

Audiences, Recognition and Individual Creativity:

A Core/Periphery Perspective

Gino Cattani
Department of Management & Organizations
Stern School of Business – NYU
40 West 4th Street
Tisch Hall Suite 7-14
New York, NY, 10012
Phone +1 212 998 0264
gcattani@stern.nyu.edu

Simone Ferriani
Dipartimento di Scienze Aziendali
Universita' di Bologna
Via Capo di Lucca, 34
40126 Bologna (ITALY)
Tel: +39051 2098073
Fax: +39051 2098074
rashomon@economia.unibo.it

Work-in-progress, please do not cite or circulate without authors' consent

November 16th, 2008

Audiences, Recognition and Individual Creativity:

A Core/Periphery Perspective

ABSTRACT

Sociological perspectives on creativity suggest that creativity is embedded in social systems from which individuals derive both inspiration and endorsement. Building on recent research emphasizing how legitimacy depends on consensus among audiences (or gatekeepers) about the features and activities of candidates, we illustrate the social structural underpinnings of individual creativity and discuss the implications that those positions hold for the recognition of candidates' creative work by their audiences. In particular, we argue that the extent to which creative work receives endorsement is a function of candidates' position within the field's social structure and the level of audience's field embeddedness. We situate the analysis and test our hypotheses within the context of the Hollywood motion picture industry, which we trace over the period 1992-2004. The theoretical implications of the results are discussed. Building on this research, we argue that the audience-candidate process of evaluation in any field implies that audience members will agree on the norms and the standards that specify what type of work will be judged as creative.

Key Words: Creativity; Core/Periphery; Audience; Recognition; Legitimation; Embeddedness; Film Industry.

1. INTRODUCTION

Despite a well established tradition that portrays individual creativity as a rather mysterious generative process occurring in the mind of the lonely genius, a growing body of research in the field of sociology has demonstrated that creativity is very often embedded within the broader social structure that shapes access to novel ideas and social support. Creative achievements in fields as diverse as science, art and business all exhibit a very similar pattern in that they are embedded in a network of actors who share ideas and act as both critics and supporters of each other's work (Collins, 1998; Simonton, 1999; Uzzi and Spiro, 2005). These accounts do not deny the role of individual talents and/or dispositions; yet they suggest that these qualities are mobilized and channelled into a context of intersecting relationships through which conventions are learned and ideas recombined.

In recent years the notion that social relationships are important to creativity has spurred organizational and managerial inquiry. Building on the basic idea that individuals can enhance their chances of generating novel outcomes by having access to diverse ideas and stimuli, scholars interested in the social side of creativity have increasingly investigated the production of creative work in relation to the configurations of individuals' social networks. Along this line, scholars have looked, for example, at the relationship between creativity and network features such as centrality (Perry-Smith, 2006), brokerage (Burt, 2004), cohesion (Obstfeld, 2005), strength of ties (Perry-Smith and Shalley, 2003), degree of small worldness, i.e., how much the network mirrors a small world (Uzzi and Spiro, 2005), and core-periphery (Cattani and Ferriani, 2008). This body of work has demonstrated that the adoption of a social network perspective can fruitfully inform the creativity literature and enhance our understanding of creativity at work (Perry-Smith and Shalley, 2003). Yet, by focusing mainly on structural explanations of generative creativity, this research has left largely untouched

another crucial dimension of individual creativity: the need for field legitimation – i.e., the process through which the new and unaccepted is rendered valid and accepted through consensus (Zelditch, 2001).

Regardless of how gifted or structurally well positioned individuals actually are, their creativity cannot be manifested in the absence of an audience that recognizes and supports their novel contribution. The generation of novelty and its recognition in fact are key dimensions of the same construct. It follows that in order to study creativity one has to acknowledge that the audience is as important for the genesis of any creative work as the individual to whom this work is credited. As Collins noted (1998: 52), creativity “[...] comes from realistically invoking existing or prospective intellectual audiences, offering what the marketplace for ideas will find most in demand.”

Although prevailing socio-structural explanations of creativity have focused on its generative dimension, the legitimacy dimension has been largely unattended. For instance, we know little about the reality that audiences’ assessments refer to norms and standards of evaluation which may prevent ‘free spirits,’ who are typically peripheral to the field and therefore not strongly (if not at all) assimilated into those standards, from receiving support and recognition for their creative effort.¹ Such individuals are in fact likely to face problems of internal solidarity and entrenched resistance in existing fields. As noted by Hargadon (2005: 23): “[...] no matter how original the insight, the label of creativity still depends upon how many others are convinced to adopt and extend these original ideas.” Following this line of thought we see various questions that merit further investigation: Which individuals are more likely to appeal to audience members who, in their role of gatekeepers, are entitled

¹ This is for instance the case of *mavericks* in art worlds. As pointed out by Becker (1982: 233): “Whereas integrated individuals accept almost completely the conventions of their work, mavericks retain some loose connection with it, but no longer participate in its activities [...] They propose innovations the art world refuses to accept as within the limits of what it ordinarily produces.”

to grant or deny recognition to individuals' creative work? What is the role of individuals' social structures in shaping audiences' recognition of their creative work? How do audiences choose among multiple creative contributions the ones worth endorsing?

We address these questions and extend previous research on the social structure of creativity by advancing an original conceptual framework that brings together socio-institutional perspectives on creativity (Csikszentmihalyi, 1996) and recent evidence on the social structure of consensus at the level of audience-candidate interface (Cattani, Ferriani, Negro and Perretti, 2008). This framework explains audiences' recognition of candidates' creative work as a function of candidates' positioning within the social structure of the field as well as the type of audience, as indicated by the degree of audience's embeddedness into the field itself. We define an audience as *embedded* when its members (gatekeepers) are industry peers. Because of their entrenchment into the field, embedded audiences tend to reproduce dominant social beliefs and norms, and hence are more likely to grant recognition to actors who are core rather than peripheral members of the network. Conversely, audiences are *non-embedded* when their members or gatekeepers are external to the field and therefore less entrenched into it. As they are less sensitive to the ritualized pressures for conformity and more attentive to features that reflect their own personal judgment rather than taken-for granted conventions, non-embedded audiences display lower proclivity towards reproducing similarity in the social patterning of the creative field (Podolny, 1993).

The empirical setting is the Hollywood motion picture industry, which we traced over the period 1992-2004. This industry provides an ideal setting for testing the implications from our theoretical framework. First, the industry has long embraced arrangements featuring flexible and short-term relationships that rely on enduring networks, in which mutual trust and reputations have been cemented over time (Faulkner and

Anderson, 1987). As they work on movie projects, individuals forge a texture of relationships that underpins and shapes their future work and outcomes. Second, this is an industry that grants systematic recognition to its members for their creative achievements through a large number of organizations that bestow awards to those who make a significant contribution to the field (Simonton, 2004a; Gemser et al., 2008). Third, creativity is central to the film production process since each movie is a unique product whose completion requires the daily creative efforts of several individuals working closely together.

The paper is organized as follows. In the next section (2), we present the theory and the hypotheses. After that we describe the empirical setting (3), the data (4), the variables (5), and the model and methods used in the analysis (6). We then summarize the findings (7) and conclude (8) with the contributions, limitations and possible extensions.

2. THEORY

2.1. The Social Embeddedness of Creativity

Stories about the generation of original ideas emphasize the role of creative people (whether intellectuals, artists or scientists) where the creators are credited with great intellectual ability or some other quality that enabled them to devise unusual solutions. However, the risk of looking at the *self* as the privileged locus of inquiry is to romanticize the fringe by overestimating the importance of novelty and originality in creative work, and therefore downplay the need for recognition, resources and disciplined professionalism that often come from intellectual fields' social core (White, 1993; Collins, 1998). In the arts as well as in the sciences, creativity is as much the result of individual achievements as is the result of the field's recognition or acceptance of those achievements. As Simonton (1999: 5) noted, "[...] unrecognized genius becomes an oxymoron."

A classic illustration of the previous point is Van Gogh's work. Everyone now agrees that Van Gogh's paintings reveal his creative genius, even though his contemporaries failed to recognize it. Are we now more conscious than Van Gogh's contemporaries of what great creative work actually is? The truth is that Van Gogh's canvases became to be seen as highly creative only after other artists and critics began to pay attention to and interpret those canvases through the lens of new aesthetic criteria. Without such a response Van Gogh would have remained what he was, a sociopathic recluse who drew 'hallucinatory' original paintings (Csikszentmihalyi, 1996). Just as the sound of a tree falling in the forest is unheard of if there is no one there to hear it, so creative work vanishes unless there is a receptive community to record and support it; and without the assessment of appropriate observers there is no reliable way to establish whether an individual's creative claims are valid.

Established definitions of creativity further stress how creativity is embedded in a social system and therefore socially construed. Amabile, for instance, suggests that a person, product or response can be viewed as creative "to the extent that appropriate observers independently agree it is creative [...] Thus creativity can be regarded as the quality of the products or responses judged to be creative by appropriate observers" (1996: 33). Another widely used definition is the one developed by Stein (1953: 131) who describes creativity as "a process which results in a novel work that is accepted as tenable, useful or satisfying by a group at some point in time". It is apparent from these definitions that creativity embodies two critical dimensions: (1) the production of novelty; and (2) the recognition of this novelty.

In the last few years sociologists and organizational scholars interested in the social side of creativity have paid considerable attention, both theoretical (Perry-Smith and Shalley, 2003; Schilling, 2005) and empirical (Burt, 2004; Uzzi and Spiro, 2005; Perry-Smith, 2006), to the generative dimension of creativity. Building on Coleman's (1988) and Granovetter's

(1973) landmark ideas, the bulk of this research has focused on structural and relational explanations of creativity aimed at understanding the emergence of novel outcomes in relation to the particular configuration of an actor's social network. Virtually no research, however, has examined the influence of these socio-structural features on the recognition dimension of creativity (for a recent exception see Fleming et al., 2007). This, we believe, is a significant shortcoming because the structure of social networks bears important implications not only for actors' creative efforts but also for their ability to build consensus and gain legitimacy in the eyes of their audiences. The idea is perhaps most clearly articulated in the sociology of science (Merton, 1973; Latour, 1987) where it is suggested that scientists are more likely to mobilize attention around their accomplishments as they establish connections with community gatekeepers. Similarly, socio-psychologists (Csikszentmihalyi, 1996; Simonton, 1999) and sociologists (Becker, 1982; Collins, 1998) provide various accounts of artists whose creative talent came to be recognized through the leveraging of insiders' and mediators' support networks that carried word of the artist's achievements (Lang and Lang, 2001).

We take two related steps to address this shortcoming. First, we build on institutional as well as socio-psychological research on creativity to discuss the role of social expectations and consensus in shaping the genesis and recognition of creative work (Ford, 1996). Following Zuckerman (1999) and Zuckerman and colleagues (2003) we frame this legitimating process as an interface between a set of candidates (the creative contributors) who compete in the field with one another to be selected by an audience (the creativity gatekeepers). But whilst extant studies typically focus on the role of one single audience, we distinguish between different types of audiences carrying different expectations and therefore inducing different behaviours. Second, drawing from Cattani and Ferriani's (2008)

characterization of candidates as occupying shifting positions in the social system along a core-periphery continuum, we illustrate the social structural underpinnings of both dimensions of creativity (i.e., novelty generation and recognition), and discuss the implications that those positions hold for the reception of candidates' creative work among audiences. In particular, we argue that the extent to which candidates elicit appeal for their creative work among audiences is a function of their core-periphery position within the social structure of the field as well as the degree of audience embeddedness into the field. Thus, recognizing the role of audiences in social interactions and accounting for the influence that normative expectations have on the process of evaluation of any creative work will enhance our understanding of the conditions under which creativity is nurtured and made manifest.

2.2. Social Structure, Conformity and Recognition

One of the most influential advocates of the need to examine creativity as the interaction between individual actors and their audiences is social-psychologist Csikszentmihalyi. Building on the notion of creativity as a subjective assessment of the product of individual action, Csikszentmihalyi (1988, 1990, 1996, 1999) developed a theory of creativity where the genesis of a creative act can be fully understood only by looking at the interrelationship between three subsystems: the *individual* – i.e., the person who serves as the source of variation to the field; the *field* – i.e., the audience members who are entitled to make decisions as to what should or should not be included in the domain; and the *domain* – i.e., the standards and norms of a recognized area of action. While the individual is critical in triggering change, the audience members who populate the field and personify the domain serve to select creative acts that subsequently elaborate the domain (see also Ford, 1996:

1114). The thrust of the theory is that creativity emerges and is made manifest as long as it conforms to audience members' expectations about what should be regarded as creative.

