A Relational Account of the Emergence of New Hollywood

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By

Katharina Burgdorf

Dean of the School of Social Sciences:	Prof. Dr. Michael Diehl
Supervisors:	Prof. Henning Hillmann Ph.D.
	Prof. Jennifer C. Lena Ph.D.
Evaluators:	Prof. Jennifer C. Lena Ph.D.
	Prof. Dr. Florian Keusch (Chair)
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Abstract

This dissertation studies the social and symbolic networks that underlie the emergence of cultural forms using the case of New Hollywood—one of global cinema's most influential movements. Using a unique data set on film collaborations and cinematic references of more than 17,000 filmmakers retrieved from the Internet Movie Database (IMDb), I examine how New Hollywood filmmakers established an artistic vision of filmmaking and transformed one of the largest film industries in the world. This vision defined the individual filmmaker—the auteur—as the unique creator of films and challenged Hollywood's dominant collective and commercial notion at that time. Sociologists often emphasize the importance of collaborative ties that facilitate community cohesion. New Hollywood filmmakers, however, shared the vision of auteurism that emphasizes the individual rather than the collective as the driving force behind filmmaking. This dissertation examines how filmmakers resolved this tension between group cohesion and individualistic ideals. I analyze the long-term changes in filmmakers' collaboration and reference networks, where ties stem from participation in joint film projects, respectively, cinematic references to revered films. Blending research on the interplay between culture and networks and institution-focused accounts of art world emergence, I provide the first relational account of Hollywood's artistic transformation. The three manuscripts that form this dissertation show how New Hollywood filmmakers created a cohesive network of shared references and developed a movie canon (Manuscript 1), how they created artistic standards of peer recognition that rewarded individual authorship, film historical openness, and literacy (Manuscript 2), and how they incorporated these artistic standards in their choice of collaborators (Manuscript 3). Based on these findings, this dissertation reflects on the theoretical and empirical implications for the study of cultural production and discusses avenues for the conceptual and empirical development of symbolic networks.

Preface

The three manuscripts that form this dissertation are listed below.

Burgdorf, Katharina, and Henning Hillmann. Identity from Symbolic Networks: The Rise of New Hollywood.

Burgdorf, Katharina. Artistic Referencing and Emergent Standards of Peer Recognition in Hollywood, 1930-2000

Wittek, Mark. and Burgdorf, Katharina. The Emergence of Status Orders in Hollywood Filmmaking. Evolution of a Cultural Field, 1920 to 2000. Manuscript under review at American Sociological Review.

Other Publications

Two manuscripts, that are not part of this dissertation, have been published during my time at the Graduate School of Economic and Social Sciences and the University of Mannheim.

Ehrich, M. E., Burgdorf, K., Samoilova, Z., & Loist, S. (2022). The film festival sector and its networked structures of gender inequality. Applied Network Science, 7(1), 1-38.

Burgdorf, K., & Hillmann, H. (2021). Archival data. In Research Handbook on Analytical Sociology (pp. 337-351). Edward Elgar Publishing.

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1. Introduction

1.1 Overview

This dissertation studies the New Hollywood movement as a case in point to examine the social and symbolic processes that underlie the emergence of novel cultural forms. While during Hollywood's Golden Age (1930-1960), filmmaking was a commercial endeavor, and directors were rarely involved in the whole filmmaking process—from writing, and shooting, to deciding on the last cut—New Hollywood filmmakers (1960-1980) shared the vision of auteur filmmaking. Auteurism revolves around the idea of the individual director as the creative engine behind a film. Its elevation of artistic autonomy questioned the commercial and collective notion of filmmaking dominant at that time. New Hollywood filmmakers, thus, contributed significantly to Hollywood cinema's cultural turn from entertainment to an art form. The present dissertation asks how New Hollywood filmmakers—despite their strong emphasis on artistic autonomy—created a cohesive community that allowed them to collectively develop and enforce novel artistic standards in accordance with their vision of auteur filmmaking.

Previous sociological accounts of New Hollywood's emergence focused on the institutional, economic, and demographic conditions of that time (Baumann 2001, 2007a, 2007b). Legal and financial difficulties fueled the downfall of the studio system, a younger audience pushed the dream factory towards novel narratives, and the emerging critical discourse created an artistic tone when discussing movies. While these developments provided a conducive "opportunity space" (DiMaggio 1992: 44) for young filmmakers to rally against the old system, they do not explain how filmmakers organized and established auteurism as a novel filmmaker identity.

Considering relational perspectives on community emergence, abundant sociological research has emphasized the importance of *social ties*—that stem, for example, from cooperation among like-minded peers—for the formation and cohesion of new movements,

schools, or disciplines (Becker 1982; Crane 1972, 1995; Gould 1995; McAdam, McCarthy, and Zald 2012). This line of reasoning has inspired many empirical studies that examine community emergence through the lens of social networks in art worlds (Crossley 2008, 2009; Uzzi and Spiro 2005), science (Moody 2004; Stark, Rambaran, and McFarland 2020), and economic fields (Hillmann and Aven 2010; Powell et al. 2005). However, most of these studies implicitly assume that cultural producers are willing to collaborate. The case of the New Hollywood movement with its vision of individualistic filmmaking constitutes a fascinating sociological case in point because it challenges the assumption that cultural movements require direct collaboration. Cultural producers may not engage in collaboration when the field obtains a strongly individualistic culture (Frickel and Gross 2005).

Sociologists have also emphasized the importance of *symbolic ties* that emerge from shared cultural practices or objects (Fine and Kleinman 1979; Lamont and Molnár 2002; Mohr 1998; Mohr et al. 2020; Mohr and White 2008; Pachucki and Breiger 2010). Language, taste, styles, or references to cultural objects bind community members together on a symbolic level. While an emergent body of research develops novel approaches to conceptualize and operationalize symbolic ties (Basov, Breiger, and Hellsten 2020; Basov and Kholodova 2022; Fuhse et al. 2020; Lena 2004, 2015), most of these studies focus on specific tie formation processes within shorter time frames.

In this dissertation, I bridge institution-focused accounts on art world emergence (Baumann 2007b; DeNora 1991; DiMaggio 1982; Johnson and Powell 2015; Rao, Monin, and Durand 2003), and relational perspectives on cultural community formation (Crossley 2008; Lena 2015; Moody 2004; Uzzi and Spiro 2005) to address the puzzle of New Hollywood's identity formation. By applying a long-term and context-sensitive analysis of filmmakers' social and symbolic networks, I provide the first relational account of New Hollywood's emergence and Hollywood's artistic transformation. I use a unique data set retrieved from the Internet Movie

Database (IMDb) that includes film projects and references of more than 17,000 filmmakers throughout 70 years of Hollywood history, that span the Golden Age of Hollywood (1930-1960), the New Hollywood (1960-1980), and the Blockbuster era (1980-2000). I apply social network analysis and regression techniques to answer fundamental sociological questions. Such a design that considers the multiplexity of relationships over a long period of time allows for a better understanding of how and when social and symbolic configurations produce novel cultural forms and why some of these cultural forms flourish while others are blighted (Kaufman 2004; Padgett and Powell 2013).

I hope that this context-sensitive computational approach speaks to the concerns of sociologists of culture and organizations. The insights of this dissertation are relevant to sociologists interested in the emergence of cultural communities and the transformation of cultural fields. The rising availability and accessibility of large-scale datasets offer new opportunities to advance our sociological understanding of the emergence and evolution of whole cultural fields. This dissertation also speaks to computational social scientists, digital humanists, and data scientists in creative industries that pursue novel ways to conceptualize and operationalize cultural processes.

The three manuscripts that form this dissertation offer different perspectives on New Hollywood's emergence. In the first manuscript, Henning Hillmann and I show how New Hollywood filmmakers created a cohesive co-citation network consisting of shared references to revered films. We argue that this symbolic network provided the relational foundation for the community and defined a canon of revered films. In the second manuscript, I show how the standards of peer recognition—in the form of giving and acquiring cinematic references—shifted over time. I argue that New Hollywood filmmakers created an artistically oriented reward system that they maintained throughout the subsequent Blockbuster era. In the third manuscript, Mark Wittek and I examine the emergence of status orders in Hollywood

filmmaking. We show how the distribution of collaboration partners and acquired artistic references becomes increasingly unequal as of the New Hollywood era. In addition, we show that New Hollywood filmmakers tended to choose collaboration partners of similar artistic status. The three papers complement each other conceptually and methodologically. While the first manuscript describes the broader film historical context and addresses the general problem of collective identity formation in individualistic contexts, the second and third manuscripts examine specific mechanisms that enable community cohesion and boundary making.

In the remainder of this chapter, I introduce major concepts to develop a relational perspective on community formation. In the second chapter, I describe the empirical case: the New Hollywood movement. In the third chapter, I discuss previous research on art world and movement emergence through the lens of opportunity structures, social networks, and symbolic networks. The three manuscripts that form this dissertation examine community formation through social and symbolic networks from complementary perspectives. The dissertation concludes with a summary and discussion of the findings that go beyond the points discussed in the manuscripts.

1.2 Relational Perspectives on Community Formation

The case of New Hollywood's emergence involves a tension between group formation and individual autonomy. While New Hollywood filmmakers emphasized artistic autonomy, they also relied on a cohesive relational foundation to collectively realize their aesthetic vision. This tension is rooted in early relational thinking, with Simmel (2014) stating that individuals and groups co-constitute each other. A dual perspective on individuals and groups suggests that individual identity emerges from individuals' involvement in diverse social groups. In reverse, group identity is defined by all involved individuals. Just as groups define individuals, individuals shape groups.

Breiger (1974) built on this notion of duality between individuals and groups and contributed to the formalization of Simmel's ideas. Applying a social network analytical approach (White 1971), he developed the idea of two-mode networks that consist of persons and affiliated groups. Group affiliation—be it in civic associations, local sports clubs, or cultural projects—shapes individuals' identity, just as individuals' involvement produces distinct group identities. This perspective acknowledges the structural duality of social systems, which implies relationships within and between two types of social phenomena (Mohr and White 2008).

Two-mode structures can easily convert into one-mode structures. Think, for example, of three filmmakers involved in the same film project. Their joint group involvement creates a collaborative tie between them. The substantive interpretation of a collaborative tie is that filmmakers participating in the same film are likely to interact on set and share ideas and resources (Faulkner 2008; Lutter 2015; Rossman, Esparza, and Bonacich 2010). Suppose many filmmakers collaborate on different film projects, where some repeatedly collaborate with the same others, and others regularly change their collaboration partners. Through individuals' overlapping group involvements, we can imagine a more or less coherent artistic community to emerge. From a relational perspective, we may think of these collaborative ties as the relational scaffolding of cultural fields that facilitate organization, solidarity, and trust among cultural producers (Fine 2012; Friedkin 2004).

However, beneath the surface of this social network, individuals are also connected through more subtle forms of relationships. Individuals form symbolic ties when they refer to the same cultural objects or share similar practices and tastes (Basov and Kholodova 2022). While scholars have traditionally considered network structures as pipes through which cultural objects and practices flow, sociology's cultural turn initiated a more integrated perspective on networks and culture (Erikson 2013; Friedland and Mohr 2004). Recent research aims at

thinking culture—in the sense of shared local practices, objects, tastes, meanings, discourse, repertoires, and norms (Pachucki and Breiger 2010)—and networks together (Basov et al. 2020; Basov and Kholodova 2022; Edelmann and Mohr 2018; Edelmann and Vaisey 2014; Godart and White 2010; Gondal and McLean 2013; Lena 2015; Lewis and Kaufman 2018; Lizardo 2006; McLean 2017; Mohr et al. 2020; Vaisey and Lizardo 2010).

Culture comprises a meaning structure that emerges from relations between individuals and cultural elements or between cultural elements. Cultural objects or practices are not merely transmitted through or embedded within network structures, but they create their own cultural orders as complementary to social orders (Godart and White 2010; Lee and Martin 2018; Mohr 1998). Following the duality notion between persons and groups, individuals are symbolically connected when they refer to the same cultural objects. When two filmmakers refer to the same film—be it through the adoption of camera shots, dialogue snippets, or stills (Biguenet 1998; Carroll 1982)—they have a symbolic connection.[1] In reverse, we may also map relationships between cultural objects through their co-reference by the same individuals. When one filmmaker references two films, these two films connect symbolically because they co-occur in the same cultural object.

This dual notion between individuals and groups, and individuals and cultural elements encourages an inherently relational perspective on the emergence and evolution of new social and cultural forms. It encourages the study of relationships between not only individuals, but individuals connected through shared reference to cultural objects, tastes, and styles, or even among cultural objects that are connected through shared co-occurrence or co-reference. Figure 1 depicts the duality between individuals and groups and individuals and cultural objects.

[1] I will elaborate on the concrete quality and role of cinematic references in the three manuscripts.

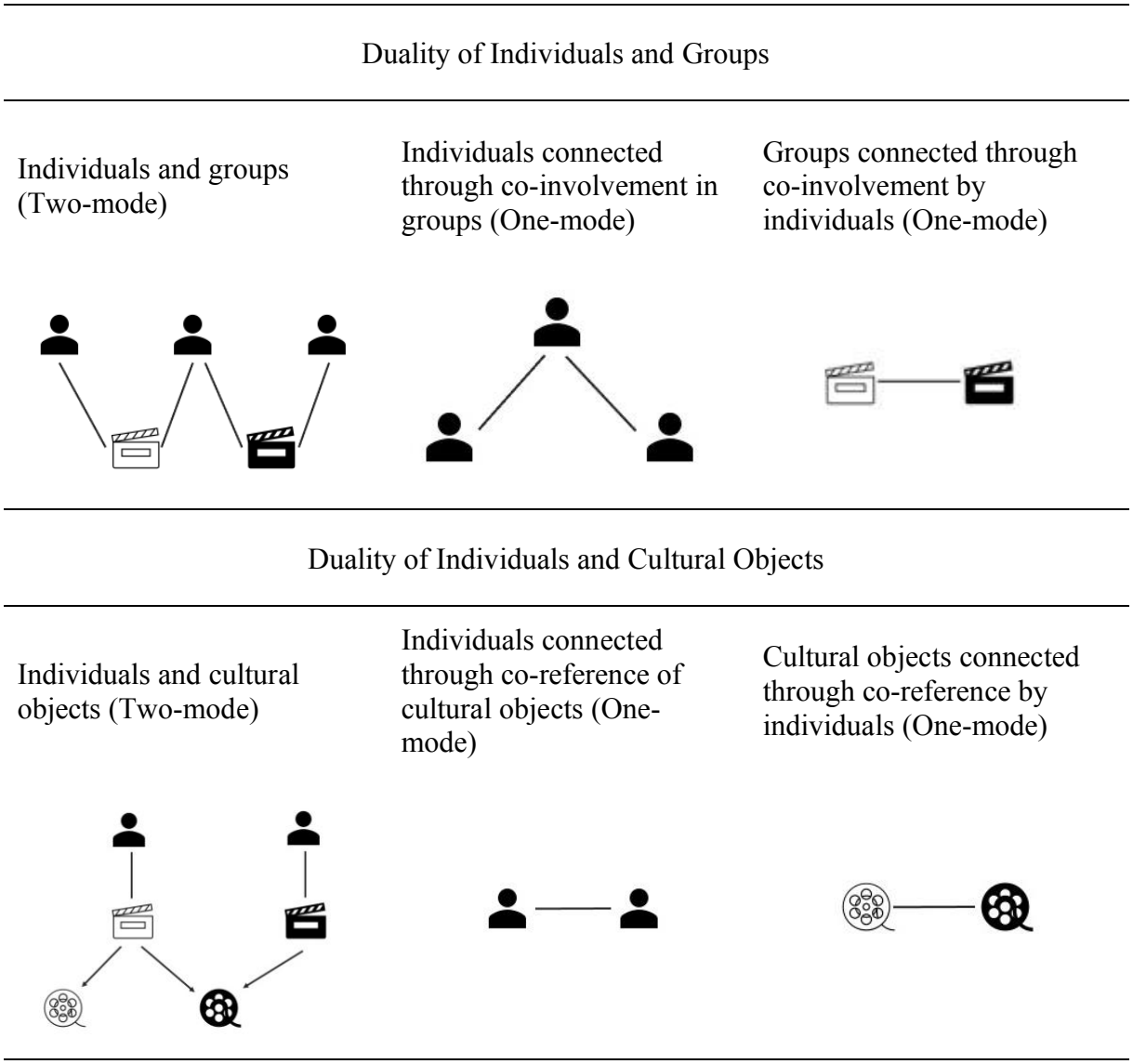

Figure 1. Illustration of two-mode and one-mode network structures. The clapperboard represents a film project, the film reel represents a released film that is referenced.

Once we consider relationships not only through direct interaction but through shared references to cultural objects or practices, this has important implications for the study of collective identities and social and symbolic boundaries (Cerulo 1997; Lamont and Molnár 2002; Pachucki and Breiger 2010; Polletta and Jasper 2001). A collective identity "may be imagined rather than experienced directly" and it can be "expressed in cultural materials—names, narratives, symbols, verbal styles, rituals, clothing" (Polletta and Jasper 2001: 285). The identity formation process involves communities creating symbolic distinctions,

establishing hierarchies, and negotiating rules of inclusion (Cerulo 1997). Just as group members "must be able to differentiate themselves from others by drawing on criteria of community and a sense of shared belonging within their subgroup" (Jenkins 2014; Lamont and Molnár 2002: 170), outsiders must recognize this identification process to speak of an objectified identity.

Think of the distinct fashion symbols selected by two famous musical communities. While 1970s Punk musicians expressed their group identity through motorcycle jackets and ripped jeans (Crossley 2009), 1990s Hip Hop musicians favored baggy jeans and baseball hats (Lena 2004). A community's cohesion manifests in its shared understanding of the sacred and the profane and community members' adherence to collectively defined rules and rituals (Durkheim 2008; Lamont and Molnár 2002). Fashion pieces, just as shared ideologies, lyrics, instruments, or language are all forms of expressing collective identity and drawing symbolic boundaries from other groups (Lena 2012).

The institutionalization of a collective identity requires long phases of consensus formation on the inclusion and exclusion of specific symbols. This process manifests in a selection of cultural elements and symbols, and often an elevation—or canonization—of some elements over others. Canonization implies that some cultural objects or practices are used or referenced disproportionally more than others. It produces boundaries between those who appreciate these cultural elements and those who disagree with the formers' preferences. More technically, Lamont and Molnár (2002: 168) define symbolic boundaries as "conceptual distinctions […] to categorize objects, people, practices" and "tools by which individuals and groups struggle over and come to agree upon […]." In contrast, social boundaries are "objectified forms of social differences" that are "revealed in stable behavioral patterns of association."

Connecting this definition with a relational perspective of individuals, groups, and culture, social boundaries between two people or groups may manifest through the absence of direct

relationships in the sense of friendship, kinship, or collaborative ties. (Pachucki and Breiger 2010). Similarly, symbolic boundaries may manifest through the absence of shared use or reference to cultural objects or practices. From a relational perspective, social and symbolic boundaries do not necessarily form on the base of shared categories, but they emerge through patterned social or symbolic interaction.

This thesis analyzes how New Hollywood filmmakers constructed a cohesive community and drew symbolic boundaries from the Golden Age of Hollywood through their shared use of cinematic references. As I show in the first manuscript, New Hollywood filmmakers formed a cohesive network of co-citations and formed a canon of films that still serves as a touchstone for filmmakers today. They developed and enforced novel standards of peer recognition that rewarded films based on their artistic merits (Manuscript 2) and created a new social and cultural status order that contributed to the elevation of film as an art form (Manuscript 3).

2. New Hollywood and Auteur Cinema

2.1 The Symbolic Clash between Old and New Hollywood

In 1967, Warren Beatty presented his new film *Bonnie and Clyde* to his studio boss Jack L. Warner (Biskind 1999). Unfortunately, Jack L. Warner, a man of over 80 and representative of Hollywood's established but shaken studio system, shared little enthusiasm for the new approaches young filmmakers came up with at that time. The movie blends creative elements from diverse genres, such as crime, romance, and road movies. The plot revolves around a madly-in-love couple that, in the heat of the moment, robs banks, and flees on the road from one to another troublesome adventure. From today's point of view, the movie seems rather conventional in its visual and narrative style and the social topics it addresses. At the time of its release, however, it broke with all established conventions, both stylistically and socially (Kael 1967).

