Visualizing Rivalry Intensity: A Social Network Analysis of Fan Perceptions

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Sport contests against rivals are believed to influence attendance (Morley & Thomas, 2007), TV viewership (Forrest, Simmons, & Buraimo, 2005), and sponsorship activities (Bee & Dalakas, 2013). The importance of these games leads sport organizations to include clauses in contracts that reward coaches for beating designated rival teams (McCarthy, 2007), and scholars regularly include a proxy for rivalry as a predictor in short-run demand estimation models (McDonald & Rascher, 2000; Paul, 2003; Price & Sen, 2003; Welki & Zlatoper, 1999). Yet despite the term’s prominence in the sport industry and academia, there is a high degree of ambiguity surrounding the concept of rivalry. For instance, determinations of whether a particular opponent is a rival are often arbitrary and inconsistent even in scholarly research (Havard, Gray, Gould, Sharp, & Schaffer, 2013; Tyler & Cobbs, 2009). No clear method exists to quantify the degree to which an opponent is a rival, evaluate if rivalry is a bidirectional concept, or assess the number of rivals a team can maintain. This lack of clarity on rival definitions makes for good barroom banter, but the ambiguity severely inhibits theory development and creates the potential for misaligned marketing strategy, improperly structured compensation incentives, and inaccurate estimations of demand variance.

Central to the conceptualization of rivalry is the process of social categorization and seeing the self and others as members of ingroups and outgroups (Hogg, 2006; Stets & Burke, 2000). For some sport fans—especially those deemed highly identified—a favorite team becomes an extension of one’s self, and opposing teams and their fans are seen as dissimilar outgroups (Wann, Melnick, Russell, & Pease, 2001). While any outgroup has the potential to threaten one’s self-concept (Dietz-Uhler, 1999; Hewstone, Rubin, & Willis, 2002), we view a rival as being a highly salient outgroup that poses an acute threat to the identity of the ingroup. This conception is akin to other definitions, which have described a rival as a “disliked competitor” (Dalakas & Melancon, 2012, p. 53), an “outgroup” (Luellen & Wann, 2010, p. 98), and an opponent with whom one has an intense, often acrimonious relationship (Benkwitz & Molnar, 2012; Spaaij & Geilenkirchen, 2011). While all these views have merit, none specify the measurement and degree to which a specific relationship between groups qualifies as a rivalry. As such, the current line of research seeks to bring clarity and consistency to the rivalry discussion by quantifying the perceived rivalries within a closed network of organizations.

To accomplish this purpose, we survey college football fans (n=5,317) from 122 Football Bowl Subdivision (FBS, or Division I-A) teams using an online questionnaire posted on 194 fan message boards. The survey provides each respondent 100 “rivalry points” to allocate across opponents of his or her favorite team; for each direction of a dyadic relationship (rivalry), we calculate the mean point totals across a team’s respondents to determine a rivalry score. We also include additional measures of respondent identification with the team (µ=5.2/7.0; adopted from Mael & Ashforth, 1992), schadenfreude toward opponents and/or their fans (Dalakas & Melancon, 2012), behavioral measures of bias (Pettigrew & Meertens, 1995), and basic demographic questions. Through employing social network analysis (SNA), we graphically map rivalry scores in Netdraw and conduct further statistical analysis via UCINET SNA software (Borgatti, Everett, & Freeman, 2002).

Much of the network analysis results are most interesting when viewed graphically as nodes (universities) with bidirectional ties among them of various strengths (i.e., allocated points); however, several intriguing descriptive statistics emerge from our data as well. For example, the teams most frequently named as a rival—as measured by indegree centrality, which is often characterized in SNA as a measure of prestige (Wasserman & Faust, 2007)—are Notre Dame (30 times), Alabama (29), Ohio State (27), Southern California (24), Auburn and Texas (23 each). Several of the above named teams, with the addition of Florida, also measure the highest difference between indegree (other teams naming them as a rival) and outdegree (rivals indicated) centrality. This difference measure indicates a phenomenon of unidirectional rivalry where one team’s fans view an opponent as a rival, but the opposing fans do not share the same characterization of the dyad. The greatest margin between allocated points is
the Boston College (BC)-Notre Dame (ND) dyad, where BC fans assign 74.17 points to ND, but ND fans reciprocate with just 1.71 of their possible 100 point rivalry allocation.

Conversely, 23 dyads (rivalries) share an aggregated reciprocal point allocation greater than 100 where each team’s fans identify the other team as its biggest rival. For example, the Red River Rivalry between Oklahoma and Texas share a score of 129.82 points, where Oklahoma fans allocate 65.62 of their 100 rivalry points to Texas, and Texas fans assign 64.20 points to Oklahoma. These totals rank the Red River Rivalry as the tenth most-focused rivalry in our study; the top three rivalries by aggregated points are Army-Navy (182.5), Arizona-Arizona State (171.76), and Michigan-Ohio State (159.55).

Several additional SNA measures are informative in quantifying the importance of rivalry: a team’s ego network includes all other teams named as rivals by that team’s fans; out-degree—discussed above—is a measure of ego network size; ties indicate how many directional links occur between teams within a particular ego network; and density measures the existence of ties as a percentage of all possible ties, which is frequently employed in SNA as an indicator of group cohesion (Blau, 1977). In the rivalry network, the most cohesive ego networks belong to Wisconsin (density of 81.94) and Oregon State (78.57), which implies that many of their rivals are also rivals to each other. Finally, the Bonacich measure of power provides a weighted estimation of social capital in relational settings by taking into account the network centrality of others to which an actor (team) is tied (Bonacich, 1987). According to Bonacich power, Alabama (8117.81), Notre Dame (7194.69), Ohio State (6514.02), and Florida (6504.18) wield the most social capital in relation to rivalry. Across the entire network, we find the measure of Bonacich power highly, but not perfectly, correlates with all-time winning percentage ($r = 0.54$).

The social network analysis conducted in this research reveals many insights about the nature of rivalry, a few of which are detailed above. Further research based on our complete findings might explore the antecedents to the most heated rivalries, the impact of having multiple rivals, and the psychological effects of unidirectional rivalry. However, this study also offers the first attempt to quantify fan perception of rivalry across a large network of interconnected teams. These data provide the opportunity to empirically measure the impact of rivalry on a host of potential consequences, including ticket demand, sponsorship dollars, personnel compensation policies, and even fan violence.