Chapter 4
Family Networks for Learning and Knowledge Creation in Developing Regions

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Social Learning Processes in Developing and Developed Contexts

With the rise of the knowledge economy, learning and knowledge creation rather than material resources and assets are becoming competitive advantages of regions and countries. Unlike concrete inputs, which are produced mechanically, intangible knowledge is created through agents' interaction and communication, which are structured by social relations and norms within organizations, communities, and societies. Accordingly, knowledge-creating regions both in traditional sectors (e.g., the Third Italy) and high-tech industries (e.g., Silicon Valley) are characterized by intensive interaction of professionals and accommodating business culture in local communities. It has thus become widely accepted that the long-term success of regional economies increasingly depends on social learning processes—localized and globalized—of individuals and organizations. Daily practices of agents develop specialized language, frameworks, and conventions as codes of communication and rules of interaction by which individually, organizationally, and regionally embedded knowledge can be mobilized and cross-fertilized in continuous codification and internalization processes (Amin & Cohendet, 2004; Bathelt & Glückler, 2011; Malmberg & Maskell, 2006; Saxenian, 2007).

As significant as these knowledge-based theories of regional economies are, developing regions have received scant attention in the theoretical discussion of social learning processes. In those contexts formal institutions such as the legal

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system usually do not function well. It is the *in*formal norms and social structures (e.g., family networks) that tend to be more important for communication and collaboration. However, some researchers have long argued that these informal networks contribute to the backwardness of developing regions (Banfield, 1958; Putnam, Leonardi, & Nanetti, 1993). These divergent arguments about the part that social networks play in developing and developed economies raise the question of why local informal relations in developing economies cannot generate the social learning process that occurs in a developed context.

Focusing on family ties, I aim to provide a provocative answer to this question by arguing that family networks can facilitate technology diffusion but not knowledge creation. My purpose is not to investigate family and friendship ties in social and political arenas. Family and friendship networks are discussed in this chapter only in terms of social learning mechanisms. I argue that ties between family members, though strong, can—unlike ties between friends—act as bridges in local and global knowledge networks. Compared to open networks of friends, family ties tend to be exclusive and hierarchical. Structured differently, friendship and family networks generate heterogeneous and homogeneous knowledge pools within themselves, respectively. This observation implies that friendship networks supplant family ties as local economies upgrade.

Exploration of family networks in developing regions may advance the discussion of knowledge in space in three ways. First, it offers a knowledge-based explanation for the advent of many industrial clusters and agglomerations in developing countries. Drawn from common features of innovative regions, traditional cluster theories do not have much power to account for localized industries in developing contexts. Many clusters in those contexts develop endogenously from intensive learning through kinship networks (Henn, 2012; Li, Bathelt, & Wang, 2012; Meagher, 2007; Nadvi, 1999). Second, this chapter's inquiry into different structures of family and friendship networks in a dynamic perspective adds to an evolutionary understanding of networks and knowledge in economic geography (Glückler, 2007). Rather than viewing regions in developing and developed contexts as two different worlds, I look at how developing regions with family-based learning networks can transform into innovative economies with open and dynamic social structures. I suggest that many developing and developed areas are facing similar challenges when it comes to socially restructuring themselves to improve their ability to mobilize local and global knowledge. Third, I shed light on the role that family structure plays in developing regions and argue that family ties as strong bridges can accelerate technology diffusion in local communities rather than hamper economic development.

I begin by summarizing the contradictory evaluation of family organization over the course of economic development. In the section thereafter I revisit Granovetter's (1973) argument of the strength of weak ties and examine the basic structure of family networks, asserting that strong family ties can be bridges for intensive interaction and technology learning in local settings. My study of family networks then continues by turning attention to the weakness of kinship connections as compared to another kind of social network, friendship ties. I illustrate why the two kinds of

network differ structurally in terms of knowledge creation and why localized learning in developing communities can be expected to evolve from closed to open networks.