In hindsight, the movie was considered the harbinger of a new era of filmmaking (Biskind 1999; Elsaesser, Horwath, and King 2004). It appealed to youth audiences as few films had before and produced exceptional box office numbers. However, when Beatty showed it to Warner to receive permission for release, he faced an unexpected reaction. Does the story go that Warner, visibly furious about the movie's content and style, rumbled: "How long was that picture? That's the longest two hours and ten minutes I ever spent." Attempting to appease Warner, Beatty said: "You know, Jack? This is really a kind of a homage to the Warner Brothers gangster films of the 30s, you know?" By this, he wanted to emphasize the movie's mindfulness of Hollywood history through cinematic references, such as adopted camera shots and stills—a fact that not only film critics appreciated (Carroll 1982; Kael 1967). Warner, however, now even more upset, yelled, "What the hell is a homage?".

This anecdote symbolizes the symbolic boundary between the old and the new Hollywood system that crystallized at that time. Most old Hollywood filmmakers produced films in an assembly-line manner within the walls of film studios, subordinated to producers that aimed for maximal revenues. In contrast, New Hollywood filmmakers "intended to cut film free of its evil twin, commerce, enabling it to fly high through the thin air of art" (Biskind 1999). Rather than reproducing linear, plot-driven storytelling with happy endings and morally elevated heroes, New Hollywood filmmakers aimed for non-linear and character-driven narratives. They shot films on location rather than within the studio walls to create a realistic style and challenged the dominant technical correctness. Most importantly, their vision of artistic filmmaking considered the individual director and not the producer or the team in control of the filmmaking process.

2.2 New Hollywood Filmmakers' Auteur Vision

The filmmakers behind *Bonnie and Clyde*—Arthur Penn, Warren Beatty, and Robert Benton—were not alone in creating a path-breaking cinematic piece. The New Hollywood era saw the creation of such prominent works as *A Clockwork Orange*, *The Godfather*, *Taxi Driver*, *Annie Hall*, and *Star Wars*. By today's standards, most of these works count as classics of American film history (Elsaesser et al. 2004). Canonical directors, such as Stanley Kubrick, Francis Ford Coppola, Terrence Malick, Martin Scorsese, Woody Allen, and George Lucas started their careers during this time and established the American auteur cinema.

At the core of New Hollywood's identity was the vision of auteur filmmaking. Golden Age directors, like John Ford or Howard Hawks, understood themselves as storytellers emphasizing craft and efficiency. In contrast, New Hollywood directors were unembarrassed to develop their individual visual styles and claim themselves as the creators of films. They engaged as cultural entrepreneurs (DiMaggio 1982; Rao et al. 2003) to reframe the director role—from a mere storyteller or craftsman to an artist—and developed personal styles to demarcate themselves from other directors. While Golden Age Hollywood directors had to leave the production site after the shooting phase, New Hollywood directors engaged in fierce fights with studio bosses to be in control of the final cut.

Auteurism emerged among French Nouvelle Vague film critics and directors in the 1950s who claimed that “directors are to movies what poets are to poems” (Biskind 1999: 16). Inspired by his French colleagues, American film critic Andrew Sarris formulated the auteur theory which provided a new framework to evaluate films according to artistic standards (Sarris 1962, 1968). His formulation of the auteur theory premises that the director's technical competencies and indistinguishable personality, and the interior meaning of film are all criteria of value. The elevation of American filmmakers, such as Orson Welles, Alfred Hitchcock, and Tom Ford, provided a novel ideological framework to study, evaluate, and emulate these

directors (Allen and Lincoln 2004; Baker and Faulkner 1991; Baumann 2007b; Hicks and Petrova 2006).

The auteur theory's strong emphasis on individualism manifested an ideological shift in Hollywood cinema. While the movie *Bonnie and Clyde* constitutes an example of a collaboration between three New Hollywood directors or writer-directors, numerous anecdotes indicate the movement's incommensurability with collaboration. For example, the collaboration between Warren Beatty and Woody Allen on *What's New, Pussycat?* (1965) left Allen unhappy about the final version of the movie and made him promise to himself to always be in undivided control of his films (Biskind 1999). Likewise, after several years of collaboration between Paul Schrader and Martin Scorsese on such canonical films as *Taxi Driver* (1976) and *Raging Bull* (1980), they decided to pursue separate projects because, as Schrader remembers, at one time, "there were now two directors in the room."[2]

This dissertation asks how New Hollywood filmmakers could still form a coherent movement and a shared consensus on their vision of artistic filmmaking given this fundamental tension between auteur ideals and collective organization, The next chapter embeds this overriding research question into the sociological literature on cultural community emergence.

3. Theoretical Background: The Role of Opportunities, Social, and Symbolic Networks

How do new cultural communities emerge and how do they create consensus on their collective identity? Previous sociological research emphasized the role of opportunity structures, resource mobilization, and symbolic framing processes as central explanatory factors for art world emergence. While this conceptual distinction originates from research on social and intellectual movement formation (Diani and McAdam 2003; Frickel and Gross 2005), it has been applied

[2] https://www.youtube.com/watch?app=desktop&v=3NhSZ6RTQgk, 01:02:22.

to the study of different cultural fields (Baumann 2007a; Hollands and Vail 2012). I build on this conceptual structure but focus on the cultural producers' opportunity structure, their resources through social networks, and frames as symbolic networks. By conceptualizing the social and symbolic network dynamics that unfold among cultural producers, I complement previous studies that highlighted the role of artists' surrounding institutions, such as galleries, audiences, or critics, in the successful organization and legitimation of new cultural forms (Baumann 2007b; DeNora 1991; Rao et al. 2003).

3.1 Opportunities

Opportunities refer to the broader context in which movements of cultural producers are embedded. They constitute the social, cultural, and political environment that fosters or impedes collective organization among artists. For art worlds, dynamics within and between different audiences—from peers, critics, and public audiences to consecrating institutions such as museums and universities—constitute and shape the "opportunity space" (DiMaggio 1992).

In the context of filmmaking, in-depth studies of Hollywood's artistic legitimation process demonstrate the importance of shifting opportunity structures for new cultural forms to emerge (Baumann 2001, 2007a, 2007b).[3] These studies reveal the diverse economic, social, and cultural factors that created the opportunity space for 1960s filmmakers to gain a grip on the old studio system. By the late 1960s, film studios suffered a severe economic crisis. While box office revenues steadily declined, and TV became a new form of entertainment for mass audiences, studios vainly tried to reach younger audiences. At that time, this young audience

[3] It is important to note that Baumann's arguments address the question of cultural forms' artistic legitimation rather than emergence. While Bauman also makes the distinction between opportunity structure, resources, and frames for the legitimation process, he focuses less on the social dynamics within the filmmaker community. Similarly, abundant studies have examined the essential role of critics in the retrospective consecration of cultural forms (Dowd et al. 2021; Schmutz 2009; Schmutz et al. 2010; Schmutz and Faupel 2010). My study aims to complement these studies through a relational perspective on cultural producers', instead of evaluators', consensus formation.

constituted the largest group of moviegoers but their demanding tastes for new narratives and styles challenged Hollywood's assembly-line approach to moviemaking. In addition, two Supreme Court decisions forced studios to divest themselves from their cinema chains and restrict their use of permanent contracts for filmmakers. As Hollywood's economic control vanished, its artistic elevation began. Film connoisseurs, such as critics and scholars, developed an artistic tone in their discussion of movies. Aesthetic appeal and the director's reputation became more value-defining than a film's entertainment qualities. In sum, these institutional shifts—the financial crisis of the studio system, changing audience composition, and the construction of consecrating institutions—created the opportunity space for filmmakers to perceive and organize filmmaking as an art form. The first manuscript provides a detailed description of the historical conditions at the time of New Hollywood's emergence.

Sociological research has demonstrated the importance of opportunity structures for the emergence of cultural forms in various empirical contexts besides Hollywood, ranging from painting and classical music to French gastronomy and botanical gardens. In the case of painting, White and White (1993) show how the over-supply of artistic talent and restricted employment possibilities facilitated the emergence of the Impressionist art movement. As the Royal academic system provided few career opportunities, Impressionist artists collectively created an alternative, gallery-centered distribution, and evaluation system.

In the context of music, DeNora (1991) studies how members of the 18th-century Viennese aristocracy formulated classical music as a legitimate art form. The bourgeoisie's improving economic conditions threatened the aristocracy's dominance in classical music concerts. To showcase their cultural dominance, aristocrats created a classification system of composers that distinguished between "geniuses" and average composers. These social developments facilitated the formation of a new art world.

Rao et al. (2003) show how culinary activists challenged the dominant culinary notion and professional identity of chefs in French gastronomy. Inspired by the 1960's antiauthoritarian wave in neighboring cultural fields—literature, theater, and film—chefs forged a new culinary vision that elevated them as inventors rather than technicians and equipped them with more freedom to create rather than emulate canonical dishes.

Johnson and Powell (2015) examine the historical conditions under which the botanical garden as a novel organizational form could emerge. They argue that social worlds are poised for new social and cultural forms when civic and scientific factors have reinforcing consequences. The rise of botanical gardens was facilitated through people's concerns about hygiene and aesthetics due to urbanization-related transformations, the rising managerial class that shared a desire for leisure opportunities, and an emergent community of scientific experts.

Overall, across a variety of cultural contexts, these sociological studies illustrate the significance of institutional arrangements that provide or limit opportunities for cultural producers. They shape the economic, legal, and demographic environment in which artists are embedded. The next section captures the role of social networks in the emergence and cohesion of cultural communities.

3.2 Social Networks

Social networks play a central role in cultural fields. Becker's (1982) rich analyses of art worlds illustrate the collective quality of artistic production. Through collective action (Becker 1974) or patterned cooperation (Becker 1982), cultural producers create, distribute, and exhibit artworks and gain access to relevant resources. The collective aspect of artistic production is particularly prevalent in filmmaking, where diverse professional roles from writers and directors to cinematographers, editors, and producers collaborate. However, even in seemingly less interactive art forms, such as painting, many people—from curators, dealers, and critics to

public audiences—engage in the creation and evaluation of art. In the following, I discuss the role of social networks from the perspective of groups, dyadic relationships, and individuals.

3.2.1 Group-Level Perspective

Especially for new groups that endeavor "to impose new modes of thought and expression." (Bourdieu 1993: 338), close-knit networks support the development and realization of a creative vision. Crane's (1995) study of avant-garde communities shows how artists operate within a dense network of peers, gallerists, and audiences. Through direct interactions, artists can develop and validate their artistic knowledge and seek support and inspiration from fellow artists. Regular direct and positive interactions facilitate the creation of a dense network that provides the cohesion necessary to foster solidarity and mobilization among group members (Gould 1995; Laumann 1973). Cohesive networks enable consensus formation among members on the group's identity and goals (Friedkin 2004).

Sociological research on art worlds shows that the formation of cohesive groups depends on artists' opportunities for interaction. Existing co-membership in associations, friendships, or fellow student relations all provide opportunities to form a cohesive group. The importance of friendship ties has been shown, for example, in the emergence of the UK-based Amber film collective (Hollands and Vail 2012) and the Czeck Punk Rock community (Císař and Koubek 2012). Opportunities for direct interaction are not only important in a community's formative years. The development from a small avant-garde group to a scene or whole industry depends on regular occasions for exchange among cultural producers, fans, as well as industry members, and critics (Lena and Peterson 2008).

Cohesive networks may create empowering and constraining structures for groups and their members as Crossley (2008, 2009) demonstrates in the case of Manchester's 1970s Punk movement. Cohesive network structures can empower because artists can easily exchange

ideas and material resources and develop shared criteria of aesthetic judgment (Wohl 2015). Dense networks facilitate coordination, communication, cooperation, and trust among artists. However, they may constrain if members monitor the actions of others and control adherence to the group's artistic and political ideals. If networks are too cohesive, this may also have consequences for group creativity. In the context of musical production, Uzzi and Spiro (2005) show that teams with small-world properties—meaning that some team members bridge otherwise separate parts of the musical network—perform better compared to teams that are too familiar. De Vaan, Vedres, and Stark (2015) show a similar pattern for the gaming industry. Less cohesive networks may benefit creativity as they mitigate redundant information, stimulate the influx of novel approaches and ideas, and facilitate the necessary friction arising from different aesthetic approaches.

The formation of cohesive networks may depend on a group's actual or envisioned ideology (Frickel and Gross 2005). In highly individualistic contexts, artists may avoid direct collaborations as they risk losing creative autonomy and reputation. If cultural producers refuse direct interaction this may constrain the formation of group consensus. For example, in the case of science, Cole (2001) argues that sociology's dominant individualistic culture constrains the formation of paradigmatic consensus. Highlighting the tension between individual autonomy and collectivism, Frickel and Gross (2005) theorize that, paradoxically, movements may be more likely to emerge in individualistic contexts as they value innovation and provide immediate rewards to actors. However, it may be easier for movements to win followers and become institutionalized at moments of increased collectivism because a collectivist culture facilitates collective action.

3.2.2 Dyad-Level Perspective

Sociologists have long been interested in the mechanisms that underlie the formation of social networks. While a large research stream has contributed to a better understanding of friendship tie formation (Ellwardt, Steglich, and Wittek 2012; Lewis and Kaufman 2018; McFarland et al. 2014), the study of tie-generating mechanisms among cultural producers attracts more attention with the increasing availability of data on complete cultural fields (Ebbers and Wijnberg 2010; Ferriani, Fonti, and Corrado 2013; Stark et al. 2020). A small number of qualitative and quantitative studies have examined why cultural producers form collaborative ties and emphasized the role of relational closeness and social recognition.

Faulkner and Anderson (1987) argue that relationally close Hollywood composers are more likely to collaborate. Repeated collaboration decreases risks and uncertainties on performance as collaboration partners can form their expectations based on past experiences (Sorenson and Waguespack 2006). Two filmmakers are more inclined to collaborate when indirectly linked through a third filmmaker (Ebbers and Wijnberg 2010). Previous collaboration partners can occupy bridging positions that enable access to new potential collaborators. This mechanism—commonly referred to as transitivity or triadic closure—suggests that if filmmakers A and B and A and C had a successful collaboration, it is likely that B and C also get along.

Besides closeness, artists' social capital—mirrored, for example, in the number of previous and current collaborators—is central to the formation of future collaborative ties (Ebbers and Wijnberg 2010; Stark et al. 2020). Collaborating with well-connected artists mitigates uncertainty about a collaboration's success and facilitates access to follow-up projects. Therefore, already popular artists tend to become disproportionally more popular than less connected artists. This accumulation of resources by a small number of people is commonly referred to as the Matthew effect (Bol, de Vaan, and van de Rijt 2018; Merton 1968; Peters and Roose 2022).

Next to social capital, high cultural esteem in the form of acquired awards (Rossman et al. 2010) or references (Lena and Pachucki 2013) may help to attract additional collaborators. Previous studies suggest that cultural producers who excel artistically or intellectually are particularly popular as collaboration partners. Working with role models may be rewarding on a creative level for most cultural producers that share the same artistic goal orientation (Skaggs 2019). The association with esteemed cultural producers may elevate artists' visibility and increase their chances to establish successful careers (Lang and Lang 1988; Rossman et al. 2010).

3.2.3 Individual-Level Perspective

Artists are embedded in collaborative contexts that shape their identity and recognition. Research has shown that artists' embeddedness significantly affects their identification as artists (Faulkner 2008; Lena and Lindemann 2014), as well as their creative success, and peer recognition (Faulkner 2008; Giuffre 1999; Lutter 2015; Phillips 2011; Rossman et al. 2010).

Artists build their careers as they move from one project to the other. Through each project, artists form relationships with other artists that potentially know about new professional opportunities. The ways in which artists form relationships have implications for their artistic identity. In the context of Hollywood, Faulkner (2008) shows that composers that are structurally equivalent in that they have similar relationships with similar others hold comparable artistic identities.

Rossman et al. (2010) show that actors and actresses are more likely to receive prestigious awards when they collaborate with other high-status peers. The strength of artists' ties with other artists and institutions fundamentally affects their career success and survival. In the case of the photography field, Giuffre (1999) shows that critical success is associated with photographers' weak rather than strong ties to galleries. Artists that have wide-spanning

connections gain access to more information and resources and are perceived as more involved in the community. Weak ties also play a significant role for movie actors and actresses. Lutter (2015) shows that women actresses face larger career disadvantages compared to men when they repeatedly collaborate with the same others. Strong embeddedness into familiar teams limits access to novel contacts and, thus, potential career opportunities.

In some contexts, embeddedness into sparse rather than cohesive networks may benefit the classification of artists and artworks. In his research on jazz musicians, Phillips (2011, 2013) analyzes how structural embeddedness influences the reception of jazz musicians. He shows that artworks from disconnected artists can be more appealing than artworks from connected artists, particularly when the respective artworks are difficult to categorize. In that sense, structural outsiders are valued more because they appeal aesthetically more to classifying audiences.

In sum, social networks play a pivotal role in the production and recognition of artworks. On the group level, cohesive social networks facilitate trust, solidarity, and resource access among community members. On the dyadic level, relational closeness and status shape the formation of collaboration ties. On the individual level, embeddedness in weak rather than strong social networks increase artists' survival chances in competitive cultural fields. The three manuscripts that form this dissertation contribute to a better understanding of social networks in cultural production from a group-, dyad-, and micro-level perspective. The first manuscript takes a macro-level perspective and analyzes temporal changes in the cohesion of filmmaker networks. The third manuscript focuses on dyad-level interactions and analyzes the role of cultural recognition in the formation of collaborative ties among Hollywood filmmakers. The second manuscript takes a micro-level perspective and examines to what extent a film's structural embeddedness affects its recognition by peer audiences.

3.3 Symbolic Networks

Previous sociological work has acknowledged the importance of symbols in the emergence and coherence of artistic, social, and intellectual movements. Abundant studies focused on the role of symbolic framing processes in diverse cultural contexts, ranging from cinema (Baumann 2007a; Hollands and Vail 2012) to music (DeNora 1991; Lopes 2009), gastronomy (Johnston and Baumann 2007; Rao et al. 2003), and architecture (Molnár 2005). Frames provide "schemata of interpretation" (Goffman 1974) and "help to render events or occurrences meaningful and thereby function to organize experience and guide action" (Benford and Snow 2000: 614). For example, in the context of Hollywood filmmaking, Baumann (2007b) argues that the auteur theory provided the ideological foundation to frame filmmaking as an art form. Borrowing elements from high-art ideologies—e.g., individual authorship and economic disinterestedness—critics, scholars, and filmmakers collectively engaged in the legitimation of film as art. While these studies argue that frames are essential for legitimizing movement goals and mobilizing participants, they do not show how abstract frames manifest in relationships among movement members. A different sociological stream demonstrates how actors draw on frames of meaning when creating relationships (Gondal and McLean 2013; McLean 1998). Against the backdrop of understanding cultural community formation, I further develop this relational perspective and discuss recent research on symbolic relationships in diverse cultural contexts.

3.3.1 Conceptual Foundations

A growing stream in the sociological literature shows how cultural communities emerge and cohere through symbolic forms of interaction (Basov and Kholodova 2022; Fuhse et al. 2020; Godart and Galunic 2019; Lena 2004). Symbolic ties may stem from shared references to cultural objects (Lena 2004; Lena and Pachucki 2013) or the shared use of cultural practices

artists deploy in their daily work (Basov and Kholodova 2022). They may also manifest in cultural producers' language (Basov et al. 2020; Fuhse et al. 2020) or their higher-level orientation toward artistic versus commercial goals (DiMaggio 1987; Skaggs 2019). While not necessarily using the term symbolic ties, several theoretical accounts, and empirical studies have examined them in different cultural contexts.

Becker (1982: 14) describes how artists rely on "shared traditions for the background against which their work makes sense and for the raw materials with which they work". By raw materials, he means combinations of single aesthetic elements—words in poems, scales in music, camera shots in films, arm postures in dance, brush techniques in painting—that create social meaning for peer, critical, and public audiences. Think of short, thick brushstrokes in pastel colors, vague outlines, and natural landscapes. This combination of aesthetic elements may invoke the Impressionist painting style. Think of fast-paced drums and e-guitars, yelling voices, and anti-establishment lyrics. This combination of sonic elements invokes Punk rather than Country music. Both examples illustrate the relational character of artistic communities through shared cultural practices (Goldberg 2011; Lena 2015). From today's perspective on the Impressionist or Punk movement, the combinations of these cultural elements provide almost fixed cognitive representations. During the first stages of the genres' development, however, members of both communities had to form a consensus on the inclusion and exclusion of specific elements (Lena and Peterson 2008).

In her comprehensive study of musical communities, Lena (2012; Lena and Peterson 2008) sheds light on their networked character arguing that shared conventions bind cultural producers together and produce boundaries around musical styles. In the early stages of musical styles, shared conventions are not fixed but emerge and develop over time as cultural communities grow and mature. Different stylistic features characterize a genre's developmental stage—from avant-garde to scene-based, industry, and traditionalist. Novel

artistic forms become visible when artists, audiences, and patrons form communities and develop new shared understandings. While avant-garde groups share "little consensus over how members should dress, talk, or describe themselves as a group" (Lena 2012: 29), scene-based genres begin to form consensus on conventions. In contrast, industry-based genres exhibit highly codified performances.

