THE SOCIAL CONTEXT OF SERVANT-LEADERSHIP ASSESSMENTS

—DANIEL STEWART
GONZAGA UNIVERSITY

—RICHARD MARTIN
GONZAGA UNIVERSITY

THE SOCIAL CONTEXT OF SERVANT-LEADERSHIP ASSESSMENTS

In Cervantes' literary classic *Don Quixote*, there is a remarkable scene in which Quixote describes the beauty of Dulcinea (the object of his passion) to his hapless squire Sancho Panza. Dulcinea's true identity is revealed to Panza, who recognizes her as a peasant girl from a neighboring village. Upon learning the young woman's identity, Panza attempts to persuade Quixote that Dulcinea (whose real name is Aldonza Lorenzo) is, in reality, quite plain and boorish. Quixote, who has never actually seen Dulcinea, rebuts Panza's exposé by boldly proclaiming, "I picture her in my imagination as I would have her be" (Cervantes, 1605). Quixote's moving declaration of faith reminds us that beauty is not necessarily a property of the object under judgment, but rather a conviction of the observer.

The same might be said of leadership. Modern studies of servant-leadership focus predominantly on attributes of the leader, describing characteristics and behaviors of the individual leader that are proposed to create superior leadership. However, attributes held by the leader do not necessarily translate into good servant-leadership unless those qualities are recognized and assessed as such by those being led. Thus, a more general theory of servant-leadership should include an analysis of the larger social structure that affects the manner in which some individuals emerge as recognized servant-leaders and others do not.

The International Journal of Servant-Leadership, 2008, vol. 4, issue 1, 321-345

Social scientists have long argued that mobility within a social structure (e.g. community, organization, etc.) is not an option that is equally available to each individual (Stinchcombe, 1979). Likewise, opportunities to lead and serve might be constrained for some individuals. Many may feel the calling to lead, but how many will be chosen or recognized as leaders? By analyzing the larger social structure in which leaders emerge, it becomes possible to build a theory of servant-leadership which acknowledges the role that individuals other than the focal individual (such as followers and peers) play in the attainment and bestowing of the role of servant-leader. In essence, we begin to integrate the traditional questions about what or who the servant-leader is, with the question of what the larger context of servant-leadership is.

The objective of this paper is to examine empirically the proposition that aspiring servant-leaders are subject to a process of social approval that defines who is able to attain the role of servant-leader. In order to do so, we conducted empirical analyses of peer assessments within a community of volunteer software programmers. By analyzing leadership within a community in which no formal authority exists, we can offer observations on the emergence of servant-leadership in a community in which voluntary service to the greater good is one of the most desirable attributes of community membership.

SERVANT-LEADERSHIP

While leadership characteristics similar to those of servant-leadership have been exemplified and espoused by others (e.g. Humphreys, 2005; Sorros, 2002), it was Greenleaf who began the modern discourse on servant-leadership as a legitimate leadership paradigm. Greenleaf (1977) drew his inspiration from a novel written by Hermann Hesse that detailed a spiritual pilgrimage to the East. The character that piqued Greenleaf's attention was the servant of the band of travelers. When the servant disappeared, the band of travelers quickly devolved into divergent factions that stalled in their progress and eventually abandoned their quest. Years later, the narra-

tor became aware that the sustaining presence of the servant marked him as the true leader of those who had undertaken the journey (Hesse, 1956). In a sense, the title of leader was bestowed on the servant by his peers as a result of his sustaining and guiding presence.

Much of the literary emphasis and effort regarding the topic of servant-leadership since its conceptualization has been on clarifying and characterizing the servant-leadership construct. Spears (2000) composed a list of ten major characteristics of servant-leadership that includes listening, empathy, healing, awareness, persuasion, conceptualization, foresight, stewardship, commitment to the growth of people, and building community. Graham (1991) characterized servant-leadership as being both moral and inspirational. Barbuto and Wheeler (2006) added to these characterizations by including having a "calling" as an eleventh characteristic of a servant-leader. With an analysis of the contrasting elements of other leadership constructs, Barbuto and Wheeler pared down the eleven characteristics to five major traits: altruistic calling, emotional healing, wisdom, persuasive mapping, and organizational stewardship. Laub (2005, p. 158) included "valuing and developing of people, the building of community, the practice of authenticity, the providing of leadership for the good of those led, and the sharing of power and status for the common good" as behavioral markers of a servant-leader.

Another branch of research on servant-leadership has focused on identifying the motivations behind servant-leadership. Van Dierendonck and Heeren (2006) suggest that the motivating factors of self-determination and personal resources lead to personal strengths such as integrity, authenticity, courage, objectivity, and humility. At the interpersonal level, these motivating factors should lead to empowerment of others and emotional intelligence. At the organizational level, these motivational factors should lead to stewardship and conviction.

Still others have proposed optimal factors that favor the adoption of servant-leadership over transformational leadership. Smith and colleagues concluded that situations which require evolutionary change are better

suited to servant-leadership (Smith, Montagno, & Kuzmenko, 2004). Humphreys (2005) further highlighted the influence of contextual variables on transformational and servant-leadership.

