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Network sampling of social divisions in a rural Inuit community

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This paper describes results from a network survey of Nain – a predominantly Inuit community of ~1200 people located on the northern coast of Labrador. As part of a larger social network research project, we used peer-referral sampling to recruit 330 residents for interviews about food sharing, housing, public health and community traditions. The peer-referral chains were analysed statistically to determine the presence and absence of social divisions in the community. The results of these analyses show that ethnic identification, relocation status and household income were the most significant social divisions in the community, while gender, education level and employment status show little or no effect on patterns of between-group interconnection. We argue that statistical patterns in the presence (and absence) of intergroup links offer novel ways to examine the interrelationship between recent economic development and the historical disruptions caused by Inuit community relocations in the 1950s.

Keywords: Inuit; Labrador; respondent driven sampling; social network analysis; inequality; sampling

While social boundaries (such as social class, gender, ethnic identity) are widely recognised possibilities within all communities, it is often difficult to demonstrate in any rigorous way the extent to which one or another potential division applies in a particular location, or how different sorts of social division interact with each other, or with unique historical events. Measuring unequal income is easy, for example, but measuring the effect of differences in income on patterns of individual connectedness and group cohesiveness is much more difficult. The same holds true for other more amorphous means of division, such as ethnic identity, where categories are more open to individual interpretation and the resulting relationships have, in the past, been nearly impossible to quantify.

This paper describes methods used to discover the presence/absence of social boundaries formed around income, gender, age, ethnic identity, place of birth, employment status and other individual social characteristics in Nain – a predominantly Inuit community on the north coast of Labrador, Canada – as these issues interact with the effects of past community relocation policies on the Labrador coast.

As part of a larger social network research project (Dombrowski *et al*. 2011, 2013a, 2013b), we used respondent-driving sampling (RDS; Heckathorn 2002, 2009, Salganik and Heckathorn 2004) to recruit $n = 330$ community residents (over 17 years of age) in Nain for social network interviews about food sharing, housing, public health, and community traditions. As per protocol, the RDS system employed in Nain involved used numbered respondent referral coupons, which in turn allowed researchers to track referral chains. As described below, these peer-referral chains were then analysed for patterns in *intragroup* and *intergroup* relationships within the community that were apparent only in the aggregate.

While far from foolproof, RDS methods have been shown to reliably recruit broad samples of otherwise hard-to-reach populations and, given sufficient referral depth and adequate sample size, can achieve sampling equilibrium and independence from referral starting points (Salganik and Heckathorn 2004, Heckathorn 2007, though see also Gile and Handcock 2010, Goel and Salganik 2010). As noted elsewhere, the sample of respondents recruited in Nain conformed closely to Statistics Canada's published results for the community, including proportional distributions of ages, genders, ethnic self-ascriptions, education levels and employment statistics (Dombrowski 2013). Given this close fit with known community statistics, we argue that the RDS sampling used in Nain was effective in recruiting a representative sample of the community (at least as far as the comparison categories are concerned), and that as such, the referral patterns uncovered by the recruitment process and documented below demonstrate actual patterns of social boundaries between subgroups in the community – divisions that are not commonly acknowledged in Arctic ethnography because they are seldom articulated by community members themselves (at least openly).

In employing RDS in this way, we join Wejnert (2010, 2009), Wejnert *et al*. (2008, 2012) in arguing that this approach (based around the examination of patterns in the presence and absence of social ties between groups) represents a direct method of uncovering social boundaries. Such an approach differs from past uses of broad survey forms in the Arctic by examining social relationships both in the aggregate and directly, and thereby forming conclusions about social divisions based on relational data rather than statistical inference drawn from individual characteristics (as when, for example, data trends in one individual variable, say age, are correlated with another individual variable, say income). The method presented here – of directly observing social relationships – has been present in small-scale Arctic ethnography for many years, but is seldom undertaken systematically or on such a large scale as made possible by RDS methods.

In what follows, data from the recruitment process are used to argue that *relocation history* (based on an individual's place of birth, and the place of birth of both parents), *income* and, to a lesser extent, *ethnic identity* represent the main source of social boundaries within Nain. Other potential boundaries were discovered to have little or no systematic effect on individual affiliation trends, including *gender*, *employment status* and *education level* – leading the authors to

conclude that the latter are not (on their own) sources of systematic social exclusion in Nain at the present time. Such findings shed light on both historical (community relocation) and present-day (industrial development-based income and Land Claims) processes as these are worked out at the local level.

