attitudes, and beliefs’), noting that they can influence each other (2001, p. 419). Organisations and economies of all forms are at the mercy of this social network effect, and though homophily may be overcome through ties to non-similar nodes these connections are harder to maintain and are at greater risk of dissolving. With reference to the festival examined below, voluntary organisations are of particular interest as ‘they represent a unique arena for watching the strong interplay of structurally induced and choice-produced homophily’ (2001, p. 432), which in this case is also bounded by time.

Parallels can be seen between the current research and Gallelli’s analysis of festival networks in Piedmont, Italy (Gallelli 2016). Organisers representing 87 festivals commented on their relationships with other festivals, based on four criteria: receiving useful information; using others’ performance spaces; co-production of events; and hosting the same artists (2016). Gallelli applied the ‘EI index’ to investigate homophily, selecting an attribute (such as festival genre) and analysing whether connected nodes shared the same characteristic: they may be ‘internal’ connections (I) or ‘external’ (E) in relation to the attribute (Crossley et al., 2015, pp. 80-2). Festivals in Piedmont showed an apparent propensity to restrict their connections to other festivals in a similar genre, turning instead to dissimilar organisations for support rather than perceived competitors. In addition, a core-periphery structure was revealed between Turin, Piedmont’s capital city, and the wider hinterland. Connections, relationships and the density of networks are shown to influence fundamental strategic decisions by festival producers, with implications for both the organisations themselves and the management of regional cultural portfolios. Indeed considering festivals from a networked perspective is complementary to, and potentially more valuable than, adopting a portfolio based approach (Richards 2015a). Whereas networks emphasise the importance of connections both within and beyond a city or region, portfolios can become internally focused and miss opportunities to generate bridging social capital with other destinations. Festivals and events can ‘act as hubs, nodes, and temporal markers within networks’, and the better these functions are understood the more successfully their contributions to contemporary modern life can be realised (2015a, p. 564).

*Summary*

Festivals reflect and represent the social world, from their engagement with places and the passing of an annual calendar, to the ways local interests and relationships are revealed through the groups and individuals that engage with them. The literature presented here highlights the impacts of diversity within festival communities and organisations, not least volunteer teams. It also shows how festivals can draw attention to broader inequalities within society, and presents means by which they can help address such divisions. Given the importance of homophily and network structures in understanding social worlds, this paper addresses both through an SNA survey and four interviews. This combination of breadth and depth opens a window onto the social milieu in which grassroots festivals operate, where diversity and equality shape their context, their contents and their contributions to society.

**Methodology**

Through its combination of SNA survey and follow-up interviews this paper offers both an ‘outsider’ overview and ‘insider’ insights into the festival network being studied (Edwards 2010, p. 2; Crossley et al., 2015). Structuring this work around the experiences and views of the population being examined reflects calls for increased research into disability access and inclusion at events (Darcy 2012), and also Thomas’s appeal for greater representation of women in events education, which helped inspire this special edition (Thomas 2016).

*Survey data: social network analysis of the festival’s volunteers*

In consultation with the festival’s artistic director 35 prominent volunteers were identified, reflecting a ‘realist’ approach to network boundary setting that relied on insights from a ‘key informant’ (Prell 2012, p. 66). With its focus on 35 potential respondents, the research did not seek to capture information from all the volunteers involved in the festival, who numbered around double that in total. A higher priority was placed on successfully obtaining responses from those people identified by the director, such is the value to SNA of minimising missing data (Borgatti et al., 2013). Given the survey method being used an unavoidable compromise was sought, such that some festival volunteers were excluded in pursuit of a higher response rate and greater focus on the more important festival participants. Alternative potential forms of relational data might have extended the focal network’s boundary, such as email records, co-attendance at preparatory events, and social media connections (Edwards 2010), yet the commitment of the selected volunteers to their festival work supported the reliability of the questionnaire approach. Working with the director also helped to manage the dynamic nature of social networks, to the extent that the 35 chosen individuals were recognised participants in the group, asked to reflect on their overall relationships to others (Scott 2017). The director’s early decisions, over whom to include and exclude, demonstrated their importance to the ensuing research: they acted as a vital broker and gatekeeper, allowing the researcher access to their colleagues in a demonstration of their social capital (Crossley et al., 2015), and defining the network’s boundary (Scott 2017).