This view of creativity echoes current formulations of legitimacy by sociologists who fundamentally consider legitimation (the process by which legitimacy is achieved) a collective process that implies the presence of both social audiences and social objects being evaluated, and which further depends on audience consensus regarding what features these objects should have to be accepted in social contexts (Zuckerman, 1999; Zuckerman et al., 2003; Johnson, Dowd and Ridgeway, 2006). Similarly, institutional scholars and organizational ecologists argue that legitimacy depends on consensus among actors (audiences) that the features and activities of organizations (candidates) are appropriate and desirable within a widespread, taken-for-granted system of norms or social codes (Hsu and Hannan, 2005; Hannan, Pólos and Carroll, 2007; Cattani et al., 2008). The generation of a creative outcome subsumes the same basic collective process of social validation. As noted by Csikszentmihalyi (1999: 321): “[...] without some process of social validation it would be impossible to distinguish ideas that are simply bizarre from those that are genuinely crazy.”

The occurrence of a process of social validation presupposes the existence of social judgments and therefore normative criteria to which attributions of creativity must refer. These cognitive as well as technical conventions may influence creativity in several ways such as giving direction to creative behavior (e.g., valuing cubism over realism in paintings), increasing the number of creations, stressing variety over continuity (and vice-versa), or influencing the means by which creativity is expressed. Thus, audience members not only raise expectations by setting norms and standards to which individual members must conform, but also act as gatekeepers by evaluating candidates' degree of conformity to such constitutive expectations (Crane, 1976). Candidates will obtain recognition and rewards for

their creative work, so long as they conform to established patterns of thought. Institutional selection processes, in other words, can influence interpretations that facilitate certain creative acts while downplaying others (Ford, 1996).

The relationship between institutional norms and standards, and the manifestation of creativity is central to our explanation of why we should expect audience members' attributions of creativity to map onto the social structuration of the field. The social structure of the field, in fact, plays a central role in shaping candidates' adherence to (or departure from) the norms and standards of the field itself (Merton, 1959). This is one of the oldest arguments in social psychology (see classic work by Festinger, Schachter and Back, 1948) and rests on the realization that greater embeddedness makes ideas about proper behavior more likely to be discussed repeatedly and to become crystallized. In this paper we refer in particular to the degree of socio-structural embeddedness because actors who are deeply embedded in their social system are more likely to conform to the conventions that characterize their area of expertise and thus reproduce ideas or styles accepted in the past. As pointed out by Jones et al. (1997: 929): "The more structurally embedded (e.g., the more connected and frequently interacting) the industry participants, the more widely they share their values, assumptions, and role understandings." High social embeddedness also renders deviance from resulting norms and standards harder to hide and, therefore, more likely to be punished (Granovetter, 1985). In contrast, actors who are less deeply embedded are not subject to such strong assimilative pressures and therefore are freer to pursue divergent ideas (White, 1993). In line with this idea, Moody and White's (2003) analysis of political behavior showed that, as a cluster's cohesion increases, actors behave more similarly, despite still having – theoretically – the freedom to be different. Indeed, high levels of connectivity tend to homogenize the pool of knowledge and promote common information exchanges,

decreasing individuals' vision and appetite to go beyond of conventional ideas (Lazer & Friedman, 2007).

Following Cattani and Ferriani (2008) we analyze the relationship between candidates' structural embeddedness and their likelihood of eliciting audiences' recognition for their creative work in terms of an actor's position along the core-periphery continuum of the field's social structure. Network theorists describe a core-periphery social structure as being characterized by a cohesive subgroup of core actors and a set of peripheral actors that are loosely connected to the core (Borgatti and Everett, 1999). Peripheral players reside in the boundaries of the network and hence are not as visible or socially engaged as those in the core. Conversely, core actors are usually key members of the community, including many who act as network coordinators, and have developed dense connections between themselves. Being entrenched in the social system core actors tend to more closely share ideas and habits.

The core-periphery imagery has been repeatedly evoked by scholars interested in the drivers of institutional change and the origins of innovation more generally. For instance, institutional researchers have shown that radically new practices are more likely to be pioneered by peripheral rather than core organizations (Leblebici et al., 1991). According to Perry-Smith and Shalley (2003: 98), in fact, "a peripheral position in a given network may suggest connections outside the network that can facilitate creativity." Similarly, work by sociologists suggests that major intellectual achievements in art and science are often associated to peripheral positions. Collins (1998: 532), for example, noted that "some of the greatest philosophers are connected to multiple circles but are core members of none. We see in such network positions Spinoza, Leibniz, Locke, Bayle, along with the great free lancing scientists Newton and Heygens." This body of research shares the central idea that

the fringe of the field allows for higher levels of experimentation and exposure to fresh stimuli that are not available in its core, whereby field conventions are widely accepted and exert strong conformity pressures on actors' creative efforts.²

By standing on the fringe of the network, peripheral actors can elude the homogenizing influences typical of an established institutional framework and therefore attend more easily to original sources of inspiration that may prompt unconventional solutions. Insulation from conformity pressures, however, also implies that peripheral players have limited ability to gain attention and recognition within these networks. Core players' entrenchment within the field's networks, by contrast, forecloses deviant ideas stimulating adherence to the field's institutionalized conventions. These conventions are typically grounded in social relations, from which they receive justification as well as motives for observation Becker (1982: xxx). As Uzzi and Spiro (2005: 461) noted, "[...] creative material is embedded in conventions and [...] conventions are learned and gather strength within networks of personal contact." Yet, unlike peripheral players, core players enjoy the kind of leverage that is required to elicit recognition among community gatekeepers. It is in fact easier to mobilize constituencies and gather attention in a cohesive social structure like the core of the network than it is in its fringes (Knoke et al., 1996).

2.3. Audience Embeddedness and Rewards

Because core players are more likely to produce work that conforms to prevailing norms and because they have superior access to constituencies, it is plausible to expect audience

² Michael Polanyi's (1963: 1013) description of the genesis of one of his major contributions to physics is indicative of this tension: "I would never have conceived my theory, let alone have made a great effort to verify it, if I had been more familiar with major developments in physics that were taking place. Moreover, my initial ignorance of the powerful, false objections that were raised against my ideas protected those ideas from being nipped in the bud."

members to exhibit a systematic tendency to grant core players recognition. The previous arguments, in other words, might suggest the existence of a social structural ordering of creativity, whereby disproportionate recognition accrues to the creative accomplishments stemming from the core of the social field. Such a prediction appears especially warranted insofar as the members of the audience have strong and uniform incentives to enforce standard codes of evaluation and preserve the institutional logics of the field. Yet candidates are often exposed to different types of audiences, each using different standards of validation. In her seminal work on reward systems in cultural institutions such as art, science and religion, Diane Crane (1976) was among the first to examine the implications resulting from the existence of different audiences adopting heterogeneous assessment criteria. In particular, according to Crane a major source of variation in the functioning of reward systems is the extent to which candidates control the system by wearing two hats, that is, assuming the dual role of candidates and gatekeepers. Following Crane's reward systems model one can in fact envision the existence of two polar cases, which we define *embedded* and *non-embedded* audiences, respectively.³

An audience can be viewed as embedded when the candidates seeking validation and the gatekeepers who can bestow it are the same actors, peers from the same community, taking on different roles. In their role of gatekeepers, candidates can thus contribute to set the norms and standards by which even their future work will be evaluated. This is the case of most scientific fields where gatekeepers are 'recruited' from prominent fellow scientists. As Wijnberg (1995: 226) noted, "[S]cience can be understood as a competitive process in

³ The first case, i.e., innovators or creative individuals are also gatekeepers, coincides with Crane's (1976: 721) *independent reward system* in which "cultural innovations are produced for an audience of fellow innovators. Innovator themselves set cognitive and technical norms and allocate symbolic and material rewards." The second case, i.e., gatekeepers are not innovators, encompasses a wider range of possibilities that Crane (1976: 721-722) labels as *semi-independent*, *sub-cultural* and *hetero-cultural reward systems*, respectively.

which scientists attempt to successfully market scientific products. Published papers are the best equivalents of products [...] Consumers are also producers, fellow-scientists: the editors and referees of journals, other writers who quote you and use your models and theories.”

Audiences are non-embedded when candidates and gatekeepers are distinct from each other, with the former not directly involved in setting the norms and standards the latter apply to their work. In this case the dominant type of selection is expert-selection. While experts are not the producers of creative work, they have the right to ‘bless’ as is typically the case in art (Bourdieu, 1993). For instance, within the context of avant-garde art, Wijnberg (1995: 229-230) noted: “There is, of course, a market for avant-garde art but this market is dominated by the expert gate-keepers. The most successful artists in the “open” market are associated with leading galleries and/or championed by leading critics and curators [...] The judgment of the experts thus defines the paradigm and the success of individual producers is again determined by their position in product space and population density.”

The distinction between embedded and non-embedded audiences holds important implications for the relationship between candidates’ position in the social structure and their likelihood of eliciting rewards for their creative work. In particular, we expect core candidates to appeal to embedded audiences because their work is more likely to conform to the field’s norms and standards and because they have greater ability to mobilize attention and constituencies. Embedded audiences have a vested interest in protecting institutionalized conventions and using their influence to maintain the status quo. Sociologists of science have provided extensive evidence about peers’ resistance (Barber, 1961; Merton, 1968). As an illustration consider the case of the Norwegian mathematician Niels Henrik Abel who, early in the 19th century, demonstrated the impossibility of solving the general equation of

fifth degree, a classical mathematical problem (Stubhaug, 2000). Despite his breakthrough solution, Abel was unknown at the time and there was no one of any considerable professional standing in Norway who could sponsor his work. He sent his paper to various illustrious foreign mathematicians, the great Gauss among them, without eliciting any attention: “Gauss merely filled the leaflet away unread, and it was found uncut after his death, among his papers” (Barber, 1961: 600). Even medical specialists have a long history of resisting scientific inventions from what they define as ‘the outside.’ Pasteur, for instance, faced violent resistance from contemporary medical specialists when he advanced his germ theory. He regretted that he was not a medical specialist because medical specialists regarded him as a mere chemist poaching on their scientific preserves, thereby not worthy of their attention (Olmsted and Fulton, 2008).

In the case of non-embedded audiences, on the contrary, candidates are not directly involved in setting the norms and the standards gatekeepers will apply to assess their work. Therefore, we expect non-embedded audiences to be more receptive towards divergent creative work, which typically (though not exclusively) originates from the fringe of the field where conformity pressures tend to be lower. In fact, non-embedded audiences have stronger incentives to promote truly original and novel contributions because their reputation as experts is greatly enhanced whenever they discover new, yet unknown, talents who eventually rise to notoriety. Moreover, since candidates are distinct from gatekeepers, we also expect non-embedded members to be less sensitive to core candidates’ attempts at mobilizing attention in their favor. . Empirical and anecdotal evidence supports this claim. In the field of photography, for example, Robert Frank’s groundbreaking book, *The Americans*, was opposed by peer photographers when it first appeared in 1958 as it gave up the then conventional view. Indeed, “[...] the angriest responses to *The Americans* came from

photographers and photography specialists ... Who recognized how profound a challenge Frank's work was to the standards of photographic style – photographic *rhetoric* – that were in large part shared even by photographers of very different philosophical postures” (Becker, 1982: 112). Popular Photography derided his images as “meaningless blur, grain, muddy exposures, drunken horizons and general sloppiness.” At that time Frank was 36 years old and still an outsider for the American photography establishment: it was only through the support and endorsement he received from critics and writers (i.e., non-embedded audiences) that he gradually gained attention. Findings from the context of French cuisine, similarly indicate how code-violating changes introduced by creative chefs critiquing the orthodoxy of classical cuisines enhanced external evaluations (i.e., the number of stars awarded by *Guide Michelin*) from third parties (non-embedded audiences) rather than being met with disfavor by them (Durand, Rao and Monin, 2007).⁴

Taken together, the previous arguments suggest that rewards for creativity are socially structured and that the salience of this structure varies with the type of audience assessing the candidates' creative work. More specifically:

Hypothesis 1: There is a positive relationship between individuals' coreness and the likelihood that they will be rewarded by an embedded audience for their creative work.

Hypothesis 2: There is a negative relationship between individuals' coreness and the likelihood that they will be rewarded by a non-embedded audience for their creative work.

⁴ “A code-preserving change is any variation that conforms to the rules of conduct representative of the social form within which the organization is nested. By contrast, a code-violating change is any variation that violates the rules of conduct representative of the social form” (Durand et al., 2007: 457).