OPEN-SOURCE COMMUNITIES AND SERVANT-LEADERSHIP

One contextual factor that has been widely overlooked in studies of servant-leadership is the role of others in the selection of servant-leaders. In this paper, we will examine the role of others within the context of a community of open-source software programmers. The goal of the open-source software community is to preserve the freedom to run, copy, distribute, study, change, and improve software (Stallman, 1999). Some of the more notable open-source projects have evolved around the distribution of the Linux operating system, but there are, in fact, thousands of open-source projects (Axelrod & Cohen, 1999). The central idea behind open-source software is that anyone can get permission to run the program, copy the program, modify the program, and distribute modified versions, but no participant in the process can add restrictions of his or her own. For example, a programmer could copy part of an open-source program, modify the code, or even sell the new software to others at a profit, but the programmer would still be obliged to share the updated source code of the new product with others. Open source programming is a form of service to the larger software community. The members of open-source projects usually volunteer their time and skills in order to promote and continue the free exchange and improvement of software. Thus open-source presents a unique opportunity to study ways in which certain members rise to leadership in a servant-led community.

Study context

This study analyzes leadership assessments within the website Advogato.org, an online community of individuals who are involved in developing open-source software. Developers join the community voluntarily and

create online user accounts that they can use to post publicly available diaries and participate in public forums related to open-source software development. In the true spirit of open-source software, even the source code for the website is made publicly available. There is no special requirement to create an Advogato account. Anyone interested in participating or observing the activity within the community is welcome to join simply by filling out an online form to create a unique user identity. Users can choose the level of information they want to provide to the public about themselves. Users can (and most do) provide a link to their personal website, an e-mail address, and notes describing themselves and their work on open-source software projects.

For the purposes of this study, the especially important aspect of Advogato is its use of a system of peer certifications whereby any member of the community can provide a publicly displayed assessment of the reputation of others within the community. Peer certifications are used as the basis of a four-tiered status ordering consisting of Observers (no status conferred by others), Apprentices (low status), Journeyers (middle status), and Masters (high status). The criteria for defining a user's status revolve around that user's dedication to the open-source software community and an emphasis on how influential a user's contributions have been to open-source projects—in other words, judgments concerning the individual's leadership within the software community.

Once peer certificates are received, each certificate is weighted by the status of the sender and then combined with all other certificates received in order to compute a publicly displayed rank that corresponds with the overall quality of certificates that the member has acquired (with certificates from high-status others carrying the most weight). The algorithm is designed in a manner that ensures that those who are successful in attracting high-level peer certificates from high-status others within the community (Masters and Journeyers) are the most likely to gain high status themselves. Each new user is, by default, given the status of Observer. The only way in which a member can gain a ranking beyond Observer is to be assessed as such by

another member who already holds a status higher than Observer. In other words, a new Observer must be given the ranking of Apprentice or higher by at least one person who is already ranked at Apprentice or higher. In essence, the Advogato algorithm uses a community member's reputation for leadership behaviors in previous open-source projects to develop a community-generated status level that corresponds with others' perceptions of an individual's contributions and commitment to the open-source movement.

Certain parallels exist between the site's definition of a "Master" and some of the proposed characteristics of the servant-leader. For instance, Masters are recognized as leaders due to their excellent service and sustaining presence in the community. Masters join the community as volunteer servants (an altruistic calling) and are elevated to leadership status only through the recognition of their peers. One of the defining characteristics of Masters is their ability not only to develop the vision for a software project, but also to communicate it effectively to the rest of the community, which requires awareness, foresight, and the ability to conceptualize. The mentoring role of Masters also aligns clearly with the development of the larger community and its members. For a Master, listening, stewardship, commitment, and persuasion would be necessary traits to ensure continued progress of the open-source movement.

Journeyers (the rank below Masters) share many of the same characteristics. This rank could be thought of as a bridge between follower (Observer/Apprentice) and servant-leader. Journeyers show some of the defining characteristics of a servant (significant time contributions, competence, etc.) as well as exhibiting some of the major traits of a leader (making it happen, vision as an author, etc.). As such, community members at the rank of Journeyer also demonstrate some of the primary characteristics associated with the potential to become a servant-leader.

A final important correlation with servant-leadership is that the rank of Master/Journeyer is bestowed upon an individual by peers who recognize the Master/Journeyer as one who is well situated to lead others in the com-

munity to achieve their mutual goal. Because of the meaningful links between the definition of Master/Journeyer and servant-leader, Advogato is an excellent context in which to analyze the dynamics of how servant-leaders are designated as such by their peers, thus adding depth to our knowledge of servant-leadership in volunteer communities.

THE ROLE OF SOCIAL CUES IN LEADERSHIP ASSESSMENTS

Number of previous assessments

At some point, the aspiring servant-leader must be recognized and assessed as such by his peers. However, making leadership assessments concerning other individuals is a task rife with ambiguity. We often do not have direct experience with the leadership of others. In such a case, there may be a large amount of uncertainty, making it difficult for unfamiliar community members to assess each other's leadership status. One of most potent forms of reducing this sort of uncertainty is social influence. Social psychologists and sociologists alike have been interested in the effects of social forces on individual actions for many years. Social psychologists, in particular, were early pioneers in demonstrating the manner in which the individual is susceptible to the norms of the group (Asch, 1951; Newcomb, 1943; Sherif, 1966).