Family Ties and Economic Development

The family is a basic social organization in both traditional and modern societies. Family and kinship groups, connected biologically, constitute a natural association of individuals and influence economic behaviors to different degrees from one society to the next. In traditional communities, where family structures predominate, individuals are both economically and socially affiliated to their families. These family networks become an institution through which seniors are empowered with authority over resource allocation and the resolution of disputes among family members. Societies of this kind are by nature composed of families rather than individuals because individuals in these contexts cannot freely make choices and take actions. Family control reduces labor participation, geographical mobility, and civil engagement and results in low economic development (Alesina & Giuliano, 2013; Bertrand & Schoar, 2006). Strong family structure has therefore long been generally regarded as an obstacle to the development of capitalism. The point is illustrated by the underdevelopment of capitalism in some family-dominated societies such as traditional China and southern Italy (Banfield, 1958; Weber, 1951) and by the fact that family and kinship networks declined with the ascendance of modern corporations and economic development in Europe (Greif, 2006). Strong family structures are still found to be related to the low development of some European regions (Duranton, Rodríguez-Pose, & Sandall, 2009). These arguments on the incompatibility of family ties in capitalism depend on the idea that activities of individuals cannot be organized beyond the family level in a society with excessively strong family structures and, hence, that civic spirit and public institutions cannot take root therein.

Unlike western individualistic societies, Asian societies tend to emphasize family values strongly. The successes of several Asian economies in the past decades therefore defy the understanding that family ties inhibit the development of capitalism. In these economies a keen sense of family obligation motivates individuals to work hard and reduce consumption in order to support family members, especially the next generation, and to increase their education. Strong family ties, as an important kind of social capital, help develop human capital (Coleman, 1988). Besides improving the labor market, strong commitment to the family also accelerates capital accumulation because family workers tend to consume less and save more than singles do. Family structure thereby contributes to the growth of Asian economies (Whyte, 1996). Since the Asian financial crisis in the 1990s, however, it has been recognized that family involvement in Asian economies is, to a large extent, responsible for the weakness of those economies (Perkins, 2000). At the national level, cronyism—family networks among political authorities such as Suharto's family in

Indonesia—brings about severe corruption and thwarts efficient investment (Kang, 2003). At the firm level, family ties discourage the participation of nonfamily professionals in family firms and restrict the growth of those enterprises (Cai, Li, Park, & Zhou, 2013; Weidenbaum & Hughes, 1996).

Although contradictory, the preceding arguments generally focus on the relationship between family structure and market development in that family ties affect resource allocation and labor participation. The presumption in those negative understandings of family ties is that individuals would make right and rational choices without family bonds and that market economies would therefore develop efficiently. In the positive evaluation of family values, family considerations force labor into the production process of capitalism and contribute to capital accumulation. In general, these arguments contextualize family ties in the neoclassical framework of economic development and have not directed much attention to the role of family structure in knowledge-sharing and learning. From a historical perspective, these arguments make sense because family economies often emerge in the early stages of capitalism and are regarded as irrelevant to the knowledge economy. However, this view of family ties can be questioned. Because acquisition of technical and business know-how is always crucial in economic development processes even in their early periods (Mokyr, 2004), it becomes important to discuss whether family networks can promote knowledge-sharing and creation.

Empirical investigation of this question in the context of regional economies has led to contradictory findings. In an exploration of high-tech industries in the Research Triangle region of North Carolina (near Durham, Raleigh, and Chapel Hill), Renzulli, Aldrich, and Moody (2000) suggested that family ties can aid the diffusion of homogeneous information but are of little help to technological entrepreneurship. By contrast, research on start-ups in traditional industries in developing economies shows that entrepreneurs' family networks convey industrial information and professional advice, which are crucial for the establishment of small businesses (Anderson, Jack, & Drakopoulou-Dodd, 2005; Jack, 2005). Indeed, some research on industrial clusters in developing contexts shows that family and kinship networks can act as important learning channels for local entrepreneurs and firms. In a cluster producing surgical instruments in Pakistan, extended family ties were found to stimulate technical knowledge-sharing between firms and encourage interfirm cooperation in local business communities (Nadvi, 1999). Li et al. (2012) also documented how family-based learning has transformed some rural villages in South China into a large cluster of aluminum-processing activities over the past 20 years. Munshi (2011) and Henn (2012) further showed that kinship and ethnic networks in an Indian diamond cluster not only functioned as a localized channel of learning but also acted as a transnational knowledge bridge connecting local communities with global diamond centers in Europe and America.