3. RESEARCH SETTING

We situated our analysis within the context of the Hollywood film industry. In the course of several decades the U.S. film industry underwent a transition from the firm-based studio system to the market-based “package unit” system (Staiger, 1985). Before this transition the studios – also known as “The Majors” (i.e., 20th Century Fox, Metro Goldwyn Mayer, Paramount, RKO and Warner Brothers) – integrated across all the stages of the value chain. Antitrust action led to a 1948 consent decree in which they agreed to divest their theater (i.e., presentation) holdings. During the same time period, competition forced them to end exclusive contracting with talents, greatly reducing the extent of in-house production (Balio, 1985). By the end of the 1970s, the film industry was organized around projects and personal networks rather than traditional hierarchies and in-house human resource departments (Jones, 1996). In this system, “Firms and subcontractors combine for a specific project, disband when the project is finished, and then combine for new projects [...] Self-employed subcontractors move from project to project, while the role of the company is to finance and distribute the finished product” (Jones, 1996: 58).

This is a very promising setting to study the relationship between social structure, audiences and rewards for creativity. First, as we noted before, creativity is central to the film production process since each movie is a unique product and requires the daily creative effort of the crew members in order to be completed. Apparently, these diverse contributions are so essential to a movie’s success that special honors have been established to recognize those contributors whose work is judged to be noteworthy (Simonton, 2004b). These honors are bestowed by movie critics and by those most directly involved in the film industry (e.g., the Academy Awards). Thus, this is an industry that allows us to study simultaneously the gatekeepers who evaluate (the audience members) and the candidates

who compete with one another for the gatekeepers' rewards. The results of these evaluations are made manifest every year through the conferring of prestigious awards that celebrate outstanding cinematic achievements and establish a social distinction not achievable by other means. Not surprisingly, several studies on creativity are situated within the context of the movie industry (e.g., Simonton, 2004a and 2004b; Cattani and Ferriani, 2008).

The dynamics of this social process of evaluation is epitomized by the fortunes of Quentin Tarantino's *Reservoir Dogs* at the 1992 Sundance Film Festival. Although Tarantino was then an unknown director, *Reservoir Dogs* was the hottest ticket of the festival. As Levy (1999: 15) describes it: "*Reservoir Dogs* [...] became the festival's most talked-about movie, and Miramax decided to distribute it. Over the course of that year, Tarantino turned up at festival after festival, receiving lavish praise from intellectual critics for making the hottest indie of the year." In just a few years, Tarantino evolved from an unemployed actor-writer working in a video store to one of the most acclaimed American filmmakers. Despite critical support, when the movie finally opened, it played for only a few weeks, so confirming initial fears that it was too unusual and violent.⁵ Lack of commercial appeal notwithstanding, *Reservoir Dogs* achieved cult status and Tarantino rose from obscurity to wide recognition. Again, Levy's (1999: 17) captures very effectively how critics, in their role of gatekeepers, might be more inclined to recognize and hence endorse peripheral actors' work: "Most of the press focused not on the movie or its issues but on Tarantino as a self-taught auteur. In the end, Tarantino didn't promote *Reservoir Dogs*; *Reservoir Dogs* promoted him. Tarantino quickly rose from obscurity, and the fact that the film didn't do well didn't matter. It created enough of a stir to give Tarantino the clout to make his next film, *Pulp Fiction*,

⁵ "Miramax's sparse marketing resulted in a modest box-office gross of \$1 million. The movie was rereleased after the success of Tarantino's second feature, *Pulp Fiction*, but even then it failed to generate the box-office excitement" (Levy, 1999: 17).

with a larger budget (\$8 million) and a high-caliber cast.” Although one might regard Tarantino’s case as unique, it is instead highly instructive of how peripheral actors’ work usually becomes visible within social fields.

4. DATA

Our data consist of the population of crewmembers who worked in at least one of the 2,297 movies distributed in the United States by the 8 major studios – i.e., the seven historical majors (Universal, Paramount, Warner Bros, Columbia-Tristar, Disney, 20th Century Fox and Metro-Goldwyn-Mayer) and Dreamworks – and their corresponding subsidiaries over the twelve-year-period 1992-2004.⁶ We focused on these studios for several reasons. First, they dominate the industry either directly, through their financial power, or indirectly, through distribution control. In the last decade, on average, the movies released by these companies consistently have accounted for approximately 90% of the entire US box-office.

Second, while focusing on the major studios might suggest a neglect of artistically oriented movies in favor of commercial ones, within these companies there are numerous divisions that specialize in different types of films and represent multiple labels carried over from previous acquisitions (see Table 1 for a list of major studios and corresponding divisions). Some of these divisions specialize in the distribution of small-budget niche films and have been widely acknowledged in the press to focus on developing more artistically oriented movies and cultivating less visible talents, as testified by the use of adjectives such as “repertory,” “independent” or “classic” in their names to signal their distinction from the parent companies (Wang, 2006). Thus, although we do not have data on the entire

⁶ Our interest is in feature films made and distributed by Hollywood. Thus, we did not include documentaries, foreign-made films, short films, and compilation screen classics.

population, the risk of misrepresenting the periphery of the system should be mitigated. Third, and consistent with the previous point, we note that 88% of the movies (i.e., 66 out of 75) that the New York Times lists among the best 1000 movies ever for the years covered by our study were distributed by Hollywood majors and therefore made it to our dataset – while only 12% of the movies (9 out of 75) in the New York Times list were distributed by organizations other than the Majors or their subsidiaries, again suggesting that despite its growing focus on generating blockbusters, the industry has retained the ability to produce unconventional movies of high artistic quality.⁷ The setting therefore is well suited for studying the social structural foundations of creativity.

For each movie in the sample we collected information on the composition of the production team as well as the recognition of crewmembers' creative work by looking at the awards/nominations received from several award-granting organizations for that work (see below). As is apparent from examination of “film credits,” movies are the collective creation of a large number of separate individuals, each contributing creative input, unique talents, and technical expertise to the project. Notwithstanding this wealth of contributors, a very restricted group of people usually is credited with the critical creative work in a motion picture. Our analysis focused on the following crewmembers: director, writer, actor/actress, editor, cinematographer, production designer, and composer.

Our selection resulted in a total of 12,679 crewmembers distributed across the 8 roles already mentioned.⁸ We identified the crewmembers using the Internet Movie Database

⁷ For the period covered in this study (1992-2004) we identified 125 movies in the NY Times list. While 75 of these movies were produced and distributed in the US – i.e., our focal population – the remaining 50 movies were produced outside the US (e.g., Europe). They form a completely different population and therefore are not relevant for our study.

⁸ The yearly average number of crewmembers per movie ranges between 11 and 15. This number is different from the sheer amount of roles considered because professionals sometimes performed multiple roles in the same project or the same role was collectively performed by multiple individuals. We used information about all crewmembers to construct the industry's social structure and create the network measures, but we did not

(IMDB), an online source owned by Amazon.com and largely supported through advertising. Most of the data provided by IMDB are submitted on a voluntary basis and validated by an in-house staff of 70 members. In recent years, a growing number of studies have used this data source (Barabási, 2002; Sorensen and Waguespack, 2006; Ferriani et al., 2005; Hsu, 2006; Cattani and Ferriani, 2008). To insure data quality we also crosschecked the reliability of the information with the Alan Goble Film Index (Goble, 2003).

4.1. The Audiences: Critics and Industry Peers

Our theory elaborates on the impact of two important audiences, i.e., professional critics and industry peers, on individual creative work. As previous research showed (e.g., Wijnberg, 1995; Zuckerman and Kim, 2003; Hsu, 2006; Gemser et al., 2008), these two broad audiences correspond to distinct selection systems that apply different norms and standards to evaluate individuals' creative work. In our setting, peers' and critics' perceptions of what they believe should be regarded as creative are revealed when they reward professionals' creative work with an award or nomination. Peers and critics in fact are often members of awarding-granting organizations.

In the analysis we focused on awards and nominations assigned to the selected crewmembers by at least one of the following 16 professional societies: 1) Academy of Motion Picture Arts and Sciences; 2) Directors Guild of America; 3) Writers Guild of America; 4) Screen Actors Guild; 5) American Society of Cinematographers; 6) American Cinema Editors; 7) Producers Guild of America; 8) Hollywood Foreign Press Association; 9) National Board of Review; 10) National Society of Film Critics; 11) New York Film Critics

include 'producers' in the analysis. Although producers can occasionally influence creative decisions and hence contribute to the overall quality of a movie, they are primarily concerned with the business side of filmmaking.

Circle; 12) Los Angeles Film Critics Association; 13) Broadcast Film Critics Association; 14) Independent Feature Project/West; 15) Chicago Film Critics Association; 16) Boston Society of Film Critics (see the Appendix for a detailed description of these awarding bodies).

We focused on these organizations for various reasons. They consistently have granted annual awards and nominations in all or at least most of the major categories of filmmaking expertise, have been in existence for several years, and are widely regarded as reliable and competent organizations (for a similar approach, see also Simonton, 2004b). Moreover, as Gemser et al. (2008: 31) noticed, “[...] the announcements of the winners of all these awards receive national coverage in the printed press and/or on national television, and the jury process is transparent for the outside world.” Together, the selected awards reflect the judgments of hundreds of experts from the worlds of film practice and criticism (our two focal audiences) who are devoted to identifying and rewarding exceptional achievements in film-making. The types of awards used in the analysis therefore allow us to minimize the risk of including only awards – such as Oscars – whose assignment often is driven more by commercial (or political) than artistic considerations (Holbrook, 1999). The primary data sources were Tom O’Neil’s (2003) *Movie Awards* and the official web sites of each organization.

We used this information to classify the selected professional societies into peers and critics audiences based on their membership (Table 2). In particular, the Academy of Motion Picture Arts and Sciences, the various Guilds and the Independent Feature Project/West societies comprise industry peers; while the Hollywood Foreign Press Association, the National Board of Review, the National Society of Film Critics, the New York Film Critics Circle, the Los Angeles Film Critics Association and the Broadcast Film Critics Association comprise industry critics. Although each award-granting organization may apply criteria that

are not always shared by other audience members, previous research (Wijnberg, 1995; Gemser et al., 2008) suggests that organizations of industry peers are more likely to agree among themselves than they are with organizations of critics and vice versa.

4.2. The Social Network Structure of the Hollywood Film Industry

To unveil the socio-relational fabric of the industry we analyzed the bipartite affiliation network between professionals and movies. An affiliation network is a network of vertices connected by common group memberships such as projects, teams or organizations. Examples studied in the past include interlocking directorates (Davis and Greve, 1997), co-authorships (Newman, 2001), and collaborations among Broadway artists (Uzzi and Spiro, 2005). Data on affiliation networks tend to be more reliable than those on other social networks because group membership often can be determined with greater precision than in cases of friendship or other types of ties (Newman, Wattz and Strogatz 2002). We constructed networks of film professionals in which a link between any two professionals indicates collaboration on the making of a movie. It is reasonable to assume that most of the core crewmembers working on the same movie are familiar with one another. While co-participation in a project does not tell us the extent that people communicate, the chance that this network reflects professional interaction between individuals is fairly high. In the global network, professionals are directly connected to each other when they worked on the same movie project, and indirectly when they are linked through at least one professional who worked on two or more movies.

The affiliation network was created starting from an individual-by-movie matrix X where $x_{ij} = 1$ if the i th individual participated in making the j th movie, and $x_{ij} = 0$ otherwise. We then multiplied matrix X and its transpose X' , whose ij th cell indicates the number of

movies to which both professional i and professional j contributed. This value can be interpreted as an index of the strength of social proximity between the two individuals (Borgatti and Everett, 1997). The resulting social structure is visually exemplified in Figure 2. A, B and C (at the top of the figure) can be imagined as feature films with vertices 1 to 10 being a selection of crew members joined to the corresponding movies by a line. Because some of these movies share one or more crewmembers, the unipartite projection of the two mode crewmembers-by-movie social structure results in the network shown in the lower part of Figure 2, in which two crewmembers are connected by an edge if they collaborate on the same movie. It is notable from this illustration that the interconnectivity of the system rests on the presence of individuals (vertices 3, 8 and 9) working across more than one project.

In defining a tie, we had to make an assumption about the duration of the relationship between professionals. With no control for relationship decay, professionals' network connectedness would be highly inflated due to the inclusion of ties to inactive artists. Following a common practice in network studies, we used a three-year moving window to control for the duration of each tie, hence making the adjacency matrixes time-varying. In essence, each year we added nodes and ties resulting from new movies, and deleted nodes and their ties that were inactive for 3 years (see also Uzzi and Spiro, 2005). We started with the crewmembers who worked in 1995 and used the earlier three-year data to construct the accumulative relational profiles (i.e., the period 1992-1994 can be viewed as the time needed to establish the network structure that professionals bring to the period 1995 onwards). We used the resulting ten time-varying matrices to compute all individual level network measures. We also used alternative windows of two, four, and five years, but found no significant differences in the results.