Social influence works in two ways (Ross & Nisbett, 1991). First, in the absence of direct knowledge, group members rely on information from others in deciding how to assess any particular individual. Second, in addition to informational aspects, social cues carry a great deal of normative pressure. The judgment of the group creates a normative influence that can push the group toward unanimity in opinion. For instance, in an early study of young students at Bennington College, Newcomb (1943) found that, due to social pressures for acceptance, the longer students were enrolled at Bennington, the more their political preferences shifted gradually and uniformly toward the prevailing position of the majority of the student body. Thus, personal opinions can be easily swayed by the opinion of the larger group.

Status of previous assessors

All assessments are not created equally, however. It has also been demonstrated that the opinions of high-status community leaders are likely to carry more weight than the opinions of low-status community members. First, high-status leaders are more likely to reflect the ideals of the community (Homans, 1950), which makes their opinions valuable to other members of the community. Second, low-status group members are likely to experience cognitive dissonance if their opinions do not match those of high-status members (Festinger, 1957; Heider, 1958).

These normative pressures influence our opinions of potential servant-leaders in the following manner: Since the opinions of high-status persons are valued more highly than are the opinions of low-status persons, receiving a positive leadership assessment from a high-status individual is more beneficial to any individual in gaining social acceptance as a servant-leader. Blau claimed that "an individual's endeavors to gain social acceptance in a group are furthered most by the approval of highly respected group members, since their approving opinions of him influence the opinions of others and thus have a multiplier effect" (Blau, 1964).

This effect has been shown to be especially strong in the open-source community. Stewart (2005) found that programmers were much more likely to be called Masters if their previous peer assessments came from other Masters, rather than from those of lower rank. Thus, it helps not only to get many peer endorsements, but also to get them from the right individuals, namely high-status individuals.

STABILITY IN LEADERSHIP ASSESSMENTS

Implicit in the distribution of select individuals into leadership roles is the ordering or grouping of individuals along some sort of scale or continuum, called the status order, in which individuals are positioned relative to one another in an observable distribution of prestige. A noteworthy feature of status orders is that they are likely to become characterized by stability.

Individuals within a community become constrained by processes of status differentiation which Merton (1968) called the "Matthew Effect." The term is derived from the Book of Matthew (25: 29) in the New Testament, which states, "For everyone who has will be given more, and he will have an abundance. Whoever does not have, even what he has will taken from him." According to this principle, high-status individuals obtain greater recognition for performing a given task than do low-status individuals. As a result, high-status individuals see a greater return on investment for a given level of output than do low-status individuals and, therefore, accrue a long-term advantage, as the benefits of high status increasingly go to those who already have it at the expense of those who do not.

For instance, say Programmer A (high status) and Programmer B (low status) individually write identical software programs. According to the Matthew Effect, Programmer A will receive more recognition for the same piece of work, simply because of his/her higher status. As such, over time, Programmer A can invest the same amount of time into software programs as does Programmer B, but see a higher overall level of recognition for the same work. Therefore, the Matthew Effect creates and maintains inequality between low- and high-status individuals by giving greater rewards to those who have already have high status.

The more assessments an individual receives, the more solidified that individual's reputation for leadership should become. As a consequence, as the cumulative number of *positive* assessments regarding a focal individual's status increases, the likelihood of that individual's receiving *negative* assessments decreases. Put simply, if over time a large number of community members claim that a focal individual is a community leader, the likelihood of that person's being called a non-leader decreases (Stewart, 2005). Or, conversely, if a large number of others claim that a focal individual is not a leader, then the likelihood of that person's receiving positive leadership assessments decreases.

TENURE AND LEADERSHIP ASSESSMENTS

Because stabilizing processes take place over time, there should also be a temporal effect on the likelihood of a community member's receiving peer assessments. Since leadership positions become increasingly taken for granted, it seems plausible that as a focal actor's tenure in the community increases, others will feel less compelled to provide public statements regarding an actor's status. In essence, as the focal actor's position becomes increasingly stable, there is less public attention likely to be paid to that actor's rank. As an example, think of Gandhi. His status as a servant-leader is very well established. Thus, it makes little sense for one to come out and declare, "Gandhi was a good servant-leader." To the general audience, this is old news and not worthy of reporting.

Previous studies of open-source leaders have found a consistent effect of tenure (Stewart, 2006). The longer one holds the high rank of Master, the less likely it becomes that one will be called an Observer. Likewise, the longer one remains at the low rank of Observer, the less likely it becomes that one will ever attain positive assessments at the Master level. Moreover, the longer one is a member of the community, the less likely it becomes that one will receive assessments of any type. Thus, those who fail to quickly attain a positive leadership reputation run the risk of having their leadership image solidify in a low-status position.

THE EFFECTS OF RECIPROCITY

In previous studies of peer assessments, one of the most powerful determinants of an individual's receiving an assessment from another was the pre-existence of an endorsement from that other individual. Social scientists and philosophers have long held the belief that reciprocity is one of the most central tenets of society (Simmel, 1950). Gouldner (1960) hypothesized that reciprocity is so ubiquitous that it could be thought of as a universal norm—a "principal component" of our moral code. To the extent that this norm is internalized by members of a community, it becomes an

important mechanism of social stability (Evan, 1962), so much so that reciprocity has often been thought of as one of the primary bases of an organized economy (Polanyi, 1957).

