Logical Weakness of “The Strength of Weak Ties”

Nobuo TAKAHASHIa) and Nobuyuki INAMIZUb)

Abstract: The present paper identifies leaps in the logic of Granovetter’s (1973) “The Strength of Weak Ties.” Granovetter states that “bridges” are “weak ties” due to the existence of a “forbidden triad.” However, the latter portion of his work, which cites empirical evidence, indicates a reversal in the logical relationship, stating that “weak ties” are “bridges.” Granovetter also provides very little evidence to state definitively that “forbidden triads never happen.”

Keywords: social network, weak tie, bridge, forbidden triad

Introduction

Granovetter’s (1973) “The Strength of Weak Ties” is the most well known study of social network. Studies in sociology (e.g., Burt, 1992;
Lin, 2001) as well as many studies in the field of business administration refer to this concept. For example, much research in business administration has been devoted to knowledge transfer and organizational learning (e.g., Heller & Fujimoto, 2004; Miyazoe, 2006), and many studies in these fields have been inspired by the “strength of weak ties” theory (e.g., Hansen, 1999; Levin & Cross, 2004; Nelson, 1989). The contributions of Granovetter (1973) include the classification of individual ties into “strong ties” and “weak ties” and the major role of weak ties in acquiring useful information and the integration of society as a whole, using the concepts of “forbidden triads” and “bridges” (to be mentioned later). Granovetter (1974) is well known for conducting a study on career changes to demonstrate these effects, and highlighting the function of weak ties. Granovetter’s investigation showed that job seekers obtain more useful information about work in unexpected social settings, such as a recent unexpected re-acquaintance with someone from high school rather than through a close friend.

This is the essence of Granovetter’s theory on the “strength of weak ties”; however, the original paper from 1973 actually shows some leaps in his logic. As we shall mention later, one cannot really say that “forbidden triads never occur,” as Granovetter states. Furthermore, in the first part of the paper he states that “all bridges are weak ties” (i.e., the logical relationship: bridge ⇒ weak tie), while in the latter, i.e., empirical evidence of the paper, he states the reverse; “all weak ties are bridges” (i.e., the logical relationship: weak tie ⇒ bridge). This invites a re-examination of the “strength of weak ties” theory.

The Concept of Bridge

Let us first outline Granovetter’s (1973) theory. A bridge is a line in a network that provides the only path between two points (Harary,
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Specifically, only the tie A-B in Figure 1(a) is a bridge. The other ties cannot be bridges because several paths exist between the two end points. Since Figure 1(b) also has tie C-D, tie A-B is not a bridge, because paths other than A-B, such as ACDB, can connect the two points A and B.

Granovetter then considers the strength of these bridges as ties. While we tend to imagine bridges as being strong ties, Granovetter concludes that bridges are weak ties.

**Forbidden Triad**

Let us now consider the two arbitrarily selected individuals, A and
B. If we assume a group of individuals \( S = \{C, D, E, \ldots\} \) with ties to either A or B or both, the stronger the tie between A and B, the greater the ratio of individuals in group S with ties to both A and B.

In other words, the overlapping between A and B’s friendship circles is least when there is no tie between A and B, greatest when there is a strong tie between A and B, and somewhere in between when A and B share a weak tie. According to this hypothesis, dyadic ties can be connected to larger structures.

Figure 2 shows a triadic situation with strong ties between A and B, and between A and C. What happens to the relationship between B and C if we use this hypothesis here? Let us discuss two factors: 1) time and 2) similarity.

1) Time

The hypothesized relationship exists due to the tendency that the stronger the tie, the greater the temporal commitment. If ties A-B and A-C exist, the time B and C spend together depends on the time A spends with B and C, respectively. If the phenomena “A and B spending time together” and “A and C spending time together” are independent, and if we say that A and B spend 60% of their time together, while A and C spend 40% of their time together, then A, B, and C will spend 24% \((0.6 \times 0.4)\) of their time together. Even supposing that there is no tie between B and C, if both B and C have a strong tie with A, then mutual interaction will occur between B and
C, and a tie will form.

2) Similarity

The hypothesis is plausible from experimental evidence that the stronger the tie linking two individuals, the more similar the two will become in various aspects. This is because if there are strong ties between A and B, and between A and C, then both B and C will become more similar to each other by becoming more similar to A. This results in a greater chance of strong ties forming between B and C if they meet.