As noteworthy as these empirical studies on family ties in regional contexts can be, they do not yield a coherent framework for explaining why family ties can channel learning in some settings but not in others. There is also little theoretical knowledge about the structure of family networks and how knowledge can diffuse within them.

Strong Family Ties as Knowledge Bridges in Local Communities

The manner in which knowledge can be shared among individuals and firms depends largely on the structure of the social networks within which they are embedded (Granovetter, 1973). Characterized by intensive interaction and high intimacy between two agents, strong ties involve much, sometimes perhaps too much, communication. The result is that understandings, ideas, and judgments on issues of mutual interest become homogenized in strong ties. Groups connected by strong ties tend to be closed. This characteristic—the closeness tendency—makes reputation reliable and punishment enforceable (Coleman, 1988). It is easy to illustrate: Given that agents B and C are both strongly connected with A, it is most unlikely that B and C will not be connected with each other. With this reasoning Granovetter (1973) deduced his famous argument: For a bridge that is the only path between two agents, "except under unlikely conditions, no strong tie is a bridge" (p. 1364). As the only form of bridges, weak ties turn out to be highly significant in the knowledge economy because they can provide varieties of information and connect different groups and communities. Applying this idea to community development, Granovetter (1973) argued that communities would be fragmented into cliques if only strong ties existed within them.

Granovetter's argument on the significance of weak ties rests on the closeness tendency of strong ties. In defending this concept, he generally interpreted social ties as friendships,[1] which can be measured by the amount time that individuals spend together. He admitted that "implicit here is Homans's idea that 'the more frequently persons interact with one another, the stronger their sentiments of friendship for one another are apt to be'" (Homans, 1950, p. 133, as cited in Granovetter, 1973, p. 1362). Granovetter's argument of the strength of weak ties is thereby cast within the framework of friendship networks, relations that people create and sustain through intended actions.

However, there is another, unique kind of social network, the family tie, which develops in a different way. If one measures the strength of social ties by trust and the emotional commitment of individuals, ties within the family can be strong even without its members being together for a long time. For instance, the bond between long-separated family members is usually very strong when they unite. As a biological and social association of individuals, family ties entail many meanings. For example, family members can be those whom an individual can trust, from whom that person receives emotional support, for whom she or he is responsible, and with whom he or she consults before making decisions. In many ways family can be interpreted as a social structure of economic actions. Because this chapter focuses on learning and knowledge generation, the following discussion centers on family ties as a mode of social interaction for sharing *economic* knowledge. Although husband and wife usually do not work in the same field and individuals may prefer not

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[1] Granovetter's (1973) understanding of social networks does not include family ties.
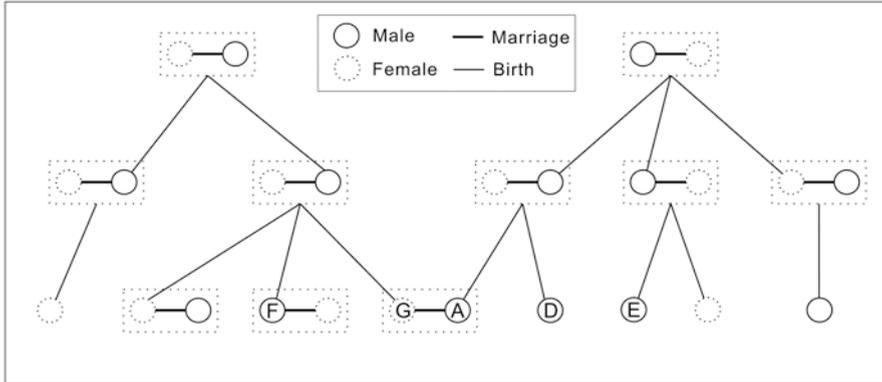
Fig. 4.1 Structure of family networks (Design by author)

to talk about work with family members, the high level of trust commonly present in family networks makes the exchange of economic knowledge virtually inevitable. How does this family-based knowledge-sharing come about?