5. VARIABLES

5.1. Dependent Variable

We modeled the audience-candidate process of evaluation using a discrete-choice modeling approach, whereby each audience member selects the candidate that it believes should be rewarded with an award or nomination. We thus created two dummy variables to distinguish between the choices made by the members of two main audiences (embedded and non-embedded) examined in our study: *Embedded Audience's Choice*, which takes on the value 1 when a professional receives at least one award/nomination from a peers audience member in a given year, 0 otherwise; and *Non-Embedded Audience's Choice*, which takes on the value 1 when a professional receives at least one award/nomination from a critics audience member, 0 otherwise. We created these variables after collecting data on the awards and nominations assigned to the selected crewmembers by at least one of the 16 professional societies described before. More specifically, the embedded audience (industry *peers*) includes the Academy of Motion Picture Arts and Sciences, the various Guilds and the Independent Feature Project/West societies; the non-embedded audience (*critics*) includes the Hollywood Foreign Press Association, the National Board of Review, the National Society of Film Critics, the New York Film Critics Circle, the Los Angeles Film Critics Association, the Broadcast Film Critics Association, the Chicago Film Critics Association, and the Boston Society of Film Critics.

5.2. Independent Variable

A core/periphery network “entails a dense, cohesive core and a sparse, unconnected periphery” (Borgatti and Everett, 1999: 375). Following the approach developed by Borgatti and Everett (1999), we estimated the degree of *coreness* of each node (i.e., professional) by

fitting a continuous model of core/periphery structure to our network data. By ‘coreness’ we refer here to the degree of closeness of each node to a core of densely connected nodes observable in the network. The algorithm achieves this by attributing high values to core members and low values to periphery. As a result, the product of two core values will be a high value (high interaction among core members), the product of one core value and one periphery value will be a medium value (moderate interaction between core and periphery), and the product of two periphery values will be a small value (lack of interaction among periphery members) (Borgatti and Everett, 1999). We opted for a continuous model because one limitation of discrete models with two-class partition is the over-simplicity inherent in defining just two classes of nodes as core and periphery. Similar considerations also hold for three or more class partitions. It is worth noting that while all actors in a core are highly central as calculated by virtually any measure, the converse is not true because “not every set of central actors forms a core ... This is because each actor may have high centrality by being strongly connected to different cohesive regions of the graph and need not have any ties to each other” (Borgatti and Everett, 1999: 393). We created the *Coreness* variable adopting a 3-year moving window, namely for the three years (i.e., $t-1$, $t-2$, and $t-3$) prior to the focal year t (the results do not vary if one uses a different time window). The measure was created using UCINET VI (Borgatti, Everett and Freeman, 2002).

5.3. Control Variables

To rule out possible alternative explanations for the hypothesized relationships we included several control variables in the final model specification.

Individual Role. As we mentioned before, our analysis is focused on the following crew members: producer, director, writer, actor/actress, editor, cinematographer, production

designer, and composer. Because these roles embody different artistic and technical dimensions and therefore draw on diverse cognitive and practical abilities, the assumption that the same relational mechanisms are equally consequential across different roles might be inappropriate. As a result, when such a distinction is not made observed effects in rewards might conceal different processes. Controlling for role is also important because different awarding organizations bestow awards to different award categories – not to mention that the number of these categories in some cases has changed over time. For instance, while the Academy of Motion Picture Arts and Sciences, the Hollywood Foreign Press Association and the Independent Feature Project organization tend to assign awards to all (or most of) the categories (therefore covering all roles included in the analysis), the Los Angeles Film Critics Association assigns no awards for movie editing, the various guilds only to their members, and the National Board of Review in certain years may or may not assign an award to certain categories (e.g., production design). As a result, individuals performing roles with more award categories are at higher risk of receiving audience recognition for their creative work. We accounted for this possibility and the particular role held by each professional by including a fixed effect for the role each professional performed in a given movie. This can be accomplished in SAS by using the STRATA statement which says that each role is a separate stratum – i.e., it groups all observations for each role in the process of constructing the likelihood function. In those cases where the same professional covered multiple roles in the same movie or across different movies, the attribution was based on the role most frequently held over the study period.

Individual Creative Freedom. Prior research has shown how intrinsic motivation is more conducive to creativity than extrinsic motivation (Amabile, 1996). It appears that when the primary motivations are interest in and enjoyment of an activity, outputs tend to be more

creative than when the only motivation is the achievement of goals imposed by others. In this regard, individuals performing multiple roles in the same movie are more likely to produce creative work as they enjoy more freedom in the pursuit of their goals. On the other hand, as they perform multiple roles individuals also find themselves in a better position to reveal their skills and talents and by implication become more visible within the field. We therefore created the variable *Creative Freedom* to capture the extent to which professionals enjoy enough latitude to express their creativity by looking at the number of different roles performed in the movies they made. While in many cases there is one specialist per role, sometimes the same artist or professional can perform multiple roles in a single movie (e.g., Clint Eastwood was director, actor and producer for *Unforgiven* in 1992) or the same role is collectively performed by multiple individuals (e.g., Joel and Ethan Cohen co-directed *Fargo* in 1996). The variable measures the average number of different roles each professional performed in the movies s/he realized in a given year.

Individual Quality. Audience's expectations are influenced by candidates' past achievements (Podolny, 1993). A high number of awards in an individual's career may indicate an exceptional talent and thus a higher proclivity towards the generation of creative work. Past research in the film industry suggests that the most successful professionals often enjoy preferential access to better resources and information (Faulkner and Anderson, 1987). Since the recognition through awards is highly valued by industry members, award recipients enjoy greater attention than their lower-status counterparts (Hsu, 2005). Accordingly, we control for an individual's history of accolades and awards by creating the variable *Individual Quality*, i.e., the number of awards won and nominations received by each professional in the three years (i.e., $t-1$, $t-2$, and $t-3$) prior to the focal year t (the results do not vary if one uses a different time window).

Individual Structural Holes. Structural holes may influence individual's ability to produce creative work by providing access to diverse information and knowledge, and facilitating the identification of options that would otherwise remain unseen (Burt, 2004). Besides providing access to more diverse information and knowledge a brokerage position also increases the level of control over the social field and, by implication, the ability to shape its subsequent evolution. This in turn might enhance the chance of becoming more visible in the field and hence of being recognized by audience members. To account for this effect, for each professional in the network we estimated the variable structural holes using Burt's (1992) classic network constraint index, which is the inverse of structural holes. Again, we created the variable adopting a 3-year moving window (the results do not vary if one uses a different time window).

Individual Stars. Audience's expectations could be affected by whether or not a professional is classified as a *star*. Following previous research (e.g., Elberse, 2007), we defined a professional as a star by looking at his/her *commercial* reputation based on how well or poorly the movies in which s/he was involved fared at the box office. More specifically, we computed the cumulative number of 'top 10 box office' movies in each year in which each professional worked until the year prior to the focal one. Data on top grossing movies came from the IMDB online database.

Movie Critical Reception. The likelihood of receiving an award or a nomination could be affected by how well the movies each professional worked in fare among the critics. Movies highly praised by critics might receive disproportionate attention and visibility in the eyes of those who assign the awards/nominations. In addition, since film critics judge the overall quality of a movie, a positive review from critics might be an indication that the focal professional worked within a particularly inspired ensemble of people, which may have

avored his performance. As an indicator of critics' assessment we used an aggregate measure of critical reception. Data on critical reception came from a well established online public source (humorously called) "www.rottentomatoes.com," which rates all movies distributed in the U.S. Using a wide number of movie reviews from accredited media outlets and online film societies, this source assign each movie a summary score of critical reception.⁹ For each review, the critic's score is converted to a 0-10 point scale. In those cases when a critic does not provide a numeric score, the internal staff converts the reviewer's general impression into a score based on that critic's word choice, tone and authoritativeness. The individual scores are then averaged to produce an overall rating of critical acceptance. Because the same list of critics is used to evaluate each movie, the score is consistent and the risk of bias is mitigated. We thus created the variable *Movie Critical Reception* to account for the meta-score value of the movies in which each professional was involved in a given year. It is worth noting that this variable could also partly control for the effect of professionals' status – due to their critical acclaim – on the likelihood of receiving an award/nomination.

Movie Box Office. The likelihood of becoming more visible within the field increases with the commercial performance of the movie in which a professional is involved. Following the lead of many other studies (e.g., Faulkner and Anderson, 1987; Sawhney and Eliashberg, 1996; Sorenson and Waguespack, 2006), we measured movie commercial performance in terms of box office receipts. While the advent of new technologies –

⁹ Accepted critics must have one of the following active membership: 1) Boston Society of Film Critics; 2) Broadcast Film Critics Association; 3) Chicago Film Critics Association; 4) Cinemarati; 5) Dallas-Fort Worth Film Critics Association; 6) Film Critics Circle of Australia; 7) Florida Film Critics Circle; 8) Kansas City Film Critics Society; 9) Las Vegas Film Critics Society; 10) London Film Critics Circle; 11) Los Angeles Film Critics Association; 12) National Society of Film Critics; 13) New York Film Critics Circle; 14) New York Film Critics Online; 15) Online Film Critics Society; 16) Phoenix Film Critics Society; 17) San Diego Film Critics Society; 18) Santa Fe Film Critics Circle; 19) San Francisco Film Critics Circle; 20) Southeastern Film Critics Association; 21) Toronto Film Critics Association; 22) Vancouver Film Critics Circle 23) Washington D.C. Area Film Critics Association.

television, VCR, cable and DVD – has expanded the number of viable revenue sources, box office returns remain “the most important benchmark when considering a film, as these ancillary revenues tend to correlate highly to the movie’s performance during its theatrical exhibition period” (Sorenson and Waguespack, 2006: 14). We adjusted box office receipts by a price deflator based on the consumer price index (CPI) per year, with 2004 as the base year. Movie box office distribution is highly skewed because, given the uncertainty of the industry, only a few movies fare well when they are distributed. Therefore, in the analysis we applied a logarithmic transformation of movie box office.

Movie Sequel. The extent to which movies reflect a genuine search for artistic novelty or focus instead on more formulaic content, like in the case of sequels, might affect the likelihood of a crewmember receiving an award/nomination. We thus computed the variable *Movie Sequel* which is a dummy taking on the value 1 when a movie is a sequel, 0 otherwise.

Movie Rating. Another important factor on the creative side is the rating assigned by the Motion Picture Association of America (MPAA). Ratings signal the degree of graphic sequences, violence and harsh language in a movie. Prior research suggests that features produced for mature audiences (R and NC-17) perform worse at the box office (Ravid, 1999; Ravid and Sunder, 2002). Moreover, since movies rated G, PG and PG-13 have greater audience potential, and mall owners sometimes by contract require theaters not to show NC-17 films, quite often studios exert some pressure on producers and directors to ensure that their films receive a rating aligned with their market aspirations. This practice can obviously constrain creativity like, for example, in the treatment of controversial material or the choice of scenes to edit and therefore the likelihood of audiences’ recognition. We accounted for this possible source of interference by creating a categorical variable taking on

the value 1 for movie rated G, 2 for movies rated PG, 3 for movies rated PG-13, 4 for movies rated R, and 5 for movies rated NC-17. We assigned the value 0 for the few (i.e., 13) movies for which no rating was available.

Movie Genre. The likelihood of receiving an award or nomination could also depend on movie genre on the premise that the artistic content of a movie might vary across genres. For example, one could argue that a professional working on an action movie is less likely to win an award because action movies typically reflect more formulaic conventions. We thus created a categorical variable (*Movie Genre*) to control for the genre of the movies in which each professional was involved in a given year. We collected genre information from IMDB.

Critics' Recognition. Critics' awards temporally precede peers' awards. As a result, awards' establishment dates might have an impact on a professional's likelihood of receiving an award or a nomination on the premise that early decisions by critics and/or industry peers might affect later decisions. It is possible that earlier assignments by the various critics' organizations affect later judgments by industry peers, rendering independent judgments amongst observers less likely. Gemser et al. (2008) suggest two mechanisms by which early awards might have more or less impact on subsequent awards: exhaustion and reinforcement effects. The exhaustion effect implies that "an award given later in the season is less effective because previous awards preempt its "signaling effect." The reinforcement effect, on the contrary, implies that "previous awards add to the strength of the signaling effect of the later awards ..." (p. 33). To control for this potential endogeneity problem, where earlier award assignments may cumulatively shape later perceptions of what deserves recognition, we created a variable that measures how many professional societies of critics bestowed an award/nomination to the same professional for the his/her performance while playing a specific role in a movie s/he made in a given year. Since there are eight such societies (Table

2), the variable can range from 0 when a professional received no award/nomination from critics, to 8 when all critics' professional societies rewarded the very same professional.