Reciprocal transactions are those in which actors' contributions to an exchange are separately performed and non-negotiated (Molm, 1997). Actors initiate exchanges without knowing whether, when, or to what degree others will reciprocate. The tendency to act upon implicit reciprocal obligations may be dependent upon the extent of interdependence and the amount of communication among a set of social actors (Pfeffer & Salancik, 1978). The furthering of open-source software is a process which is highly dependent upon the input of others. Therefore, we suspect that interdependence should lead to strong effects of reciprocity within this community.

Reciprocal exchange of peer assessments is not a given, however. Individuals received a reciprocal assessment from others in only one quarter of the cases examined in this study, suggesting that within Advogato, the mere act of supplying an endorsement by no means guarantees a return, especially when the endorsement is received by one who is not known. Take, for instance, the following exchange between two members of the Advogato community:

> Message from *deekayan* (username) to *RoUS* (username):
> I appreciate the fact that you certified me. In fact, I think I had certified you at one point. . . . However, just because you certified me doesn't mean I'm going to certify you. . . . I don't know you, you're a master already, so you will have to excuse me if I don't ever certify you. . . not even for apprentice. I should hope that the others listed don't certify you just because you finger pointed either.
> Response from *RoUS*:
> Um, I wasn't pointing any fingers, and I too hope none of the people I named certify me simply because I named them. Certainly it's not a uniformly symmetrical arrangement, and I don't expect people to certify me 'just because' I certified them. I suspect you're overlooking one of the derivative effects, too: I'm sure I'm not the only one who checks out the distance–relationships. That is, if I know Heather, and Heather certifies me, if I notice that Heather has also certified Chris I'll have some little

> inclination to check out Chris' contributions (possibly resulting in a certification of Chris) because I respect Heather's judgment.
>
> —From the online blog of user id: *RoUS*

This particular community member (whose rank was Master) even posted lists of individuals who had certified him and for whom he was considering reciprocal assessments. The list was labeled, "People who have certified me about whom I need to find out more so I can evaluate returning the compliment." Ironically, this same user kept another list that was labeled, "People whom I have certified who have not returned the compliment," with a note that read, "Not all of them know me, so some of these are entirely reasonable. Others. . . well, in a voluntary system it's hard to say it's 'unreasonable,' but it rather seems that way in some cases." Thus, there is some evidence that reciprocal peer assessments are handled carefully by both receivers and providers.

It seems highly feasible that, if one individual has already assessed another, the norms of reciprocity and exchange may come to dominate the relationship, thus affecting the impact of social cues, such as the number and status of previous certifiers. In this study, we seek to analyze whether the effects of social cues remain strong even under the condition of reciprocity.

METHOD

For the purpose of this study, peer certificates can be used as evidence that a leadership assessment has been given to member *i* (ego) by member *j* (alter). Specifically, we model the likelihood that alter will certify ego at the level of Master or Journeyer, since these are the levels at which community members exhibit some of the characteristics of servant-leadership.

Model and Dependent Variable

Data was obtained from the original .xml files that were used to gener-

ate the Advogato.org website, using 13 discrete panels divided at roughly one-month intervals. Each panel lists every assessment given and received by each community member as of time *t*. Therefore, it is possible first to construct a data set consisting of every member-to-member dyad possible at time *t*. Then, using as the time axis the period that has elapsed since the birth of a particular dyad (that is, since the date that both members existed in the data set), one can estimate the likelihood that community member *i* (ego) will receive a peer certificate from community member *j* (alter) at time *t*. Because the exact form of time dependence for the process of assessment is not known, we use the piecewise constant exponential model, a flexible version of the standard hazard rate model that allows the hazard rate to vary with time in a fairly flexible way (Blossfeld & Rohwer, 1995). The basic idea of the piecewise exponential model is to split the time axis τ into l discrete time periods and assume that hazard rates are constant within each of these intervals but can change between them. Given time periods $\tau_1, \tau_2, \ldots, \tau_l$, a general form of the model is:

$$r(t)_{ij} = \exp(\acute{\alpha}_l^{(ij)} + A^{(ij)} * \alpha_l^{(ij)}) \qquad \text{if } \tau_l \leq t < \tau_{l+1}$$

where the dependent variable $r(t)_{ij}$ is the hazard rate (likelihood) of member *i* receiving a peer certificate from member *j* at time *t*, $\dot{U}_l^{(ij)}$ is a constant coefficient associated with the *l*th time period, $A^{(ij)}$ is a vector of covariates, and $\alpha_l^{(ij)}$ is an associated vector of coefficients. In order to model the effects of social cues on leadership assessments, we will employ models designed to assess the likelihood that ego will receive a positive leadership endorsement (that is, a peer certificate given at the level of Master or Journeyer") from alter at time t_1, using lagged covariates from time t_0.