Figure 4.1 depicts the structure of a typical family network.[2] Unlike friendship ties, family networks are hierarchical like trees, stratified in generations. Within family trees a husband and a wife, linked horizontally, constitute a pair of nodes in the network. Family ties develop vertically by birth and horizontally by marriage. Created primarily through birth and marriage, all family ties are strong in terms of trust, intimacy, and emotional commitment. As in friendship networks, the strength of a relationship between two individuals in family networks depends on the length of the path between them. In Fig. 4.1, for example, brothers A and D are closer (only two steps between them) than cousins A and E (four steps). Given the different strengths of the relations between brothers and cousins, why are A, D, and E not connected directly in Fig. 4.1? The reason is that brothers, cousins, and other kinship connections are *derived* ties; their relationships are derived from the basic structure of the family networks shown in Fig. 4.1. A and D are brothers because they have common parents, and A and E are cousins because they have common grandparents. Family connections among A, D, and E are created by virtue of their ties with common parents or grandparents. Direct links between A and D or E will be redundant because their connections through parents and grandparents already show their relations. The same consideration also applies to other kinship relations in Fig. 4.1. In fact, distant relatives, especially those between extended families, such as E and F, have few chances of being together and knowing each other.

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[2] Specifically, Figure 4.1 shows a biological structure of family networks (a map of the biological relationships between family members) and their social structure (a pattern of interaction and communication). Social practices in family networks vary in different cultural contexts and time periods. The arguments formulated in this chapter rest on my own observations, which apply to developing economies (especially China) and should not be overgeneralized. I thank Johannes Glückler for this point.

Although they can be contacted through some family members, they are more likely to be as distant as strangers. The fact that they are mutually accessible suggests the role that some family members and ties have as bridges.

In Fig. 4.1 the marriage of A and G creates a bridge between two extended families. Before the marriage, the two extended families were unconnected. After the marriage, although most family members in the two groups still do not know each other,[3] they are connected through the sole tie between A and G. In this sense every marriage acts as a bridge in family networks. This bridging function of marriage can partly explain why marriage is so important in traditional societies: It may be the only bridge to leverage resources and knowledge beyond families in such a low-trust context (see Padgett & Ansell, 1993, for an analysis of the Medici family network in the Renaissance, for example). Through marriage, hierarchical family ties, too, can be bridges. For instance, if D marries, then the path between A and D, together with their marriage ties, becomes the bridge between their wives' families.

Knowledge and information can be quickly and reliably shared across family groups through bridges. Suppose that D has some information or opportunity that can be of interest to F. In daily conversation between A and G, A may accidentally divulge this information to G, who, realizing the potential of the information for her brother F, would facilitate information flows between F and D. If further communication and interaction between F and D is required, A and G will endorse these actions. The advantage of family bridges is that, as strong ties, they can be particularly effective for repeated interaction and learning, not just one-time information- or opportunity-sharing. Such intensive learning is extremely important for technology diffusion because manufacturing know-how and technical skills are learned in a systematic way by trial and error.

Having described the structure of family networks, I now turn to probe the role that family bridges can play for knowledge-sharing in industrial communities. If strong family ties can be bridges—in contradiction to Granovetter's (1973) conclusion that no strong tie is a bridge—then local communities, even those with only strong ties, can be closely connected rather than fragmented into cliques. At this point a difference in focus has to be clarified. Not everyone in local communities is highly relevant to economic development, which is primarily related to agents with a spirit of entrepreneurship and an interest in technological and business learning. As an economic geographer, I thus focus this chapter on social networks of a specific local group—entrepreneurs and professionals—rather than on the general social structure of local communities. This perspective narrows the argument derived from the concept of family bridges. I assert that local *business* communities can be closely connected through family bridges. Tentative evidence tends to suggest that at least this connection is possible in developing regions in which family relations of entrepreneurs are a notable feature. For example, 35 % of the entrepreneurs in a diamond cluster in India and 57 % of their children married within the local industrial community (Munshi, 2011). In the early development stages of an industrial cluster for aluminum extrusion in China in the 1990s, many entrepreneurs

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[3] They may meet once at A and G's wedding.

were from a local clan whose members shared a rare family name (Li et al., 2012). Both cases suggest that cluster development in developing economies can be promoted by family ties of entrepreneurs. Indeed, industrial communities in developing countries rely more heavily on family ties than clusters in developed contexts, which are embedded in networks of friends, alumni, and ethnic groups. A key question, then, is why family networks matter in industrial communities in developing regions? Particularly, what is the structure of family networks that can give rise to knowledge diffusion to sustain local industrial development?