Awarding Organizations. As we noted before we grouped the 16 professional societies into two distinct audiences, i.e., *peers* and *critics*, on the premise that each audience's members tend to apply similar norms and standards when they evaluate and reward individuals' creative work. Although we do not have controls capturing professional societies' time-varying characteristics, we accounted for the impact of stable unobserved differences among members within the same audience type by stratifying by professional societies, which is tantamount to estimating a fixed effects model for awarding organizations.

Year. Since we had no a priori expectations about the existence of a time trend over the study period, we controlled for the effect of all unobserved factors (e.g., macro-economic trends, changes in taste or fashion, and other factors that might affect the movie industry) that might affect audience members' evaluation by stratifying also by year.

6. MODEL

For any given role (e.g., director, actor/actress, editor, cinematographer, etc.), we modeled the impact of each professional's characteristics on the probability of an audience member (whether embedded or non-embedded) selecting (i.e., assigning an award/nomination to) that professional rather than any other potential professional. This can be framed as a series of discrete choice problems with one winner/nominee selected in each category (role) each year from a discrete set of candidates. We did so by applying McFadden's (1973) discrete choice model approach where the explanatory variables are characteristics of the choices (nominee and winners). Let y_{ij} be equal to 1 if audience member i (with $i = 1, \dots, n$) chooses option j (with $j = 1, \dots, J_j$), 0 otherwise; and x_{ij} be a vector of explanatory variables describing

option j for audience member i . The number of possible choices is J_i to indicate that different audience members may have different sets of options to choose from. The conditional logit model introduced by McFadden assumes the following general form

$$\Pr(y_{ij} = 1) = \frac{e^{\beta x_{ij}}}{e^{\beta x_{i1}} + e^{\beta x_{i2}} + \dots + e^{\beta x_{ij_i}}} \quad [a]$$

The previous equation implies that the odds that audience member i will choose professional j over professional k is given by the difference in the vector of explanatory variables describing each option as

$$\exp\{\beta(x_{ij} - x_{ik})\} \quad [b]$$

If the values of any explanatory variable are the same, then this variable has no effect on the choice between professional j and professional k . Suppose now that each audience member i has a stable preference for each option j , denoted α_{ij} . Also suppose that the actual utility U_{ij} for a particular option varies randomly around α_{ij} so that

$$U_{ij} = \alpha_{ij} + \varepsilon_{ij} \quad [c]$$

where ε_{ij} is a random variable having a standard extreme value distribution and the α_{ij} 's are independent across the different options. If audience members choose the option with the highest utility U_{ij} and if the logarithm of α_{ij} is a linear function of the explanatory variables, then the probability that audience member i chooses option j is given by equation [a]. If these conditions are satisfied, the conditional logit model is reasonable because the assumption of independence of irrelevant alternatives (IIA), a key assumption of the discrete choice model, is

not violated (Allison, 1999). This means that the odds of choosing option j rather than option k are not affected by the other available options. The independence of irrelevant alternatives assumption can only be tested when audience members are presented with different choice sets. In the award application, however, it is reasonable to assume IIA because “nominees are unlikely to be considered close substitutes for one another” (Pardoey and Simonton, 2007: 381). A possible exception to IIA might be the relatively rare occasion when an individual receives multiple nominations in the same category in the same year. In the case of Oscars, for example, this has happened only very rarely – e.g., for Best Director (Clarence Brown in 1930, Michael Curtiz in 1938, and Steven Soderbergh in 2000) – because “[...] the Oscar rules prevent this from happening in the lead acting categories” (Pardoey and Simonton, 2007: 381-392). Similar considerations hold for other awards as well. The Hausman and McFadden’s (1984) test further indicates that our sample exhibits IIA.

In the analysis we split the whole sample into two subsamples, one for award-granting associations consisting of peers and the other for award-granting associations consisting of critics (Table 2). We then stratified by audience members (to account for any stable differences among award-granting associations), professional’s role and year. We estimated the model by maximum likelihood using PROC TPHREG in SAS (version 9.1).

7. RESULTS

Tables 3 and 4 present the descriptive statistics and the correlation values, which are relatively low. We also checked for the existence of multicollinearity by computing the variance inflation factors (VIFs) using PROC REG in SAS, and found multicollinearity not to be a problem. The results for the discrete choice models for both the non-embedded and the embedded audiences are shown in Tables 5 and 6, respectively. As mentioned before, we

estimated these models by stratifying by audience member (i.e., the various professional societies within each audience type), role and year.

Table 5 presents the coefficient estimates for the discrete choice model predicting the likelihood that a non-embedded audience (an audience of critics) will choose – i.e., will assign an award/nomination to – a professional performing a specific role in a given movie. Model 1 is the baseline model with all controls. Although the coefficient estimates are not reported, the overall impact of the dummies for movie genre and movie rating is significant. The coefficient estimate of the variable *Movie Critical Reception* is significant and the sign of the coefficient is in the expected direction suggesting that professionals are more likely to be chosen for an award and/or nomination for their performance(s) when they work on a movie that obtained positive critics’ reviews. Similarly, the coefficient estimate of the variable *Movie Box Office* is significant and the sign of the coefficient is in the expected direction suggesting that professionals are more likely to receive an award and/or a nomination for their performance(s) when they work on a movie that fared well at the box office. On the contrary, professionals working in movies whose content tends to be more formulaic like a sequel (*Movie Sequel*) are less likely to receive an award or nomination. At the individual level, the quality of each professional’s human capital (*Individual Quality*) and the number of roles each professional performed in the same movie (*Individual Creative Freedom*) turned out to be significant and in the postulated direction. Similarly, professionals who achieved the status of star (*Individual Star*) for having worked in the past in movies that fared very well at the box office (i.e., movies ranking among the ‘top 10 box office’ movies of the year) are also likely to be more visible and therefore receive an award or nomination. The results further suggest that network closure, that is, a network poor in structural holes (*Individual Structural Holes*), reduces the likelihood of receiving an award or nomination from critics. The global test of

the null hypothesis that all the coefficients are equal to 0 is highly statistically significant (the likelihood ratio test is 11968.44 with 28 df and $\text{Pr}>\text{ChiSq} = 0.0001$).

Model 2 shows the results after we entered the variable *Individual Coreness*, which is significant and in the postulated direction, suggesting that there is a negative relationship between professionals' coreness and their likelihood of being rewarded by a non-embedded audience. As the odds ratio indicates, for a 1-unit increase in the level of the coreness variable the predicted odds that a professional will receive an award/nomination from critics decrease by 3.4%. Adding this variable improves the goodness of fit of the model relative to the baseline as indicated by the LR test ($\chi^2_{[L2-L1]} = 31.46$ with p -value < 0.001 for 1 df) that shows a significant improvement when the variable is included into the model. The results, therefore, support hypothesis 1.

Table 6 presents the coefficient estimates for the discrete choice model predicting the likelihood that an embedded audience (i.e., an audience of peers) will choose – i.e., will assign an award/nomination to – a professional performing a specific role in a given movie. Again, the overall impact of the dummies for genre and movie rating is significant. Model 1 is the baseline model with all controls. The coefficient estimates of the variables *Movie Sequel*, *Movie Critical Reception* and *Movie Box Office* are significant and the sign of the coefficient is in the expected direction. At the individual level, the number of roles each professional performed in the same movie (*Individual Creative Freedom*) and the quality of his/her human capital (*Individual Quality*) are significant and in the postulated direction. Similarly, being a professional with a high level of commercial reputation (*Individual Star*) enhances the chance of receiving an award or nomination. On the contrary, the brokerage measure (*Structural Holes*) turned out to be non-significant. The number of critics' associations rewarding a professional (*Critics' Award/Nomination*) positively affects the likelihood of receiving a reward

from peers, suggesting the existence of a signaling effect of critics' decisions on subsequent peers' decisions. The global test of the null hypothesis that all the coefficients are equal to 0 is highly statistically significant (the likelihood ratio test is 4676.66 with 29 df and $\text{Pr}>\text{ChiSq} = 0.0001$).

Model 2 shows the results after we entered the variable of theoretical interest – *Individual Coreness*. The coefficient is statistically significant and in the hypothesized direction, indicating the existence of a strong positive relationship between a professional's degree of network coreness and the likelihood that an embedded audience member will reward his/her creative work. In particular, for a 1-unit increase in the level of the coreness variable the predicted odds that a professional will receive an award/nomination from critics increase dramatically (by 2,308%). The overall fit of the model improves substantially on the baseline as indicated by the change in the value of the Log Likelihood. The LR test ($\chi^2/L2-L1 = 24.38$ with p -value < 0.001 for 1 df) shows a significant improvement when the variable is included into the model. The results, therefore, support hypothesis 2.

Robustness Checks. We checked the robustness of the results to alternative model specifications. In particular, a potential problem in the analysis is that the likelihood of being rewarded by either critics or peers might affect a professional's position along the core-periphery continuum of the social field. To deal with this potential endogeneity issue, we took several steps. First, we reran the analysis by entering the coreness variable (including the constraint variable) with a 1-year lag into the model, but the results were not affected. Second, we estimated a model predicting a professional's coreness level by using the number of awards/nominations s/he received in the previous year as a predictor, but found no significant effect.

Individuals who are members of a very talented team may receive greater audience recognition by collaborating with high-status people. An individual status stems from both his/her past achievements and the status of his/her partners. This implies that “higher status affiliations help to increase returns to a given quality of output” (Beth and Podolny, 1999: 565. We accounted for these possibilities by measuring the quality of the team as the average number of awards and nominations the team members (other than the focal individual) received in movies they were involved in the three years (i.e., $t-1$, $t-2$, and $t-3$) prior to the focal year t . (The results did not change when we increased this window from the previous three to the previous five years.) Since the variable is very highly correlated (0.977) with the variable measuring the quality of a professional’s human capital, we could not enter both variables into the model together. We thus re-ran the analysis only with the team quality variable but the results were not affected.

Individuals who occupy a central position within the social field are more likely to have access to diverse information and knowledge they can use in producing creative work. By broadening the scope of their collaborations individuals can also enhance their visibility in the field and by implication the likelihood of being recognized by the relevant audiences. To account for each professional’s network size we included a measure of (the log of) the number of network ties s/he has established to other professionals over the three-year period prior to the focal year. This variable increases whenever the focal individual adds new ties to his/her network. Including this variable in the final model had no significant impact on the results. Similar considerations hold for alternative centrality measures (e.g., eigenvector, betweenness, closeness).

Some scholars (e.g., Sorensen and Waguespack 2006) have measured professionals’ human capital by looking at the overall number of movies they made to capture differences

in their level of experience. We checked the robustness of our results by estimating the model and substituting the number of movies each professional worked on for the number of awards/nominations received in the previous two years. Since the variable is highly skewed (with a few professionals making several movies per year) we entered the variable into the model after taking the logarithm. Again, the results did not change appreciably. It is worth noting that we could not enter this variable when the variable *Individual Quality* was included because they are highly correlated.

The distribution and marketing strategy of the movies in which professionals were involved may affect their visibility and therefore the chance of having their work recognized by award-granting organizations. In particular, the number of opening screens on which movies were initially released in a given year could reflect distributors' efforts to promote those movies on a larger or smaller scale. Accordingly, we re-ran the analysis including the average number of opening screens but again the main findings were not affected. We did not include this measure in the final model because data for the opening screens were available only for 1836 movies out of 2297 movies in our final sample. All these additional results are available from the authors upon request.

We further checked the robustness of the results by running an additional set of analysis using a slightly different model specification. Since there are eight professional societies of peers and critics, respectively, each professional can in principle receive at least an award/ nomination from one, several or even all societies (up to a maximum of 8) for the role s/he played in a particular movie in a given year. Following this logic we created the dependent variable as a ratio that measures the degree of recognition by either peers or critics. In the case of an embedded audience, for instance, if a professional received an award/nomination from all peers' professional societies, the ratio is equal to 1 (8 out of 8); if

only one society bestowed an award/nomination the ratio is equal to 0.125 (1 out of 8); if the same professional received no award/nomination the ratio is equal to 0 (0 out of 8). Similar considerations hold in the case of critics. The ratio therefore ranges from 0 (lowest degree recognition) to 1 (maximum degree of recognition) within each audience type. We used these two ratios (one for peers and one for critics) as dependent variables to estimate fixed-effects and random-effects models for both audience types. The dependent variable for critics (non-embedded audience) was included as a control in the model estimating the degree of recognition from peers. Table 7a reports the results for the fixed-effects models for the non-embedded (critics) and embedded (peers) audiences. While the degree of peers' recognition increases with the level of professional's coreness within the social field, higher coreness levels do not raise the degree of critics' recognition. Overall, these results are somewhat consistent with those for the discrete choice modeling approach, and confirm our general claim that rewards for creativity are socially structured and that the salience of this structure varies with the type of audience assessing candidates' creative work. We obtained our estimates using PROC GLM for linear models in SAS.