The resulting list of volunteers was alphabetised and numbered to produce a roster of names that accompanied the survey questionnaire. Relational data is vital to SNA, captured here in response to: ‘Now, from the list of [festival] volunteers, identify which five are the most important to you in your work with the festival and/or your decision to volunteer with the festival’. Respondents were allowed some flexibility in interpreting what ‘most important’ meant to them, yet the festival remained the basis of the relationships identified. A variety of attribute data were collected, including demographic categories of the ‘status homophily’ type. ‘Value homophily’ indicators were captured through five point Likert-type questions (McPherson et al., 2001), covering respondents’ perceptions of the nature of the festival, its relationship to the surrounding neighbourhood, and engagement with its host communities. Ultimately 29 of the potential 35 survey responses were gathered, representing 83% of the bounded network population. Initial responses were via paper surveys, distributed and returned in person at a team meeting one month before the festival. Those not present at the meeting were contacted by email in the following days, generating further responses. Timing the data collection in this way allowed the subsequent analysis to consider how important the festival’s formal hierarchy and departmental structure was felt to be, alongside other potential influences on the network’s shape and characteristics. The 29 respondents made 11 references to the six non-respondents and these were deleted from the SNA data, reducing the number of usable ties from 145 to 134. This removal of data is regrettable (it excluded the eighth most referenced individual), however it provided a more valid picture of connections between the remaining 29 (Borgatti et al., 2013).

*Interview data: capturing the insider’s view*

Sampling for the interviews used UCINET software, applying four ‘centrality’ measures to the survey data (Borgatti et al., 2002, pp. 163-80):

- Degree centrality: a count of how many ties a network node has. ‘Indegree’ has been used here, reflecting directed data as one festival volunteer nominates another.

- Eigenvector centrality: similar to degree in counting an individual’s adjacent nodes, with each node weighted according to its own centrality. UCINET ‘symmetrizes’ the data, removing the direction of flow and resulting in an undirected graph.

- Beta centrality: reflects the potential influence of one person on others in the network, including their diminishing influence on more distant connections.

- Betweenness centrality: reflecting the presence or absence of a given node on the shortest paths between each other pair of nodes. High betweenness centrality increases the potential to act as a gatekeeper for information and resources.

From these four measures an aggregated centrality ranking of all 29 people was drawn up, with each approach weighted equally in line with Valente et al’s correlation of centrality measures (Valente, Coronges, Lakon, & Costenbader, 2008). The resulting list was split into four categories: group A (six people) returned high centrality across all four measures; group B (eight) were mostly in the second quartiles of centrality; group C (nine) mostly in the third quartiles; while group D (six) only contained people with 0.00 indegree or betweenness centrality. A member of each group was interviewed, following a call to those survey respondents who had indicated their willingness to participate further in the research. Each of the four private conversations was recorded and transcribed, then analysed thematically to identify similarities and differences of opinion to illustrate and seek to explain the underlying social network analysis. The interviews offered personal insights into four contributors’ involvement with the festival, and taken as a whole they represented variegated experiences from across the social network. A semi-structured approach was used for the interviews (Fox, Gouthro, Morakabati, & Brackstone, 2014), with questions informed by the diversity, equality and community based themes noted above. Integrating SNA into a mixed methods approach has received important support in recent years (Edwards 2010), with the four interviews adding a rich source of data to complement the SNA findings.

An initial visualisation of the network revealed the structure seen in figure 1, with nodes sized according to their aggregated centrality group (A being largest, D smallest). The graph also highlights the four interview participants, as white nodes.

< INSERT FIGURE 1 >

Figure 1: visualisation of festival social network graph.

**Findings and discussion**

Findings from the SNA survey and subsequent interviews are discussed below in response to the two research questions. These findings also present social network analysis as both a research method and a reflection of the lived experience of festival production.

*i. How can the festival’s network structure best be described, and is there evidence of defined subgroups or a core-periphery relationship?*

UCINET and other SNA software applications offer two primary means of displaying and analysing network data: in graph form, and through statistical returns (Scott 2017). Figure 2 demonstrates the flexibility of SNA software, with multiple pieces of information shown. Node size continues to represent the aggregated centrality category, with white nodes now identifying a core group of seven people amongst a periphery of 22 in black. Most nodes are now circles, with seven square nodes in the top right signifying people who identified themselves as part of the Finance team.