Sampling

A random sample of 33% of the data (sampled randomly by ego's ID number) was used for the statistical analyses. In order to analyze the effects of social cues under conditions of reciprocity, we then selected only those observations in which there was a pre-existing rating of *j* by *i* at time t_0. During the period of the study, approximately 40% of the population

neither gave nor received a peer certificate. Leaving these non-participant individuals in the risk set could lead to bias in our models, since we could be comparing legitimate "at-risk" community members with those who are never really at risk of receiving a peer assessment. Therefore, individuals who neither gave nor received a peer assessment were excluded from the study. This resulted in a data set of 58193 observations across 21683 unique dyads.

Estimating the form of time dependence

An initial examination of the Nelson-Aalen cumulative hazard estimates revealed that the likelihood of ego receiving a peer assessment from alter was greatest in the earliest days of a dyad's history and then declined gradually for the remaining life of the dyad. Thus, the exponential hazard model was broken into pieces at the intervals of 50, 100, 200, and 400 days to produce five time periods. Exploratory qualitative analyses of baseline models with no covariates confirmed that the likelihood of receiving a leadership assessment declines in a pattern consistent with the time intervals chosen.

Independent Variables

Characteristics of ego

The model includes measures for the number of k others ($k \neq j$) who had previously given ego a peer assessment (as of t_0) at the levels of Master, Journeyer, and Apprentice, using the Observer category as a reference group. We predict that the likelihood of ego receiving an assessment at the level of the dependent variable increases with the number of others who have previously given ego a certificate at that level and decreases as the number of those who have given ego an assessment at other levels increases. Thus, the likelihood of receiving a Master certificate increases with the number of previous Master certificates and decreases with the

number of Journeyer, Apprentice, and Observer certificates. Similarly, the likelihood of receiving a Journeyer certificate increases with the number of previous Journeyer certificates and decreases with the number of Master, Apprentice, and Observer certificates

The average status of the k others who have previously assessed ego at each status level was computed by weighting each peer certificate according to k's rank (certificate from an Observer=1, Apprentice=2, Journeyer=3, Master=4) and then dividing this weighted score by the total number of others who had given ego an assessment at each level. For those individuals who had not received a peer assessment at that level, this variable was set equal to zero. As before, we expect that the likelihood of ego's receiving an assessment at a given level increases with the average status of others who have previously given ego an assessment at that particular level and decreases with the average status of those who have given ego an assessment at any other level.

Characteristics of alter

Indicator variables were included for alter's leadership rank at t_0 with the Observer category omitted for comparison. The models also include terms for the total number of assessments that had been given by alter as of t_0, as well as the average status of those whom alter had previously cited. There is also a variable for alter's tenure, since there may be negative tenure dependence in alter's motivations for giving a status reference. For example, individuals within a community can use references to others as a way to establish their own social identity. In the early stages of group membership, alter may be likely to use peer assessments as a signal to others, in essence broadcasting what alter believes his or her own social position to be. However, once that social position becomes established over time, the signaling benefit derived from issuing certificates to others decreases.

Reciprocity

The models also include a variable indicating at which level alter had been certified by ego as of t_0, with the Observer category omitted for comparison. A recent assessment should have a more powerful effect than one given long ago. Thus, the models also control for the natural logarithm of the number of days since ego first gave the peer assessment to alter.

RESULTS

Descriptive statistics are shown in Table 1 and estimates of the hazard rate models are found in Table 2. A meta-analysis reveals several important patterns. First, individuals with the leadership rank of Master are the least likely to reciprocate assessments. This particular pattern should have a strong effect on the stability of the status order in Advogato. Community members can rise to the level of Master only if they are certified as being a Master by other Masters. Community members can receive Master-level assessments from alters of all ranks, but Master-level assessments from non-Masters do not carry any weight when a member's rank is calculated. It seems as though current Masters are restrictive in the giving of Master-level assessments that are necessary for others to experience upward mobility.

It also seems as though ego was in a much better position to receive an assessment if she had assessed a community member who had a history of giving many certificates. Across all models, the likelihood of alter reciprocating increased significantly with the number of references that had previously been given by alter ($p<0.001$).

As one might predict, individuals were most likely to respond to assessments in a tit-for-tat exchange. An alter who had received a Master assessment from ego was nearly four times more likely to give a Master certificate than was an alter who had received an Observer certificate ($3.97= \exp(1.3787)$, $p<0.001$). This tit-for-tat pattern repeats itself in the Journeyer model.