We then estimated the final model using the Generalized Estimating Equations (GEE) to control for individual heterogeneity and the existence of any systematic difference across individuals due to unobserved effects. This method allows for correlation in the dependent variable across observations over time – due to repeated yearly measurements – by estimating the correlation structure of the error terms (Liang and Zeger, 1986). We ran the model by using an autoregressive structure that assumes the correlations between repeated measurements of the dependent variable to decline from period to period. We reported the results for the non-embedded (critics) and embedded (peers) audiences in Table 7b. Again, the results are somewhat similar to those for the discrete choice modeling

approach: the degree of peers' recognition increases with the level of professional's coreness within the social field, but higher coreness levels do not raise the degree of critics' recognition. We also ran the model by imposing an exchangeable correlation structure, which assumes the correlations between repeated measurements of the dependent variable to be equal across time. We finally tried a less restrictive specification in which the correlation matrix for values of the dependent variable across the observation years has a banded structure. There is, in other words, one correlation for values that are one year apart, another correlation for values that are two years apart, and so on. All specifications yielded similar results. We report significance levels based on Huber–White robust standard errors to control for any residual heteroscedasticity across panels. We obtained our estimates using PROC GENMOD in SAS.

8. DISCUSSION AND CONCLUSIONS

This study offers a theoretical and empirical framework for understanding creativity as a joint result of socio-structural conditions at the individual level and social systems making judgment about individuals' efforts. In recent years sociological and socio-psychological research has greatly contributed to the development of a more socially-oriented perspective on creativity, paving the way for a significant stream of organizational studies exploring the contextual drivers of creativity. However, prior to Perry-Smith and Shalley's (2003) recent conceptualization, the creativity literature has virtually ignored the relational determinants of creativity that are instead so central in social network theory. Not only are these determinants important for understanding the origin of novel insights and contributions; they also shed light on the conditions under which those novel insights and contributions are

more or less likely to be endorsed by actors (audiences) who are entitled to decide what should or should not be socially valued.

While in the last few years researchers have begun to address the structural influence on generative creativity, only very few studies have looked at the impact of socio-structural conditions on the validation of creative work by gatekeepers who judge the acceptability of this work. We sought to fill this gap by building on socio institutional perspectives on creativity (Csikszentmihalyi, 1996; Ford, 1996) and by combining structural explanations of creativity with recent organizational insights on the social structure of consensus (Cattani et al., 2008). In our conceptualization, the relationship between novelty and its recognition is framed as an ongoing tension between the core and the periphery of the social field. Actors positioned at the fringes of the social system are free to experiment with unconventional ideas and solutions as they are less pressured to conform to the norms and standards of the field. However, they have no or only limited ability to mobilize attention and to harness the symbolic and material resources needed to make their work visible and therefore more likely to be recognized. In contrast, core players are more effective at leveraging their network to build consensus around their work, even though they might end up producing more incremental work due to higher level of assimilation into the conventions of the field. We noted that whether these creative efforts are socially validated, and therefore rewarded, depends on the norms and standards of judgment used by audiences, which in turn reflect audiences' incentives to preserve the institutional logics of the field. Building on Crane's reward system model we distinguished between two types of audiences. Embedded audiences are more likely to reward the creative work of core players who tend to conform to the prevailing norms and standards of the field. Conversely, non-embedded audiences are more likely to be open towards peripheral players' work as their members do not have the

same personal interests at stake that members of embedded audiences do have. Critics and peers have in fact different incentives in that critics' reputation within the field depends significantly on their ability to discover new talents.

The distinction between embedded and non-embedded audiences holds important implications for a deeper understanding of the audience-candidate process of evaluation, besides and beyond the filmmaking industry. In any field, whether in art or science, the assessment of a given piece of work as creative reflects the subjective evaluation of the field's gatekeepers. As they gauge this work, gatekeepers have to establish whether it conforms to the norms and the standards that specify what types of outcomes should be judged as creative. In both social and natural sciences the peer review system illustrates the dynamics of the process of evaluation for embedded audiences, whereby editors and reviewers are also members of the field. The finding that an embedded audience's likelihood of endorsing an individual's creative work increases as the very same individual gets closer to the field core is consistent with Kuhn's (1970) central argument that exponents of a dominant paradigm will oppose any attempts, which typically originate from the periphery of the field, to challenge the *status quo*.

From a methodological standpoint this study represents an original attempt to introduce network analytic techniques within the realm of individual creativity. The viability of using sociometric tools to unravel the relationship between creativity and social networks was recognized a long time ago (Moreno, 1940; Northway and McCallum Rooks, 1955; Crane, 1972). Yet, only recently have systematic attempts been made to untangle this relationship based on formal network measurement and operationalization (Burt, 2004; Uzzi and Spiro, 2005). Our paper takes various measures to address this shortcoming. To unveil the social fabric of the Hollywood movie industry, we examined the bipartite affiliation

network resulting from collaboration among professionals across projects (i.e., movies). The use and analysis of unipartite projections of affiliation networks have a few distinctive advantages over more traditional ways of gauging social networks (Newman et al., 2002). In particular, they allow reconstructing networks of much larger size than in experimental research because compiling substantial datasets based on pure sociometric questionnaires is very time-consuming and costly. To the extent that project membership's archival sources are updated regularly, social structures derived from affiliation networks easily can be tracked longitudinally. The present study examines individuals' social interactions not only on a large scale (the number of nodes involved over the period 1992-2004 is 12,679), but also longitudinally. While in recent years much progress has been made in the analysis of longitudinal network structures, the challenges of gathering network data over time are still a major obstacle to the development of network research and arguably one of the most common sources of criticism of network studies (Borgatti, 2005).

The study suffers from obvious limitations that nevertheless represent opportunities for future research. First, we studied an art field rather than a scientific one where knowledge can be more easily codified and evaluation of changes is likely to be premised more on technical criteria than on the fit with normative criteria (Becker, 1982). As a consequence, the results should be generalized with caution to other settings where external evaluations might be related more closely to technical prowess and mastery. Any attempts to generalize should also account for the distinctive project-based nature of the film industry. Project-organizations operate under highly uncertain and volatile circumstances, and it is under these conditions that networks conveying identity and recognition are especially important. However, it is worth noting that project organizations typify collaborative endeavors that are becoming increasingly common across various social systems (Ferriani et al., 2005).

The audience-candidate process of evaluation in any given field implies that gatekeepers (or audience members) will agree on the norms and the standards that specify what types of outcomes will be judged as creative. Throughout the paper we assumed audience members to share virtually the same set of norms and standards. However, lack of consensus among gatekeepers compounds the complexity of this process of evaluation. Recent work by Cattani et al. (2008), for example, suggests that among the conditions affecting the likelihood of reaching consensus is the level of field fragmentation as indicated by the degree of connectivity among audience members (Cattani et al., 2008). In each field, gatekeepers can alternatively form a relatively homogeneous audience sharing the same norms and standards; or be absorbed into multiple audiences, each having a distinct set of norms and standards. Reaching consensus on the same norms and standards is especially difficult in fragmented fields: as they face low conformity pressures, individual actors (candidates) are more likely to experiment with new styles and hence generate outcomes that tend to depart from established ways of doing things. In non-fragmented fields, on the contrary, there is very little disagreement on which outcomes should receive social endorsement because higher connectivity levels among audience members are likely to foster consensus around a widely shared set of norms and standards. The implications of audience fragmentation for the process of evaluation of candidates' creative work represent an area worthwhile of further exploration.

Finally, it is important to stress how from our data we can only observe an audience's choice – i.e., the assignment of an award or nomination – but not the process leading to the final choice. The complex process by which an audience screens and selects among potential candidates falls outside the scope of this study. A different research design

and analytical approach (e.g., an ethnographic study or a survey) would be better suited to explicitly address this question.

Concluding Remarks

Creativity does not occur in a vacuum nor is it born in the minds of single individuals *ex nihilo*. On the one hand, the production of creative work involves the reassembling and rearranging of existing materials, practices and influences; on the other, it is the context in which that work is produced that judges it as creative or not. Thus, in order to understand creativity it is not enough to focus solely on the individuals whose name is usually associated to major achievements.

Saying that Picasso invented Cubism or that Einstein developed the relativity theory is a convenient simplification that resonates with our predilection for heroic stories. Picasso's and Einstein's achievements would be inconceivable without the intellectual and social networks that stimulated their thinking and the social mechanisms that recognized and endorsed their creative efforts. As Csikszentmihalyi (1996: 7) noted: "To say that the theory of relativity was created by Einstein is like saying that it is the spark that is responsible for the fire. The spark is necessary, but without air and tinder there would be no flame." In line with these ideas we developed and tested a framework for understanding creativity as a result of both socio-structural conditions at the individual level and social systems making judgment about individuals' efforts. We believe such a perspective to enrich the theoretical foundations of creativity research and open up original opportunities for scholars interested in the intersection of creativity, social structures and rewards.

REFERENCES

- Allison, P. D. 1999. *Logistic Regression Using the SAS System: Theory and Application*. Cary, NC: SAS Institute.
- Amabile, T. M. 1996. *Creativity in Context*. Boulder, CO: Westview Press.
- Balio, T. 1985. Stars in business: The founding of United Artists. In T. Balio, ed. *The American Film Industry*, 153-172. Madison, WI: The University of Wisconsin Press.
- Barabási, A. 2002. *Linked: The New Science of Networks*. Cambridge, MA: Perseus.
- Becker, H. S. 1982. *Art Worlds*. Berkeley, CA: University of California Press.
- Bechky, B. A. 2006. Gaffers, gofers, and grips: Role-based coordination in temporary organizations. *Organization Science*, 17(1): 3-21.
- Beth, B. A., and J. M. Podolny. 1999. Status, quality, and social order in the California wine industry. *Administrative Science Quarterly*, 44(3): 563-589.
- Bourdieu, P. 1993. *The Field of Cultural Production*. Columbia University Press, New York.
- Borgatti, S. P. 2005. The state of organizational social network research today. Working Paper, Department of Organization Studies, Boston College.
- Borgatti, S. P., and M. G. Everett. 1997. Network analysis of 2-mode data. *Social Networks*, 19: 243-269.
- Borgatti, S. P., and M. G. Everett. 1999. Models of core/periphery structures. *Social Networks*, 21: 375-395.
- Borgatti, S. P., M. G. Everett, and L. C. Freeman. 2002. *Ucinet 6 for Windows*. Harvard: Analytic Technologies.
- Burt, R. 1992. *Structural Holes: The Social Structure of Competition*. Cambridge: Harvard University Press.
- Burt, R. 2004. Structural holes and good ideas. *American Journal of Sociology*, 110: 349-99.
- Crane, D. 1972. *The Invisible College*. University of Chicago. Chicago, IL: University Chicago Press.
- Crane, D. 1976. Reward systems in art, science, and religion. *American Behavioral Scientist*, 19(6): 719-734.
- Cattani, G., and S. Ferriani. 2008. A core/periphery perspective on individual creative Performance: Social networks and cinematic achievements in the Hollywood film industry. *Organization Science*, forthcoming.

- Cattani, G., Ferriani, S., Negro, G., and F. Perretti. 2008. The structure of consensus: network ties, legitimation and exit rates of U.S. feature film producer organizations. *Administrative Science Quarterly*, 53(1): 145-182.
- Coleman, J. S. 1988. Social capital in the creation of human capital. *American Journal of Sociology*, 94(Supplement): S95-S120.
- Collins, R. 1998. *The Sociology of Philosophies: A Global Theory of Intellectual Change*. Cambridge: Harvard University Press.
- Crane, D. 1972. *The Invisible College*. University of Chicago. Chicago, IL: University Chicago Press.
- Crane, D. 1976. Reward systems in art, science, and religion. *American Behavioral Scientist*, 19(6): 719-734.
- Csikszentmihalyi, M. 1994. The domain of creativity. In D. H. Feldman, M. Csikszentmihalyi, and H. Gardner (Eds.), *Changing the world: A framework for the study of creativity*. London: Praeger.
- Csikszentmihalyi, M. 1996. *Creativity, Flow and the Psychology of Discovery and Invention*. New York: Harper Collings.
- Csikszentmihalyi, M. 1999. Implications for a systems perspective for the study of creativity. In R. J. Sternberg (ed.), *Handbook of Creativity*, 313-335. New York: Cambridge University Press.
- Davis, G. F., and H. R. Greve. 1997. Corporate elite networks and governance changes in the 1980s. *American Journal of Sociology*, 103: 1-37.
- Durand, R., Rao, H., and P. Monin. 2007. Code and conduct in French cuisine: Impact of code changes on external evaluations. *Strategic Management Journal*, 28: 455-472.
- Faulkner, R. R., and A. B. Anderson. 1987. Short-term projects and emergent careers: evidence from Hollywood. *American Journal of Sociology*, 92: 879-909.
- Ferriani, S., R. Corrado, and C. Boschetti. 2005. Organizational learning under organizational impermanence: Collaborative ties in film project firms. *Journal of Management and Governance*, 9: 257-285.
- Festinger, L., S. Schachter, and K. Back. 1948. *Social Pressures in Informal Groups*. Cambridge, MA: MIT Press.
- Fleming, L., Santiago, M., and D. Chen 2007. Collaborative brokerage, generative creativity, and creative success. *Administrative Science Quarterly*, 52(3): 443-475.