3.3.2 Network Analytical Applications

Recent research in the sociology of culture applies a network analytical approach to study how symbols bind community members together in art collectives (Basov and Kholodova 2022), fashion markets (Godart and Galunic 2019), politics (Fuhse et al. 2020; Wang and Soule 2012), and scientific disciplines (Moody and Light 2006; Shwed and Bearman 2010; Stark et al. 2020). Most of these studies incorporate a dual perspective on culture and networks. This perspective implies that networks do not merely transmit cultural elements but relationships among individuals, symbols, or individuals and symbols, can emerge from individuals' shared use of cultural objects and practices (Lee and Martin 2018; Mohr et al. 2020).

In the context of arts, Basov and Kholodova (2022) analyze the interplay between social, symbolic, and material networks of five European art collectives. Artists have a symbolic relationship when they use similar language in their descriptions of artworks. Material ties stem from the shared use of objects. The mapping of these multi-layered networks illustrates how symbolic and social relationships overlap or diverge. In a different study, Basov (2020) examines to what extent cultural homophily—i.e., the shared use of linguistic concepts and references—affects social network ties among and between artists and art managers within and across two art collectives. He finds that cultural similarities are higher among members in different art versus managerial positions within the same art collective than within art or managerial positions across different collectives. This finding suggests that culture emerges

from local contexts and daily practice rather than higher-order art versus economic goal orientation.

In the political field, Fuhse et al. (2020) study the symbolic relationships that emerged from parliamentary discourse in the Weimar Republic. They distinguish between cultural relations among symbols (i.e., ties between co-occurring linguistic terms), socio-symbolic constellations (i.e., ties between politicians that stem from shared use of terms in speeches), and social relationships (i.e., ties that stem from interaction through applause, laughter, or objections). By analyzing the interplay between social and symbolic networks, they identify patterns of support and opposition among politicians and parties and trace how polarization rather than cohesion increasingly characterized Weimar's political community.

In sum, recent sociological accounts suggest that symbolic ties—though not always termed as such—play an essential role in the formation of cultural communities. This dissertation focuses on symbolic ties from references among artists and artworks. Within a community, artists constantly imitate each other "in order to validate their own conception of artistic knowledge" (Crane 1995: 25) and to pay each other recognition. Rap musicians who sample tracks by fellow artists or repeat samples used by other musicians (Lena and Pachucki 2013), jazz musicians who imitate others' sounds or repertoires (Berliner 1994; Phillips 2013), and literary writers who refer to peers' books in their texts (Bourdieu 1993) are all examples of artistic referencing. The three manuscripts of this dissertation offer a detailed conceptualization and operationalization of symbolic networks through cinematic references. The first manuscript operationalizes symbolic networks through shared references among filmmakers and through directed references among films. The second manuscript operationalizes symbolic networks through films' undirected references to other films and the third manuscript through directed reference networks among filmmakers.

4. Summary of Manuscripts

The three manuscripts that form this dissertation examine the social and symbolic relationships among filmmakers that underlay the formation of the New Hollywood movement. The first manuscript, "Identity from Symbolic Networks: The Rise of New Hollywood," asks how the collective identity of New Hollywood filmmakers emerged. We analyze social networks that stem from collaborations among filmmakers and symbolic networks that arise from co-references among filmmakers and references among films. Using information from the Internet Movie Database on more than 17,000 filmmakers active between 1930 and 2000, we show that a cohesive symbolic network provided a foundation for New Hollywood's collective identity. The empirical evidence suggests that their collective identity cohered around a new film canon: a collection of revered films that filmmakers referenced disproportionally. We argue that symbolic ties through shared citations allowed New Hollywood filmmakers to realize their vision of auteur filmmaking and to draw symbolic boundaries that separated them from the established studio identity of Hollywood's Golden Age.

The second manuscript, "Artistic Referencing and Emergent Standards of Peer Recognition in Hollywood, 1930-2000," focuses on a specific community-generating and -sustaining mechanism. I examine how a film's referencing of other films affects its peer recognition. Prior research finds that peers tend to reward socially well-embedded artists that signal community involvement and literacy of established conventions. Another stream of sociological research argues that the criteria for peer recognition are not fixed but depend on the amount of legitimacy that a cultural field has acquired. I study Hollywood's emerging and shifting standards of peer recognition between 1930 and 2000 and ask how a film's reference style influences its acquisition of references. Reference styles include a film's novelty (i.e., the combination of film references in novel ways), a film's literacy (i.e., the number of used references), and openness (i.e., the use of European references). I develop a new, network-based measure of

novelty that captures a referencing film's betweenness score in the cumulative citation network. I analyze the reference styles of 5,414 US-American movies and show how literacy and openness emerged as novel artistic standards during the New Hollywood period. While films of the New Hollywood (1960-1979) and the Blockbuster era (1980-1995) were rewarded for signaling cultural literacy and openness in their reference styles, these standards did not apply yet to Golden Age filmmakers (1930-1959). Strikingly, filmmakers of the Golden Age and the Blockbuster era rewarded reference styles that signaled combinatorial novelty. In sum, the evidence suggests that New Hollywood filmmakers incorporated their auteur vision in the field by creating and enforcing new peer recognition standards. While the first manuscript focused on the bigger picture of New Hollywood's emergence as reflected in their cohesive symbolic networks, the second manuscript sheds light on the micro-mechanisms of using and acquiring cinematic references.

The third manuscript, "The Emergence of Status Orders in Hollywood Filmmaking. Evolution of a Cultural Field, 1920 to 2000," moves to another key social mechanism. We examine how Hollywood filmmaking became more stratified and segregated according to filmmakers' artistic recognition. We analyze the interplay of collaboration and reference networks among more than 13,000 filmmakers over an 80-year period and reveal the long-term changes in Hollywood's social and symbolic organization. Our findings suggest that the distribution of social recognition—measured by filmmakers' prominence in collaborative ties and artistic references—became increasingly stratified as the field grew and matured. Moreover, during the New Hollywood era, collaboration networks became more and more segregated according to filmmakers' artistic status. While the first manuscript revealed the fragmented structure of New Hollywood filmmakers' collaboration networks, this manuscript shows that if they were collaborating, they favored colleagues of high artistic status.

In sum, the three manuscripts of this dissertation provide a relational account of the emergence of the New Hollywood movement—one of the most prominent film movements in Western film history. By blending institution-focused accounts with social network approaches, I develop a novel conceptual and analytical lens to understand the emergence and cohesion of New Hollywood. The findings indicate that the New Hollywood movement formed a cohesive community by using shared references and defining a canon. In addition, New Hollywood filmmakers developed novel standards for peer recognition and favored collaborations with artistic equals. I argue that developing cinematic referencing as a new expressive device and creating and enforcing new artistic standards for peer recognition not only offered New Hollywood filmmakers an internal source of cohesion. It also created symbolic boundaries from the commercial studio system and contributed to Hollywood's legitimation as an art world. These findings question sociology's strong emphasis on social networks in the organization of groups and inform recent debates on the interplay between culture and networks. In addition, the findings complement and complicate previous sociological accounts which argued that institutional shifts created Hollywood's art world formation. Finally, this dissertation encourages a context-sensitive approach to social network analysis to comprehensively capture the social mechanisms that underlie the emergence of cultural forms.

Table 1. Overview on manuscripts

Manuscript	**Social network**	**Symbolic network**
Identity from Symbolic Networks: The Rise of New Hollywood	Collaboration network (undirected) Nodes: Filmmakers Ties: Participation in joint film projects	Co-citation network (undirected) Nodes: Filmmakers Ties: Shared references to films Citation network (directed) Nodes: Films Ties: References to films
Artistic Referencing and Emergent Standards of Peer Recognition in Hollywood, 1930-2000		Citation network (undirected) Nodes: Films Ties: References to films
The Emergence of Status Orders in Hollywood Filmmaking. Evolution of a Cultural Field, 1920 to 2000	Collaboration networks (undirected) Nodes: Filmmakers Ties: Participation in joint film projects	Citation network (directed) Nodes: Filmmakers Ties: References to filmmakers

5. Discussion

Throughout this dissertation, I developed a conceptual and analytical lens to study the emergence of the New Hollywood movement. In this section, I summarize the substantive insights gained from the three manuscripts and discuss how they complement each other. Finally, I indicate implications for the study of cultural fields and point out the limitations of my research.

5.1 Relational Explanations of New Hollywood's Emergence

5.1.1 Identity from Symbolic Networks

The first manuscript revealed that New Hollywood filmmakers formed a cohesive network of symbolic ties through shared references to films, while their collaboration network yielded merely a fragmented structure. These findings suggest that New Hollywood's individualistic approach to filmmaking impeded rather than encouraged direct collaboration. The group, however, was more coherent than its ideology suggested. Members engaged in symbolic boundary making and created a canon by disproportionally referencing revered films. This canon still serves as a touchstone for filmmakers and critics today, indicating the movement's immense cultural significance.

Previous network-analytical accounts emphasized that movement formation in scientific, intellectual, and political fields requires direct collaboration among movement members (Becker 1974, 1982; Crossley 2009; Diani and McAdam 2003). In contrast, our findings suggest the binding power of shared symbols rather than direct interaction. Future research should scrutinize this finding for other cultural fields that either impose individualistic ideals or have no opportunity for direct interaction. Further developing our understanding of symbolic networks becomes especially important in an increasingly globalized art world and for new cultural forms that emerge in digital spheres.

Sociologists also highlighted the importance of shifting institutional conditions—the emergent critical discourse and film departments and younger audience composition—for Hollywood's art world formation (Baumann 2001, 2007b, 2007a). Our analyses complement these findings and show how filmmakers incorporated an abstract ideology—auteurism—invented by critics into their artistic practice. In sum, instead of focusing either on generalizable network mechanisms without contextual considerations or a narrative account of the particularities during one historical period, a combination of approaches promises new avenues for future research.

5.1.2 Artistic Referencing and Emergent Standards of Peer Recognition in Hollywood, 1930-2000

The second manuscript shows the emergence of novel peer recognition standards during the New Hollywood period. During the New Hollywood period and subsequent Blockbuster era, reference styles reflecting cinematic literacy and openness acquired more references than other films. Besides reference styles, films that exhibited individual authorship attracted more references from peers than films made by more than one director. Against the background of the first manuscript's insights, these findings indicate that New Hollywood filmmakers practiced what they preached. They not only created referencing as a novel expressive device, but they also actively enforced filmmakers' adherence to the defined conventions.

By recognizing the adherence to artistic standards, they could establish auteurism as a filmmaker identity beyond the New Hollywood period. Strikingly, in contrast to Golden Age and Blockbuster films, New Hollywood films did not attract more references if they signaled combinatorial novelty. This finding may hint at New Hollywood filmmakers' appreciation of diverse combinations of references. As the movement matured, combinatorial novelty may have become more critical because the studios' regained power threatened their original ideals.

When studios began to take advantage of individual authorship as a marketing device (Baker and Faulkner 1991), filmmakers rewarded films that signaled knowledge of the larger meaning structure of references. Overall, the findings indicate that during the Blockbuster era, filmmakers became stricter with their enforcement of the new standards.

The insights of the first and the second manuscript yield a new tension between a movement's codification and adaptability to changing environments. How can a movement maintain a certain degree of consensus but still retain the flexibility to encourage novelty and progress? Previous research showed how new cultural forms go through different developmental stages, from avant-garde to scene to industry and traditionalist (Lena 2012; Lena and Peterson 2008). While experimentation is high in an art movement's early stages, traditionalist genres exhibit high degrees of codification. Engaging in the extensive codification of auteur conventions may undermine rather than save the original idea. At the same time, a certain level of consensus on standards is essential for auteurism's visibility and influence (Lamont and Molnár 2002).

The following anecdote illustrates this tension. In a 2019 New York Times Op-Ed, Martin Scorsese laments the low artistic commitment of Marvel movies (Scorsese 2019). His main complaint revolves around the absence of a visionary auteur. Directors of Marvel movies have, in fact, little creative leverage as Disney studios control the filmmaking process. Like auteur films, they contain a plurality of pop-cultural and film-historical references (Salvador 2017). In contrast to many auteur films, however, they have a large fanbase that collectively engages in meaning-making. Despite recent trends to incorporate democratic ideals in artistic production and evaluation (Johnston and Baumann 2007; Lena 2019), Martin Scorsese's statement reflects a rather narrow, high-brow understanding of artistic filmmaking. Rather than engaging in a contemporary interpretation of artistic cinema that may even appreciate popular

appeal, his literate interpretation of 1960s auteurism may undermine rather than support its persistence.[4]

Equipped with new data sources and longitudinal network techniques, researchers could investigate how artistic movements, intellectual schools, or scientific disciplines risk undermining themselves when applying traditionalist rather than flexible interpretations of their identity. While research often focuses on the first waves of movements, the resilience and robustness of their identities may crystalize in later stages (Bearman and Brückner 2001; Nelson 2021).

5.1.3 The Emergence of Status Orders in Hollywood Filmmaking. Evolution of a Cultural Field, 1920 to 2000

The third manuscript analyzed the emergence of social and artistic status orders in Hollywood filmmaking. The findings reveal that the field became more stratified—indicated by the increasingly unequal distribution of social and artistic recognition—with increasing size. In contrast to the Blockbuster era, the New Hollywood period exhibited a segregated collaboration network according to filmmakers' artistic status. New Hollywood filmmakers tended to choose collaborators with similar artistic status.

Previous sociological accounts argued that cultural communities are structured according to social and artistic recognition (Cattani, Ferriani, and Allison 2014; Lena and Pachucki 2013; Rossman et al. 2010). Our study is the first to show how social and artistic status orders emerge over time by applying social network analytical techniques. The findings reveal that a small elite of filmmakers constitutes the field's center accumulating disproportional amounts of

[4] Recent years have seen the rise of *Vulgar Auteurism*, a critical counter-movement to strict auteurism that aims at “assessing the 'unserious' artistry of popcorn cinema with absolute seriousness.” (Patches 2014). This debate illustrates that the symbolic boundaries of artistic classification systems are contested and constantly shifting.

recognition. While previous studies operationalized artistic recognition through awards (Cattani et al. 2014; Rossman et al. 2010; Rossman and Schilke 2014) or critical reception (Cattani et al. 2014; Lena and Pachucki 2013), we develop and apply a novel measure of artistic status through attracted references. Award ceremonies typically constitute rare events initiated by resourceful institutions. In contrast, attracted references reflect filmmakers' standing in the community and provide more valid representations of peer dynamics. Our conceptualization and measurement, thus, enable a bottom-up rather than top-down perspective on status orders.

We also contribute to recent literature highlighting the importance of contextuality in network formation. Sociological studies increasingly acknowledge that tie formation processes may differ across socio-cultural contexts according to varying opportunity and meaning structures (Basov 2020; Fuhse and Gondal 2022; Gondal and McLean 2013; McFarland et al. 2014). However, so far, mainly historical sociological studies examine long-term (i.e., longer than a few years) changes in network structures and tie formation processes (Erikson and Bearman 2006; Erikson and Hamilton 2018; Hillmann 2021). We hope that future research exploits the new availability of large-scale and longitudinal data sets to examine how temporal and contextual variability influences community emergence and change.

Comparing the second and the third manuscript reveals an interesting puzzle around Golden Age filmmakers. Films of the Golden Age did not attract recognition for literacy, openness, or individual authorship, but they acquired references for exhibiting combinatorial novelty (Manuscript 2). In addition, we find that already these early filmmakers preferred collaborators of high or similar artistic status (Manuscript 3). These findings challenge the assumption that Golden Age filmmakers mainly pursued commercial interests. Apparently, a small group of early Hollywood filmmakers engaged in artistic filmmaking. Future research should examine if this community simply did not achieve the critical mass necessary to organize (Crossley

2009) or if the field was not yet poised for its artistic transformation (Johnson and Powell 2015).

5.2 Implications for the Study of Cultural Fields

I want to highlight four major implications of my research that may inform future studies on cultural fields. Firstly, and most generally, while sociological research highlights that collective action is crucial for cultural production, this dissertation shows that a community's willingness to collaborate may depend on the field's overall orientation toward individualistic versus collective goals (Frickel and Gross 2005). In phases of dominant individualistic cultures, artists, scientists, or entrepreneurs, may appear to be in full charge. As sociologists, we should look beneath the surface of direct interaction to detect movement emergence and understand the properties of social and cultural change. Besides individualistic ideologies, contemporary cultural producers are increasingly embedded in globalized or digital communities and may face limited opportunities for direct interaction. These communities may become visible through a closer look at their language or the references they incorporate into the cultural objects they produce.

Secondly, the findings have conceptual, methodological, and practical implications for studying inequality in cultural fields. Conceptually, previous research often considers inequality as static and measures it through artists' career longevity or received awards (see, for example, (Cattani et al. 2014; Lutter 2015; Rossman et al. 2010). Inequality, however, can be considered emergent and dependent on the contextual conditions in a field's development. The findings reveal that canons, which play a pivotal role in legitimizing inequality, are not set in stone but emerge from collective action among artists, critics, and general audiences. Just as scientists might start to diversify their bibliographies (Garfield and Van Norden), artists, critics,

and public audiences may critically reflect on how they reproduce inequality when using references, respectively evaluating and consuming cultural products (Morris 2017).

Thirdly, this research has conceptual and methodological implications for an emergent stream in the sociological literature showing how a field's opportunity and meaning structure may influence network formation (Bottero and Crossley 2011; Fuhse and Gondal 2022; McFarland et al. 2014). As cultural communities develop, members find themselves in varying opportunity structures that may encourage or impede tie formation. The Hollywood case demonstrates how filmmakers were legally prohibited from engaging in independent collaborations based on shared tastes or styles until the Supreme Court decision in 1948. Their embeddedness into cohesive teams within one studio discouraged them from forming wide-spreading networks. And if they had formed wide spreading networks, this may not have been conducive to their success. Besides opportunities, the meaning of social ties varies over time and across cultural contexts (Gondal and McLean 2013). In the case of filmmaking, the meaning of collaborative ties depends on whether artists share individualistic or collective notions of artistry. While auteur filmmakers consider collaborations as constraining, other artistic movements may incorporate collective ideals in their artistic approach (Hollands and Vail 2012). For the study of cultural fields, it is, thus, essential to develop a context-sensitive approach that considers that historical variance may facilitate or hamper the formation of social networks.

Finally, this dissertation has methodological implications for studying cultural fields using large-scale data and computational tools (Edelmann and Mohr 2018; Mohr et al. 2020). Recent years have seen a rising availability of digital found data. This trend also affects the creative industries in which artists and curators meticulously document their ongoing projects, collaborations, and other achievements. The new availability of big cultural data attracts increasing attention from field practitioners for predicting auction prices, box office hits, or

Academy Awards (Anon 2020; Zauzmer 2020). While collecting, preparing, and analyzing found data from digital or material archives is not a new endeavor for sociologists, its broader implementation still requires collective effort (Lazer et al. 2009; Salganik 2018). Using large-scale data for theoretically informed and analytically rigorous sociological research involves apparent challenges, such as potential data selectivity. A wealth of studies and textbooks guide the appropriate design of survey or interview questions, but this is not the case yet for the use of found data. In addition, while there is a long tradition of conceptualizing measurement error in quantitative surveys (Groves and Lyberg 2010), few such accounts exist for found data (see, for example, Bodell, Magnusson, and Mützel 2022 for an approach to capture error structures in data from text documents). We reflect upon these issues in a recent article (Burgdorf and Hillmann 2021). This dissertation offers a concrete empirical application of conceptual and methodological toolkits for conducting cultural sociological research in the digital age.

5.3 Limitations

In closing, I would like to point out relevant limitations of my research, which open avenues for future work. These limitations concern the conceptualization of social and symbolic networks, data quality issues, and the findings' generalizability.

Firstly, the focus on collaboration networks neglects other forms of social relationships, such as friendship ties. While collaboration ties are directly observable, systematic information on friendship ties is challenging to obtain for elite populations, such as Hollywood filmmakers. Film historical accounts suggest that most New Hollywood filmmakers were friends who celebrated parties together and gave each other advice (Biskind 1999). These regular informal exchanges may have supported the formation of their collective identity. However, given their frequent interactions, it is surprising that friendships did not translate into co-working relationships. As one artist put it in Faulkner's (2008: 176) in-depth study of Hollywood: "Your

friends almost inevitably become the people with whom you work." In addition, the density of friendship networks is likely to be relatively stable throughout Hollywood's history. Hollywood has always been a small world in which groups of friends created film studios—the studio United Artists was founded by Charlie Chaplin, Mary Pickford, David Wark Griffith, and Douglas Fairbanks Sr. in 1919—, founded the Academy of Motion Picture Arts and Sciences in the 1920s[5], or saved each other during the Blacklisting era of the 1940s and 1950s (Pontikes, Negro, and Rao 2010). It would be fascinating to examine informal relationships among Hollywood filmmakers through friendship or dating activities. Archives like the MoMA Department of Film and the Academy of Motion Picture Arts and Sciences offer comprehensive collections of correspondence letters between filmmakers. In addition, Wikipedia traces dating activities among Hollywood stars. Both data sources could indicate starting points for future network analytical research.