Table 1. *Univariate Statistics for the Analysis of Leadership Assessments*

Variable	Mean	Std. dev	Min	Max
Variables describing j (alter)				
j's rank at t0 = observer	0.0927	0.2900	0	1
j's rank at t0 = apprentice	0.0792	0.2700	0	1
j's rank at t0 = journeyer	0.3793	0.4852	0	1
j's rank at t0 = master	0.4488	0.4974	0	1
j's tenure (in days)	375.9666	129.2244	48	667
Number of references given by j at t0	25.8658	32.7004	0	279
Average status of others rated by j	2.9875	1.0685	0	4
Variables describing i's certificate to j				
i gave master certificate to j at t0	0.3030	0.4596	0	1
i gave journeyer certificate to j at t0	0.4400	0.4964	0	1
i gave apprentice certificate to j at t0	0.1831	0.3868	0	1
i gave observer certificate to j at t0	0.0739	0.2615	0	1
time since j received certificate from i (in days)	199.2150	113.3668	21	413
Variables describing i (ego)				
Has received 50 or more certificates (1=yes)	0.1403	0.3473	0	1
Number of master certs received as of t0	10.3843	36.7586	0	496
Number of journeyer certs received as of t0	13.7170	14.4577	0	122
Number of apprentice certs received as of t0	3.8158	6.8131	0	46
Number of observer certs received as of t0	1.6010	2.8559	0	46
Average rank of others giving master certs	1.2229	1.4283	0	4
Average rank of others giving journeyer certs	2.4418	1.0232	0	4
Average rank of others giving apprentice certs	1.6831	1.4553	0	4
Average rank of others giving observer certs	1.6474	1.5290	0	4
i's tenure (in days)	356.6787	129.9096	48	667
Dependent variable				
i received master certificate from j	0.0684	0.2524	0	1
i received journeyer certificate from j	0.1840	0.3875	0	1
# of community members = 1704				
# of dyads = 21683				
# of observations = 58193				

Table 2. *Maximum Likelihood Estimates for Receiving a Leadership Assessment*

Variable	Model 1 Master certificate Coef.	Std. Err	P>|z|		Model 2 Journeyer certificate Coef.	Std. Err	P>|z|
tp1 <= 50 days	-6.6631	0.4571	0.000		-6.1289	0.2401	0.000
50 < tp2 <= 100 days	-4.4697	0.4210	0.000		-4.3660	0.2269	0.000
100 < tp3 <= 200 days	-4.3691	0.4239	0.000		-3.9494	0.2305	0.000
200 < tp4 <= 400 days	-3.4180	0.4405	0.000		-2.8229	0.2399	0.000
400 days < tp5	-3.2087	0.4917	0.000		-2.2916	0.2802	0.000
Variables describing j (alter)							
j's rank at t0 = apprentice	-0.3777	0.1536	0.014		-0.2662	0.0854	0.002
j's rank at t0 = journeyer	-0.9884	0.1300	0.000		-0.4801	0.0732	0.000
j's rank at t0 = master	-1.7085	0.1506	0.000		-1.0786	0.0845	0.000
j's tenure (in days)	-0.0062	0.0004	0.000		-0.0059	0.0002	0.000
# of references given by j at t0	0.0080	0.0009	0.000		0.0103	0.0004	0.000
Avg status of others rated by j	0.4556	0.0429	0.000		0.3535	0.0233	0.000
Variables describing i's certificate to j							
j received master certificate from i at t0	1.3787	0.1815	0.000		0.9999	0.1364	0.000
j received journeyer certificate from i at t0	0.9871	0.1687	0.000		1.6756	0.1281	0.000
j received apprentice certificate from i at t0	0.5340	0.1802	0.003		1.2833	0.1321	0.000
ln time since j received certificate from i	-0.8646	0.0508	0.000		-0.7365	0.0306	0.000
Variables describing i (ego)							
# of master certs received as of t0	0.0009	0.0005	0.111		-0.0213	0.0049	0.000
# of journeyer certs received as of t0	-0.0524	0.0032	0.000		0.0328	0.0048	0.000
# of apprentice certs received as of t0	-0.2070	0.0264	0.000		-0.0694	0.0064	0.000
Avg rank of others giving master certs	0.8079	0.0366	0.000		-0.0090	0.0138	0.518
Avg rank of others giving journeyer certs	-0.2289	0.0289	0.000		0.6457	0.0310	0.000
Avg rank of others giving apprentice certs	-0.0247	0.0240	0.304		-0.0573	0.0125	0.000
Avg rank of others giving observer certs	-0.1085	0.0225	0.000		-0.0046	0.0115	0.687
i's tenure (in days)	-0.0004	0.0003	0.243		-0.0028	0.0002	0.000
# of Dyads	21683				21683		
# of Events	1371				3841		
# of Observations	77886				72393		
Log Likelihood	-2005.47				-5058.56		
LR Chi-Square	5267.44	52 d.f.			7739.86	52 d.f.	
Prob > Chi-Square	0.000				0.000		

The likelihood of receiving a reciprocal certificate also decreases with the amount of time that has passed since the focal certificate was given. The natural logarithm of the number of days since ego certified alter was negative and significant in both models.

Social influence variables

Holding the control variables constant, the role of social influence appears to be quite robust. The direction and pattern of the coefficients across models mirrors the pattern we would predict for stability in leadership assessments. As the number and average status of those giving ego an assessment at a given level increased, the likelihood of alter giving ego an assessment at that same level also increased. Furthermore, as the number and average status of others giving ego a certificate at any level other than the level of the dependent variable increased, the likelihood of ego's receiving a certificate at the modeled level decreased. Finally, ego's tenure consistently produced a negative effect on the likelihood of receiving a certificate at any level.

Summary

Our predictions regarding the effects of social influence hold up well. In sum, people respond to what others (particularly high-status others) are saying when assessing the leadership status of community members. The presence of a reciprocal assessment was found to be important, with alter most likely to respond to ego's assessment in a tit-for-tat exchange. However, even holding reciprocal exchange constant, alter was still significantly influenced by the number and average status of others who had previously assessed ego.