- Friedkin, N. 1998 *A Structural Theory of Social Influence*. New York: Cambridge University Press.
- Gemser, G., M. A. A. M. Leenders, and N. M. Wijnberg. 2008. Why some awards are more effective signals of quality than others: A study of movie awards. *Journal of Management*, 34(1): 25-54.
- Glynn, M. A. 1996. Innovative genius: A framework for relating individual and organizational intelligences to innovation. *Academy of Management Review*, 21: 1081-1111.
- Goble, A. 2003. *The Complete Index to World Film*. Valan Publishing.
- Granovetter, M. 1973. The strength of weak ties. *American Journal of Sociology*, 78(6): 1360-1380.
- Hannan, M. T., Pólos, L., and G. R. Carroll. 2007. *Logics of Organization Theory: Audiences, Codes, and Ecologies*. Princeton, NJ: Princeton University Press.
- Hausman, J. A., and D. McFadden. 1984. Specification tests for the multinomial logit model. *Econometrica*, 52: 1219-1240.
- Hsu, G., and M. T. Hannan. 2005. Identities, genres, and organizational forms. *Organization Science*, 16: 474-490.
- Hsu, G. 2005. Evaluative schemas and the attention of critics in the US film industry. *Industrial and Corporate Change*, 15(3): 467-496.
- Hsu, G. 2006. Jacks of all trades and masters of none: Audiences' reactions to spanning genres in feature film production. *Administrative Science Quarterly*, 51: 420-450.
- Huckfeldt, R., Johnson, P. E., and J. Sprague. 2004. *Political Disagreement. The Survival of Diverse Opinions within Communication Networks*. New York: Cambridge University Press.
- Johnson, C., Dowd, T. J., and C. L. Ridgeway. 2006. Legitimacy as social process. *Annual Review of Sociology*, 32: 53-78.
- John-Steiner, V. 2000. *Creative Collaboration*, Oxford University Press, Oxford, UK.
- Jones, C. 1996. Careers in Project-networks: The Case of Film Industry. In M. B. Arthur, D. M. Rousseau (eds.), *The Boundaryless Career*. New York: Oxford University Press.
- Jones, C., W. Hesterly, and S. P. Borgatti. 1997. A general theory of network governance: Exchange conditions and social mechanisms. *Academy of Management Review*, 22: 911-945.

- Kuhn, T. 1970. *The Structure of Scientific Revolutions*. Chicago: Chicago University Press, 2nd edition.
- Latour, B. 1987. *Science in Action: How to Follow Scientists and Engineers Through Society*. Harvard University Press, Cambridge Mass, USA.
- Levy, E. 1999. *Cinema of Outsiders*. New York University Press, New York, USA.
- Leblebici, H., G. R., Salancik, A. Copay, and T. King. 1991. Institutional change and the transformation of inter-organizational fields: An organizational history of the U.S. radio broadcasting industry. *Administrative Science Quarterly*, 36(2): 333-363.
- Liang, K. Y., and S. L. Zeger. 1986. Longitudinal data-analysis using Generalized Linear-Models. *Biometrika*, 73(1): 13-22.
- McFadden, D. 1973. Conditional logit analysis of qualitative choice behavior. In *Frontiers of Econometrics*, Zarembka P. (ed.). Academic Press: New York; 105–142.
- Merton R. 1973. *The Sociology of Science: Theoretical and Empirical Investigations*. Chicago, University of Chicago Press.
- Meyer, J. W., and B. Rowan. 1977. Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 87: 340-363.
- Moreno, J. L. 1940. Mental catharsis and the psychodrama. *Sociometry*, 3: 209-243.
- Newman, M. E. J. 2001. Who is the best connected scientist? A study of scientific co-authorship networks. *Physics Review*, E64.
- Newman, M. E. J., D. J. Watts, and S. H. Strogatz. 2002. Random graph models of social networks. *Proceed. National Acad. Sc.*, 99(1): 2566-2572.
- Northway, M. L., and M. McCallum Rooks. 1955. Creativity and sociometric status in children. *Sociometry*, 18: 194–201.
- Obstfeld, D. 2005. Social networks, the tertius iungens orientation, and involvement in innovation. *Administrative Science Quarterly*, 50(1): 100–130.
- O'Neil, T. 2003. *Movie Awards (Revised Edition)*. Perigee Trade.
- Perry-Smith, J. E. 2006. Social yet creative: The role of social relationships in facilitating individual creativity. *Academy of Management Journal*, 49(1): 85–101.
- Perry-Smith, J. E., and C. E. Shalley. 2003. The social side of creativity: A static and dynamic social network perspective. *Academy of Management Review*, 28(1): 89-106.
- Podolny, J. M. 1993. A status-based model of market competition. *American Journal of Sociology*, 98: 829-872.

- Pardoey, I., and D. K. Simonton. 2007. Applying discrete choice models to predict academy award winners *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 171(2): 375-394.
- Rao, H., Monin, P., and R. Durand. 2003. Institutional change in Toque Ville: Nouvelle cuisine as an identity movement in French gastronomy. *American Journal of Sociology*, 108(4): 795-843.
- Ridgeway, C. L., and S. J. Correll 2006. Consensus and the creation of status beliefs. *Social Forces*, 85: 431-453.
- Runco, M. A. 2004. Creativity. *Annual Review of Psychology*, 55: 657-687.
- Sawhney, M. S., and J. Eliashberg 1996. A Parsimonious model for forecasting gross box-office revenues of motion pictures. *Marketing Science*, 15(2): 113-131.
- Schilling, M. A. 2005. A “small-world” network model of cognitive insight. *Creativity Research Journal*, 2-3: 131-154.
- Simonton, D. K. 1984. Artistic creativity and interpersonal relationships across and within generations. *Journal of Personality and Social Psychology*, 46: 1273-1286.
- Simonton, D. K. 1999. *Origins of Genius: Darwinian Perspectives on Creativity*. Oxford: Oxford University Press.
- Simonton, D. K. 2000. Creative development as acquired expertise: Theoretical issues and an empirical test. *Developmental Rev.* 20 283-318.
- Simonton, D. K. 2004a. Film awards as indicators of cinematic creativity and achievement: A quantitative comparison of the Oscars and six alternatives. *Creativity Research Journal*, 16: 163–172.
- Simonton, D. K. 2004b. Group artistic creativity: Creative clusters and cinematic success in 1,327 feature films. *Journal of Applied Social Psychology*, 34(7): 1494-1520.
- Sorensen, O., and D. Waguespack. 2006. Social networks and exchange: Self-confirming dynamics in Hollywood. *Administrative Science Quarterly*, 51: 560-589.
- Staiger, J. 1985. The package-unit system: Unit management after 1955. In *The Classical Hollywood Cinema: Film Style & Mode of Production to 1960*, 330-338. New York: Columbia University Press.
- Uzzi, B., and J. Spiro. 2005. Collaboration and creativity: The small world problem. *American Journal of Sociology*, 111: 447-504.

- Wang, J. 2006. Creativity and project value in the film industry. Paper presented at the Financial Management Association European Conference, Barcelona, June 2007.
- White, H. C., and C. A. White. 1965/1993. *Canvases and Careers. Institutional Change in the French Painting World*. New York: Wiley.
- Wijnberg, N. M. 1995. Selection processes and appropriability in art, science and technology. *Journal of Cultural Economics*, 19: 221-235.
- Zelditch, M. 2001. Processes of legitimation: Recent developments and new directions. *Social Psychology Quarterly*, 64: 4-17.
- Zuckerman, E. W. 1999. The categorical imperative: Securities analysts and the legitimacy discount. *American Journal of Sociology*, 104: 1398-1438.
- Zuckerman, E. W., Kim, T-Y., Ukanwa, K., and J. von Rittman. 2003. Robust identities or non-entities? Typecasting in the feature film labor market. *American Journal of Sociology*, 108: 1018–1074.

Table 1 – The Studios and Their Distribution Divisions*

Studio	Distribution division
Sony	American International Pictures
	Columbia
	Screen gems
	Sony Classics
	Sony Repertory
	TriStar
Universal	Focus Features
	Good Machine
	Gramercy
	October
	October Classics
	Polygram
	Rogue Pictures
	USA Films
20th Century Fox	Fox Intl Classics
	Fox Searchlight
MGM (purchased by Sony in 2005)	Orion Classics
	Orion Pictures
	United Artists
	Samuel Goldwyn
Warner Bros.	Castle Rock
	Fine Line
	New Line
	Warner Independent
Paramount	Paramount Classics (now Paramount Vantage)
	Republic
Disney	Buena Vista
	Caravan Pictures
	Dimension
	Hollywood Pictures
	Miramax
	Touchstone Pictures
Dreamworks (purchased by Viacom in 2006)	

* The studios purchased distribution divisions at different points in time. Many of these divisions changed ownership during the study period (for instance: Focus Features is the art house films division of Universal Studios and originated from the 2002 divisional merger of USA Films, Universal Focus and Good Machine; October was purchased by Universal in 1997; Screen Gems became a specialty film-producing arm of Sony group in 1999; Samuel Goldwyn was purchased by MGM in 1997; Castle Rock and New Line were purchased by Warner in 1996, etc.). In attributing film releases to major studios we accounted for the timing of all such transactions.

Table 2
Audiences' Membership

Embedded Audience (Peers)	Non-embedded Audience (Critics)
<ul style="list-style-type: none"> • Academy of Motion Picture Arts & Sciences <ul style="list-style-type: none"> • Directors Guild of America • Writers Guild of America • Screen Actors Guild • Art Directors Guild • American Society of Cinematographers <ul style="list-style-type: none"> • American Cinema Editors • Independent Feature Project/West 	<ul style="list-style-type: none"> • Hollywood Foreign Press Association <ul style="list-style-type: none"> • National Board of Review • National Society of Film Critics <ul style="list-style-type: none"> • New York Film Critics Circle • Los Angeles Film Critics Association • Broadcast Film Critics Association • Chicago Film Critics Association • Boston Society of Film Critics

Table 3
Descriptive Statistics

Variables	Mean	Std Dev	Minimum	Maximum
Embedded Audience's Choice	0.01	--	0	1
Non-Embedded Audience's Choice	0.01	--	0	1
Awarding Organization	10.59	4.18	1	16
Movie Genre	5.10	4.02	1	18
Movie Sequel	0.10	--	0	1
Movie Rating	3.24	0.86	0	5
Movie Critical Reception	5.46	1.47	0.7	9.5
Movie Box Office (log)	16.52	1.97	7.69	20.32
Individual Role	5.56	2.36	1	8
Individual Creative Freedom	1.19	0.54	1	7
Individual Quality	1.53	2.99	0	17.33
Individual Star	0.34	0.91	0	13
Individual Structural Holes	0.12	0.09	0.01	0.926
Individual Coreness	0.01	0.02	0	0.701

Table 4 – Pearson Correlation Coefficients

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Role (dummies)	1										
2. Movie Genre (dummies)	0.007 0.237	1									
3. Movie Rating (dummies)	0.024 <.0001	0.101 <.0001	1								
4. Movie Sequel	0.009 0.138	0.014 0.025	0.134 <.0001	1							
5. Critical Reception	0.005 0.421	0.059 <.0001	0.084 <.0001	0.094 <.0001	1						
6. Movie Box Office (log)	-0.018 0.004	0.024 0	-0.209 <.0001	-0.147 <.0001	0.141 <.0001	1					
7. Individual Creative Freedom	-0.325 <.0001	-0.023 0	0.054 <.0001	-0.015 0.013	0.057 <.0001	-0.032 <.0001	1				
8. Individual Quality	-0.008 0.167	0.045 <.0001	0.082 <.0001	0.031 <.0001	0.309 <.0001	0.212 <.0001	0.014 0.026	1			
9. Individual Star	0.089 <.0001	0.002 0.695	-0.048 <.0001	-0.037 <.0001	0.062 <.0001	0.198 <.0001	0.019 <.0001	0.212 <.0001	1		
10. Individual Structural Holes	-0.09 <.0001	-0.017 0.004	-0.003 0.599	-0.02 0.001	0.018 0.004	-0.292 <.0001	0.081 <.0001	-0.217 <.0001	-0.304 <.0001	1	
11. Individual Coreness	-0.037 <.0001	0.03 <.0001	0.043 <.0001	-0.037 <.0001	0.046 <.0001	0.015 0.017	0.047 <.0001	0.1 <.0001	0.103 <.0001	-0.145 <.0001	1