Secondly, the specialized conceptualization and operationalization of symbolic networks may miss other relevant properties of symbolic relationships. For example, I do not consider spoofs, remakes, or features of films. Distinguishing the different qualities of filmmakers' borrowing techniques may provide a more nuanced picture of community formation and boundary making. I also do not differentiate between various forms of references but treat camera shots, dialogue snippets, and stills equally. Classifying the variety of cinematic references would enable a more apparent distinction between blatant copying and subtle allusion. It would also be worthwhile to compare and classify referencing across diverse artistic fields, for example, music, literature, film, and more recent cultural forms, such as gaming. In addition, as recent studies on science (Stark et al. 2020), politics (Fuhse et al. 2020), and art collectives (Basov and Kholodova 2022) show, symbolic relationships also manifest in linguistic affinity. Film scripts, correspondence letters, or interviews with filmmakers may

[5] https://www.oscars.org/academy-story

provide fascinating data sources to advance the conceptualization and measurement of symbolic relationships.

Thirdly, while I aimed at assessing data quality through several additional analyses (see the appendix of each manuscript), this study would have benefitted from more contextual information that IMDb currently misses. For example, only about 10% of films include information on budget and box office numbers as this information is sensitive. More systematic details on these numbers would be necessary to assess the correlation between a film's reference information and economic resources and outcomes. While sociological research has spent great efforts to classify and tackle missing information in surveys, more research is needed to address data quality issues when using big data in general (Cai and Zhu 2015) and user-generated databases in particular.

Finally, this dissertation focused only on one cultural field: Hollywood filmmaking. While this case constitutes one of the most influential creative industries in the world, its social and symbolic organization may deviate from that of other cultural fields. For example, in the context of cinema, Italian Realism, the Nouvelle Vague, and the German New Wave all shaped how films are produced and perceived in their respective countries. Future research may study these movements and compare the social dynamics with those of New Hollywood to assess the generalizability of my findings. However, these movements all occur in Western contexts, which historically cohere through shared cultural tastes and talent flows (Elsaesser 2005; Ezra and Rowden 2006). Studying non-Western movements, such as Nuevo Cine Mexicano, Indian's Parallel Cinema, or South Korean New Wave would enable us to disentangle the influence of contextual conditions and general social mechanisms. In addition, future research may investigate the role of social and symbolic ties in the emergence of other cultural forms, such as musical styles, scientific disciplines, or digital art movements. Building on this

research's insights and limitations opens new avenues for the future measurement of cultural processes.

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7. Appendix: Manuscripts

The three manuscripts that form this dissertation are attached in the following order:

Burgdorf, Katharina, and Henning Hillmann. Identity from Symbolic Networks: The Rise of New Hollywood.

Burgdorf, Katharina. Artistic Referencing and Emergent Standards of Peer Recognition in Hollywood, 1930-2000.

Wittek, M. and Burgdorf, K. The Emergence of Status Orders in Hollywood Filmmaking. Evolution of a Cultural Field, 1920 to 2000. Manuscript under review at American Sociological Review.

Identity from Symbolic Networks: The Rise of New Hollywood

Katharina Burgdorf

Henning Hillmann

ABSTRACT

The authors show how the collective identity of auteur filmmaking emerged through the New Hollywood movement in the 1960s and 1970s. They contrast how tangible and symbolic network ties contribute to collective identity formation. Using information from the Internet Movie Database on more than 17,000 filmmakers who were active between 1930 and 2000, they show that a cohesive symbolic network, in which New Hollywood filmmakers shared references to revered films, served as a foundation for the collective identity of this new artistic movement. References include allusions to iconic scenes, settings, and shots of classic films. In contrast, tangible collaborations in film projects yielded merely a fragmented social network that did little to support the creative enterprise of New Hollywood. The evidence suggests that this new collective identity cohered around an emerging film canon: a collection of valuable films that were cited disproportionally and that still serve as touchstones for filmmakers today. The authors argue that symbolic ties through shared citations allowed New Hollywood filmmakers to realize their vision of autonomous auteur filmmaking and to draw symbolic boundaries that separated them from the established studio identity of Hollywood's Golden Age.

What matters to me is that I get to make the pictures -that I get to express myself personally somehow.

Martin Scorsese (in King 2002)

We wanted to transform the system by showing a love for writers and directors. We're proud of what we did, but it would have been nice if we changed the system a little.
Francis Ford Coppola (in Nashawaty 1997)

When the lights go out all over Europe / I forget about old MGM
'Cause Paramount was never Universal / And Warners went out way back
When those lights go out all over Europe / I forget about old Hollywood
'Cause Doris Day could never make me cheer up / Quite the way those French girls always could
Neil Hannon/The Divine Comedy

Sociologists have long recognized a tension between collective identity and community cohesion on one hand, and individual autonomy and freedom on the other. Strong cohesion implies a deep embedding of community members in social networks that connect them through multiple pathways. In the extreme, communities display maximum connectivity, such that each member is directly linked to every other member (Moody and White 2003). Within such strongly cohesive communities, few individual members stand out, and little distinguishes their place from those of their fellow group members. Exceptions to the rule may exist, yet strong community cohesion tends to constrain individual autonomy in most settings. Likewise, such attachment to the community finds its expression in a collective identity that instills not only a sense of belonging, commitment, and we-ness among all members; it also serves to draw symbolic and tangible boundaries that distinguish insiders from outsiders, to the extent that distrust of outsiders becomes a measure of a community's cohesion (Homans 1975; Hillmann 2008). The stronger the adherence to a collective

identity, the more constrained are individual autonomy and freedom within the boundaries of the group. For individuals to break out of the collective mold, they will have to cultivate contacts with other groups beyond their own. We witness here the beginning of social differentiation, which eventually enables individuals to be affiliated with multiple groups at once, to find their own place, and hence to develop a sense of their individuality, as distinct from an encompassing collective identity (Simmel 1971). In sum, individual autonomy tends to be overwhelmed by a strong collective identity. Conversely, whenever individual autonomy is strengthened, it chips away at the cohesive force of collective identity.

We argue that this tension is particularly salient when new groups or movements emerge that require a healthy dose of cohesion to prevail against an established system, yet also place a premium on the expression of individual creativity, and hence the pursuit of individual autonomy. How do such groups resolve the dualism and potential conflict inherent in the relationship between group identity and individual autonomy? And given such tension, how do the members of emergent groups maintain a shared understanding of who they are and what distinguishes their enterprise from the pursuits of competing groups? The intuition behind these challenges points to symbolic boundary making whereby community members identify and separate outsiders from insiders (Lamont, Pendergrass, and Pachucki 2015; Pachucki and Breiger 2010; Zerubavel 1999). The questions also echo Becker's (1982) discussion of mavericks in art worlds and Bourdieu's (1993) notion of avant-garde groups in the fields of cultural production. Young mavericks, often trained within an art world's dominant logic, rally against established conventions. Avant-garde groups typically practice on the fringes of the field and challenge the existing *doxa*, i.e., the cultural understandings dominant in a field. While striving for aesthetic innovation, they call for novel aesthetic practices and new ways to organize production. As Bourdieu (1993: 338) put it, they endeavor “to impose new modes of thought and expression.” Change in art

worlds succeeds when mavericks mobilize others to cooperate in the new practices that their vision requires. This is often not an easy task to accomplish. As White and White (1993) showed in their work on the Impressionist movement, avant-garde groups have to navigate the constant tension between the advantages of being in a group on the one hand and the premium on artistic autonomy on the other, which often induces instability.

We consider collective identity formation and symbolic boundary construction in the arts movement of New Hollywood. It was a movement that spearheaded a veritable aesthetic revolution in the American filmmaking industry of the 1960s and 1970s. Among its ranks we find such cinematic visionaries as Francis Ford Coppola, Martin Scorsese, and George Lucas. Together with their peers, they forged a novel collective identity of auteur filmmaking, which changed how cinema is produced—from a studio-based to a director-centered approach—and how films are perceived—from mere entertainment to an artform in its own right (Baumann 2001, 2007a, 2007b). Their radical new approach to filmmaking challenged the hitherto dominant studio identity of the Golden Age of Hollywood (1920-1960).[1] The notion of auteurism as a distinct artistic vision was first expressed by French film critics in the 1940s, and further elaborated as *la politique des auteurs* during the French Nouvelle Vague movement throughout the 1950s and 1960s. Auteurism claims an understanding of filmmaking realized through the techniques of the *caméra-stylo* (Astruc 1948). According to this understanding, and central to our concern, it is the individual filmmaker who controls the entire creative process of making a film. He—for women were

[1] The terms "studio identity" or "studio system" refer to the oligopoly of the Big Five film studios (Paramount Pictures, 20th Century Fox, Metro-Goldwyn-Mayer (MGM), Warner Bros., RKO Pictures) and Little Three studios (Universal Studios, Columbia Pictures, United Artists). The studio era was characterized by long-term employment of creative personnel and the studios' unified ownership of production, distribution and exhibition enterprises which facilitated standardized production of films. We use the term "Hollywood" to refer to the American film industry. The term "Golden Age of Hollywood" captures the period between 1920 and 1960. It is connected to the organizational structure of the studio system and the visual and narrative style of the classical Hollywood cinema favoring, among other aspects, linear narratives (Bordwell, Staiger, and Thompson 2015).

rare members of the auteur movement—establishes his own recognizable style as expressed in specific forms of editing, narrative styles, and dialogues breaking the *fourth wall,* that imagined screen separating actors and audience. Note that this understanding of individuality in filmmaking aligns neatly with the popular image of the lone creative genius. It seems natural to ascribe the qualities we appreciate in a film to a singular creative director or a particularly gifted actor. Popular cultural narratives likewise appreciate the individual genius who is awarded the Nobel Prize rather than the scientific laboratory that enabled the research (Zuckerman 1967), and they praise the artistic visionary rather than the film team that is associated with the Academy Award for Best Director (Baker and Faulkner 1991; Rossman, Esparza, and Bonacich 2010).

Auteurism as an aesthetic ideal was first introduced into American film discourse during the 1960s by film critic Andrew Sarris (Sarris 1962, 1968; Biskind 1999; Baumann 2001, 2007; Allen and Lincoln 2004; Hicks and Petrova 2006). Whereas the movement's artistic ambitions were articulated clearly, there has been less of a consensus when it comes to the definition of an auteur, and what distinguishes this new role from traditional filmmakers. As *New Yorker* film critic Richard Brody (2019) has noted,

> "There's no critical term more be devilled than "auteur." It's used sometimes as an honorific, to praise directors with a strong artistic mark, and sometimes merely as a description, to suggest that directors bear the ultimate responsibility for a movie's quality (or lack of it). […] In all cases, it suggests that the directors' work is key to a movie's artistic identity. But in a field that involves a collaboration between many artists, from actors and writers to editors and designers, the notion of the auteur is not intuitive."

One way to define the auteur is to consider film creators who combine the roles of director and writer in the production process. If the same person took on the responsibilities of both writer and director, it enabled him to exercise creative control over the entire filmmaking process (Baker and Faulkner 1991).

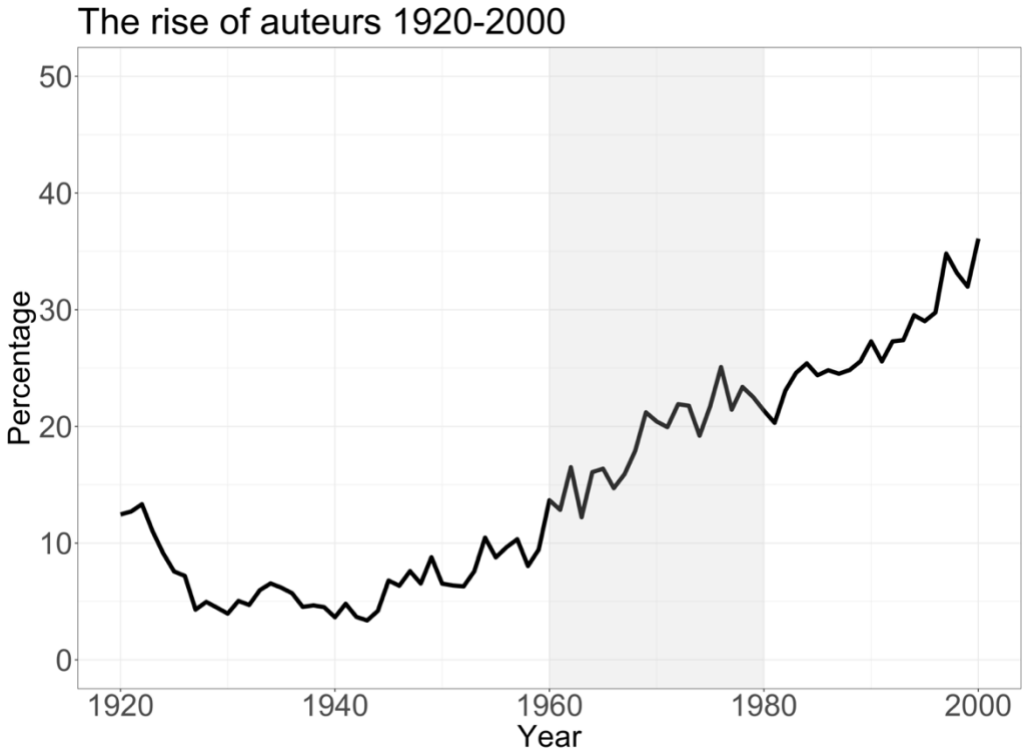

FIG. 1. - The rise of auteurs in American filmmaking, 1920-2000
Note: The figure shows the percentage of auteurs (defined as filmmakers who combined the roles of writer and director) divided by the number of all writers and directors in a given year.
Source: IMDb, ftp://ftp.fu-berlin.de/pub/misc/movies/database/ (last retrieved in September 2017)

Using this definition, figure 1 shows the increase in the share of auteurs among American filmmakers from 1920 through 2000. Less than 10% throughout much of Hollywood's Golden Age (c.1920-1960), the share began to surge in the 1960s, and eventually accounted for 35% of all filmmakers in 2000. The rise of the twin role of writer-director indicates the growing prevalence of auteurs and the growing legitimacy of New Hollywood as a novel and influential creative force in the American film industry.[2]

At its heart, however, the New Hollywood movement, together with its core ideal of auteurism, had to confront a seemingly inescapable dilemma. It is a dilemma that brings us

[2] The relatively large share of writer-directors in the early 1920s has nothing to do with auteurism but reflects lacking professionalization among writers. Writers scripted stories, but rarely received credit for them. Instead, directors often received writing credits as they made small adjustments to the scripts. Later professionalization efforts, such as the establishment of scenario departments and the Screen Writer Guild, eventually separated the roles of writers and directors (Bordwell et al. 2015).

back to the tension between collective identity and individual autonomy. For one, the established studios of the industry, such as 20th Century Fox, MGM, Paramount, or Warner Bros., still provided the material resources necessary for translating the creative imaginations of auteur director-writers into motion pictures. Assembling a film crew, from producers, art directors and production managers to photographers, camera assistants and technicians; casting leading actors and actresses as well as supporting roles; scouting and booking suitable locations for shooting; raising funds to finance the entire film project—all of these steps in the production process are inherently collaborative efforts and not the work of any individual creative mind (Andrews 2013; Becker 1982). As filmmaker Paul Schrader (2006) has remarked, "motion pictures are the most collaborative of the arts; perhaps this is why, as if in protest, there has been so much attention paid to film 'auteurs'." What, then, are we to make of a project such as the anthology film *New York Stories* (1989) wherein Woody Allen, Martin Scorsese, Francis Ford Coppola, and Sofia Coppola contributed writing and directing duties? Who, among them, was entitled to the creative credit reserved for the auteur?

New Hollywood celebrated the singular genius of the auteur, yet its proponents arrived on the scene as a collective artistic movement. Few new movements, whether in the arts (Accominotti 2009; Crossley 2009; White and White 1993) sciences (Crane 1972; Frickel and Gross 2005; Moody 2004), politics (Diani and McAdam 2003; Gould 1995; Tilly 2009; Wang, Piazza, and Soule 2018), or religion (Wurpts, Corcoran, and Pfaff 2018; Zerubavel 1982), will survive and leave a mark in a competitive field such as the market for films, if their adherents do not feel committed to a shared identity. It was no different with the collective undertaking of New Hollywood as an emergent movement. New Hollywood directors and writers did share an identity, yet one that granted center stage to the creative autonomy of each individual auteur. Here we arrive at a genuine puzzle: filmmaking typically demands close collaboration among several professional roles. As in comparable cases, we would expect that establishing auteurism

as a novel artistic identity required a cohesive network among like-minded peers, the pooling of resources, community visibility, and a shared expression of artistic ideas. These demands for collective efforts, however, were not commensurate with the movement's motivating ideal that championed the unique creative vision of each individual filmmaker as an autonomous director-cum-writer.[3]

Based on these observations, we might infer that New Hollywood must have failed eventually. Yet, as a movement, it revolutionized cinema and inspired entire generations of filmmakers that followed. How, then, did the proponents of New Hollywood reconcile the demands of collective identity and collaboration in film production with their deep commitment to the artistic genius of the individual auteur? In what follows, we argue that the necessary cohesion for the New Hollywood movement to succeed was indeed not found in any collaborative networks that directly linked writers and directors within multiple joint film projects, i.e., the kind of project-based team networks we typically find in the sciences and knowledge-based industries (Moody 2004; Powell et al. 2005; Stark, Rambaran, and McFarland 2020). Drawing on comprehensive information about 52,353 films and 17,783 directors and writers from the Internet Movie Database (IMDb 2017), we show that New Hollywood filmmakers maintained cohesion as a movement through an alternative network of symbolic ties that linked their films through shared references to previous works in film history. Much like citation networks in science, references were made to specific cuts, scenes, settings and stills that were characteristic of classic films held in admiration as masterworks in the eyes of New Hollywood auteur filmmakers. Just like some scientific books and articles are regarded as exemplars in their field and attract most citations, New Hollywood's filmmakers established a canon of classic films that stood as the perfect expressions of auteurism's artistic ideals.

[3] Note that there is indeed empirical evidence from various artistic fields and industries that dense networks may limit creativity, innovation, and career success (Lutter 2015; Phillips 2011; Uzzi and Spiro 2005).

Shared references to canonical works enabled New Hollywood filmmakers to weave a cohesive web of symbolic ties that ensured them of their shared artistic endeavor and identity. It was a symbolic foundation that offered a sense of belonging to a collective undertaking, yet without encroaching on the autonomy of the individual filmmaker because this symbolic network did not imply any direct collaborative ties, exactly as prescribed in the purist ideal of auteurism.

We are not the first to ask how powerful, yet often abstract symbols can yield organizational cohesion (Ansell 1997). The question guides work on the role of cultural framing for movement mobilization (Benford and Snow 2000; Gamson 1992; McAdam, McCarthy, and Zald 1996). Scholars of the Carnegie School have long emphasized the importance of shared symbols for coordinated decision-making in uncertain organizational environments (Cyert and March 1992; March and Olsen 1976). The notion that organizational fields are aligned around ceremonial symbolic practices is fundamental to Neo-Institutionalism (Meyer and Rowan 1977; Powell and DiMaggio 1991). Likewise, cultural entrepreneurs have to invoke suitable ideals and frames to rally the support of elites for new organizational forms, be they grandiose opera houses or research-intensive botanical gardens (Johnson 2008; Johnson and Powell 2015). Within the literature, the question tends to be framed as a duality of cultural symbols and action embedded in multiple social networks, such that meaning and ties are co-constitutive of each other (Gondal and McLean 2013; McLean 2017). In this view, people mobilize around shared powerful symbols, but their alignment into a movement, organization or party still happens through the tangible organizational networks they are embedded in. Meaning is attached to social ties, yet symbols and networks remain analytically separate. We build on this literature, yet it is our contribution to expand it to settings, in which symbolic action is inscribed directly into network ties. Put differently, these networks themselves consist of symbolic ties. In our case, the shared references that New Hollywood filmmakers make to a canon of classic films give rise to such a symbolic network.