Before theoretical and empirical exploration of these questions, it should be recognized that communities with a single kind of tie are imaginary. Local business communities actually consist of different kinds of relations encompassing both families *and* friends, both strong and weak ties. Figure 4.2 shows a theoretical social network in an industrial community of entrepreneurs, for whose interconnections family bridges are pivotal. This social network has four components. Entrepreneur H, who has three family bridges and one friendship bridge, occupies a central position linking the four components of the local business community. Now suppose H learns new technology or business know-how from the outside of the community. Through family and friendship bridges, this knowledge can quickly spread across the whole local community (through eight steps in Fig. 4.2), suggesting that entrepreneurs in closely connected communities can rapidly learn new knowledge through family networks. This family-based learning may explain why many industrial clusters in Asia have been able to develop swiftly over the past decades, even in areas with poor industrial bases. For example, most of the entrepreneurs in the aluminum extrusion cluster in China did not initially know how to extrude the metal, but technical know-how was soon shared with them by an engineer who, just like H in Fig. 4.2, established family bridges in the local business community (Li et al., 2012).

Family-based localized learning can be paramount in the development of industrial clusters in developing economies. Given the increasing global brain drain, it is, with few exceptions, hard for most developing regions to attract highly skilled people worldwide. A dynamic learning community of educated immigrants and professionals tends to be beyond the capacity of many developing areas, at least for the time being. People thus often believe it is almost impossible for traditional communities to generate and support a learning economy. Family-based learning suggests that this conviction may not be true. In developing regions, family networks are usually social structures that exist before local industrial development. Channeled by family bridges, business and technical knowledge can be quickly shared in well-connected traditional communities. That dissemination is conducive to entrepreneurship and endogenous economic growth. From a knowledge perspective, theoretical and empirical investigation affords evidence that family ties can encourage economic development and suggests that the chances of successful industrialization will substantially increase if it is compatible with local social structures such as family networks (Woolcock & Narayan, 2000).
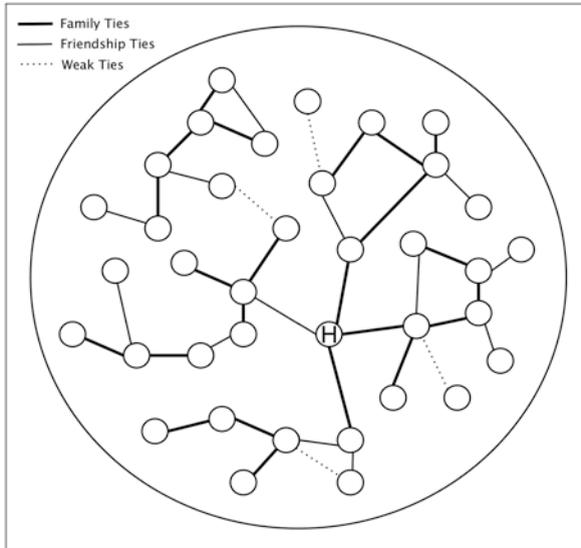
Fig. 4.2 A community well connected by bridges between family members and friends (Design by author)

From Families to Friends: Building Knowledge-Creating Economies in Developing Contexts

The role of family ties as bridges for localized learning should not be overemphasized, because family bridges have important weaknesses. First, stability of family ties is at odds with what dynamic learning requires in some fields. Family ties created through marriage and birth tend to be a lifetime commitment, meaning that family networks develop very slowly and selectively. The fact that they emerge only gradually implies that the number of bridges each individual or family can have through the strong ties of kinship is restricted by the size of the family. At the individual or community level, effective family bridges as knowledge pipelines therefore cannot increase substantially in a short period. In sectors such as high-tech industries, where short life cycles of products and technologies require a consistent combination of new ideas from various sources, family networks are incapable of channeling the needed knowledge flows. Stable family ties work best for learning from certain sources in a mature technological field (e.g., traditional industries) or in trading activities that require a high level of trust rather than technological innovation (e.g., the diamond sector).