The Nain networks project

The data discussed below were collected as part of a larger project aimed at understanding the informal networks that residents of Nain use to access housing, food, health-related counselling, traditional knowledge and other factors (Dombrowski *et al*. 2011). This research took place in Nain, Labrador, from January through June 2010. Nain is a predominantly Inuit community, and the capital of the newly formed indigenous autonomous area of Nunatsiavut. The community was formed by Moravian missionaries in the late eighteenth century, and is currently composed of approximately 1200 people, roughly 60% of whom are age 18 or over.

The creation of the indigenous semi-autonomous region of Nunatsiavut in 2006 represented the intersection of three distinct trends: (1) the advocacy of Labrador Inuit for several decades, particularly under the aegis of the Labrador Inuit Association (Brice-Bennett 1977), (2) a general trend of recognising indigenous land rights in northern Canada that resulted, most noticeably, in the creation of Nunatsiavut's northern neighbour, Nunavut (Tester and Kulchyski 1994, Kulchyski 2005) and (3) the increasing use of Land Claims to facilitate the industrial development of the North. In this case, the first step in that development was the opening of the Voisey's Bay Nickel Mine, located approximately 30 km south of Nain (Goldie 2005; on the intersection of these processes, see Dombrowski 2008, 2010, Lea 2012, Dombrowski *et al*. 2013), which began mining operations shortly after the Land Settlement was official. Prior to 2006, Nain was the largest Inuit community on the Labrador Coast, with residents engaged primarily in commercial fishing and subsistence production via hunting and fishing. As discussed below, Nain was also the relocation destination of a number of outlying Inuit communities in the late 1950s. Since 2006, the community has become the administrative centre of the Nunatsiavut Government.

Because social networks were a main focus of the overall study – and also because of high levels of residential mobility and lack of phone service made other forms of random sampling difficult or impossible – incentivised peer-to-peer recruitment was thought to be the most reliable way to obtain a large sample of respondents for one-on-one interviews (all of which were conducted by project investigators Kirk Dombrowski and Joshua Moses). Each interview lasted roughly 1 hour, and in total, approximately 16,000 network connections were documented among the 773 adult residents of Nain on issues of food sharing, housing assistance, domestic violence assistance, hunting/fishing partnerships, kinship, job assistance, sources of traditional knowledge and youth support. The

researchers spent a little less than 6 continuous months in the community conducting interviews and performing ethnographic observation.

RDS is an established methodology for recruiting 'hard-to-reach' populations for social research. It was pioneered in the mid-1990s by sociologist Douglas Heckathorn and modified and extended in the decade since (Heckathorn 2002, 2007, Salganik and Heckathorn 2004). More recently, Wejnert has argued that RDS analysis can be used for general social network analysis as well (where he labels it, RDS-SN; see Wejnert 2009, 2010). The current study would fall somewhere between these ends of the spectrum. While not a 'hard-to-reach' population in the conventional sense, the residents of Nain represent a research scenario that poses significant challenges to conventional random sampling – including high levels of residential mobility.

Briefly put, the RDS methodology uses an incentivised, peer-referral system, tracked via a numbered set of coupons that are distributed by study participants to other potential participants. The methodology has become, over the last several years, the default method for researching populations not amenable to random sampling through conventional methods, either due to their remoteness or to the stigmatised nature of the social factors involved (Magnani *et al*. 2005).

Starting with a small number of seeds, RDS begins by providing payment for a research interview (in our case, $30 for a ~1 hour interview), from which both individual and social network data are obtained. Following this, the researcher offers recruiting bonuses for participants who bring other qualified participants into the project. To do this, each participant is given three individually numbered coupons that they may distribute to those in their personal social network who fit the project profile. For each new recruit who comes in to the research project with a recruitment coupon, the recruiter who gave him/her that coupon receives the additional recruitment bonus (in our case $10). In turn, each new recruit is paid for participating in the research interview, and then given three recruiting coupons of his/her own. All recruitments are tracked, and steps are taken to ensure that duplicate participation is prevented (in our case, the names of respondents were tracked and over the course of 6 months, the researchers came to know almost all adult residents of the community by name). In general, the recruitment payment is intentionally set low enough to avoid encouraging coercion on the part of recruiters, yet its presence provides the recruiter with an incentive to choose among his/her associates those individuals with whom he/she has enough influence such that the receiver will participate in the study, and the recruiter can be assured of getting the recruitment fee.