Future studies

These models measure the effects of direct exchange between ego and

alter. However, not all social exchange situations are this direct. Generalized reciprocity describes a situation in which an individual feels obligated to reciprocate another's action not directly, but through a third actor who is also involved in an exchange relationship with alter (Ekeh, 1974). In a generalized exchange situation, what we might observe is the giving of leadership assessments to alter as an apparatus to seek reciprocal assessments from others within alter's social network. Although the data is not currently organized in a manner that would allow such an analysis, it would be interesting to conduct such an analysis in the future.

CONTRIBUTIONS

This study takes an extremely novel approach to analyzing the evolution of servant-leadership. First, instead of focusing on qualities and behaviors of the focal individual, this study looks at the effects of social cues on non-focal others, who then determine who becomes assessed as a servant-leader. A major assumption in this approach is that servant-leadership is not something that can be generated in a vacuum. An individual cannot decide on her own to become a servant-leader and then suddenly become a servant-leader. Instead, it takes the additional acknowledgement of others within the community to grant leadership status to an individual. Our findings suggest that overt assessments from recognized leaders greatly increase the likelihood that a focal individual will also be acknowledged as a leader. This extra step in the emergence of servant-leadership has not been addressed previously in empirical research.

A second major contribution to the servant-leadership literature is methodological. This study analyzes the judgment of servant-leaders at the level of the dyad—the most basic social unit available. By using this method, we avoid assuming that each individual within the community is judged by others in exactly the same light. Previous studies usually assign a leadership status to an individual with the implicit assumption that everyone else agrees with the given assessment. For instance, it would be typical to see an analysis of a highly visible leader, such as Gandhi, which assumes

that this person is uniformly regarded a model servant-leader when, in fact, there is likely to be some subset of people who do not actually think that this individual is or was a good servant-leader. There have been other leadership theories that focus on dyadic relationships, for instance Leader-Member-Exchange (LMX) (Danreau, 1976). However, these have mostly been focused on the issues of how to lead, in essence assuming that there is already a pre-defined and accepted leader/follower relationship in the dyad.

Finally, this paper adds contextual depth to our knowledge of servant-leadership by analyzing the emergence of servant-leaders in a real-world setting. By combining existing theories of servant-leadership with those of social science, we have been able to examine leadership assessments in a real volunteer-based community that relies mainly on servant-leadership for its progress, but is nonetheless subject to social forces that dictate who becomes labeled as a servant-leader.

Leadership Implications

For practitioners of servant-leadership, the effects of inertia in perceptions of leadership must be recognized as either an opportunity or a pitfall in the long-term development as servant-leader. For those who desire to become servant-leaders, it is essential for early actions to be consistent with the tenets of servant-leadership and for those actions to be perceived as such by peers. If an individual comes to be recognized by her peers as a potential servant-leader because of these early actions, that individual will begin building social inertia that will greatly enhance her chances of being recognized as a servant-leader and then retaining that status. If, however, that individual fails to establish this early social inertia, tenure dictates that the individual is less likely ever to become recognized as a servant-leader. Thus, the aspiring servant-leader should seize early opportunities to serve and lead while also successfully navigating the social structure that influences who will ultimately be acknowledged as servant-leader.

For those already considered to be servant-leaders by their peers, the effect of social inertia and tenure on leadership assessment creates a distinct

dynamic. Individuals who have already been assessed as servant-leaders by their peers become less likely over time to receive assessments that vary from this status. While this might be a reflection of the individual's continuing servant-leadership, the assessments may begin to simply be a function of inertia ("Matthew Effect," tenure, etc.) in social status. As a result, it is possible that an individual who has ceased to act as a servant-leader could still be recognized as such by his peers. For these individuals, the leadership challenge is to maintain the early actions that allowed them to attain the role of servant-leader, even after social forces have solidified their status as such.

CONCLUSION

In the end, Don Quixote does not get the girl. In fact, Dulcinea, as he knows her, does not even exist. Quixote exhibits many fine leadership qualities, including commitment, imagination, and joy (March & Weil, 2005). Yet, despite the strength of his conviction concerning the beauty of his beloved, Quixote is unsuccessful in gaining a large following. Except for his loyal companion Pancho Sanza (whose opinion apparently did not matter much, perhaps due to his lowly rank), Quixote remains the object of scorn and ridicule in the company of others who view his persistent and consistent failure as mere folly.

Much like Quixote, servant-leaders strive to remain true to a cause. Yet, it is left for others to first recognize the genius (or perhaps, in the case of Quixote, delusion) of the would-be leader and then to bestow upon that individual the true recognition of his or her servant-leadership. Although the distinction between leader and non-leader may be based on objective factors such as skill and commitment, we conclude that it is also highly likely that social constructivism (Berger & Luckmann, 1966) plays a key role in the assessment of servant-leaders. In the end, social cues may be a primary factor that defines the fine line between objectivity and subjectivity in our recognition of both servant-leaders and servant-leadership.