Second, localization of family networks reduces the variety of knowledge that family bridges can provide, since geographical proximity of family members restricts their function as pipelines for external learning. In developing contexts traditional family networks generally do not go beyond local communities. The chances that family bridges will become global pipelines are quite low in such

Table 4.1 Comparison of family and friendship networks

Dimensions	Family ties	Friendship networks
Formation	Marriage and birth	Common experience, personality
Structure	Hierarchical, exclusive	Open, inclusive
Duration	Lifelong	Flexible
Strength	Strong	Strong or weak
Knowledge	Homogenous	Heterogeneous
Power	Patriarchal, imbalanced	Equal, reciprocal
Action	Involuntary	Voluntary

settings. Even in cases where family connections extend internationally through emigrant entrepreneurs, external knowledge tends to confine itself to some groups in the family rather than to diffuse throughout the locale (Henn, 2012).

Third, family networks as hierarchical structures foster knowledge diffusion rather than knowledge creation. Unlike other social connections, family ties entail an imbalanced distribution of power between individuals, usually in favor of seniors and males in traditional communities. Economic knowledge within families thus usually flows either horizontally (across families) by means of marriage bridges or vertically from the old to the young (Sussman, 1959). In that kind of learning process, the roles of agents as knowledge transmitters or receivers are assigned ex ante by their positions in family structures. Knowledge thereby tends to diffuse in a unidirectional manner in family networks. Because family ties are strong, such knowledge diffusion processes can be quick; because family networks are stable, the variety of knowledge in local communities can shrink rapidly.

In contrast to this process of knowledge diffusion, knowledge *creation* comes from collision of different ideas and from reflection on traditional thinking. Knowledge creation requires dynamic interaction of individuals, which is inconsistent with the structured flows of knowledge in family networks. Although useful for technology diffusion at the individual or community level, family networks may therefore be unhelpful to knowledge creation.

If family ties do little to build an innovative regional ecosystem, how can developing regions that industrialize through family-based learning transform into a knowledge economy? Another basic kind of social network, friendship ties, will gain increasing significance in the transformation process because friendship networks constitute a more open and dynamic structure for learning than family ties do (see Table 4.1). Unlike family ties created by marriage and birth, friendship is built from a sharing of common experience, an agreement on common rules, and an attraction between personalities. Friends are chosen independently, made through mutual acceptance, and endorsed by personal trust. Friendships are thus an autonomous association of individuals, open in structure and flexible in duration and strength. The easiest way to make friends is to be introduced by common friends. Granovetter (1973) argues this point by demonstrating the closeness tendency of strong friendship ties. In friendship networks only weak ties with acquaintances can become bridges, which elicit new information and opportunities. Therefore, hetero-

geneous knowledge can be cross-fertilized for innovation in societies through weak friendship bridges. Furthermore, the mutual obligation inherent in friendship enables friends to organize, disband, and reorganize in technical communities. These dynamic combinations of relations offer possibilities for knowledge creation and disruptive innovation. As Fukuyama (1995) put it, friends represent a spontaneous sociability of individuals and constitute an important kind of social capital in a modern society:

> The most useful kind of social capital is often not the ability to work under the authority of a traditional community or group, but the capacity to form new associations and to cooperate within the terms of reference they establish. (p. 27)

If the preceding theoretical constructs of family and friendship networks are correct, then the significance of family ties for business and technology learning is likely to wane as regional or national economies upgrade, while friendship networks will gain momentum. This transformation is consistent with Giddens's (1990) view of the modernization process, in which individuals experience intimacy less from families than from friends. The evolutionary framework of family and friendship networks is supported by provocative evidence as well. Using world social survey data, Bertrand and Schoar (2006) and Alesina and Giuliano (2013) found strong family connections to be related to a lack of generalized trust and weak formal institutions in societies. More directly, an international comparison of entrepreneurs' social networks (Drakopoulou-Dodd & Patra, 2002) suggested that, in a fairly developed economy, entrepreneurs' social connections consist more of friends than of families and relatives.