It is notoriously difficult to pinpoint who exactly the members of the New Hollywood movement were, beyond the most illustrious protagonists. Just as debated is the timing of the movement: when it began to assert itself in the industry, and when its members succeeded in establishing themselves as leading voices in the field. Because there is so little consensus in the film history literature, we pursue a three-pronged empirical strategy to establish systematic evidence in support of our argument.

We first consider the extent of cohesion in the collaboration and co-citation networks among sixty-one prominent New Hollywood filmmakers that most sources in the film history literature recognize as the leading members of the movement (table A.2). Because we seek to understand the emergence of this movement, we map and examine the networks from the 1950s through the 1990s. At this stage, our sample of New Hollywood filmmakers is thus substantively defined. It is a selective sample, but it is a selection that works to our advantage: if our argument is to hold at all, then it should certainly apply to this most prominent group of New Hollywood directors and writers.

Second, we extend our empirical analysis beyond this most visible circle and define the New Hollywood movement based on the period (1960-1980), in which its members were allegedly most active and their artistic vision most salient. We further place these two decades within the broader time window from 1930 through 2000, resulting in a sample of 17,783 directors and writers in the American film industry. Our reasoning to do so is twofold. First, the New Hollywood movement sought to distinguish itself sharply from the studio-based production system that dominated the Golden Age of Hollywood (1930—1960).[4] Hence, if our argument of identity formation is correct, we should find noticeable differences in the composition and

[4] The "Golden Age of Hollywood" usually refers to the period 1920—1960. We have chosen 1930 as the starting year for our analysis, because, by this time, film production was a mature industry, with a high degree of professionalization. The 1930s also witnessed the beginning of the sound film era (Bordwell et al. 2015; Lutter 2015).

pattern of the collaboration and co-citation networks, as we move from the Golden Age (1930—1960) toward New Hollywood (1960—1980). We show that cohesion in the collaboration network decreases whereas cohesion within the co-citation network increases over time. The growth in cohesion from co-citation ties serves as our indicator of a symbolic foundation for collective identity formation. Second, if New Hollywood did indeed succeed in establishing a new canon of classic films, we should see its influence on successive generations of filmmakers reflected in the sustained cohesion within co-citation networks immediately following the New Hollywood period (1980—2000).

Finally, in a third step, we provide direct evidence for the culmination of revered films into a canon of classics referenced by New Hollywood filmmakers in their own works. Again, a canon is pivotal for identity formation in the arts as it consolidates a community's shared ideals, values, and creative vision. We therefore consider the successful establishment of this film canon as another indicator of New Hollywood's emerging collective identity. Empirically, we present systematic evidence that references were increasingly concentrated on a select body of canonical films with the onset of New Hollywood in the 1960s and 1970s. Our findings thus suggest that canon formation resembles a Matthew effect, not unlike citation patterns among scientific publications, such that references are unequally distributed and favor a small number of disproportionally prominent works.[5]

In sum, individual filmmakers who subscribed to the ideals of New Hollywood cinema, and auteurism, cited scenes, settings, and shots of canonized classics. They did so to pay homage, to signal their literacy and a shared taste to peers and audiences alike, and to be recognized as legitimate auteurs in their own right. Collectively, referencing the same body of canonical films

[5] We do not mean to imply that canon formation was a single-handed move by an exclusive circle of New Hollywood writer-directors. Below, we clarify that it involved critics, audiences, legitimacy-granting institutions such as academies and film schools, as well as later filmmakers who adopted the same artistic vision as the pioneering auteurs—all of whom contributed to the consecration of a selective body of earlier films as classics that set the aesthetic standard for new films to aspire to (Allen and Lincoln 2004; Baumann 2001, 2007b, 2007a; Hicks and Petrova 2006).t

gave rise to a cohesive network of co-citation ties among filmmakers and their works. Most important, we argue that this cohesive network of symbolic ties gave shape to New Hollywood as a collective movement that was impossible to come from the close collaborations of traditional film production, precisely because such direct collaborations were seen as incommensurate with the movement's insistence on the creative autonomy of the individual auteur filmmaker. New Hollywood and auteurism could thus emerge as a collective identity despite the group's radical emphasis on artistic individualism. By the same token, their sense of belonging to a collective enterprise enabled New Hollywood directors and writers to draw symbolic boundaries that distinguished their vision and work ethic from the old established studio system.

THE POST-WAR HOLLYWOOD FILM INDUSTRY

Scholars still debate what exactly constitutes the New Hollywood movement. Some suggest that it signifies a specific time period in American cinema ranging from the late 1960s until the late 1970s (Elsaesser 2012; Neale 2005). Others argue that it was a community of filmmakers who all graduated from film schools, and thus benefitted from high levels of film literacy (Biskind 1999; Madsen 1975; Pye and Myles 1979). What most scholars agree on is that New Hollywood not only introduced a novel cinematic style (Thompson 1999), but also corresponded with substantial changes in the makeup of the filmmaking industry (King 2002).

Throughout the 1960s the American film industry faced a severe economic crisis. This crisis was caused by demographic, legal, and technological developments (Baumann 2007b). After the Second World War, the rise of television led to declining cinema attendance rates. In addition, the Hollywood film industry experienced fundamental organizational changes after two Supreme Court decisions in the 1940s. First, in 1944, the De Havilland decision of the Supreme Court ruled that Hollywood film studios had to abolish their use of long-term

employment contracts.[6] This deregulation allowed filmmakers to freely engage in collaborations with their peers and to work with studios of their choice (Dixon and Foster 2018; Nelmes 2007). Second, in 1948, as a result of a Supreme Court decision in the Hollywood Antitrust Case, the major studios had to divest themselves of their cinema chains.[7] This divorce rang in the end of the studio era as it undermined the major studios' guaranteed market and increased competition from independent producers for exhibition slots (Gil 2010; Schatz 1996). The crisis of the established Hollywood system, however, also opened opportunities for a young generation of filmmakers who rose to prominence in the 1960s. As Baumann (2007: 88) put it:

> "When the old formulas had begun to fail, when director-centered production became the norm, when TV became the default drama for the masses, studios did not know what to do. And so, they gave directors freedom to seek their own artistic vision, and these directors discussed their freedom to make the films they wanted to make like it was an inalienable right. […] They were not making films in order to pack theaters on opening weekend. They wanted recognition from their peers and from the critics […]."

Together with the decline of the studio system, the emergence of a critical discourse paved the way for this new artistic vision to thrive (Baumann 2001). Recall that the novel cinematic style of auteurism implied the belief in the individual writer-cum-director who controls the entire production process and imprints his personal artistic signature on the film. Auteurism originated in French film critic Alexandre Astruc's (1948) idea of the *caméra stylo*. The idea was further elaborated as *la politique des auteurs* by the French critics of the *Cahiers du cinéma* in the 1950s who initiated the *Nouvelle Vague*, one of the most fundamental movements in French cinema (Graham and Vincendeau 2009; Neupert 2007; Rachlin 1993). Film critic Andrew Sarris forged these ideas into the framework of auteur theory and introduced it to the

[6] De Haviland v. Warner Bros. Pictures, 67 Cal. App. 2d 225 - Cal: Court of Appeal (1944)
[7] United States v. Paramount Pictures, Inc., 334 U.S. 131 (1948)

American film discourse in 1962 (Sarris 1962, 1968). For critics, auteur theory provided a novel frame of reference for evaluating a film's artistic merit (Allen and Lincoln 2004; Hicks and Petrova 2006). For young filmmakers, learning about auteur theory while they attended one of the new American film school departments in the 1960s, it suggested a novel approach to their craft. Hence, Thompson (1999: 2) pointed out that several of New Hollywood directors "had film school educations and were well aware of the auteur theory and of film history in general. They aspired to become auteurs themselves, working within the industry but at the same time consciously establishing distinctive artistic personas."

As other avant-garde movements, New Hollywood eventually evolved from novelty act to an established art form. By the 1980s, New Hollywood had segued into the Blockbuster era, which witnessed a renaissance of the studio system (Elsaesser 2012). Auteurism and its associated artistic identity, however, were firmly entrenched as the gold standard of greatness in feature films.[8] Bosses of the big studios were eager to employ New Hollywood's trademark aesthetic as a marketing device in their own productions (Baker and Faulkner 1991). At least since the 1980s, a film is not just a film: it is a Steven-Spielberg-film or a David-Fincher-film and marketed as such. In what follows, we examine how, through what organizational mechanisms, the New Hollywood movement evolved from its avant-garde beginnings to this quasi-canonical status.

THE MEANING AND STRUCTURE OF CITATIONS IN FILM

The director-writers of the New Hollywood movement used references to esteemed earlier films as the primary aesthetic technique to express adherence to an artistic identity and heritage

[8] Auteurism was not without its critics who accused the movement of elitism. For example, film critic Pauline Kael (1971) emphasized the importance of Orson Welles' collaborators for *Citizen Kane,* knowing fully well that partisans of the auteur movement put Orson Welles on a pedestal as an "absolute auteur."

within their own works. These references can be interpreted as network ties that point from contemporary to past films, thereby linking a younger generation of filmmakers not only to their artistic ancestors, but also to each other to the extent that they cite the same cinema classics in their works. For citation ties to weave a symbolic network that embeds filmmakers into a community, the artists, and ideally their informed audience as well, should be able to decipher such references as meaningful. Consider a concrete example to illustrate the use of citation in films.

Recall that the French *Nouvelle Vague* cinema was among the main inspirations for New Hollywood's auteurism. Jean-Luc Godard's work appears to have been particularly influential. Godard's *Bande à part* (*Band of Outsiders,* 1964), itself an homage to the film-noir genre, features a famous dance sequence where the three main characters suddenly begin to improvise the Madison dance in a café (see the still in figure 2). Viewers familiar with that scene will recognize the barely hidden quote in Hal Hartley's quirky outlaw drama *Simple* Men, released in 1992 (Kehr 1992). Hartley, arguably heir apparent to New Hollywood's auteur style of filmmaking, likewise includes an impromptu dance scene, which comes entirely unexpected for first-time viewers. The sequence is likewise initiated by a trio of the film's leading characters, and it is also staged in a café setting. Only the jazz tune that features in *Bande à part* is replaced with a contemporary Sonic Youth track (figure 2).

Moving forward, in his neo-noir tale *Pulp Fiction* (1994), director Quentin Tarantino offers yet another rendition of a spontaneous dance in that memorable scene where the characters played by Uma Thurman and John Travolta break out into a Twist, seeking to win a dance contest in a cocktail bar. The allusion to Godard's *Bande à part* is thinly veiled, and it is certainly no accident that Tarantino named his production company *A Band Apart*. What we have, then, are two contemporary director-writers who place their creative work in an artistic lineage by quoting an iconic sequence of *Nouvelle Vague* cinema. In more technical network

parlance, we find a triadic relationship between the three films, established through citation ties. It does not end here because Godard (1972: 86-89) meant the Madison in *Bande à part* as an homage to Robert Fosse's choreography for the 1957 Hollywood musical-film *The Pajama Game*. Hence, by way of such citations, we have come full circle from Classic Hollywood to the *Nouvelle Vague* and onward to New Hollywood and contemporary cinema.

FIG. 2. - Citing impromptu dance sequences

Image: Jean-Luc Godard, *Bande à part* (1964)
Image: Hal Hartley, *Simple Men* (1992)
Image: Quentin Tarrantino, *Pulp Fiction* (1994)
Image: *The Pajama Game* (1957), choreography by Robert Fosse

These examples illustrate that the inclusion of references to earlier movies is not just happenstance but intentional. When filmmakers place them into their own works, they do so on purpose. With the advent of New Hollywood in the 1960s, the use of citations emerged as an important aesthetic practice that distinguished auteurism from classic cinema. "Allusions to film history" may come in various forms, including "quotations, the memorialization of past genres, the reworking of past genres, *homages*, and the recreation of 'classic' scenes, shots, plot motifs, lines of dialogue, themes, gestures, and so forth from film history" (Carroll 1982: 52; Biguenet 1998). With New Hollywood, history, rather than the present, becomes fundamental to the art of filmmaking. Paying homage by re-enacting an iconic scene, as Hartley and Tarantino did in their films, signals their literacy as cinéastes who are well versed in film history, as much as it reveals their aesthetic preferences. Paying homage acknowledges that any new film derives its meaning and significance as a work of art from its position in relation to previous works in the network of film history (Carroll 1982). Likewise, when we, as social scientists, acknowledge prior research in our quotes and citations, we not only point to evidence

in support of our argument. We also claim an intellectual ancestry, and thus legitimacy for our work by standing "on the shoulders of giants" (Merton 1985). Whether consciously or by following conventions that have become second-nature, auteur filmmakers position themselves within an artistic lineage and the legitimacy it confers when they evoke scenes, shots, and settings of older films in their own films.[9]

To the extent that writer-directors share similar tastes and reference the same set of past works as their peers, their like-mindedness facilitates a sense of community and a shared identity as auteur filmmakers, yet without any need for tangible collaborations between them. As aesthetic practices, citation, allusion, and homage are thus commensurate with the ideal of the filmmaker as an autonomous creative artist. At the same time, these practices rely on well-informed peers who know their film-historic vocabulary and recognize that the imitation of an iconic scene, such as the dance sequence discussed above, is not an act of plagiarism but an expression of the artistic ideals of auteur cinema.

We know from sociological research on various art worlds that shared artistic conventions—be they the use of specific camera angles and shots in filmmaking, innovative brush techniques in painting or the use of particular musical scales in composition—give rise to genres and schools, help to draw symbolic boundaries around them, and provide the social glue that hold together communities of artists (Becker 1982; Berliner 1994; Lena 2004, 2012; Lena and Pachucki 2013). Eventually, the adoption of conventions culminates in the establishment of a canon—a limited set of highly esteemed works that set the gold standard for all later works to live up to. The fundamental role of a canon is also familiar to us from the establishment of scientific fields. Speaking of sociology, Connell (1997: 1541) has argued that the "construction of the canon provided not only an intellectual but also a symbolic solution to the internal

[9] One difference between scientific and film references is that scientists are supposed to make their citations explicit, whereas filmmakers usually do not list quotes in the closing credits of their films.

disintegration and cultural marginalization that had overtaken sociology before the midcentury." A canon therefore accomplishes two tasks at once. Inside a given field, a canon codifies conventions and symbols, norms and values into a coherent set, and thus offers insiders as well as new entrants a source of collective identification with their peers (Stinchcombe 1982). At the same time, strict adherence to such a canon sends a clear signal of strong community cohesion that any outsider will recognize.

A similar culmination into a canon as a shared point of reference can be observed in the case of New Hollywood. With all the emphasis on shared conventions and community-building, this is not to deny that canon formation was routinely riddled with conflict. The aesthetic standards of the film canon were hotly contested, and critics, such as Pauline Kael (1963, 1971), opposed the very idea of individual film authorship. Likewise, conflicts could and did arise over the issue who was legitimately entitled to consecrate films as classics and admit them to the canon. Still, the kinds of allusions to scenes and settings in film history we described above eventually became systematic, and the director-writers of the movement settled on the same set of revered films to quote in their own works. Film scholars have shown that the emergence of a film historical canon coincided with the rise of New Hollywood cinema (Carroll 1982; Staiger 1985). The movement's aesthetic aims were aided by concurrent institutional developments, including the introduction of film study programs at leading universities, and the establishment of the American Film Institute and the National Film Registry to preserve the history of the medium and create lists of classical works (Allen and Lincoln 2004; Hicks and Petrova 2006).

The similarities between science and the arts help us to understand the meaning of citations in the world of filmmaking. Likewise, the underlying structure of citation ties in filmmaking is best understood in comparison to the patterns of citation networks. The latter emerge from footnotes, acknowledgments and lists of references in science publications (Moody and Light

2006). To the extent that different disciplines favor different citation styles and privilege different authors as cite-worthy, they draw symbolic boundaries that distinguish them from each other. Hence, shared references to what are considered classics or pathbreaking works are one source for community cohesion within a scientific discipline. Just as prevalent as sources for cohesion and consensus within a discipline are references among contemporaneous scholars. They reflect collaborations in research teams as well as the exchange of ideas between them (Moody 2004; Moody and Light 2006; Shwed and Bearman 2010). In network parlance, joint references to past works and citation ties among current works eventually amount to closed triads and dense local clusters—precisely the expression of bounded disciplines in structural form.

In a similar fashion, we argue that citations in filmmaking brought forth a symbolic network that embedded the artists into a community of like-minded peers and facilitated their collective identity as auteurs. As we show below, whereas direct tangible collaboration in the production process was frowned upon by New Hollywood's writer-directors, little kept them from admiring each other's art and referencing it in their own films. They thus expressed their recognition as peers through shared references. Consequently, closed triads were as prevalent among the works of auteur filmmakers as among the research projects of scientists.

Precisely because filmmakers held equivalent positions in relation to the past—present auteurs would share similar references to similar earlier films, and subsequent films would cite their predecessors in turn—the sequential structure of citation ties naturally led to the formation of an artistic lineage as new films found their place in the citation network. Once again, it is important to emphasize that none of these network ties necessitated any recourse to direct collaborations in the production process. The symbolic network of citations, we argue, provided a foundation for identity that aligned neatly with the motivating ideal of auteurism,

an ideal that championed the creativity of the individual writer-director and not the collective work of production teams.

One important difference between citations in science and filmmaking concerns how recognizable the references are for viewers. Coherence and clarity are the objectives of scientific publications. References are explicit and unequivocal so that readers can quickly grasp both the evidence and explanation presented. In contrast, proponents of auteur cinema have emphasized an inherent ambivalence when they allude to iconic scenes in their films. Director Wes Andersen remarked that filmmakers are in fact trying to hide citations. According to Andersen, "the reason why you hide your inspirational sources is because you try to steal them."[10] The consequence of such stealing and concealing is that only the select few in-the-know will be able to recognize these allusions. A symbolic boundary is thus drawn that separates *insiders* who are sufficiently competent in film history from *outsiders* who are illiterates when it comes to understanding the meaning of allusions.

Symbolic boundary work is not exclusive to filmmaking. We find parallels in other art worlds, such as in current Rap and Hip Hop where musicians use sampling of songs and tracks to foster social closure and internal identification within the community of peers. At the same time, sampling of selective sources implies symbolic distinction that sets Rap and Hip Hop apart from other more conventional musical genres (Lena 2004; Lena 2012). Beyond the arts, in the field of religion, shared rituals and devotion to the study of canonical and sacred scriptures sustain cohesion among the members of "thought communities" as much as they erect boundaries that separate the faithful from the non-believers (Zerubavel 1982, 1999). In politics as well, protest movements have been shown to rely on a repertoire of shared rhetorics and symbolic boundaries to assert their collective identity in the face of opposition from

[10] "Wes Andersen Interview: Masterclass on Filmmaking," Cinémathèque Française, March 2017. Link: https://www.youtube.com/watch?v=tMOq7jeC6Yk (accessed November 8, 2021).

competing movements (Taylor and Whittier 1992; Wang et al. 2018). What all this boundary work has in common, then, is an affirmation of community cohesion through symbolic networks and a clear distinction between insiders and outsiders (Lamont and Molnár 2002; Lamont et al. 2015; Pachucki and Breiger 2010).

DATA SOURCE

We use information on collaborations and citations as it is listed in the Internet Movie Database (IMDb), a rich digital data repository, which includes all films and their associated crew and cast over the course of the entire history of filmmaking. IMDb is a crowd-sourced platform where a community of film enthusiasts submits, edits and updates information. Unless the information is submitted by users with a proven track record, IMDb publishes new data entries only after screening them for consistency and correctness.[11] We are not the first to draw on this exceptional source. Several studies have relied on the IMDb and confirmed the validity of its entries with regard to information on casts, crews, and genres (Cattani and Ferriani 2008; Cattani, Ferriani, and Allison 2014; Max Wei 2020; Sorenson and Waguespack 2006; Zuckerman et al. 2003), user ratings (Keuschnigg and Wimmer 2017), acting credits (Rossman et al. 2010), and references (Bioglio and Pensa 2018; Spitz and Horvát 2014).