< INSERT FIGURE 2 >

Figure 2: network visualisation showing each node’s aggregated centrality category, the presence of core and peripheral groups, and the festival’s Finance team.

UCINET’s correlation methodology indicated the possible presence of a core group (Borgatti et al., 2013), which could be corroborated or discounted through further analysis. The software’s recommendation results from the density of ties, as a proportion of the maximum possible number of connections:

- The core group of seven has a network density of 73.8%, despite each person being restricted to a maximum of five choices. Ties within the peripheral group have a density of 6.7%, with the network as a whole returning a 16.5% density.

- Ties from the core group to the periphery have a low density at just 2.6%, while from periphery to core it is 44.2%.

When considering who is most important to their festival work almost everyone turned to the seven members of the core group, therefore the characteristics of these central individuals are of particular interest. They reported each other as being important, and only rarely turned to more peripheral figures. Those on the periphery looked to the core, though they also formed some connections to each other.

Further methods support the core-periphery proposal, including the Girvan-Newman test: ties with the highest betweenness scores are systematically removed, revealing cohesive subgroups (2013). For the festival a large main subgroup is identified, which becomes progressively more focused on the core individuals in consecutive iterations of the test. Cliques can also reflect important structural characteristics of a network, defined as occurrences where all members of a clique are connected to one another (2013). Several cliques of four nodes or more were identified in the festival network, and core group members dominated most of them; peripheral nodes were present, but only through their ties to better connected parts of the network. (UCINET requests that a minimum clique size be set, and symmetrizes the ties to present undirected data.) The core nodes also filled the first seven positions in the aggregated centrality rankings, and represent four of the five people who identified themselves as being part of the festival’s overall management team.

Fulfilling the festival’s aim of benefiting from a diverse mix of contributions therefore appears to be reliant on people in the core group, and the extent to which they can represent the characteristics, interests and views of the wider network. The formal departmental structure of the festival is relevant here as the declared framework within which this might take place. Volunteers are matched to one of five functional departments, which all have their own leadership: Content, Promotion, Finance, Site, and Bars. All four interviewees placed a high importance on the departmental system when asked to describe the organisation, as it helped them identify with the festival and their roles within it. Their descriptions included ‘tiers’ of management, and of a ‘macro system’ containing ‘micro systems’ with their own responsibilities. From the SNA survey, at least one member of the network’s core group associated themselves with either Content, Promotion, Finance or Site, and although none represented Bars only one person in the whole network did so. However, of the four well-represented departments only the seven Finance nodes displayed a cohesive presence in the network: some four-member cliques were identified, and UCINET’s faction algorithm placed six of them into a distinct subgroup (the seventh being found in the core faction) (2013). With a month to go before the festival a lack of coherence is in evidence within most of the departments, which could limit the extent to which volunteers identify with others in their operational neighbourhood. Identification with a functional department of the festival was important to the volunteers, yet SNA evidence suggests this was not the strongest motivation for volunteers to forge ‘most important’ connections with each other.

If the festival’s core leadership group was to reflect the breadth of the wider volunteer network it therefore could not rely on the official departmental framework to do so, for that was not a fair reflection of the social relationships across the 29 respondents to the survey. This contrasts with Clarke & Jepson’s interpretation of the ways formal structures of power were deployed by the central steering group in Derby, though this approach hampered broader engagement and support for their vision (Clarke & Jepson, 2011). Conversely, SNA data from the focal festival here perhaps show that committed volunteers can operate effectively at a departmental level, while also being somewhat aware of the broader structure of the organisation. Derrett (Derrett 2003) and Stevens & Shin (Stevens & Shin, 2014) both highlight the value of having festivals emerge from and engage with the local community, building on existing connections. SNA offers a means of revealing just such established relationships which may otherwise be hidden from those present in the network. The mixed methods used here illustrated this further as one interviewee described the ‘friend of mine who was in the promo team’ that underpinned their initial tie to other volunteers, and thence to the festival itself. It is to the festival’s credit that the most peripheral of the interviewees felt able to become involved without a pre-existing connections, for they described having ‘missed… being part of a community… and wanted to be part of it [the festival]’.