Although the rationale of the evolution from families to friends is clear in theory, this transition is not easy in reality because the breakdown of family networks and the construction of generalized trust for friends are two different processes (Fukuyama, 1995). Family ties stable over one generation can decline quickly across generations. Increasing geographical mobility of new generations decreases connections among family members in traditional communities whether this effect is desired or not. Talented young individuals may even intend to disconnect from their families in order to avoid commitment to less able relatives (Munshi & Rosenzweig, 2005). Members of new generations who are more mobile than those of previous ones may also be unable to connect closely with each other or the rest of their families because of a lack of time spent together (Li et al., 2012). The transition from family ties to ties of friendship is complicated further by the challenge of developing generalized trust and creating autonomous associations in societies (Portes & Landolt, 2000). Based on mutual agreement, friendship must develop naturally. Legal systems may back up individuals' interaction and collaboration, but compulsory regulations cannot guarantee the creation of voluntary associations. It takes time for individuals to reach consensus on their identities and build accepted codes of interaction. Only after that point can spontaneous associations of friends prosper as the main infrastructure for social learning in societies.

Developing regions usually become stuck in a transitional stage, in which local family structure was destroyed while generalized trust in societies has not been cre-
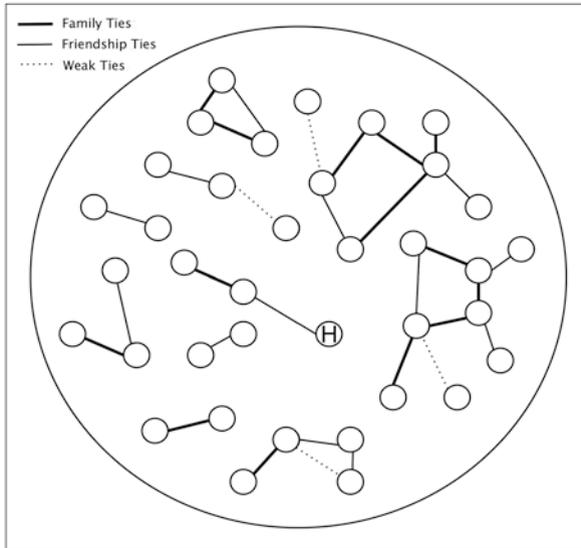
Fig. 4.3 A fragmented community after the collapse of family bridges (Design by author)

ated (Fukuyama, 1995). This situation, which is neither mechanically nor organically solidified in Durkheim's (1893/1997) sense,[4] corresponds to the worst conceivable combination of community- and society-based governance for economic development argued by Rodríguez-Pose & Storper (2006). Falling into this transitional stage can be an unanticipated consequence of public policies, such as an unsuccessful plan for urban renewal (Jacobs, 1961) or a blind liberalization strategy (Meagher, 2007), which destroy the social structure of traditional communities but cannot build an interactive environment for new social and economic orders. It can also be an unavoidable outcome of rapid industrialization that quickly undermines traditional family solidarity while formal institutions and a spirit of civic engagement are still developing, as in modern China. Figure 4.3 illustrates a fragmented community in transition after the erosion of family bridges and before the development of friendship bridges. In contrast to Granovetter's (1973) argument that strong ties create separate cliques, it is the *decline* of strong family ties, especially family bridges, that pulls the community apart. New external knowledge, even if accessible to some local entrepreneurs, is difficult to share in a fragmented community of this kind. As a result, the community's ability to absorb technological and business know-how becomes weak. Local firms with no social networks for learning and with weak capacity for innovation have no choice but to enter a race to

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[4] Developing societies in this transitional stage are not socially integrated with individuals who have common beliefs (mechanical solidarity) or who depend on each other in the division of labor (organic solidarity) in Durkheim's (1893/1997) sense.

the bottom by competing on low costs. This situation describes many industrial clusters in developing contexts.