Because we focus on auteur cinema as a movement in American filmmaking, we restrict our study to American short and feature films and their creators. We include foreign films in our dataset only if they were cited. We exclude the following genres: news, talk-show, gameshow, reality-tv and adult movies. Table A.1 in the appendix reports the various film genres we include in our analysis. We use information on the cast and crew as it is listed in the IMDb to build our dataset on collaborations in the writing and directing of films. For the definition of

[11] In the appendix (figure A.1), we examine to what extent the inclusion of references among films in the IMDb is driven by their popularity among users who enter this information into the database. We find little evidence to support this potential caveat in the dataset.

filmmakers, we focus on the two professional roles that were most relevant for the auteur identity—directors and writers—and we allow for cases where filmmakers kept the two roles separate and for cases where they assumed both roles at once.[12]

For filmmakers to be included in our dataset, they must have participated in the production of at least two films in the period from 1930 through 2000. Our reasoning is that filmmakers who worked on just a single film were less likely than their more productive peers to have left a lasting imprint on Hollywood filmmaking and on the auteur movement. Because opportunities for collaboration increase in the number of films made, the exclusion of one-time filmmakers from our data will yield an upper-bound estimate for cohesion in the collaboration network: we retain only the most productive filmmakers, and they are the ones who most likely contributed to cohesion, whereas the inclusion of one-time filmmakers probably would have increased the number of isolates rather than bridging positions, and hence decreased cohesion in the collaboration network. In contrast, excluding one-time filmmakers will yield a lower-bound estimate for cohesion in the co-citation network because even one-time filmmakers would have been able to reference older films in their works, had they been included in our dataset. Put differently, the restriction to directors and writers who produced more than one film implies a conservative analysis of our argument that cohesion within the auteur movement rested primarily on a symbolic network of co-citations, and not on a network of tangible collaboration ties.

We collected all information on citations from the section on "connections" to other films in the IMDb, which is available for all films that involve at least one such reference. There is considerable variation in the types of connections listed in the IMDb: they range from active

[12] Careful readers may wonder why this definition of auteur filmmakers is not as restrictive as the one we used in figure 1, in which we considered only the twin-role of director-cum-writer. Our rationale here is that this exclusive approach would underestimate network cohesion if the adherents of New Hollywood themselves subscribed to a less focused identity and were just as welcoming to filmmakers who were either directors or writers (Andrews 2013).

ones, such as "references," to passive ones, such as "version of" or "remade as." We only consider titles that are listed as "references" because we seek to show to what extent filmmakers were paying genuine homage to previous works in film history. We are less interested in remakes or spoofs of earlier films. According to the IMDb's stated definition, a film includes a reference if it "references or pays homage to a previous title (i.e., a still/poster/artifact; mentioned by name; scene discussed by characters; dialog quoted in non-spoofing way)."[13] Considering all selection criteria, our sample consists of 17,783 individual filmmakers, 52,353 films and 28,128 references sent by 6,686 films to 8,578 other films. All observations are contained within the 70-year period from 1930 to 2000.

Empirical Strategy

We pursue our empirical analysis in three successive steps that complement each other. We begin with a comparison of cohesion in the collaboration and co-citation networks among sixty-one prominent New Hollywood filmmakers who are widely considered as the leading figures of the auteur movement in American cinema. In the second step, we extend our empirical analysis of network cohesion beyond this elite group and consider the New Hollywood movement more broadly, based on the period (1960-1980) when its members were most active and established their artistic vision in the industry. In our third and last step, we demonstrate the consolidation of New Hollywood's auteur identity into a canon of established classic film works. Table 1 summarizes the empirical strategy we adopt at each of the three steps. The three sections that follow correspond to our three analytical steps. In each section, we first describe the measurement of key concepts and then proceed to our findings.

TABLE 1
EMPIRICAL STRATEGY

[13] https://help.imdb.com/article/contribution/titles/movie-connections/GNUNL9W2FTZDGF4Y?ref_=helpsrall# (accessed November 8, 2021).

	Step 1: New Hollywood Elite	Step 2: New Hollywood Period	Step 3: Canon Formation
Concept	Network cohesion	Network cohesion	Canon formation
Measures	Proportion of nodes in largest component	Modularity divided by logged number of nodes	Skewness of indegree distribution
Sample	61 selected New Hollywood writers and directors, 1950-2000	All American writers and directors, 1930-2000	All American citing films and all cited films, 1930-2000
Unit of analysis	Temporal change (periodical) in structure of collaboration and co-citation networks	Temporal change (continuous) in structure of collaboration and co-citation networks	Temporal change in citation choices

Note- The table reports our empirical strategy. The data source for all three steps is the Internet Movie Database.

COHESION AMONG THE NEW HOLLYWOOD ELITE

Measurement

In this section, we present systematic evidence that cohesion within the most visible circle of New Hollywood filmmakers (N = 61) in the period from 1950 through 2000 stems primarily from embeddedness in the web of joint references to earlier films rather than from any direct collaboration relationships between writers and directors. Auteurism championed the creative autonomy of the individual filmmaker, whereas it considered teamwork among multiple directors and writers as incompatible with the artistic ideals of New Hollywood. Consequently, we expect that the network of tangible collaboration ties among filmmakers in this sample will be sparse and fragmented. In contrast, we expect cohesion to arise from the network of co-citation ties among filmmakers and their works because the adherents of auteurism referenced the same body of consecrated films to signal their shared artistic taste to their peers in the industry.

An intuitive measure of cohesion in such small to medium sized networks is the number and relative size of components. Technically, components are subgroups within networks such that

all members of a component can reach each other through at least one pathway (Moody and White 2003). Components are mutually exclusive subgroups that are disconnected from each other. It follows that fragmentation in our network of filmmakers increases in the number of separate components. Conversely, cohesion arises if the New Hollywood filmmakers find themselves embedded in a small number of components. Maximum cohesion is reached if all filmmakers are concentrated within a single component. Hence, the proportion of filmmakers entailed in the largest component offers a convenient indicator of the extent of cohesion within the New Hollywood network (see table 1).

Figure 3 shows illustrative examples of what constitute collaboration ties and co-citation ties. In the collaboration network, ties are formed through tangible teamwork between writers and directors in the production of a film. An example is *Raiders of the Lost Ark* (1981), directed by Steven Spielberg and written by George Lucas, both eminent proponents of the New Hollywood movement. In the two-mode network, the two filmmakers are linked indirectly through their joint work. In the one-mode projection of this network, Lucas and Spielberg are directly connected. Similarly, a co-citation tie is established if two filmmakers build references to the same earlier film into their own works. In our example, Robert Altman cited *Citizen Kane* (1941) in his film *MASH* (1970), and Francis Ford Coppola did the same in his film *The Godfather* (1970). Again, the one-mode projection of the co-citation network turns this into an edge (undirected tie) between the two directors Altman and Coppola.

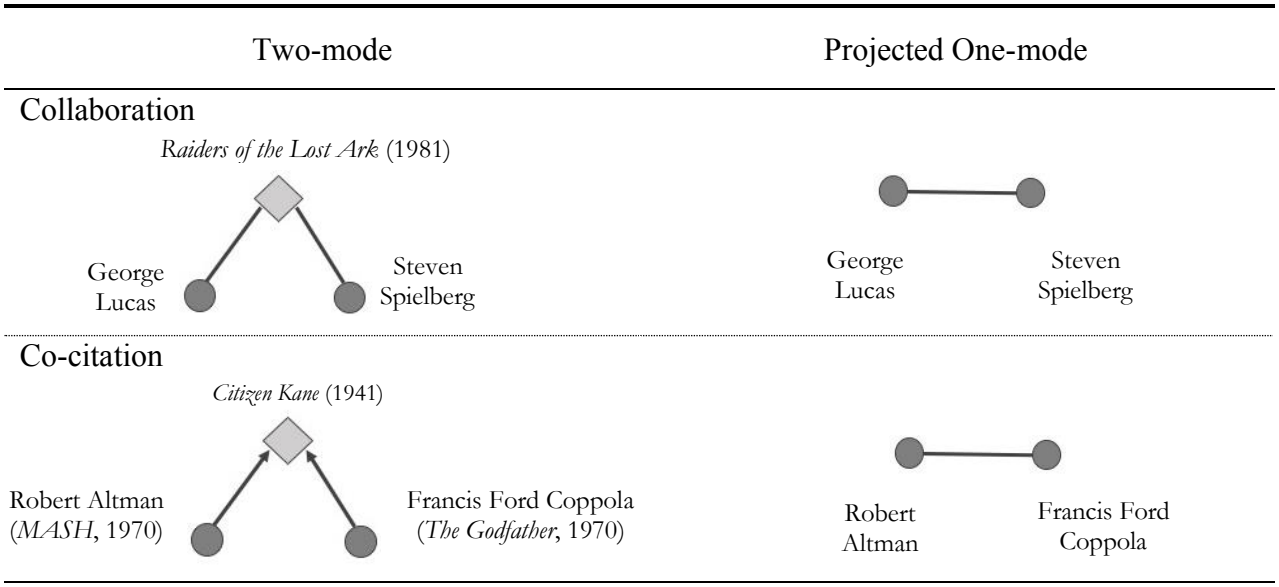

FIG. 3. - Examples of tie creation through collaboration and co-citation.

Focusing on the 1950-2000 period allows us to observe if filmmakers were active before, during, and after the formative period of the New Hollywood movement (1960-1980). The main source for our sample is the list "Directors: New Hollywood," as it has been compiled and included in the IMDb.[14] We undertook an extensive cross-validation of the IMDb list, using well-established accounts of the New Hollywood movement in the film history literature (see appendix A.2). We merged the list of names with information on the 1,055 films that these filmmakers were involved in, either as directors or writers, and with information on the 1,998 films they cited in their work (yielding a total of 4,000 references). Hence, our data structure at this step consists of the elite set of New Hollywood filmmakers, their collaborations as writers and directors in their joint film projects, the films they made, and finally the films they cited.

[14] https://www.imdb.com/list/ls073927086/ (accessed November 8, 2021).

TABLE 2
THE NEW HOLLYWOOD ELITE

	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000
	Num filmmakers per film				
Median	2	2	2	2	2
Mean	2.52	2.42	2.61	2.56	2.6
Min	1	1	1	1	1
Max	6	13	8	10	21
	Num films per NH filmmaker				
Median	1	4.5	5	5	4
Mean	5.6	5.06	5.62	5.5	4.37
Min	1	1	1	1	1
Max	31	26	15	12	12
	Num citations per NH filmmaker (if citing)				
Median	7	5	11	13.5	13
Mean	8.14	7.7	19.29	28.79	25.77
Min	1	1	1	1	1
Max	16	35	95	152	104

Note - The table reports descriptive statistics on filmmakers, films, and citations for the sample of 61 elite New Hollywood filmmakers. The first section of the table indicates the number of filmmakers per film in which a New Hollywood filmmaker (according to our definition) participated. A film in which a New Hollywood filmmaker participated could also include writers and directors that were not part of the movement. For example, Mario Puzo collaborated with Coppola in the Godfather but is not mentioned as a New Hollywood filmmaker in the historical sources.

Because we are interested in the emergence of New Hollywood within the filmmaking field, we need to consider how the collaboration and co-citation networks changed over time. Choosing an adequate periodization is a thorny issue. We need enough periods to reveal meaningful change in the two networks, yet slicing the data too thin may induce artificial fragmentation because we are cutting off ties at some arbitrary point even though they did persist for much longer. Here we settled on a periodization into five even-sized decades: 1950-1960; 1960-1970; 1970-1980; 1980-1990; 1990-2000. For each period-specific network, table 2 reports descriptive statistics for the number of directors and writers involved in a film, the number of films a filmmaker made, and the number of citations to earlier films a filmmaker

included in his own works (lest one wonders, the IMDb New Hollywood list does not include a single female director).[15] Our choice of periodization rests on substantive grounds. It usually took filmmakers two years after a completed film before they began work on a new project, that is, the median distance between two films by the same director is two years. As table 2 shows, this corresponds to about four to five films per filmmaker over the course of each period (except for the 1950—1960 period). Each period thus offers ample opportunities for filmmakers to build ties through successive collaborations. Hence, bias that leads us to underestimate cohesion within the collaboration network is limited. The periods are also partly overlapping so that the ties stemming from a film project that began in the last year of a given period (e.g., in 1970) are not arbitrarily cut off and extended into the subsequent period instead.

Results

The plots in figure 4 allow us to compare the topography of the collaboration and co-citation networks from a bird's-eye perspective. Within each period-specific network, the nodes represent individual filmmakers.[16] In the collaboration network, writers and directors are linked through edges that represent direct teamwork on a film project. In the co-citation network, two filmmakers are linked if they included references to the same earlier film in their own films (see figure 3).

[15] Note that the information on the number of filmmakers per film in which a New Hollywood filmmaker participated could also include writers and directors who were not part of the movement (according to the historical sources). For example, Mario Puzo collaborated with Coppola in the Godfather but is not mentioned as a New Hollywood filmmaker in the historical sources.

[16] Because we seek to understand the rise of New Hollywood and auteur theory, with its insistence on the primacy of directors and writers in the creative process, we also focus on directors and writers. In separate robustness analyses, not reported here, we include additional roles (producers, cinematographers, and others) and find no substantial differences in our results.

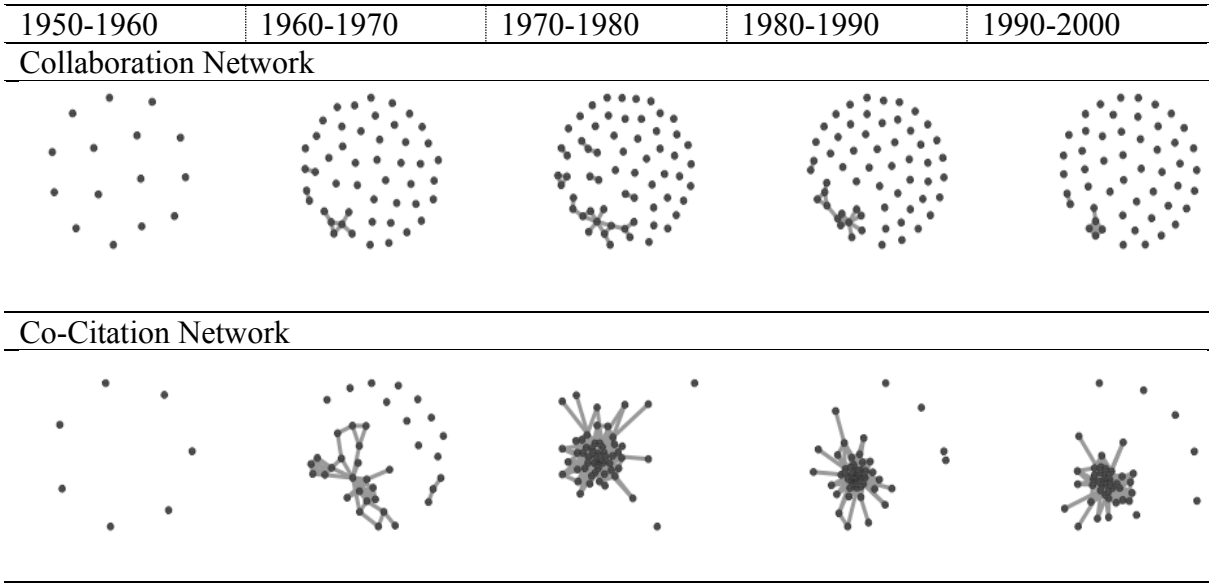

FIG. 4 - Collaboration and Co-Citation Networks of New Hollywood filmmakers.

During the 1950s, our first period-network, we find a limited number of future New Hollywood filmmakers who neither collaborated with each other, nor cited the same films. During this first period, 15 filmmakers participated in a film project, while only 7 of these filmmakers used citations in their films. Consequently, cohesion is absent in both types of networks in this early decade. With the onset of the New Hollywood movement in the second period (1960-1970), a clear difference between the patterns of the two networks emerges. Compared to the first period, the number of filmmakers within all networks increased substantially. Despite this increase of potential partners for a film project, the number of collaborations among New Hollywood filmmakers remained limited to just a single small cluster and two dyadic partnerships. All other filmmakers found themselves in an isolated position. If anything, what defined the pattern of the collaboration network was the absence of ties. As figure 4 shows, this fragmented structure remained unchanged throughout all periods that followed. In stark contrast and beginning with the rise of New Hollywood in the 1960s, cohesion increased within the network of co-citations.

In the 1960s, it appears that at least half of all filmmakers were embedded into a single large component. In the following periods, nearly all active filmmakers found themselves located within this well-connected component that formed the center of the co-citation network.[17] Put differently, here we find first systematic evidence in support of our argument that auteurism, as the motivating artistic vision of New Hollywood, kept filmmakers who subscribed to this vision from forming direct collaborations with each other. Instead, they turned to co-citations—by paying homage to the same films—as the foundation for cohesion within their movement.

Further support for our inferences comes from the systematic evidence in table 3. The five periods and the parts for the collaboration and the co-citation networks correspond to the layout in figure 4. The table reports descriptive statistics for the number of filmmakers in each period and for their number of collaborative and citation ties with other filmmakers in the network. Most important, our indicator of cohesion—the number of components and their relative size—supports the visual inspection of the network graphs above. Again, in the first period, before the rise of New Hollywood, we find just as many separate components as there were individual filmmakers in both types of networks. At this point, fragmentation best describes the patterns of both networks. With the emergence of New

[17] We may wonder if this stark contrast between the patterns of collaboration and co-citation networks was driven by the ease of citing relative to initiating a collaboration. However, citing in film was not as salient in the period before New Hollywood established it as an aesthetic ideal (see table 3, figures 4 and 5). If citing were indeed so much easier to accomplish, then we should see it reflected in its widespread use and a cohesive co-citation network even *before* the advent of New Hollywood, especially when fewer films were available that could have been referenced. Likewise, for a co-citation tie to emerge, two filmmakers would have to cite the same film. Hence, the opportunities for tie formation are comparable between the collaboration and co-citation networks: in a network of seven filmmakers, each of them has six potential partners for teamwork, and each of them has six potential peers who may cite the same film as they do. Further, as the industry developed, the pool of films that could have been cited became exceedingly large, which implies that any cohesion in the co-citation network must be driven by some consensus about what limited set of films is worthy to be cited. Uncovering this consensus is precisely what we seek to do in this article.

Hollywood in the 1960s, the striking difference between the two network patterns comes to the fore.

TABLE 3
NETWORK STATISTICS: NEW HOLLYWOOD ELITE

	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000
	Collaboration Network				
Num Filmmakers	15	48	61	58	51
Num Edges	0	8	22	17	8
Mean Degree	0	0.33	0.72	0.59	0.31
SD Degree	0	0.81	1.14	1.31	0.91
Num. Comp.	15	41	42	46	46
Prop. in Largest Comp.	0.07	0.12	0.21	0.21	0.1
	Co-citation Network				
Num Filmmakers	7	37	58	56	47
Num Edges	0	44	444	453	274
Mean Degree	0	2.38	15.31	16.18	11.66
SD Degree	0	2.42	10.9	11.97	8.88
Num. Comp.	7	13	3	5	7
Prop. in Largest Comp	0.14	0.62	0.97	0.93	0.87
Prop. in Largest Comp. (incl. isolates)	0.07	0.48	0.92	0.9	0.8

Note - The table reports network statistics on the collaboration and co-citation networks of the 61 New Hollywood elite directors and writers between 1950 and 2000. Note that the last row includes all filmmakers that were active but did not necessarily cite other films.

Within the collaboration network, the number of separate components (41) still was nearly as large as the number of individual filmmakers (48). Such a large number of components confirms fragmentation as the defining pattern of the collaboration network among New Hollywood directors and writers.[18] Very little in this ratio of components to filmmakers changed over the course of the following periods. In contrast, even though the number of

[18] Even though one should be careful when comparing networks of different sizes and varying relational content, it is worth noting that previous studies of collaboration networks in other industries have found 53% (Moody 2004 on collaboration in science), 94% (Uzzi and Spiro 2005) on the production of Broadway musicals), and up to 98.6% (Powell et al. 2005) on collaboration in biotechnology) of the relevant actors embedded within the largest component. Even the largest share of filmmakers in the main component (21%) that we find in our collaboration network is noticeably smaller in comparison. This difference is compatible with our argument that some explicit or implicit norm—such as auteurism's insistence on the creative autonomy of the individual artist—steered filmmakers away from teamwork.

individual filmmakers within the co-citation network increased nearly to the level of filmmakers in the collaboration network, the number of separate components in the co-citation network remained small in comparison. At the height of New Hollywood, in the 1970s, all except two of the fifty-eight citing filmmakers in the co-citation network were embedded within a single large component. In the following periods, the number of components increased ever so slightly, but the majority (87-97 %) of citing filmmakers were still connected within the largest component. The small number of components and the high concentration of filmmakers within the largest components indicate that cohesion, rather than fragmentation, was the defining pattern of the co-citation network. Note that the results are nearly identical if we consider all filmmakers in the 1970s, 1980s and 1990s – whether they were citing or not - for the calculation of the proportion of nodes in the largest component (see the last row in table 3).

In sum, these results are consistent with our argument that filmmakers who subscribed to the artistic ideals of New Hollywood tended to avoid direct teamwork as writers and directors on a joint film project. Any cohesion that existed among the elite members of New Hollywood was born largely out of shared references to earlier films they considered to be classics and exemplars of their artistic vision.