*ii. What evidence of homophily can be found within the festival’s social network, and if present what appears to have caused it?*

For the core group to function effectively as a management cohort for the festival, evidence from the literature highlights inclusivity (Clarke & Jepson, 2011) and diversity (Phillips 2014). Analysis of the survey data reveals evidence of both shared and divergent characteristics across the network, suggesting the presence or absence of homophily. A comparable gender mix existed between core and periphery, with only a moderately higher age among the core. The other chronological variable, of working with the festival in previous years, revealed core individuals as having the most established relationships with the organisation. Their wholly white ethnicity reflected the network’s predominant characteristic, as did noting Scotland or England as their country of birth. Longevity is correlated with centrality: slightly older native contributors seeming to have had the time, motivation and commitment to establish themselves within the team.

Non-British volunteers, 10 of the 29 survey respondents, were noticeably peripheral and few attracted ties from their British colleagues. Restrictions on presenting a non-British perspective to the festival’s core group might have been compounded by the limited influence of functional departments as forums for activity and influence. Ties between the 10 non-Britons were also limited, comprising a subgroup of four, one pair, and four isolates. Anecdotal evidence gathered during the festival endorsed the high esteem in which non-British contributors were held, though their influence may lie somewhat dormant during the planning stages at least.

Turning to statistical tests, homophily at a whole network level can be addressed using the EI Index, as used by Gallelli in Piedmont (Gallelli 2016). Table 1 presents EI findings from UCINET for those who identified as part of the Finance, Content, Site and Promotion departments, alongside ‘overall management’. Ties have been symmetrized for this analysis, which assesses the extent to which those in each category reported or received ties with others in the same category (internal), or those beyond it (external): EI = E - I / E + I (Crossley et al., 2015).

Table 1: EI index among functional departments, ordered from most homophilous to least.

 Internal External Total EI

Finance (7 people) 32 25 57 -0.123

Content (12) 54 47 101 -0.069

Site (6) 12 29 41 0.415

Overall (5) 20 56 76 0.474

Promotion (6) 8 33 41 0.610

EI scores always range from -1 (perfect homophily, with connections limited to those in the same group), to +1 (perfect heterophily). Members of the Finance department show a greater propensity to turn to each other rather than other sections of the festival, as do Content although their homophily is more marginal. The remaining three functional categories display a marked heterophily by contrast: people identifying themselves against these categories are referring to external contacts far more frequently than those who share the same identifier. The same test can be applied to other variables, such as previous years of involvement and gender, as in table 2.

Table 2: EI index for those who had also volunteered in previous years, and by gender.

 Internal External Total EI

2016 (18 people) 126 45 171 -0.474

2015 (13) 86 60 146 -0.178

2014 (7) 28 65 93 0.398

2013 (2) 2 41 43 0.907

Female (18) 76 62 138 -0.101

Male (9) 16 60 76 0.579

Gender declined (2) 0 16 16 1.000

Against previous years’ involvement, the passage of time and weight of numbers have a bearing on who festival volunteers rated most important. With nearly two thirds of the 29 respondents having worked with the festival in 2016 there is intuitive logic to seeing them report important connections to each other. The 13 survivors from 2015 also displayed a marked level of homophily, though this was reversed for 2014 as the number of representatives fell to seven. The importance of the two longest serving team members is evident from the imbalance between internal ties (each nominates the other) and external ties (a collective 41 ties attracted from other people). With female volunteers outnumbering male 2:1 it is no great surprise to see them report a higher absolute number of ties amongst themselves. In relative terms, with a large number of ties reported between females and males the resulting EI scores show males as having heterophilous networks, markedly different to females. Relational data and social network analysis show how diversity within a group can be explored with greater insights than absolute numbers would allow.