Given these two factors of time and similarity, we also see that the weaker the ties A-B and A-C have, the less chance there is of forming tie B-C. The hypothesized relationship between B and C can also be predicted according to the theory of cognitive balance discussed by Heider (1958) and Newcomb (1961). It is also said that there are some direct evidence of the existence of the hypothesized relationship.

Let us describe the above argument more accurately and attempt to determine what we can draw from the hypothesis. First, let us assume that there are three categories of relationships: (1) strong tie, (2) weak tie, and (3) absent. Let us consider the three points A, B and C. Certainly, Figure 3(a) shows that the triad is most unlikely to occur: strong ties between A-B and A-C, and no tie between B-C. However, Granovetter exaggerates this further to assume that this triad will never occur, that is, Figure 3(a) shows a “forbidden triad.” In other words, the hypothesis states that where there are strong ties between A-B and A-C, there will be either a weak tie between B-C, as shown in Figure 3(b), or a strong tie, as shown in Figure 3(c).

Granovetter states that some evidence exists for the absence of the triad shown in Figure 3(a). Davis (1970, p. 845) analyzed 651 sociograms and found that in 90% of them, triads consisting of two mutual choices and one non-choice occurred less than the expected number of times. We assume that mutual choice indicates a strong
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Newcomb (1961, pp. 160–165) reports that in triads, including dyads expressing mutual high attraction, the configuration of three strong ties became increasingly frequent as people knew one another longer and better, and that the triad shown in Figure 3(a) became much less frequent.

**A Bridge is a Weak Tie**

Granovetter combines (1) and (2) mentioned above to conclude that “no strong tie is a bridge.” This is because if there is a strong tie between A-B, and A or B has another strong tie (for instance, A-C), then the forbidden triad means that there is also a tie between B-C; therefore, A-B cannot be a bridge, as shown in Figure 4(a).
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In contrast, as shown in Figure 4 (b), strong tie A-B can be a bridge only when all other ties from A or B except tie A-B are weak ties; however, Granovetter dismisses such a scenario as unlikely, and concludes that “all bridges are weak ties.”

**Granovetter’s Leaps in Logic**

Granovetter’s argument that “bridges are weak ties” comprises two leaps in logic. One relates to “forbidden triads.” Certainly, triads in which there is no tie between B-C despite strong ties between A-B and A-C appear not to occur frequently. However, there is no basis or proof for insisting that they “never occur.” We must note that “forbidden triad” is only an assumption.

The other relates to the conclusion that “bridges are weak ties” by
baselessly dismissing the conditions for strong tie A-B to be a bridge as “unlikely” (all other ties from A or B except the tie A-B are weak ties, as shown in Figure 4(b)). Logically, it is clear that a certain tie being a weak tie is not sufficient condition to prove that it is a bridge.

Strictly speaking, the assumption that forbidden triads do not occur concludes the following: if the end points of a bridge have strong ties other than the bridge, then “bridges are weak ties.” In other words, it is unreasonable to conclude that “bridges are weak ties”; a more suitable conclusion would be to identify that “bridges are not limited to strong ties, but rather are very likely to be weak ties.”

Moreover, none of the studies cited as supporting evidence succeed in identifying bridges. For example, Granovetter’s own study conducted a random sampling survey of professional, technical, and managerial workers in a Boston suburb who had recently changed jobs. He asked those who found a new job through contacts how often they saw the contact around the time that the job information was passed onto them. Of those who found jobs through personal contacts ($N = 54$), 16.7% reported seeing their contact “often” (at least twice a week), 55.6% reported seeing their contact “occasionally” (more than once a year but less than twice a week), and 27.8% “rarely” (once a year or less). If frequency of contact represents the strength of the tie, then people connected through weak ties were more useful in providing information about the job. The latter part of the paper lists studies and research results that emphasize the importance of these weak ties, but this does not prove whether these weak ties are bridges. Granovetter consistently summarized these studies’ results as if weak ties were bridges (weak tie $\Rightarrow$ bridge). Here, in addition to the forced conclusion that “bridges are weak ties” (bridge $\Rightarrow$ weak tie), we can see another leap in logic (or perhaps a reversal of the direction of the arrow).

In any case, while the paradox in the title “The Strength of Weak
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Ties” is amusing, Granovetter (1973) is a celebrated work that has given rise to a variety of discussions.

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*Received March 2, 2012; accepted April 17, 2012*