COLLABORATION AND CO-CITATION IN AMERICAN FILMMAKING, 1930-2000

One caveat of the findings we presented thus far is that we relied on a selective sample of the most prominent proponents of the New Hollywood movement. The study of elites certainly has its place: if there is one group where our suggested mechanism of identity formation from symbolic networks should work, then it is among this elite circle of auteur filmmakers. Still, we may wish to include lesser-known filmmakers who contributed to the rise of New Hollywood and its auteur identity, but whose works were not met with sufficient artistic and

financial success to be included in the IMDb's list of New Hollywood directors. Likewise, if New Hollywood was indeed successful in establishing itself as a dominant creative force in the field of filmmaking, then its motivating ideal of auteurism should have spilled over into other corners of the field, beyond the niche of elite writers and directors. Consequently, we would expect that a much broader set of filmmakers adopted the practice of referencing and paying homage to classic films. In what follows, we therefore consider a broader sample of 17,783 directors and writers who worked on at least two film projects between 1930 and 2000. Within this sample, we treat New Hollywood as a more inclusive movement and define it based on the period, 1960-1980, when the artistic ideal of auteurism became most salient.

Table 4 shows, for each sub-period, descriptive statistics for the number of filmmakers, the number of films directed and written, and the number of references per filmmaker. Following our argument, we expect again that cohesion in the collaboration network decreased, whereas it increased in the co-citation network as we move from Hollywood's Golden Age (1930-1960) towards the rise of New Hollywood during the 1960s and 1970s. Further, if auteurism and the establishment of a film canon did indeed spill from an elite niche over into the entire field of filmmaking, then we should observe sustained cohesion in the co-citation network in the years following the height of New Hollywood (1980-2000).

TABLE 4
DESCRIPTIVE INFORMATION ON ALL FILMMAKERS

	1930-1940	1940-1950	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000
	Num filmmakers per film						
Median	3	2	2	2	1	1	1
Mean	2.82	2.73	2.44	1.92	1.74	1.78	1.55
Min	1	1	1	1	1	1	1
Max	29	37	18	13	12	19	29
	Num films per filmmaker						
Median	3	3	2	2	2	1	2
Mean	9.06	7.31	5.01	3.10	2.39	2.09	2.24
Min	1	1	1	1	1	1	1
Max	363	181	152	114	99	72	114
	Num citations per filmmaker (if citing)						
Median	2	2	2	2	3	4	5
Mean	3.37	3.63	3.38	4.00	5.12	8.17	11.57
Min	1	1	1	1	1	1	1
Max	55	72	45	53	93	133	316

Note - The table reports descriptive statistics on filmmakers, films, and citations for all 17,783 directors and writers, 52,353 films, and 28,128 references between 1930 and 2000.

Measurement

Components offer an intuitive measure of cohesion for networks of moderate size. They are less suited to measuring cohesion in the large-scale networks (more than 8,000 nodes) that we examine in this section. As an alternative, we rely on network modularity for estimating cohesion and fragmentation because it takes the size of the network into account (Moody and Coleman 2015; Moody and White 2003; Newman 2006). Modularity indicates to what extent a network consists of distinct communities that may be sparsely connected with each other or even disconnected without any bridges between them. The modularity score, and hence network fragmentation, increases in the number of such salient communities. Global network cohesion beyond any group boundaries—which is what we are interested in here—increases as the modularity score decreases, reaching a lower-bound of 0 if only a single group exists in the network. We further scale modularity for the logged number of nodes because the raw modularity score accounts only for the number of edges (Shwed and Bearman 2010). As a final

adjustment, we use four-year moving windows for both networks because ties typically form before the focal year of a film's release, and they also tend to persist after the film's release (see de Vaan, Vedres, and Stark 2015).

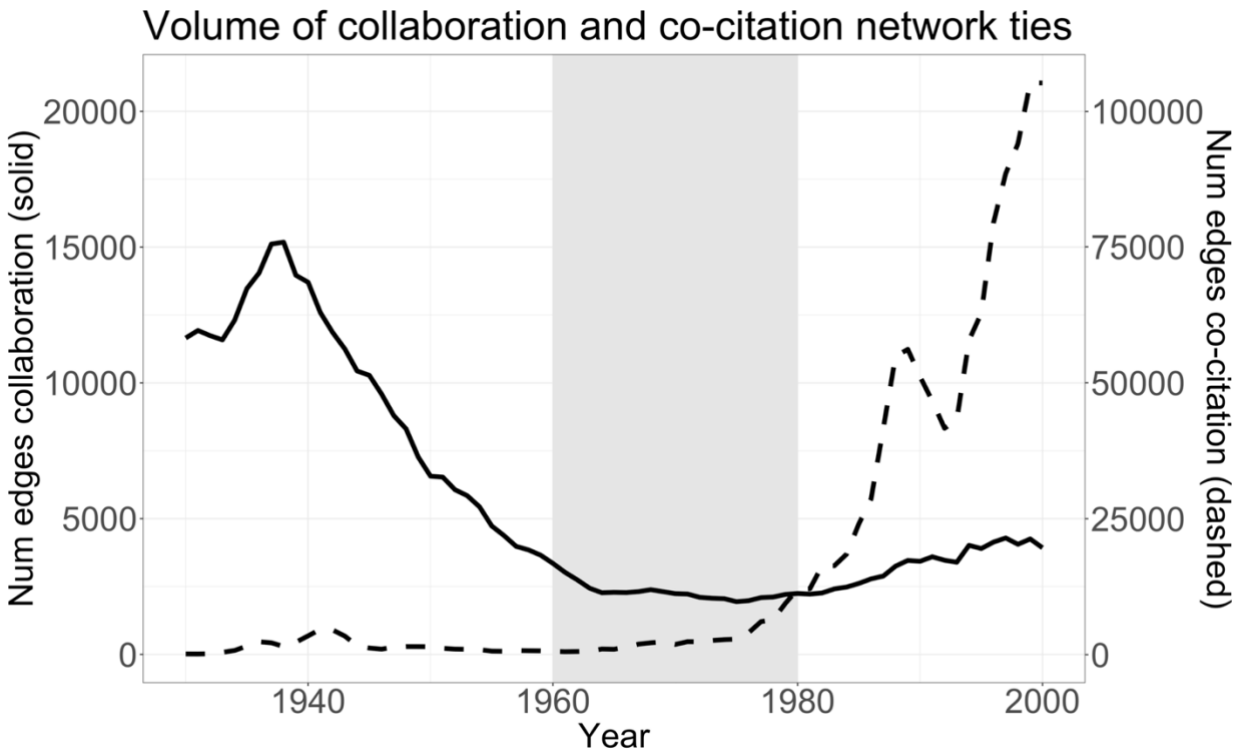

FIG. 5. - Number of edges in collaboration (solid line) and co-citation networks (dashed line), 1930-2000. The shaded area marks the New Hollywood period. Note that the numbers report edgesize for 4-year moving windows. For example, the calculation for 1970 includes ties from 1967, 1968, 1969, and 1970.

Results

Consider first the collaboration ties and co-citation ties across the entire period (1930-2000) in figure 5. The straight line traces collaboration ties between writers and directors, while the dotted line does the same for co-citation ties. The shaded area refers to the height of the New Hollywood movement, from 1960 through 1980. Figure 5 shows a clear trend that supports our argument. Following an initial rise before 1940, the number of collaborations decreased as we move into the 1960s and remained at a similar level thereafter. In contrast, excepting a slight increase in the early 1940s, co-citations stayed at the same low level until the mid-point of the

New Hollywood movement. In the 1970s, at the height of New Hollywood, co-citation ties among American filmmakers exhibited a steep increase that continued through the end of our observation window (the dip in the early 1990s may reflect a reporting error). The evidence suggests citing and paying homage were known practices among filmmakers well before the 1960s, but it was New Hollywood that succeeded in establishing citation as a legitimate form of artistic expression. Likewise, the contrast in numbers indicates that co-citation relationships were much more likely candidates for cohesion than the comparatively smaller number of collaboration ties. Our point here is not an existence proof of the truism that cohesion increases in the volume and density of ties. The crucial question is why the rise in co-citation ties was so pronounced, relative to the number of collaborations. The answer, we suggest, lies in a cultural mechanism that gave rise to the observed network patterns, and this cultural mechanism is to be found in New Hollywood's auteur theory and its norm of referencing canonical films.

Table 5 contrasts cohesion in the collaboration and co-citation networks. For ease of interpretation, we visualize the modularity findings in figure 6. The solid line represents the weighted modularity score for the collaboration network over the entire period, from 1930 through 2000. Modularity, and hence fragmentation of the collaboration network into separate communities, increased until 1970, the mid-point of the New Hollywood period, remained at about the same level until the 1980s, and decreased slightly thereafter.

TABLE 5
NETWORK STATISTICS: ALL FILMMAKERS

	1930-1940	1940-1950	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000
	Collaboration Network						
Num Filmmakers	3,606	3,305	3,040	3,382	4,090	5,519	8,212
Num Edges	34,838	23,528	11,633	6,128	5,515	7,502	9,954
Mean Degree	19.32	14.24	7.65	3.62	2.70	2.72	2.42
SD Degree	25.55	16.50	9.37	4.26	3.19	3.52	4.65
Modularity/log Nodesize	0.06	0.07	0.08	0.10	0.10	0.10	0.10
	Co-citation Network						
Num Filmmakers	829	955	724	905	1,332	2,358	2,974
Num Edges	8,121	12,110	3,860	8,063	34,809	197,157	447,648
Mean Degree	19.59	25.36	10.66	17.82	52.27	167.22	301.04
SD Degree	25.63	33.59	15.26	25.50	65.99	190.02	319.39
Modularity/log Nodesize	0.08	0.07	0.09	0.07	0.05	0.03	0.02

Note - The table reports network statistics on the collaboration and co-citation networks of all 17,783 directors and writers.

Important for our argument is the comparison with the modularity slopes—not the levels—of the co-citation network. Before the onset of the New Hollywood movement in the 1960s, modularity, and hence fragmentation within the co-citation network, waned and waxed. The rise of New Hollywood, however, was a clear turning point: fragmentation in the co-citation networks decreased steadily from the 1960s through 2000. In particular, the downward trending slope of modularity in the co-citation network deviates clearly from the trend that we observe for the collaboration network. Put differently, collaboration partnerships in film projects alone were apparently not sufficient to provide a solid relational foundation for an influential movement in the field. With the advent of New Hollywood as a new creative force, however, the practice of citing and paying homage gained such prominence in filmmaking that it could serve as a symbolic foundation for cohesion and a collective identity around the idea of auteurism.

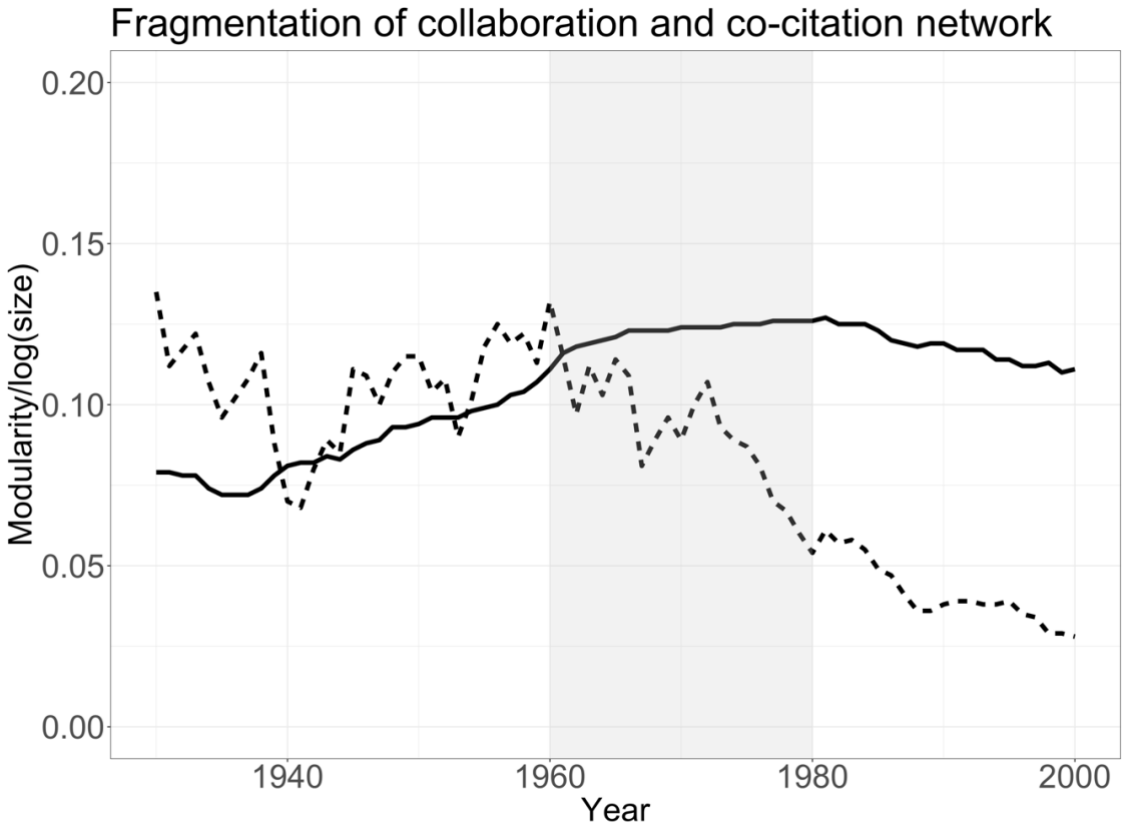

FIG. 6. - Modularity (scaled by logged number of nodes) over time. The solid line reports fragmentation in the collaboration network, the dashed line does the same for the co-citation network. The shaded area marks the New Hollywood period. Note that the numbers report network modularity for 4-year moving windows. For example, the calculation for 1970 includes ties from 1967, 1968, 1969, and 1970.

The Golden Age of Hollywood offered ample opportunities for collaboration, but it did so within the confines of the studio system, and thus did little to support filmmakers' artistic autonomy. In contrast, New Hollywood filmmakers cohered through shared references. In ways that may be best understood as symbolic boundary-making, the new generation of filmmakers shunned direct collaborations and the old studio system as constraints on their autonomy as individual creative artists. Further, the lasting cohesion through co-citation ties well beyond the height of New Hollywood suggests that its proponents did indeed succeed in establishing auteurism and a new canon of classic films that went on to influence future cohorts of filmmakers.

CANON FORMATION, 1930-2000

We argue that a canon of classic films was essential for the formation of a collective identity among New Hollywood filmmakers because it embodied the essence of the movement's shared ideals of artistic expression. In what follows, we provide systematic evidence that the citation patterns of New Hollywood filmmakers became ever more focused on a set of venerated films that reflected the taste and vision they shared with their peers.

Measurement

To reveal canon formation, we turn to the web of references among films over the entire period from 1930 through 2000. There are good reasons to focus on the network of directed ties from one film to another rather than the networks of relationships among filmmakers, as we did in the previous two sections. Canon formation is all about films and the artistic ideals they express. It is precisely this meaning of a canon that New Hollywood director Paul Schrader (2006: 47) invoked in his aptly titled essay *Canon Fodder*:

> In addition, I'd like to concentrate on films, not filmmakers. Motion pictures are the most collaborative of the arts; perhaps this is why, as if in protest, there has been so much attention paid to film "auteurs." *The film canon, however, consists of films, not people.* A film may be the creation of one strong individual, it may be the product of several; in either case *only the film can be judged*. [emphasis added]

Directed film-film citation network

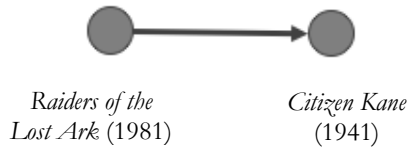

FIG. 7. - Nodes are films that generate a tie by referring to each other.

Figure 7 illustrates what constitutes a tie in the citation network. In this example, the final scene in Steven Spielberg's *Raiders of the Lost Ark* (1981) includes a wide shot of endless aisles of wooden crates stored in a warehouse, which is a thinly veiled reference to the famous final scene in Orson Welles' *Citizen Kane* (1941). In this case, we observe a directed tie that points from *Raiders of the Lost Ark* to *Citizen Kane*. Table 6 reports summary statistics for all citing and cited films for the seven sub-periods between 1930 and 2000.[19] The perhaps most obvious, and expected, trend is the continuous increase in the number of citing and cited films as well as in the number of citations per film. These first descriptive results indicate the increasing legitimacy and use of reference-making in filmmaking.[20]

[19] While citing films include only American films, cited films may come from countries other than the United States.

[20] Readers may wonder if the surge in citations is an artefact of more precise measurement in later years because IMDb users may prefer newer films, and thus code references that appear in them more meticulously. In appendix A.1, we show that there is little evidence to support such a taste-based selectivity. Further, in appendix A.3, we offer evidence that citation ties are not merely the result of IMDb users who have some theory of reference-making in film and therefore believe to have detected citations that were never intended as such by filmmakers.

TABLE 6
DESCRIPTIVE INFORMATION ON CITATION NETWORK (CANON)

	1930-1940	1940-1950	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000
Num citing films	468	592	461	575	910	1,768	2,451
Num cited films	784	1,012	843	1,457	3,046	7,974	14,773
Num unique cited films	527	666	620	999	1,679	3,315	5,138
	Num citations per film						
Median	1	1	1	1	2	3	3
Mean	1.68	1.71	1.83	2.53	3.35	4.51	6.03
Min	1	1	1	1	1	1	1
Max	26	25	22	24	51	112	260

Note - The table reports descriptive statistics on the directed citation network among all films between 1930-2000. Citing films include only American films, but cited films may include non-American films.

Intuitively, we may think of canon formation as akin to a Matthew effect such that a narrow set of consecrated films receives a disproportionately large number of references, given the total number of films and citations that were made. The appropriate measure for the number of references received is each film's indegree centrality in the network of citations. Evidence for the emergence of a film canon would be indicated by increasing inequality in the indegree distribution of cites by the time of New Hollywood's rise to prominence in the 1960s and 1970s. We measure the tendency towards inequality using change in the skewness in the distribution of indegree centrality across successive four-year moving windows.[21]

[21] Our dataset consists of the population of citing and cited films in the period 1930-2000. While sample skewness is contingent on sample size (which makes it difficult to interpret change in skewness over time), skewness in a population is unaffected by population size. Skewness will change, however, if the underlying mechanism that generates the distribution changes. This is precisely our argument: auteur theory with its emphasis on citing canonical films is the new mechanism that we suggest is operating in this setting.

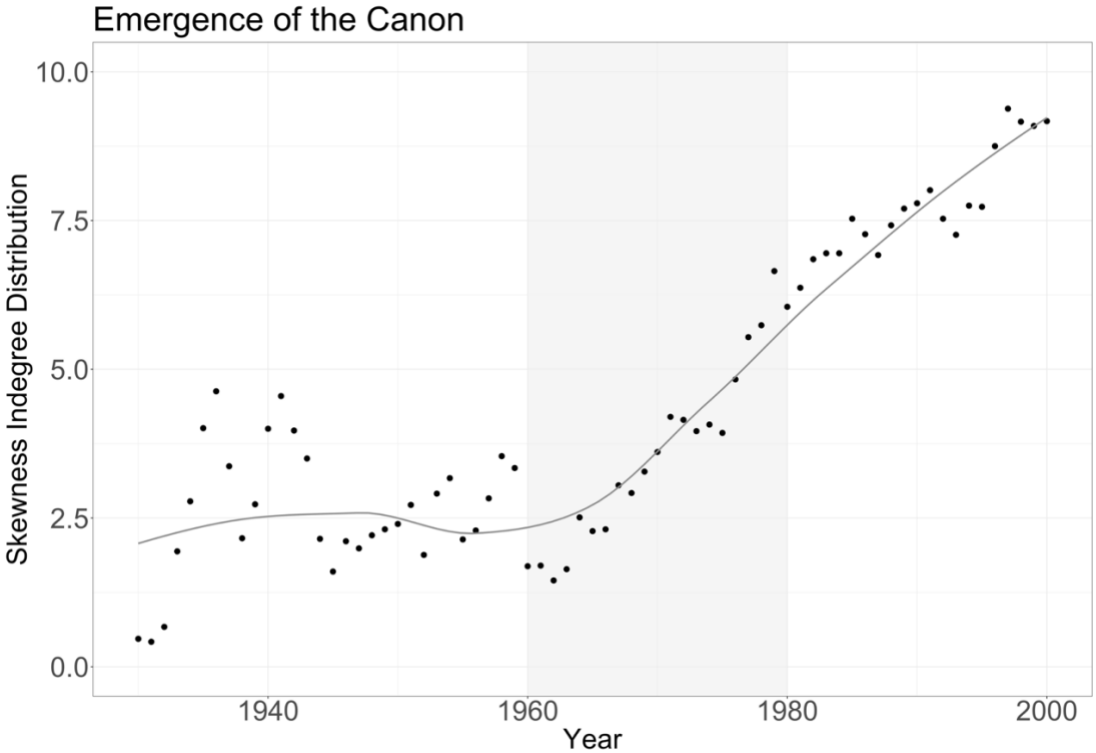

FIG. 8. - Skewness of indegree distribution (4-year moving windows) with loess curve. The shaded area marks the New Hollywood period. Note that the numbers report network skewness for 4-year moving windows. For example, the calculation for 1970 includes ties from 1967, 1968, 1969, and 1970.