In Nain, we sought to recruit any adult resident of the community over the age of 17, and as per our agreement with the Nunatsiavut Research Committee, ongoing open enrolment took place during the entire 6 months of the project. In all, over 800 referral coupons were distributed to respondents, and 288 total recruitments (out of 330 total interviews) took place. The remaining 42 interviews were either initial seeds (16) or 'walk-ins' (26, i.e. individuals who heard about the project indirectly and scheduled an interview without a recruitment

coupon after the first month of research). The instructions for referral coupon distribution were intended to allow maximum enrolment/inclusion of community adults. Respondents were told that they would receive the recruitment bonus if they gave their coupons to anyone 18 years old or older who currently lived in the community and whom they knew by name, if/when that person completed the research interview. In Nain, the small, close-knit nature of the community meant that, without exaggeration, every participant knew all other potential participants by name, and thus the potential number of respondents for all participants was, in theory, equal to the field of all possible respondents. Recruitment did not happen at random, however. Nearly 80% (227/288 total recruitments) of those recruited via referral coupon indicated that their recruiter was either a 'close relative', 'relative', 'close friend' or 'friend'.

Given that all recruiters had, in theory, access to all eligible respondents, researchers sought a better way to gauge the size of the 'likely' pool of possible recruits for each respondent. To do this, the intake interview asked each participant to give the approximate number of 'people you are close to here in Nain – people who you trust and feel you can count on for help.' This, we felt, was a better indicator of the field of possible recruitments than the standard RDS protocol of individuals simply known by name. This latter figure (people you can count on) ranged from 2 to 150, with an arithmetic mean of 17.5, and a standard deviation of 15.7, and was taken to be an indication of each person's self-estimated social network size (i.e. degree, for purposes of RDS analysis, see Heckathorn 2002).

To test that the sampling procedure remained accurate to the actual demographic distribution of the community, RDS-generated estimates of population proportions derived from the Nain recruitment data were compared with Statistics Canada census sources for Nain (see Dombrowski 2013). In all, the RDS estimates derived from the recruitment process are very similar to the Census figures in most areas with Census findings falling within the RDS estimated boundaries (set at $p = 0.05$ confidence level) for virtually all demographic variables.

Homophily and affiliation in social networks

One advantage of the RDS recruitment method is the ability to derive estimates of *homophily* as it appears in the recruitment data. Homophily (H) is the tendency of members of a group within a network to associate with others from their own group, rather than those outside their group, at a rate higher than random mixing of the same population would predict (Wejnert 2009, 2010). Thus, a homophily score for women in the network would be a measure of the tendency of women to associate with other women (rather than men) in the community when compared with random pairings.

Such *intragroup* tendencies to association are measured by RDSAT on a scale from –1 to 1 (Heckathorn 2002), with a score of $H = 0$ indicating no preference for in-group association; $H = 1$ indicating the highest possible preference for in-

group association (implied, for example, if all men recruited to the project in turn recruited only other men) and a score of $H = -1$ indicating the highest possible preference to connect with those outside of the group (implied in a situation where all of the men recruited to the project in turn recruited only women).

The same scale can also be used to measure the level of association *between* groups (Wejnert 2010), labelled here as 'affiliation' (A). Thus, while 'homophily' tracks the tendency of a group to connect only with others in the same group, 'affiliation' (A), tracks the tendency of members of one group to connect with those of a specified other group (again, at a rate higher than that predicted by a random mixing of ties within the overall population). Like homophily, affiliation is scored on a scale of –1 to 1, with a positive score indicating a tendency for *intergroup association*, and a negative score indicating *intergroup disassociation*. By way of example, an affiliation score between those in the group aged 25–30 and those aged 45–50 of $A = 0.355$ would indicate a tendency of those in the former (i.e. younger) group towards association with those in the older group. A negative score of the same absolute value ($A = -0.355$), on the other hand, would indicate a tendency for disassociation by members of the younger group with members of the older group. Importantly, such scores need not be symmetrical. That is, in a situation where association/disassociation levels between more than two groups is being measured, it is possible and perhaps even likely that the preference for association from group A to group C will be different than group C's preference for affiliation with group A. Such social *asymmetries* are an important feature in understanding local social boundaries discussed below.

In the tables that follow, the conventions of Figure 1 will be followed, with horizontal rows indicating homophily scores where both column and row categories are the same (i.e. x→x or y→y), and affiliation from row to column where categories differ (x→y in row 1, y→x in row 2). As above, because affiliation preferences between groups need not be symmetrical, in places where affiliation tendencies between more than two groups are being measured, the values of x→y and y→x frequently differ.