Moving from the study of groups and subgroups to the experiences of individuals, ‘ego network’ analysis can be applied to discrete people, such as the four interviewees. Though some research projects specifically set out to collect ego data (Jarman 2017), it is also possible to extract it from a whole network (Prell 2012; Borgatti et al., 2013; Crossley et al., 2015). Applying the EI index to individual nodes (again with symmetrized ties) is illustrated here with the most central interviewee’s ties: 21 coming in, sometimes reciprocated by the five going out. Heterophilous relationships can be identified on grounds of gender (0.048), age category (0.143), and country of birth (0.333), showing that their immediate connections were primarily outwith their own category against these variables. In this instance access to information about the wider network can also be exploited, accounting for those alters not directly connected to the focal ego. The Yules Q test adapts the EI Index to provide this context, with perfect homophily now scoring +1, and heterophily -1 (2015). The most central interviewee returned heterophilous scores for gender (-1.000) and age (-0.778) that are more marked than before: their immediate connections are more diverse than the whole network’s characteristics would predict against these variables. Against country of birth (scoring 0.111) the ego’s immediate connections are now seen to be marginally homophilous in their wider context, potentially substantiating the notion of a disconnect between the network’s core and the non-British members of its periphery.

Demographic categories comprise elements of ‘status homophily’, yet the survey also gathered ‘value homophily’ data (McPherson et al., 2001, p. 420). This latter type, based on ‘values, attitudes, and beliefs’ have greater potential to be transmitted from one person to another, representing homophily by diffusion rather than selection. Combining interview evidence with data from the survey’s Likert statements helps to illustrate this, such as responses to: ‘[Festival] “fits in” here in [neighbourhood]’. The most central interviewee strongly agreed with this statement (as did six out of the seven in the network’s core group), but there was less enthusiasm from the peripheral group where four of 22 strongly agreed, 15 agreed, and three were neutral. The interviewee’s personal EI score on this count was 0.333, indicating heterophily among their direct connections. However their Yules Q score was 0.111: their local region was actually relatively homophilous in the context of the wider network. If the core group of seven were indeed influential across the broader network, interview data could help reveal evidence of diffusion of the Likert statement theme between the pre-festival completion of the surveys and the post-festival interviews. A general trend amongst the interviews was to see the two in more central positions able to speak with more detail and confidence about community engagement, such that they had more evidence of whether the festival ‘fitted in’ to its neighbourhood. Their anecdotes reflected on visits by locals and offers of help: ‘I remember one guy coming in after work… to say I’ve got a load of tools that you can have’. Also tangible experiences to demonstrate the relationship between the festival and its locality: ‘we opened up the space… and we showed our [archive] footage of [the neighbourhood]’. The more peripheral interviewees offered enthusiastic rhetoric but limited detail. This trend was repeated in relation to the festival’s positive impact on its venue’s longer term sustainability, with a peripheral interviewee highlighting the ‘great extent’ to which the festival has contributed to the viability of the building. This was a stronger statement of support than either of the more central interviewees offered. The survey data therefore largely reflected evidence from the interviews: network centrality, which correlates with longstanding engagement with the festival and a greater sense of influence over its management, also manifested itself in a better informed, yet arguably more sober appraisal of the festival’s role within the community. The wider team, beyond the core, could become similarly well informed about the festival if more information was shared with them, but hopefully not at the expense of their championing of its potential as a force for good.

Towards the end of the interviews questions focused on how and why festival volunteers came to work together, similarities and differences between them, and whether they influenced each other’s views and opinions. Diversity was a common thread across all four, as each reflected on the mix of personalities and nationalities they experienced, and the range of professional skills brought together within functional departments. These personal experiences were imbued with frequent references to the processes of working on shared projects, where passion for the arts bonded disparate people to a common goal. In a reversal of the neighbourhood engagement theme, discussions around team diversity and dynamics left the more peripheral figures with a greater store of anecdotes and examples to share. Finding a community of likeminded ‘alternative’ people was held in high regard, particularly by those for whom it was a driving motivation to join this year’s festival team. This was homophily around support for the artistic mission of the festival, as observed among volunteers, performers and audience members. It is the same force identified by Desire Lines (Desire Lines 2015), Leith Creative (Cunningham & Bremner, 2015), and other grassroots analysis of the event, festival and creative sectors in Scotland and elsewhere.