Just as the transition from families to friends sheds light on the challenges that developing regions face, it can be relevant for developed economies as well. In the global knowledge economy successful regions increasingly need to acquire and mobilize distant resources, ideas, and innovations, a task that requires generalized trust in talented people regardless of their races, religions, and national origins. Dynamic regional economies, such as Silicon Valley, have been creating an open, friendly social structure to attract immigrant technocrats from all over the world. These mobile professionals act as global knowledge brokers to facilitate cross-border learning and innovation (Saxenian, 2007). In both developing and developed countries, regions without this social infrastructure for global learning are becoming either isolated or passively integrated into global networks of leading clusters through transnational brain drains. A new core-and-periphery pattern in the global knowledge economy may develop along with the great transition of social learning from closed to open networks. In this sense developed and developing regions are up against the same challenge of the transformation process.

Conclusion

Social networks for interactive learning are essential for regional knowledge economies. Exploration of socialized knowledge networks in industrial communities is conducted mainly in successful regions in western individualistic societies. Developing regions are widely seen to be grappling with challenges that are no longer concerns in developed economies, such as the development of civic spirit and the enforcement of formal regulations. A fundamental difference between developing and developed economies is perhaps that individuals in developing contexts are more committed to families in traditional communities and, hence, act less independently than individuals in developed countries. These distinctions make developing regions appear to be a different world. In economic geography, a field in which knowledge-based theories of clusters are derived from practices of regional economies in developed contexts, the conditions of developing regions have received scant attention in theoretical discussion of knowledge in space. Focusing on developing regions, I pursue an alternative frame of reference: the evolution of social learning processes in traditional communities. Specifically, I have posed two theoretical questions. First, can knowledge be shared in a structured way within family networks, and if so, how? Second, if family ties can channel knowledge flows, why is family-based learning so inconspicuous in innovative regions?

The first question invites an investigation into the anatomy of family networks. Unlike friendship connections, family ties are created primarily by birth and marriage, and marriage-based linkages can work as bridges for information-sharing between extended family groups. The connecting role of marriage implies that strong family ties can be bridges, which differ from weak friendship bridges as

argued by Granovetter (1973). As bridges, family ties can channel knowledge fertilization between two groups; as strong ties, family bridges can be extremely helpful for technological learning that requires repeated communication and interaction. In traditional communities family bridges can enable entrepreneurs to learn business and technical know-how quickly. Traditional family structure is thus not a handicap of being less developed but rather an advantage for catching up.

The second question requires interpreting the role of family networks for learning from a dynamic perspective. After industrialization, regional economic growth relies more on technological innovation and knowledge creation than on resource utilization and business imitation. Being stable and hierarchical in structure, family networks are most likely to channel and bridge knowledge flows in one direction from fixed sources. Being localized, family ties are numerically restricted as translocal knowledge pipelines. The variety of knowledge pools in family networks therefore tends to decline after rapid diffusion of technology. In that stage the significance of ties with friends tends to surpass that of family ties in encouraging knowledge creation, because friendship networks are more dynamic and open for new information than family ties are. It is beyond the scope of this chapter to document the transformation process from family- to friend-based learning. The challenge for many developing economies is that family networks in local business communities can quickly collapse in new generations of entrepreneurs while generalized trust and formal institutions as foundations for spontaneous associations of individuals take a long way to develop in societies.

The great transition from family-based industrial communities to friend-based learning regions confronts developing economies and many developed areas alike. The turbulent global knowledge economy requires regions to develop global connections of transnational professionals and entrepreneurs regardless of their backgrounds, yet only a few leading clusters have successfully constructed a friendly social infrastructure to attract talented immigrants and mobilize innovation on a global scale. Divergence among clusters and regions may increase in the global knowledge economy along with the transition from closed to open social learning processes.

In examining the dynamics of family networks from the perspective of learning in industrial communities, I do not tend to argue that there is a trend toward substituting friends for families as the only, or even the main, social structure in societies. This dualistic interpretation of families and friends clearly does not hold from a sociological perspective. The family remains a basic part of social organization in modern societies and is not going to disappear.

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