In this analysis, we use notions of homophily and affiliation to operationalise the concept of 'social boundary'. As such, a social boundary is not an impermeable wall between self-demarcating groups. Rather, we understand a social

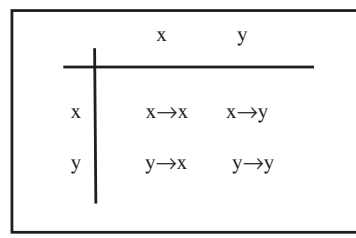

Figure 1. Schematic of affiliation tables (used below) showing affiliation from column to row.

boundary to be a relationship between social aggregates across which the flow of information, resources or even general sociality may be impeded (or enhanced). One can imagine almost any form of difference forming the basis for a social boundary – differences in education level, native language use or school affiliations – though at a given time and place, most possible distinctions are normally inconsequential, and only some potential points of distinction will be emphasised. Some of these points of distinction will be purely local (as the notion of *Kablunângajuk* is here), and some will be derived purely for purposes of analysis (like the bivariate relocation factor–household income discussed below).

Given this, the analysis and discussion that follows is based on the idea that systematic deviations over the course of the recruitment process reflect social boundaries within the community – boundaries that may or may not be visible to those involved (or which they may or may not be willing to reveal to researchers). We note for clarity that the investigators played no role in recruitment after the selection of the initial seeds, and with 330 interviews over 72 interview days, had no means to gauge the trends in the recruitment process at the time. The trends discussed here became apparent only when the total recruitment data were analysed later. Also, despite the fact that we collected a wealth of other social network connections, the analysis discussed below is based solely on the recruitment data. This is largely because all of the other networks were designed to discover specific aspects of social interaction. The recruitment network was the only network data collected that did not specify the exchange of a particular item, idea or relationship. In this case, interview participants were free to recruit from their entire social circle. And thus, while homophily and affiliation patterns are certainly found in the other networks, the analysis here is intended to serve as a baseline against which the patterns of connection in other networks can be gauged.

Among the more important findings that can be drawn from the RDS recruitment data is the list of potential social divisions that showed little or *no evidence* of homophily/affiliation preferences within or between groups. Among these were *gender*, *working status* and *education level*. Our findings indicate that differential status with regard to each of these categories played little or no role in the making of social boundaries in Nain. So, while all of these statuses represented important points of social contact and frequent topics of conversation, none, it seems, serves to significantly constrain intergroup/category social connection. Likewise, age seemed to have little effect on inter-age-group connection, with moderate to strong scores occurring only across very large age differences. Neighbouring age categories were not separated by considerable social barriers, though the very young seem to have fewer connections with those much older than themselves, and vice versa.

Homophily and affiliation: ethnicity

Among the first marked statuses that *did* influence patterns of social connection in Nain was ethnic identity. Nain, like other communities along the north coast of

Labrador, is a multi-ethnic community. Unlike Makkovik (better known through two prior studies by Ben-Dor (1977), Kennedy (1977, 1982)) Nain has always been a predominantly Inuit community (Brantenberg 1977a, 1977b). Like Makkovik, the population of Nain contains Inuit, Settlers, mixed-ethnic and white residents. However, recent political changes have reconfigured individual ethnic identification to conform with the post-Labrador Inuit Land Claims (2005) situation.

Among the most noticeable differences from the description of Nain by Brantenberg (1977a) is the virtual disappearance of the Settler category. Previously a distinct category denoting decent from early European settlers along the Labrador coast, and normally mixed marriage from Labrador Inuit as well, this group was incorporated under the 2006 Land Claims Agreement under the term '*Kablunângajuk',* an older (and often pejorative) term meaning, roughly 'trying to be white person', which in the past was used predominantly for the children of mixed marriages. While few respondents in our study used the term *Kablunângajuk*, several adults used the term 'mixed', and some even used the term 'LIA' (short for Labrador Inuit Association, the political organisation that brought the original land claim), to describe their ethnic background (see (Brantenberg 1977b).

Table 1 presents the affiliation matrix for the three identity categories introduced above. Of note is the high negative affiliation score between those self-identifying as Inuit and those self-identifying as whites.

However, because the number of respondents in the white/other category was very low (only 6/330), these figures must be approached with much caution – as the small size of this subpopulation means that the resulting affiliation score is much more likely to be affected by random chance than the findings in other categories. Table 2 presents the same affiliation matrix when the two non-Inuit identities are collapsed into a single category.