**Conclusions**

Social network analysis offers tools through which the structure of social relationships can be examined, providing an overview of relative diversity across a group of people that is rarely afforded to those within the network itself. Matching this to targeted interviews helped deliver evidence of the insiders’ views, for their personal perceptions of diversity and influence within the group. There are social capital implications to the evidence presented above, and indeed this is a common theme in SNA literature from a historical and methodological perspective (Prell 2012; Crossley et al., 2015). Those volunteers who committed to the festival over an extended period of time joined an influential core group of people, not necessarily through being awarded a job title, but through recognition accrued among colleagues. That core group, with its densely knit overlapping connections, exhibited important bonding social capital traits, although bridging between core and periphery was a largely one-way process that further increased the importance of central individuals (Wilks 2009). More established relationships can represent stronger ties, that are instrumental to the overall success of the network in achieving its objectives: people perform better with those they know, particularly in challenging and creative environments (de Montjoye, Stopczynski, Shmueli, Pentland, & Lehmann, 2014). What this paper has shown is that the biggest social and inter-personal challenge to festival producers, particularly in a voluntary organisation with infrequent meetings and heavy personal demands on its members, is how to engage newcomers in a mutually rewarding manner. To share information about the organisation’s work, to increase the engagement and confidence of peripheral figures, and to do so while benefiting from the inherent diversity of communities united in their championing of creativity.

**References**

Andrews, H., & Leopold, T. (2013). *Events and the Social Sciences.* Abingdon: Routledge.

Arcodia, C. A., & Whitford, M. W. (2006). Festival attendance and the development of social capital. *Journal of Convention & Event Tourism*, *8*(2), 1-18.

Asia-Europe Foundation (ASEF). (2014). *Enabling Crossovers: Good Practices in the Creative Industries.* Singapore: Asia-Europe Foundation (ASEF).

Atkinson, D., & Laurier, E. (1998). A sanitised city? Social exclusion at Bristol's 1996 international festival of the sea. *Geoforum*, *29*(2), 199-206.

Autissier, A. -M. (2015). Volunteering for festivals: Why and how? In C. Newbold, C. Maughan, J. Jordan, & F. Bianchini (Eds.), *Focus on Festivals: Contemporary European Case Studies and Perspectives* (1 ed., pp. 138-146). Oxford: Goodfellow Publishers.

Borgatti, S. P., Everett, M. G., & Freeman, L. C. (2002). *UCINET for Windows: Software for Social Network Analysis* [Computer Software]. Harvard, MA: Analytic Technologies.

Borgatti, S. P., Everett, M. G., & Johnson, J. C. (2013). *Analyzing Social Networks.* London: SAGE Publications.

De Bres, K., & Davis, J. (2001). Celebrating group and place identity: A case study of a new regional festival. *Tourism Geographies*, *3*(3), 326-337.

Chapman, G., Cleese, J., Gilliam, T., Idle, E., Jones, T., & Palin, M. (1979). *Monty Python's Life of Brian.* [Motion picture] UK: HandMade Films.

Christakis, N. A., & Fowler, J. H. (2010). *Connected: The amazing power of social networks and how they shape our lives.* London: HarperPress.

Clarke, A., & Jepson, A. (2011). Power and hegemony within a community festival. *International Journal of Event and Festival Management*, *2*(1), 7-19.

Crossley, N., Bellotti, E., Edwards, G., Everett, M. G., Koskinen, J., & Tranmer, M. (2015). *Social Network Analysis for Ego-Nets.* London: SAGE Publications Ltd.

Cunningham, M., & Bremner, D. (2015). *Leith Creative: Understanding Leith's Cultural Resources and Creative Industries*. Leith: Leith Creative.

Darcy, S. (2012). Disability, access, and inclusion in the event industry: A call for inclusive event research. *Event Management*, *16*(3), 259-265.

Derrett, R. (2003). Festivals & regional destinations: How festivals demonstrate a sense of community & place. *Rural Society*, *13*(1), 35-53.

Desire Lines. (2015). *Desire Lines: A call to action from Edinburgh's cultural community*. Edinburgh: Desire Lines.

Discrimination: Your Rights. (n.d.). Discrimination: Your rights. [Web page].

Duffy, M. (2000). Lines of drift: Festival participation and performing a sense of place. *Popular Music*, *19*(1), 51-64.

Edwards, G. (2010). Mixed-method approaches to social network analysis. *ESRC National Centre for Research Methods Review Paper.*

Fox, D., Gouthro, M. B., Morakabati, Y., & Brackstone, J. (2014). *Doing events research: From theory to practice.* Abingdon: Routledge.

Gallelli, A. (2016). Social structure and cultural production: An empirical analysis of festivals' networks. *The Journal of Arts Management, Law, and Society*, *46*(1), 34-46.

