Double-embeddedness: Spatial and relational contexts of tie persistence and re-formation

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ABSTRACT

Personal relationships are embedded in both spatial and relational contexts. Using data on 60 intentional communities from the Urban Communes Data Set, we examine how such embedding is related to the persistence and re-formation of close personal ties over a thirteen year period, beginning from when most members had been out of their group environments more than a decade. We find that local network structure—the pattern of dyads immediately surrounding any dyad—is extremely weighty in which ties persist, which lapse, and which are re-initiated, but that the precise ways in which local structure affects contact are bound up with the distance between dyad members. We also find asymmetries in these processes that other studies have been unable to uncover—that processes that lead ties to be dropped are not the same as those that lead them to be renewed; that increases in local embeddedness are not opposite of decreases; that change in contact is not the same as change in friendship. Finally, there is evidence of hierarchical effects influencing the retention of friendships more than twenty-five years after most respondents left their groups.

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1. Double-embeddedness

One of the most fundamental findings of social network analysis is that a dyadic relation between two persons is not independent of the context in which it is embedded (e.g., Hammer, 1980, p. 173; Hallinan and Hutchins, 1980; Louch, 2000; also see Hummell and Sodeur, 1990; Burt, 2000; Lubbers et al., 2010). The easiest way to see this embedding is to look at where relations are made or where they survive; when we do, we find that certain contexts, such as geographic proximity or the existence of mutual acquaintances, are conducive to relationships being found, while others are not. But despite the explosion of work on social networks over the past quarter century, remarkably little is known about the actual dynamics whereby people form and alter social relationships, or how these are shaped by spatial and relational contexts. In particular, we often have difficulty examining the effects of spatial and relational embeddedness simultaneously. We will refer to this as the "double-embeddedness" of ties—that a dyadic relation may be embedded in a local structure of other relationships, in turn embedded in geographic space.[1]

In large part this has been because collecting the necessary data is extremely difficult. Studies of social networks generally gather data from narrowly delimited geographic or institutional settings, while panel studies of geographically scattered persons generally do not gather data beyond respondents' current reported ties (as opposed to lapsed or possible ties) because of the large burden that would place on both investigators and respondents (McCarty et al., 2007). This means not only do we have a great many models chasing very little data, but we also lack a clear understanding of how to combine information on the joint effects of spatial and relational embedding (for important attempts to systematize our knowledge to date, see Faust and Skvoretz, 2002; Skvoretz and Faust, 2002; Rivera et al., 2010).

Yet the processes by which embedding shapes the occurrence of ties may be more complex than our models tend to reflect. We have recently been brought to realize just how consequential it can be to ignore the differences between processes of tie formation and

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[1] We are aware that this term "double embeddedness" was recently used in a different sense by Baker and Faulkner (2009), but it fits our approach perhaps even better.

tie retention (Noel and Nyhan, 2011). Similarly, as Lieberson (1985) has emphasized, we often assume for reasons of convenience that the positive effect of an increase in some independent variable is the same as the negative effect of its decrease, though this rarely makes theoretical sense. The statement that "the probability of a tie increases with embeddedness" may both be true and untrue: even if it is mathematically true, in order to map this to concrete social processes we must know whether we are envisioning a comparison of existing ties to extinct ties, to ties that were never made in the first place, and whether we are imagining embeddedness increasing or decreasing.

In sum, before we attempt to propose theories of the ways in which ties are embedded in spatial and relational contexts, we will need to look closely at how different types of embedding shape the formation and dissolution of different types of relationships. There have been both new methods developed for examining longitudinal change in networks, as well as a growing number of important analyses, but most of these studies deal with short durations and restricted geographic scopes (Jerusalem et al., 1996; Leik and Chalkley, 1997; Lubbers et al., 2010; Leenders 1997a, b; Morgan et al., 1997; Wellman et al., 1997; van de Bunt et al., 1999; McDonald and Mair, 2010; Preciado et al., 2012; Ellwardt et al., 2012; Mollenhorst et al., 2014). Almost no research distinguishes between the *formation* of ties and their retention [although see Cheadle et al. (2013) for an exception].