This shows low (but positive) homophily among Inuit, and a higher (bordering on moderate) homophily among non-Inuit. Yet what Table 2 obscures, and which is readily apparent in Table 1, is that the majority of the non-affiliation between Inuit and non-Inuit (Inuit → non-Inuit [$A = –0.21$] in Table 2) is actually

Table 1. Affiliation matrix: ethnic identity.

	Inuit	Mixed	White/Other
Inuit	0.2	−0.042	**−0.517**[a]
Mixed	**−0.3**	0.219	0.069
White/Other	**−0.315**	**0.335**	−1.0

Notes: [a]Because the number of respondents in the White/Other category was so low, statistics concerning this group are subject to considerable error. As discussed above, these data are included here to point out the ways that Inuit/mixed mutual affiliation patterns are asymmetrical, a fact that is lost when all non-Inuit collapsed into a single category. Bold type indicates moderate to high levels of affiliation/disaffiliation.

Table 2. Affiliation matrix: ethnic identity grouped.

	Inuit	Non-Inuit
Inuit	0.21	−0.21
Non-Inuit	−0.304	0.304

non-affiliation between Inuit and white/other (Inuit → white/other [A = –0.517] in Table 1), rather than between Inuit and those identifying as Mixed (Inuit → Mixed [A = –0.042] in Table 1). This is important because the reverse is not the case. From Table 1, we can see that Mixed affiliation to Inuit is much lower (Mixed → Inuit [A = –0.3] in Table 1) than the reciprocal Inuit to Mixed affiliation.

This is an example of an asymmetrical social boundary, and points to the ways in which the current situation in Nain differs from those reported by past research in Labrador. In particular, this version of social division stands in contrast to both Kennedy and Ben-Dor's expectations. Where Ben-Dor foresaw the eventual absorption of Inuit into Settler culture/community, particularly as 'mixed' children in Makkovik tended to affiliate more closely with the Settler kin over time; and where Kennedy saw the likelihood of sustained ethnic isolation with Inuit on one side and Settlers on the other; the current data from Nain point to a much more nuanced social barrier with limited affiliation happening mainly in one direction: from Inuit to Mixed/Settler/*Kablunângajuk*. If it is true that many of those currently identifying as 'mixed' would in the past have identified as 'Settler', then the post-Land Claims scenario in Nain would seem to present a new sort of dynamic; a scenario that is somewhat opposite Settler attempts to 'court' Inuit affiliation (as described by Kennedy (1977, p. 372)), and one which satisfies Paine's 'construction of emblems for this new [collective] ethnicity' (1977, p. 258).

In another sense, the current situation can be seen as a somewhat unexpected outcome of the situation described for Nain by Brantenberg, who saw the transition from Moravian to Newfoundland Provincial political control to favour Settlers who were capable of brokering between community and Provincial interests (1977b, p. 381). Unlike the pre-1970 period described by Brantenberg – where Settler power was gained through 'Euro-Canadian agencies. . .that provided Settlers with alternative means for expressing their identity as whites' (1977b, pp. 381–382) – the current situation seems to be one where members of this same category, now identifying as mixed, find Euro-Canadian agencies to be opportunity to present themselves as Inuit, particularly regarding the Land Claims process.

The implications for this shifting affiliation are manifold, and can be seen in their impact on the movement of material goods and social help in other (more concrete) social networks in Nain (Dombrowski *et al*. 2013a, 2013b). While such

examples are too complex for the current article, we note that affiliation patterns find expression in both the interpretation of potential kinship links and in the recirculation of traditional foods that are often markers of ethnic/indigenous identity.

Homophily and affiliation: relocation

A second question of local affiliation concerns the interaction between current residents whose deep historical past lay in the vicinity of Nain, and those residents relocated to Nain either directly or indirectly from more northern Inuit communities from the late-1950s forward. Relocation in Labrador was the result of several concurrent social and political forces that began in the early twentieth century and culminated in the 1956 relocation of the community at Nutak, and the 1959 relocation of the community at Hebron. While extended treatment of these relocations is not possible here, the result was the distribution of Inuit families to several Labrador communities, including Nain (see (Brice-Bennett 1977, 1994). As Brantenberg notes (1977b, p. 387, see also Kennedy (1977, p. 360), and Paine (1977, pp. 256–257), relocation resulted in considerable intra-community, intra-ethnic tensions between relocatees and long-time residents of the communities into which relocates were placed.