Getz, D., & Page, S. J. (2016). *Event Studies: Theory, research and policy for planned events* (3 ed.). Abingdon: Routledge.

Henn, S., & Bathelt, H. (2015). Knowledge generation and field reproduction in temporary clusters and the role of business conferences. *Geoforum*, *58*, 104-113.

Jarman, D. (2017). Personal networks in festival, event and creative communities: Perceptions, connections and collaborations. In A. Jepson & A. Clarke (Eds.), *Advances in Events: Power, construction and meaning in communities, festivals and events* (pp. [unknown]). Abingdon: Routledge

Jeong, S., & Santos, C. A. (2004). Cultural politics and contested place identity. *Annals of Tourism Research*, *31*(3), 640-656.

Kaushal, R., & Newbold, C. (2015). Mela in the UK: A'travelled and habituated' festival. In C. Newbold, C. Maughan, J. Jordan, & F. Bianchini (Eds.), *Focus on Festivals: Contemporary European Case Studies and Perspectives* (1 ed., pp. 214-226). Oxford: Goodfellow Publishers.

Lock, D., & Heere, B. (2017). Identity crisis: A theoretical analysis of ‘team identification’ research. *European Sport Management Quarterly*, *17*(4), 413-435.

MacLeod, G. (2014). Walling the city. In R. Paddison & E. McCann (Eds.), *Cities & Social Change: Encounters with contemporary urbanism* (pp. 130-147). London: SAGE.

Martin, V., & Cazarre, L. (2016). *Technology and Events: How to create engaging events.* Oxford: Goodfellow Publishers Limited.

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, *27*(1), 415-444.

Mehus, I. (2005). Distinction through sport consumption: Spectators of soccer, basketball, and ski-jumping. *International Review for the Sociology of Sport*, *40*(3), 321-333.

de Montjoye, Y. A., Stopczynski, A., Shmueli, E., Pentland, A., & Lehmann, S. (2014). The strength of the strongest ties in collaborative problem solving. *Scientific Reports*, *4*(5277), 1-6.

Phillips, K. W. (2014). How diversity makes us smarter. *Scientific American* [Web page].

Prell, C. (2012). *Social Network Analysis: History, Theory & Methodology.* London: SAGE.

Quinn, B. (2005). Arts festivals and the city. *Urban Studies*, *42*(5-6), 927-943.

Richards, G. (2015a). Events in the network society: The role of pulsar and iterative events. *Event Management*, *19*, 553-566.

Richards, G. (2015b). Festivals in the network society. In C. Newbold, C. Maughan, J. Jordan, & F. Bianchini (Eds.), *Focus on Festivals: Contemporary European Case Studies and Perspectives* (1 ed., pp. 245-254). Oxford: Goodfellow Publishers.

Richards, G., & Palmer, R. (2010). *Eventful Cities: Cultural management and urban revitalisation.* Oxford: Butterworth-Heinemann.

Scott, J. (2017). *Social Network Analysis* (4th ed.). London: SAGE Publications Ltd.

Scottish Colleges: The Equality Challenges. (n.d.). Scottish colleges: The equality challenges. [Web page].

Smith, M. K. (2009). *Issues in Cultural Tourism Studies* (2nd ed.). Abingdon: Routledge.

Smith, S. J. (1993). Bounding the borders: Claiming space and making place in rural Scotland. *Transactions of the Institute of British Geographers*, 291-308.

Spaaij, R. (2014). Sports crowd violence: An interdisciplinary synthesis. *Aggression and Violent Behavior*, *19*(2), 146-155.

Stevens, Q., & Shin, H. (2014). Urban festivals and local social space. *Planning Practice and Research*, *29*(1), 1-20.

Thomas, R. (2016). A remarkable absence of women: A comment on the formation of the new events industry board. *Journal of Policy Research in Tourism, Leisure & Events*, *8.*

Valente, T. W., Coronges, K., Lakon, C., & Costenbader, E. (2008). How correlated are network centrality measures? *Connections (Toronto, Ont.)*, *28*(1), 16-26.

West, C. (1990). The new cultural politics of difference. *October*, *53*, 93-109.

Wilks, L. (2009). *Initiations, Interactions, Cognoscenti: Social and cultural capital in the music festival experience (unpublished PhD thesis).* PhD.