Table 5
Results of Discrete Choice Model Predicting Non-Embedded Audiences' (i.e., Critics') Choice

Variables	Model 1			Model 2		
	Coeff.	Std. Err.	Hazard Ratio	Coeff.	Std. Err.	Hazard Ratio
Movie Genre (dummies)	yes	--	--	yes	--	--
Movie Rating (dummies)	yes	--	--	yes	--	--
Movie Sequel (dummy)	-0.265***	0.070	0.767	-0.242***	0.069	0.785
Movie Critical Reception	0.715***	0.010	2.043	0.718***	0.010	2.050
Movie Box Office (log)	0.194***	0.010	1.215	0.195***	0.010	1.215
Individual Creative Freedom	0.327***	0.027	1.387	0.341***	0.028	1.406
Individual Quality	0.092***	0.005	1.097	0.095***	0.005	1.100
Individual Star	0.093***	0.014	1.098	0.094***	0.014	1.099
Individual Structural Holes	-2.867***	0.215	0.057	-2.999***	0.218	0.050
Individual Coreness				-3.380***	0.996	0.034
<i>Fixed Effects:</i>						
Awarding Organization	included			included		
Year	included			included		
Individual Role	included			included		
-2 Log Likelihood	23009.57			22993.84		
ChiSq vs null	11968.44***			11984.17***		
ChiSq vs Model 1				31.46***		
Number of Observations	134610			134610		

* p < 0.1, ** p < 0.05, *** p < 0.01 – Two-tailed tests for all variables

Table 6

Results of Discrete Choice Model Predicting Embedded Audiences' (i.e., *Peers'*) Choice

Variables	Model 1			Model 2		
	Coeff.	Std. Err.	Hazard Ratio	Coeff.	Std. Err.	Hazard Ratio
Movie Genre (dummies)	yes	--	--	yes	--	--
Movie Rating (dummies)	yes	--	--	yes	--	--
Movie Sequel (dummy)	-0.391**	0.143	0.677	-0.417**	0.143	0.659
Movie Critical Reception	0.669***	0.020	1.953	0.663***	0.020	1.941
Movie Box Office (log)	0.162***	0.021	1.176	0.163***	0.021	1.177
Individual Creative Freedom	0.256***	0.053	1.292	0.235***	0.053	1.264
Individual Quality	0.055***	0.011	1.056	0.052***	0.011	1.054
Critics' Award/Nomination	1.130***	0.043	3.096	1.135***	0.043	3.113
Individual Star	0.085**	0.030	1.089	0.084**	0.030	1.087
Individual Structural Holes	-0.269	0.414	0.764	-0.165	0.414	0.848
Individual Coreness				3.182***	0.813	24.085
<i>Fixed Effects:</i>						
Awarding Organization	included			included		
Year	included			included		
Individual Role	included			included		
-2 Log Likelihood	6573.49			6561.30		
ChiSq vs null	4676.66***			4688.85***		
ChiSq vs Model 1				24.38***		
Number of Observations	64411			64411		

* p < 0.1, ** p < 0.05, *** p < 0.01 – Two-tailed tests for all variables

Table 7a

GLM Fixed-Effects Model Predicting Degree of Recognition by Non-Embedded (*Critics*) and Embedded (*Peers*) Audiences

Variables	Non-Embedded (Critics)		Embedded (Peers)	
	Coeff.	Std Err	Coeff.	Std Err
Year (dummies)	Yes	--	Yes	--
Movie Genre (dummies)	Yes	--	Yes	--
Movie Rating (dummies)	Yes	--	Yes	--
Movie Sequel (dummy)	-0.0017	0.0013	-0.0017	0.0008
Movie Critical Reception	0.0060	0.0003	0.0030	0.0002
Movie Box Office (log)	0.0020	0.0002	0.0013	0.0002
Individual Creative Freedom	0.0011	0.0011	0.0009	0.0007
Individual Quality	0.0000	0.0002	-0.0006	0.0001
Critics' Award/Nomination			0.4070	0.0048
Individual Role (dummies)	Yes	--	Yes	--
Individual Star	-0.0008	0.0005	-0.0017	0.0003
Individual Structural Holes	-0.0106	0.0080	0.0081	0.0053
Individual Coreness	0.0165	0.0150	0.0705	0.0099
R-Square	0.369921		0.562745	
Number of Observations	31214		31214	
				P > t
				0.0382
				<.0001
				<.0001
				0.1879
				<.0001
				<.0001
				<.0001
				0.1263
				<.0001

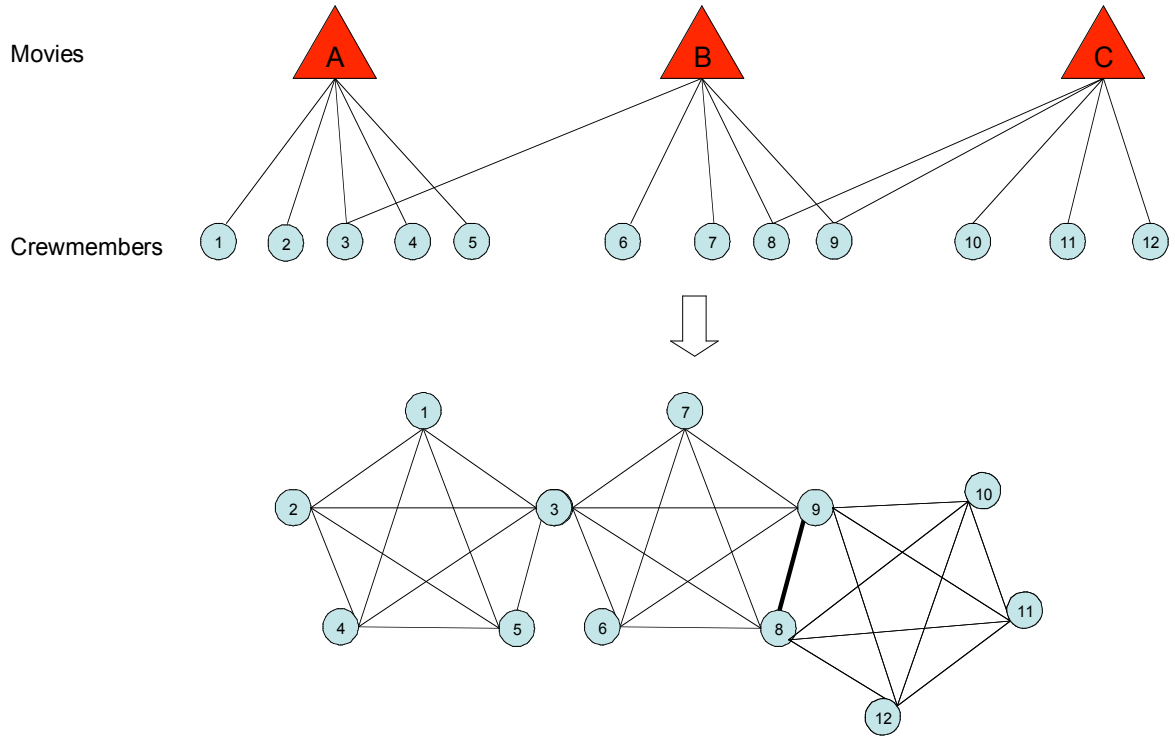
Table 7b

GEE Estimates for the Model Predicting Degree of Recognition by Non-Embedded (*Critics*) and Embedded (*Peers*) Audiences

Variables	Non-Embedded (Critics)		Embedded (Peers)	
	Coeff.	Std Err	Coeff.	Std Err
Intercept	-0.0152	0.0079	-0.071	0.0053
Year (dummies)	Yes	--	Yes	--
Movie Genre (dummies)	Yes	--	Yes	--
Movie Rating (dummies)	Yes	--	Yes	--
Movie Sequel (dummy)	-0.002	0.001	-0.0012	0.0006
Movie Critical Reception	0.005	0.000	0.0029	0.0001
Movie Box Office (log)	0.002	0.000	0.0010	0.0001
Individual Creative Freedom	0.002	0.001	0.0018	0.0004
Individual Quality	0.001	0.000	0.0002	0.0001
Critics' Award/Nomination	Yes	--	0.4095	0.0039
Individual Role (dummies)	Yes	--	Yes	--
Individual Star	0.0001	0.0003	-0.0002	0.0002
Individual Structural Holes	-0.0078	0.0037	-0.0004	0.0024
Individual Coreness	-0.0018	0.0079	0.0123	0.0049
Deviance	59.26		26.1182	
Pearson Chi-Square	59.26		26.1182	
Log Likelihood	50621.59		62871.50	
Number of Observations	31214		31214	
				P > t
				0.1754
				--
				--
				--
				0.0550
				<.0001
				<.0001
				<.0001
				<.0001
				0.0156
				<.0001
				--
				0.3592
				0.8661
				0.0122

Figure 1

Unipartite Projection of a 2-mode Crewmember-by-Movie Network



APPENDIX

Overview of Critics and Industry Awards in the Sample

The Academy of Motion Picture Arts and Sciences is a professional honorary organization composed of over 6,000 motion picture professionals dedicated to the advancement of the arts and sciences of motion pictures. All the members have received special recognition for their own contributions to filmmaking. The Directors Guild of America is a craft union founded in 1960 enlisting approximately 12,000 directors. The Writers Guild of America is a labor union founded in 1921 comprising more than 11,000 writers in the motion picture and television industries in the United States. The Screen Actors Guild was founded in 1933 that has assigned life time achievement awards since 1962. The Screen Actors Guild Awards are an annual award given by the Screen Actors Guild (SAG) to recognize outstanding performances by members. SAG Awards have been one of the major awards events in Hollywood since 1995. Nominations for the awards come from 4200 randomly selected members of the union, with the full membership (120,000 as of 2007) available to vote for the winners. The inaugural SAG Awards aired live on February 25, 1995. The American Society of Cinematographers is a cultural and professional organization founded in 1919 whose membership extends only to directors of photography with distinguished credits in the industry, currently numbering approximately 340 members. The American Cinema Editors is an honorary society founded in 1950 that includes film editors selected for the qualities of professional achievements and their dedication to editing.

The Hollywood Foreign Press Association is a non-profit organization established in 1943, consisting of approximately 90 international journalists representing almost 50 nations. The National Board of Review Awards is a non-profit organization founded in 1909 and composed of both film professionals and film critics. The New York Film Critics Circle is a group comprised of 34 print journalists who write for New York City-based publications such as *Newsweek*, *Time*, *The New Yorker*, the *New York Times*, *Entertainment Weekly*, and *Rolling Stone*. Often viewed as harbingers of the Oscar nominations, the Circle's awards are also viewed – perhaps more accurately – as a primary alternative to the Oscars, honoring esthetic merit in a forum that is immune to commercial and political pressures.

The Los Angeles Film Critics Association (LAFCA) is a professional organization founded in 1975 that honors each year's outstanding cinematic achievements. Its members review for newspapers, magazines, TV, and online media. Founded in 1984 the Independent Feature Project/West is a non-profit organization that champions independent film and supports a community of artists who embody diversity, innovation, and uniqueness of vision. Film Independent helps filmmakers make their movies, builds the audience for their projects, and works to diversify the film industry. The awards were originally known as the FINDIE (“Friends of Independents”) Awards but were renamed the Independent Spirit Awards in 1986. Winners are chosen by 8,000 members after the nominees are picked by an 11-member screening committee. National Society of Film Critics (NSFC) was founded in 1966 by a group of film critics who had been denied membership into the New York Film Critics Circle. The organization is known for its highbrow taste, and its annual awards are one of the most prestigious film critics' awards in the United States. In past years, many of their Best Picture winners were foreign films, and they rarely match with the Academy Awards (they only agreed with the Oscar for four times in the past 40 years). The NSFC and its members are also among the most well respected professional film critics groups in North America. The Broadcast Film Critics Association (BFCA) is the largest film critics' organization in the United States and Canada, representing 199 television, radio and online

critics. Founded in 1995, the BFCA presents its Critics' Choice Awards each year to honor the finest achievements in filmmaking. The Chicago Film Critics Association is a tax-exempt, not-for-profit organization that was founded in 1990 by film critic Sue Kiner after the successful launch of the Chicago Film Critics Awards in 1989. It honors outstanding film works, performances and individuals. The Boston Society of Film Critics was formed in 1981 with the stated goal of "awarding commendations to the best of the year's films and filmmakers and local film theaters and film societies that offer outstanding film programming" (from the association's homepage).