To examine the impact of relocation on pattern of social division, we consider respondents' place of birth and their resulting *relocation factor*. Relocation factor is a composite score created here to allow for comparison with other social influences. To calculate each respondent's relocation factor, participants in the study were asked for their own place of birth, as well as the place of birth of both parents, each of which was scored 1 if it referred to a relocated community, 0 if not. This resulted in a factor between 0 and 3, with 0 the result of neither parent nor the respondent him/herself having been born in a relocated community; and a score of 3 where both parents and the respondent him/herself were been born in a relocated community. Scores of 1 and 2 indicate other possible combinations. The purpose of creating the factor was to allow for a sliding scale capable of revealing the impact of relocation on descendants of relocatees and not simply just relocatees themselves.

As can be seen in Table 3, the history of relocation posed a significant, if graduated, social barrier within Nain, with individuals in the lower relocation factor range seldom exhibiting affiliation with those in high relocation range, and vice versa. Indeed, some of the strongest disaffiliation scores found in the entire study can be seen between those whose historical connections within the region lay entirely within Nain (relocation factor = 0) and those whose historical connections lay entirely with relocated communities (relocation factor = 3). These findings show that, even 50 years after the relocation, social boundaries still exist in Nain between the original members of the community (and their descendants) and relocatees (and their descendants), extending the findings of Kennedy (1977, 1982), who saw continuing isolation of relocatees as a

Table 3. Affiliation matrix: relocation factor.

	Score of 0	Score of 1	Score of 2	Score of 3
Score of 0	0.175	0.022	−0.268	**−0.64**
Score of 1	−0.004	0.026	0.007	−0.249
Score of 2	−0.269	0.032	0.102	0.008
Score of 3	**−0.56**	−0.026	0.096	0.174

Note: Bold type indicates moderate to high levels of affiliation/disaffiliation.

potentially enduring phenomenon. Yet in this case, the issue is less attributable to ethnic boundaries per se, as the current data on social boundedness pertain to all residents, regardless of ethnic identity – and thus captures *intra*-ethnic tensions caused by relocation that are not apparent in the Inuit/Settler situation in Makkovik.

Homophily and affiliation: income

The final significant social boundary uncovered by the network sampling in Nain is based on individual and household incomes (see Table 4a and b). As above, such issues are at the forefront of local social life in Nain following the 2006 Land Claims Agreement, which has resulted in the creation of the Nunatsiavut Government, the opening of the nearby Voisey's Bay Nickel Mine and a building boom that has accompanied the considerable expansion of the population of Nain over the last several years. Nain is the administrative capital of the indigenous autonomous area of Nunatsiavut, which has resulted in a considerable expansion of government-salaried jobs. In addition, the growing population means that service employment opportunities have grown as well. These factors, together with mine services and related industries, have meant considerable job growth in Nain in the last several years. Yet, there remains a large contingent of unemployed and underemployed residents, and income differentials in the community are stark.

When income brackets are examined for their impact on intergroup affiliation patterns, we note that negative levels of affiliation exist between those located on the opposite ends of the income scale, regardless of whether income was

Table 4a. Individual.

	Under $200	$200–300	$300–500	Over $500
Under $200	0.048	0.036	−0.13	−0.295
$200–300	−0.104	0.092	0.023	−0.322
$300–500	−0.284	0.051	0.154	−0.137
Over $500	−0.2	−0.013	0.029	0.101

Table 4b. Household.

	Under $300	$300–500	$500–750	Over $750
Under $300	0.134	0.001	−0.174	−0.265
$300–500	0.013	0.228	−0.326	−0.308
$500–750	0.011	−0.191	0.11	−0.126
Over $750	−0.271	−0.355	−0.322	0.324

measured on an individual or household basis. This suggests that close social relationships between low income and higher income individuals and households in Nain are rare.

When examined at the level of individual income, all groups showed low levels of homophily (from $H = 0.048$ to 0.154), meaning that individuals showed only small preference for those at their own income level. Yet when examined at the household level, we see that those in the highest household income bracket show moderate homophily ($H = 0.324$) and robust tendencies of *disaffiliation* to all income groups below their own ($A = –0.126$ to $–0.355$). The same was not true for those at the lowest end of the household income scale, where low levels of homophily are apparent.

Social boundaries like these are perhaps not surprising, and social divisions/exclusions based on income or wealth in times of rapid social change and economic expansion may even be expected. Such factors receive little outside comment when they take place in indigenous communities, however. Yet during the course of our fieldwork, economic inequality was often mentioned as a significant social barrier, and one of long-standing.