Whatever the spatial and temporal scales used, social network researchers have long emphasized the importance of the local network structure around any particular tie. The few previous studies of personal ties covering periods of a decade or more have found effects of network composition on tie retention, despite high degrees of turnover among survey respondents' reported ties (e.g. Wellman et al., 1997; Ruan et al., 1997; Suitor and Keeton, 1997; Terhell et al., 2007). Because personal ties may be used to convey information about third parties present within a network, there is reason to think such effects would be at least as strong for the re-initiation of lapsed ties (cf. Granovetter, 1973). There has also been a great deal of interest recently in the relation of network processes to geographical distance (Butts et al., 2012; Mollenhorst et al., 2011; Mok et al., 2010; Preciado et al., 2012). But little is known about the long-term influence of geographical position on tie retention and re-initiation, and as Daraganova et al. (2012, p. 9) have recently emphasized, almost nothing is known about the joint effects of network structure and geographic position.

In this article, we examine how this double-embeddedness is associated with the persistence and re-initiation of close personal ties over a twelve-year period using data drawn from members of a sample of sixty different intentional living communities—voluntary communities that generally involved strong ties, but which most members had exited more than a decade before the period of observation. The data include both personal ties that have persisted more or less continuously for around twenty-five years after their initial formation, and relationships that were deliberately re-established after having been allowed to lapse for a time. The long time periods involved and the multiple waves of the study allow us to differentiate between the persistence of existing ties and the re-establishment of lapsed ties, something not possible with most data sets.

The paper is organized as follows. In the following section we discuss how the spatial and relational embedding of close personal ties might shape their long-term retention and re-initiation. We then go on to describe the data, measures, and methods used. Finally, we examine how the double-embeddedness of ties predicts the persistence of extant ties, and the re-establishment of lapsed ones, looking both at the frequency of contact between ex-group members and at their perceptions of the quality of

that relationship. To anticipate, our results show that both social networks and geography matter, but in more complex ways than previous research has indicated: the effects of networks and geography are very different for the retention of ties than for the re-initiation of a lapsed tie, the effects of adding shared ties are not the same as dropping shared ties, and the effect of ego moving closer in space to alter is not the opposite of moving farther away.

2. The embeddedness of ties

In this section we draw on the existing literature to develop intuitions about the way in which the double-embeddedness of ties in geographic space and network structure may affect their retention and re-initiation. We expect that both spatial proximity and a network of mutual acquaintances should facilitate the retention and re-initiation of ties, but we also suggest that there is reason to believe that the spatial and network embedding of relationships affect different types of ties in different ways, and that each kind of embeddedness may interact with the other.

2.1. Spatial embeddedness

The spatial embeddedness of ties has implications both obvious and non-obvious. Proximity clearly facilitates the formation of many types of ties, and is by definition necessary for "face-to-face" relations. Not surprisingly, nearness in geographic space has been found to be extremely important in the processes whereby people make and break a number of different types of relationships, even at very local scales (Festinger et al., 1963 [1950]; Fischer, 1982; Fischer and Stueve, 1977, p. 168; Mok et al., 2007; Hipp and Perrin, 2009; also see Butts, forthcoming). But ties, once formed, may endure subsequent geographical separation—or they may not.

It is possible that for existing ties, any inverse relationship between survival probabilities and geographical distance, should one be found, may change with the passage of time. On the one hand, we might expect the importance of proximity to *increase* over time, as we can imagine something akin to a "store" of positive sentiment and emotional energy that can lead to the preservation of a tie across great distances for a limited period of time, but not beyond that. On the other hand, it is also possible that as the number of surviving relationships becomes winnowed down to a select few, distance will become less important because individuals are willing to invest more in their remaining relationships that have endured over many years.

The effects of separation might also differ by the type of tie involved. Again, we have equally reasonable accounts that suggest opposite predictions. We might expect that subjectively closer relations are better able to weather separation—as we move, we drop our more casual acquaintances entirely, and preserve those who are dear to us. But the contrary argument is just as plausible—that strong ties require *both* geographical closeness and other kinds of connections, while weak ties can be established with either (Martin, 2009, p. 41). This implies that with geographical separation, stronger ties are likely to dissolve or to lapse into weak ties.

All this is complicated by the fact that closeness in geographical space can be hard to disentangle from closeness in social space. The strong tendencies to the establishment of ties with those who are like us both in terms of social background and preferences (social and value homophily respectively; see, recently, DiPrete et al., 2011) dovetail with the tendency of preferential sorting by location (Bishop, 2008). Thus to some extent, we may attribute too much to spatial propinquity when we fail to notice that people