Daniel Stewart is an assistant professor at Gonzaga University, where he teaches strategic management, entrepreneurship, and leadership. In addition to his academic work, Dan is currently president of Dardan Enterprises and serves as a board member for various commercial ventures and Native American organizations. He received his Ph.D. in Organizational Behavior and his M.A. in Sociology.

Richard Martin is a graduate student at the Gonzaga University School of Business Administration.

REFERENCES

Asch, S. E. (1951). Effects of group pressure upon the modification and distortion of judgments. In H. Guetzkow (Ed.), *Groups, leadership, and men.* Pittsburgh: Carnegie Press.

Axelrod, R. M., & Cohen, M. D. (1999). *Harnessing complexity: Organizational implications of a scientific frontier.* New York: Free Press.

Barbuto, J. E., & Wheeler, D. W. (2006). Scale development and construct clarification of servant leadership. *Group and Organization Management, 31*(3), 300-326.

Berger, P. L., & Luckmann, T. (1966). *The social construction of reality: A treatise in the sociology of knowledge.* New York: Doubleday & Company, Inc.

Blau, P. M. (1964). *Exchange and power in social life.* New York: Wiley.

Blossfeld, H.-P., & Rohwer, G. (1995). *Techniques of event history modeling: New approaches to causal analysis.* Mahwah, NJ: L. Erlbaum.

Cervantes, M. d. (1605). *Don Quixote de la Mancha.* Madrid.

Dansereau, F., Graen, G., & Haga, W. F. (1976). A vertical linkage approach to leadership within formal organizations—A longitudinal investigation of the role-making process. *Organizational Behavior and Human Performance, 13,* 46-78.

Ekeh, P. P. (1974). *Social Exchange Theory: The two traditions.* Cambridge, MA: Harvard University Press.

Evan, W. M. (1962). Role strain and the norm of reciprocity in research organizations. *American Journal of Sociology, 68*(3), 346-354.

Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row Peterson.

Goulder, A. W. (1960). The norm of reciprocity. *American Sociological Review, 25*(2), 161-178.

Graham, J. W. (1991). Servant-leadership in organizations: Inspirational and moral. *Leadership Quarterly, 2*(2), 105-119.

Greenleaf, R. K. (1977). *Servant leadership: A journey into the nature of legitimate power and greatness*. New York: Paulist Press.

Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.

Hesse, H. (1956). *The journey to the East* (H. Rosner, Trans.). New York: The Noonday Press.

Homans, G. C. (1950). *The human group*. New York: Harcourt Brace.

Humphreys, J. H. (2005). Contextual implications for transformational and servant leadership: A historical investigation. *Management Decision, 43*(10), 1410-1431.

Laub, J. (2005). From paternalism to the servant organization: Expanding the Organizational Leadership Assessment (OLA) model. *The International Journal of Servant-Leadership, 1*(1), 155-186.

March, J. G., & Weil, T. (2005). *On leadership*. Oxford: Blackwell Publishing.

Merton, R. K. (1968). The Matthew Effect in science. *Science, 159*, 56-63.

Molm, L. D. (1997). *Coercive power in social exchange*. Cambridge: Cambridge University Press.

Newcomb, T. M. (1943). *Personality and social change: Attitude formation in a student community*. New York: Dryden Press.

Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. New York: Harper & Row, Publishers.

Polanyi, K. (1957). The economy as insituted process. In K. Polanyi, C. M. Arensberg, & H. W. Pearson (Eds.), *Trade market in the early empires: Economies in history and theory*. Glencoe, IL: The Free Press.

Ross, L., & Nisbett, R. E. (1991). *The person and the situation: Perspectives of social psychology*. Philadelphia: Temple University Press.

Sendjaya, S., & Sarros, J. C. (2002). Servant leadership: Its origin, development, and application in organizations. *Journal of Leadership and Organizational Studies, 9*(2), 57-58.

Sherif, M. (1966). *In common predicament: Social psychology of intergroup conflict and cooperation*. Boston: Houghton Mifflin.

Simmel, G. (1950). *The sociology of Georg Simmel*. New York: Simon & Schuster.

Smith, B. N., Montagno, R. V., & Kuzmenko, T. N. (2004). Transformational and

servant leadership: Content and contextual comparisons. *Journal of Leadership and Organizational Studies, 10*(4), 80-91.

Spears, L. C. (2000). On character and servant-leadership: Ten characteristics of effective, caring leaders. *Concepts and Connections, 8*(3).

Stallman, R. (1999). The GNU operating system and the free software movement. In C. Dibona, S. Ockman, & M. Stone (Eds.), *Open sources* (pp. 53-70). Sebastopol, CA: O'Reilly.

Stewart, D. (2005). Social status in an open source community. *American Sociological Review, 70*(5), 823-842.

Stewart, D. (2006). The trappings of status: The relationship between tenure and status in an open-innovation community. *The Journal of Research in Marketing and Entrepreneurship, 7*, 28-47.

Stinchcombe, A. L. (1979). Social mobility in industrial labor markets. *Acta Sociologica, 22*(3), 217-245.

van Dierendonck, D., & Heeren, I. (2006). Toward a research model of servant-leadership. *The International Journal of Servant-Leadership, 2*(1), 147-164.