Homophily and affiliation: relocation *and* income

To understand the relationship between the two most significant categories discussed above – relocation factor and household income – the two variables were examined in a multivariate analysis. To allow for sufficient category population, a simplified set of divisions was used for each variable. Relocation factor was divided into those with a relocation score of 0–1 in one category ('non-Relocatees'), and relocation scores 2–3 in the other ('Relocatees') in the other. Likewise, household income was divided into two groups: those households earning less than $500 per week (here categorised as 'Low Income'), and those earning more than $500 per week ('High Income'). The results of the homophily/affiliation analysis appear in Table 5. Together, they show an unusual asymmetry that points to a complex intertwining of historical and current economic factors in Nain today.

(1) Reading across line 1, for those Relocatees in the Low Income category, the primary affiliations are with those in the same *income* category, i.e.

Table 5. Multivariate affiliation matrix: relocation factor and household income.

	Relocatee and Low Income	Relocatee and High Income	Non-Relocatee and Low Income	Non-Relocatee and High Income
Relocatee and Low Income	0.227	**−0.42**	0.14	**−0.567**
Relocatee and High Income	−0.204	0.139	**−0.318**	0.015
Non-Relocatee and Low Income	0.057	**−0.471**	0.089	−0.053
Non-Relocatee and High Income	**−0.538**	−0.204	−0.049	0.195

Note: Bold type indicates moderate to high levels of affiliation/disaffiliation.

those of Low Income regardless of relocation status. They show high levels of disaffiliation with those in the High Income category regardless of the relocation status of the latter.

(2) Those Relocatees in the High Income category (row 2) have lower social connectedness with those categorised as Low Income – again affected only slightly by the relocation status of the latter (A = –0.204 for Low Income Relocatees; A = –0.318 for Low Income non-Relocatees). This parallels the findings for Low Income Relocatees, where economic considerations also were paramount, and relocation status less important in determining social boundaries.

(3) Among non-Relocatees, those with Low Income (row 3) demonstrate their lowest level of connection with High Income Relocatees, and otherwise roughly equal affiliation with all other categories. Interestingly, individuals in this group appear to affiliate with those in the High Income category, *provided they are not Relocatees*.

(4) Among High Income Non-Relocatees (row 4), we see the strongest tendency to disaffiliate with Low Income Relocatees (A = –0.538), and a noticeable trend to disaffiliation with High Income Relocatees as well (A = –0.204). Towards Low Income Non-Relocatees, High Income Relocatees remained more or less neutral (A = –0.049).

Taken together, it appears that, among *non-Relocatees*, it is relocation status, rather than income, that seems the more significant factor in deciding inter-group (dis)affiliation levels, while for Relocatees, it is income level that determines their affiliations.

Discussion

Relocation has been a long-standing concern in Labrador. While too lengthy to explain fully here, a significant number of current residents from Nain were either

relocated to the community from communities further north in the late 1950s (from Nutak and Hebron), or chose to move to Nain in the early 1960s, as Hebron and Nutak residents left other destination communities to rejoin family members in Nain (see Brice-Bennett 1977, 1994), or are descended from those who were relocated. While part of a larger programme of community relocation across the Arctic (Tester and Kulchyski 1994), the Labrador relocations were poorly planned and executed, creating lasting problems for all of those involved. Often housing intended for relocatees was unready or poorly constructed when they arrived, and employment opportunities in the receiving communities were scarce. In addition, the influx of relocatees put strain on local hunting and fishing resources in the communities they moved into, which remained important to household survival for both original residents and relocatees at that time.

Similarly, the creation of the new region of Nunatsiavut and the accompanying industrial development have added new social dynamics, including income inequality and differential access to outside resources and opportunities in Nain. The Voisey's Bay Nickel mine has introduced Nain to the vagaries of the international metal market, where nickel prices have fallen from more than $25 per pound to less than $5 per pound in the years since the Land Settlement in 2006. Largely as a result of this decline in price, the Canadian mining firm operating the site (Inco) has been purchased by Brazilian mining giant Vale, who subsequently sought to re-negotiate the labour agreement under which Nain employees worked. Self-government too has added employment and income dynamics that have fundamentally altered patterns of work and financial dependency in the community. Under these conditions, long-standing ethnic and historical divisions have been re-written, forming a complex overlay with implications for many efforts aimed at adjusting to the Land Claims Era in the North.

Programmes such as community justice initiatives, talking circles and the like, have to accommodate the sorts of boundaries discussed here, though often social boundaries of any kind go largely unaccounted for in the planning of these programmes. New religious dynamics (discussed elsewhere for Alaska Native communities in similar circumstances, see Dombrowski 2001, 2002, 2004) have gained attention in Nain as well, including the rise of a popular local Pentecostal church with controversial views on the history of the community, which operates a popular food bank and alcohol treatment programme catering to those most marginal to the current economic and social dynamics. Signs of social stress abound in Nain, yet policing strategies that do not account for social boundaries and the potential they have to provoke disagreement or disconnection often seem patchwork and aloof as a result (see Sider 2003).

As noted above, social boundaries (as defined here) can exist with our without overt social or individual recognition. All of the boundaries discussed here were, however, recognised by our interview participants and the subject of occasional and, for some, frequent comment. By far, the most widely commented on aspect of the issues raised here was the issue of economic differentiation. The

Land Claims process was widely anticipated to bring about a reversal of the generally downward economic trend that has dominated Nain since the collapse of commercial fishing throughout Labrador in the early 1990s (see Kennedy 1995). While the Land Claims has brought a rash of building and a new government bureaucracy, many perceive that the accompanying prosperity has been taken up by outsiders, and restricted to members of some kin groups.

The history of relocation was also markedly present in Nain. During the time of our fieldwork, the Government of Newfoundland and Labrador was planning (and later carried out) a public apology and memorialisation of the events, which received much support from the Nunatsiavut Government. This was well received by those actually relocated, but seemed less important to their descendants. Marginalisation within the community over the past 50 years has left the latter without the cultural capital necessary to take up positions in the emerging cultural restoration/revitalisation movement. They lack the language skills to get work as translators, or the cultural skills to host the various workshops on traditional crafts.

The most complex of the issues raised here is Inuit identity itself. Like the residents of Nunavut discussed by Searles (2002, 2010), Labrador Inuit identity corresponds more closely to an ethnic rather than a racial notion: informed by (but not necessarily defined by) parentage, and conditioned somewhat by behaviour (such as speaking Inuktitut and performing traditional hunting/gathering tasks or traditional craft skills). Children born of Inuit parents are Inuit in local eyes, regardless of practices or abilities. Individuals born of mixed parentage, even those who have lived much of their lives away from the community, are accorded Inuit status if one of their parents had a traditional Inuit connection to the community and the individual in question returns to take up traditional ways.

Much of this is complicated by the 2006 Land Settlement, however, which declared both Inuit and *Kablunângajuk* to be Inuit. In this way, some residents that, in the past, may have preferred to identify as Settlers (see Kennedy 1982) or *Kablunângajuk*, today describe themselves as Inuit. This is a radical and a historical shift in the eyes of many in the community, and responses are decidedly mixed. In some cases, self-identification as Inuit by one who, in the past, would likely have identified as Settler is derided as pure opportunism. In other cases, especially where the individual practices what are considered to be traditional Inuit ways (like hunting and sharing), a self-ascription as Inuit will be taken as reasonable, even if noticeably recent.

Where past ascriptions remain, the data presented above show an unusual pattern of asymmetry. In Nain, Inuit remain separated from the small ‘white’, mostly outsider population (perhaps by their own choice), while looking to mixed/settler/*Kablunângajuk* residents for connection. The latter, on the other hand, show easy connection with whites, but do not reciprocate the affiliation tendencies shown to them by Inuit. In fact, they show moderate patterns of social exclusion of Inuit. The extent to which this represents a departure with past forms

of ethnic group boundaries in Nain is discussed above. To our minds, the current system represents a significant departure from past descriptions of Nain and other communities along Labrador's northern coast.

Reflecting on these results from the view of social science more generally, two central results emerge. The first is the fact that the network analysis methods advocated by Wejnert (2010) can be used to uncover what we have referred to here as asymmetrical social boundaries, where tendencies to affiliation by those in group A to those in group B are not matched by similar tendencies from B to A. The ability to quantify affiliation strengths makes such findings possible. A second important point is ability of the methods discussed here to show how issues of identity can be shown to interact with other social processes of development, differentiation and broad political–economic change. In this case, the bivariate analysis of economic differentiation and relocation factor showed how one issue, related to ethnic identity, was fractured by other, seemingly distinct considerations (economy). While such processes are often remarked on by social scientists, the ability to demonstrate them with any kind of rigour has remained largely absent. Again, the potential for RDS-SN to lend quantitative support to prior qualitative observation (or to refine and/or refute those observations) would seem a welcome addition to our efforts to understand the role of identity(ies) in ongoing social transformations.

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