Results

Figure 8 documents the emergence of a canon. Table 7 reports the corresponding tabular evidence per decade. The resulting pattern supports our argument: during the Golden Age of Hollywood before 1960, referencing earlier films was a known practice, but inequality, such that a few films received a disproportionate amount of cites, was not pronounced. With the rise of New Hollywood in the 1960s, however, the slope of the skewness indicator begins to rise markedly; and it continues to do so through the end of our observation window. Our findings indicate that the proponents of New Hollywood did indeed succeed in establishing a canon of films that set the aesthetic standard for others to follow, including even those filmmakers who did not openly align with New Hollywood.

TABLE 7
NETWORK STATISTICS OF CITATION NETWORK (CANON)

	1930-1940	1940-1950	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000
Num Nodes	922	1,165	1,016	1,478	2,387	4,532	6,914
Num Edges	784	1,012	843	1,457	3,046	7,958	14,773
Mean Indegree	0.85	0.87	0.83	0.99	1.28	1.76	2.14
SD Indegree	1.32	1.39	1.06	1.33	2.39	4.26	5.43
Skewness Indegree Distribution	5.18	5.63	4.26	5.2	8.01	10.57	12.3

Note - The table reports network statistics on the directed citation networks of 6,686 citing and 8,578 cited films.

CONCLUSION

The case of New Hollywood is exemplary for a general pattern in social relationships whose understanding has always been at the very heart of the sociological imagination: it is the question to what extent individual autonomy may persist under the constraints of group dynamics. We have argued that the tension between individual and group pursuits is particularly visible when new movements emerge that value the expression of individual creativity above all, and yet have to muster organizational cohesion among their members to prevail against a crowded field of established competitors. Consequently, we may ask how such movements resolve the dualism between individual autonomy and group cohesion. In particular, we have considered how the filmmakers of New Hollywood reconciled the demands of collective identity and collaboration in film production with their deep commitment to the artistic genius of the individual *auteur*.

Our argument is that their commitment to auteur theory implied a self-imposed rejection of direct collaborations among New Hollywood filmmakers. Collaboration, and in particular collaboration under the auspices of the old studio system, was perceived as limiting the artistic autonomy of the individual director and writer. Tangible relationships of teamwork in film production thus could not provide an accepted basis for organizational cohesion and

a collective identity of New Hollywood as a movement of like-minded artists. Still, the evidence indicates that New Hollywood was not a failure, but rather a remarkable success of a new movement in the field of film production. What, then, was the source of organizational cohesion that aligned the filmmakers of New Hollywood? We argued that, instead of tangible teamwork ties, these filmmakers achieved their organizational cohesion through symbolic networks of shared references to a canon of classic films. Referencing the same set of canonical films in their own works placed these filmmakers into similar positions within this symbolic network. Cohesion and a collective identity could thus emerge from the similarity of network positions, and they could do so without the constraints on individual autonomy that would arise from direct collaborative relationships.[22] Alignment through symbolic networks, we suggested, offered a relational basis for reconciling the demands of organizational cohesion and the preservation of individual artistic autonomy. We have presented supporting evidence for our argument from the Internet Movie Database (IMDb 2017), both for the inner circle of New Hollywood directors and writers, and for the extended set of all American filmmakers during the 1930-2000 period.

What our findings illustrate is that identity formation is an inherently relational process (Sahlins 1991). New Hollywood is but one exemplary case of this general pattern. On the one hand, building such a collective identity points to social relational mechanisms that operate inside the group to forge organizational cohesion. In our case, the group is the movement of New Hollywood filmmakers. The mechanism is the establishment of a film canon and the systematic use of references to the films included in this canon. Cohesion among filmmakers emerged to the extent that they positioned themselves in similar ways

[22] Readers familiar with the history of social network analysis will be reminded of the debate whether cohesion or structural equivalence is the more salient source of group behavior (Burt 1978, 1987; Friedkin 1984).

within this symbolic network of references (Ansell 1997; Gould 1995). On the other hand, the case of New Hollywood also illustrates that identity formation entails the drawing of symbolic boundaries whereby the members of a movement seek to distinguish themselves and their ideals from outsiders. In the extreme, as we noted in the beginning of this article, the distrust of outsiders may become the measure of a community's cohesion (Hillmann 2008; Homans 1975). The relationship between insiders and outsiders reminds us that collective identities resemble role structures in that any role is meaningful only if it entails a complement (Leifer 1988). Expected role behavior is then associated with similarity of positions in a network of social relations. In a similar fashion, Old Hollywood and its studio system served as the role complement to New Hollywood's auteur identity. The adherents of New Hollywood thus shared similar positions in their rejection of Old Hollywood's system of studio film production. The sharp distinction between the aesthetics of auteurism and the teamwork-based studio system served as a symbolic boundary that the insiders of New Hollywood drew to distinguish their collective identity from those whom they considered to be outsiders, namely those associated with Old Hollywood.

We have shown that New Hollywood has been immensely successful in establishing its canon of classic films. The movement revolutionized American cinema by setting new aesthetic standards of how films should be made and how they should be judged. Our evidence from the IMDb indicates that references to the canon and the use of homages spilled beyond the inner circle of New Hollywood's avant-garde and diffused into remote corners of the field of film production. Apparently, citing scenes from the classics and allusions to iconic shots are now so commonplace in filmmaking that the practices associated with auteurism no longer serve as an exclusive marker of group identity. The symbolic boundary that used to distinguish insiders from outsiders has become blurred. This development thus reminds us of the potentially temporary nature of identity-driven

movements (Bearman and Brückner 2001). One general lesson that the case of New Hollywood teaches us, then, is that such avant-garde movements run the risk of becoming the victims of their own success such that their carefully built collective identity may be eroded eventually.

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APPENDIX

TABLE A.1 FILM GENRES

Genre	Freq	%
action	4,411	4.40
adventure	3,274	3.27
animation	6,740	6.72
biography	863	0.86
comedy	15,228	15.19
crime	4,377	4.37
documentary	5,231	5.22
drama	13,800	13.76
family	4,203	4.19
fantasy	1,113	1.11
film-noir	743	0.74
history	738	0.74
horror	2,430	2.42
music	2,469	2.46
musical	2,138	2.13
mystery	1,677	1.67
romance	4,728	4.72
sci-fi	1,414	1.41
short	17,035	16.99
sport	938	0.94
thriller	2,474	2.47
war	996	0.99
western	3,236	3.23
Total	100,256	100.00

Note - Based on sample of 52,353 unique films. One film may belong to up to three genres. Films must belong to at least one genre to be included in the sample. Genre information for second and/or third genre is missing for 17,685 films (33.8%)

A.1. Robustness Checks: User Preferences and Probability of Inclusion in the IMDb

In the third section of our empirical analysis, we identify a Matthew effect in the distribution of references among films. Canonical films are those that receive a substantially greater number of references than most other films. We may wonder, however, to what extent high scores on degree in the co-citation network are in fact driven by the preferences of IMDb users who enter information about films into the database. Because the IMDb is a user-generated dataset, we

may end up with a selective sample of films and citation ties among them that merely reflect the taste of users for some films and their distaste of others. This selectivity is potentially problematic for our argument because the latter rests on the *status order* of films in the field of filmmaking, and not on the *popularity rank* of films among IMDb users. Hence, do some films score high on degree because they are truly influential among filmmakers, or because they are popular among IMDb users?

We address this caveat in two ways. First, we consider the extent of correlation between the number of user votes for films and their average user rating scores, on the one hand, and, on the other, the indegree and outdegree in the citation network among films. The number of votes for a film reflects how recognized it is among the IMDb audience, whereas the rating score tells us how valued it is. Both numbers indicate how popular a film is in the eyes of IMDb users. We assess the correlation between network degree and user votes and ratings for the subset of 9,436 films that sent (n = 6,686 films) or received (n = 8,578 films) at least one reference. This may include cases where either indegree > 0, and outdegree = 0, or indegree = 0, and outdegree > 0.[23]

We find only a moderate correlation between network degree and user scores. Certainly, IMDb users are an expert group of film connoisseurs, and if a canon of influential films does exist, they should be able to identify such classics. Hence, some moderate correlation between a film's citations and users' votes should be expected. Indeed, the number of references that a film received correlates modestly with the number of rating votes (r = .44), which suggests that IMDb users recognize canonical films. When it comes to the valuation of films, the correlation

[23] We do not consider the correlations for all 52,353 films in our dataset because most films would show a degree = 0. These cases are not meaningful for our purpose because they played no influential role in film history, and thus were unlikely to have contributed to the cohesion of the New Hollywood movement. Including such network isolates in our robustness check would effectively amount to testing if influential films and those that left no trace in film history differed in the number of user votes and ratings. Instead, our interest is to assess to what extent any network degree > 1 is systematically related to IMDb user votes and ratings.

between indegree and the average rating score is unimpressive (r = .20). Problematic for our argument would be a strong correlation between network outdegree and user scores because it may imply that, for films they hold in high esteem, users see references that may not even exist. This is not the case: the correlations between outdegree and the number of rating votes (r = .35), and between outdegree and the average rating score (r = .05) are even weaker than for indegree.

Second, beyond a simple summary statistic, we show that the status order among films (as measured by the number of references received and sent) is not determined entirely by the popularity rank of films (as measured by users' votes and ratings). In the boxplots in figure A.1, we compare three broad status groups of films (high, medium, low network degree) with respect to their average user votes and ratings.[24] For indegree, we group films that received no references into the lowest status (indegree = 0; n = 4,127 observations), films that received 1-3 references into the medium status (equal to, or above the 50th percentile in the degree distribution; n = 4,269), and films that received 4 and up to 359 references into the highest status (equal to the 90th percentile in the degree distribution; n = 1,040). For outdegree, the low status group includes films that made no references to other films (n = 2,809); the medium status group includes films that made 1-6 references (equal to, or above the 30th percentile in the degree distribution; n = 5,545); and the high-status group entails films that made 7 and up to 260 references to other films (equal to the 90th percentile; n = 1,082).[25]

[24] We logged the number of user votes because the underlying distribution is highly skewed (mean = 19,153.05; sd = 74,819.99).
[25] The exchange of references is not necessarily reciprocal or generalized: a given film may reference others but receive no references in return, and vice versa.

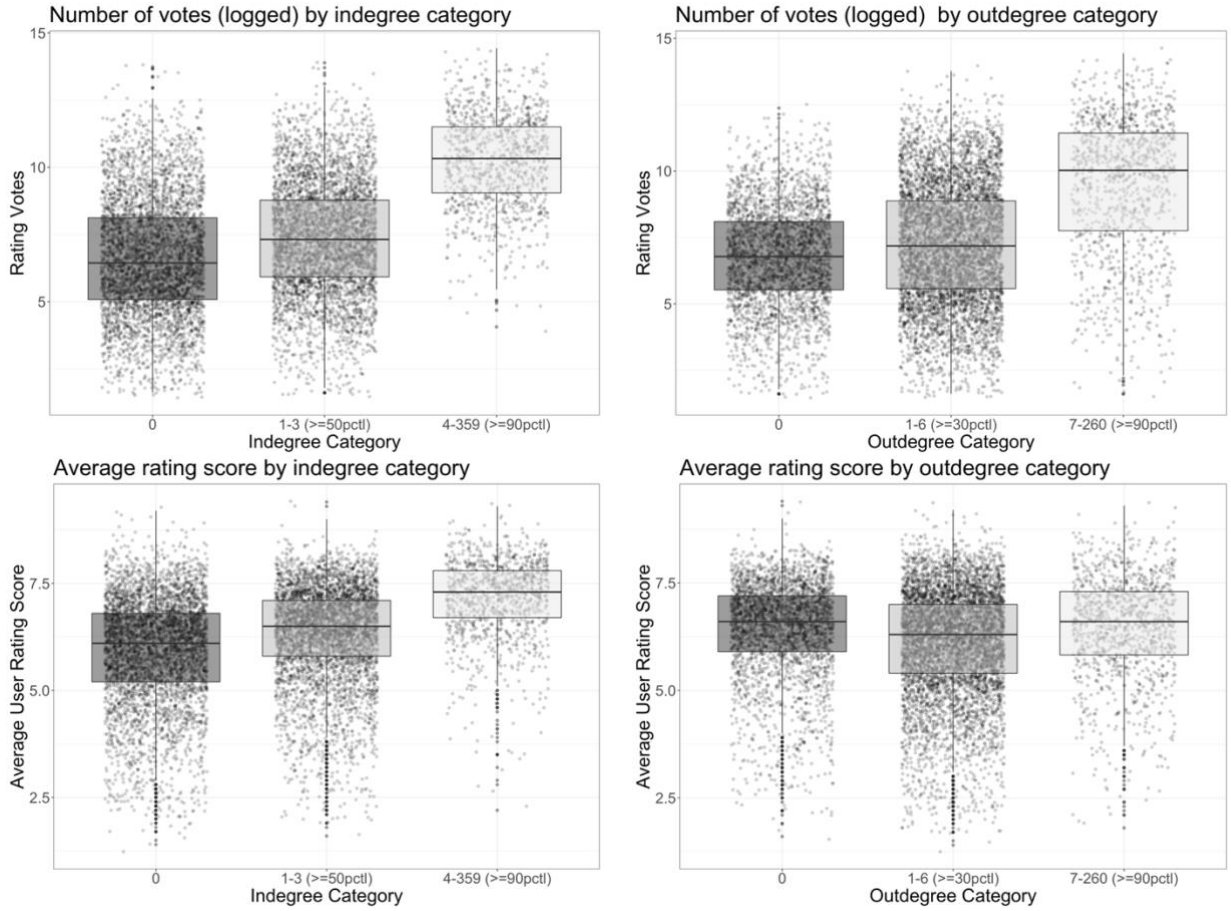

FIG. A.1 - Distribution of IMDb user votes and average rating scores across indegree and outdegree categories

If the popularity of films among IMDb users dictates the number of references sent and received, then we should observe little overlap in the distribution of user votes and ratings between the three status groups of films, and references should be concentrated in the most popular films. We may expect some moderate positive relationship if a film canon does exist and is recognized by an audience of connoisseurs (i.e., the films most often cited by other films also receive higher user ratings). The boxplots suggest a slight tendency towards such a relationship for the number of user votes, which reflects mainly that users can recognize these films. More important, however, we find that the distributions of all three status groups overlap. Put differently, films with few, middling, or large numbers of references are all likely to receive low, middling, or high scores from IMDb users. This finding is particularly striking for the

comparison of rating scores, and hence the valuation of films by users, beyond mere recognition.

In sum, we find little evidence that supports the alternative argument that the recorded references among films in the IMDb are merely the revealed preferences of users for popular films at the expense of less popular ones.

A.2 Criteria for Selecting the Elite Group of New Hollywood Filmmakers

To identify the leading proponents of New Hollywood, we relied primarily on the IMDb list of New Hollywood directors, which has been compiled by IMDb users.[26] We have cross-validated this sample with four influential film historical books on New Hollywood and two additional internet sources (Biskind 1999; Elsaesser, Horwath, and King 2004; King 2002; Thompson 1999).[27] We excluded all filmmakers from our sample who are not mentioned at least once by any of the other sources. Three filmmakers had to be excluded: David Cronenberg, Randal Kleiser, and John Waters. We added filmmakers to the sample who are mentioned in at least four out of the six other sources but not in our main IMDb source of New Hollywood directors. We included three additional filmmakers: James Cameron, James Toback, and Paul Mazursly. Table A.2 shows our final list of sixty-one New Hollywood filmmakers.

[26] https://www.imdb.com/list/ls073927086/ (accessed November 8, 2021).
[27] https://en.wikipedia.org/wiki/New_Hollywood
https://www.imdb.com/list/ls079993239/ (accessed November 8, 2021).

TABLE A.2 IMDb LIST OF NEW HOLLYWOOD DIRECTORS

1	Abel Ferrara	32	Mike Nichols
2	Alan J. Pakula	33	Milos Forman
3	Arthur Penn	34	Monte Hellman
4	Bob Rafelson	35	Norman Jewison
5	Brian de Palma	36	Paul Schrader
6	Clint Eastwood	37	Peter Bogdanovich
7	David Cronenberg	38	Peter Yates
8	David Lynch	39	Philip Kaufman
9	Dennis Hopper	40	Ralph Nelson
10	Don Siegel	41	Randal Kleiser
11	Francis Ford Coppola	42	Richard C. Sarafian
12	Franklin J. Schaffner	43	Richard Donner
13	George A. Romero	44	Ridley Scott
14	George Lucas	45	Robert Altman
15	George Roy Hill	46	Robert Benton
16	Hal Ashby	47	Roger Corman
17	Jerry Schatzberg	48	Roman Polanski
18	Jim Sharman	49	Sam Peckinpah
19	Joe Dante	50	Sidney Lumet
20	John Boorman	51	Stanley Kubrick
21	John Carpenter	52	Steven Spielberg
22	John Cassavetes	53	Stuart Hagmann
23	John G. Avildsen	54	Stuart Rosenberg
24	John Landis	55	Sydney Pollack
25	John Milius	56	Terrence Malick
26	John Schlesinger	57	Tobe Hooper
27	John Waters	58	Warren Beatty
28	Lawrence Kasdan	59	Wes Craven
29	Martin Scorsese	60	William Friedkin
30	Mel Brooks	61	Woody Allen
31	Michael Cimino		

Source: https://www.imdb.com/list/ls073927086/

A.3. Robustness Checks: Validity of Citations in the IMDb

Another caveat of our analysis may be that the set of citable films we have identified as the canon was not intended as such by New Hollywood directors. Instead, it may be the outcome of coding choices made by IMDb users who share some theory of reference-making, irrespective of whether they like a film or not (see appendix A.1). A worst-case scenario would be IMDb users who believe to have discovered, in a film from, say, 1990, a reference to an obscure film from 1960 that was never considered to be a citable film by New Hollywood filmmakers. Now, that the 1960 film has entered the risk-set of citable films, as defined by IMDb users, other films, say from the 1980s, may be retroactively seen as referencing it as well.[28] Citation ties would thus proliferate and contribute to cohesion even though directors never intended such references.

Ideally, we would assess the match between IMDb user codings and directors' intentions. Unfortunately, filmmakers rarely disclose their use of references in public.[29] Professional film critics, however, play an important role in conveying a film's cultural value and meaning to a broader audience. Precisely because New Hollywood was inspired by film criticism, the interpretations by professional critics come closest to the artistic intentions of directors. To address the caveat, we therefore assess to what extent the references identified by IMDb users match those mentioned in critical reviews. Close matches, especially on canonical films, would indicate that citations recorded in the IMDb are not mere artefacts of users' imagined references.

[28] Entries in the IMDb, however, have no time stamp that would allow us to identify the precise sequence of users' codings of references from one film to another. We do know that film critics writing in the 1970s already identified references to such often-cited classics as the *Wizard of Oz* (indegree=51 in our sample), well before the IMDb was launched in 1990.

[29] In an exceptional instance, Martin Scorsese once revealed in an interview that Psycho provided a template for some of the scenes in Raging Bull. https://www.youtube.com/watch?v=gzYk-cQk388 (accessed January 6, 2021).

Table A.3 lists the matchings for 14 selected New Hollywood films, produced between 1967 and 1979. Within this selective sample, 39 references to other films listed by IMDb users have also been identified by critical reviews in leading newspapers and magazines. While this is a considerable overlap, IMDb users also coded 90 references that have not been mentioned in critical reviews. Film critics, however, do not necessarily focus on allusions to earlier films in their writing. More important for our purposes, both IMDb users and critics should recognize references to canonical works that are widely cited and pivotal for network cohesion. This is precisely what figure A.2 shows: the average number of citations received is significantly greater for referenced films that have been identified by both IMDb users and critics than for referenced films that are listed exclusively by IMDb users. Likewise, the upper limit of the interquartile range is higher for references detected by both IMDb users and critics than it is for references that are listed only by IMDb users. We conclude that references to widely cited and canonical films are the ones that IMDb users and professional film critics agree on, and there is little evidence to suggest that the prominence of films in the citation network is merely the outcome of choices made by IMDb users.

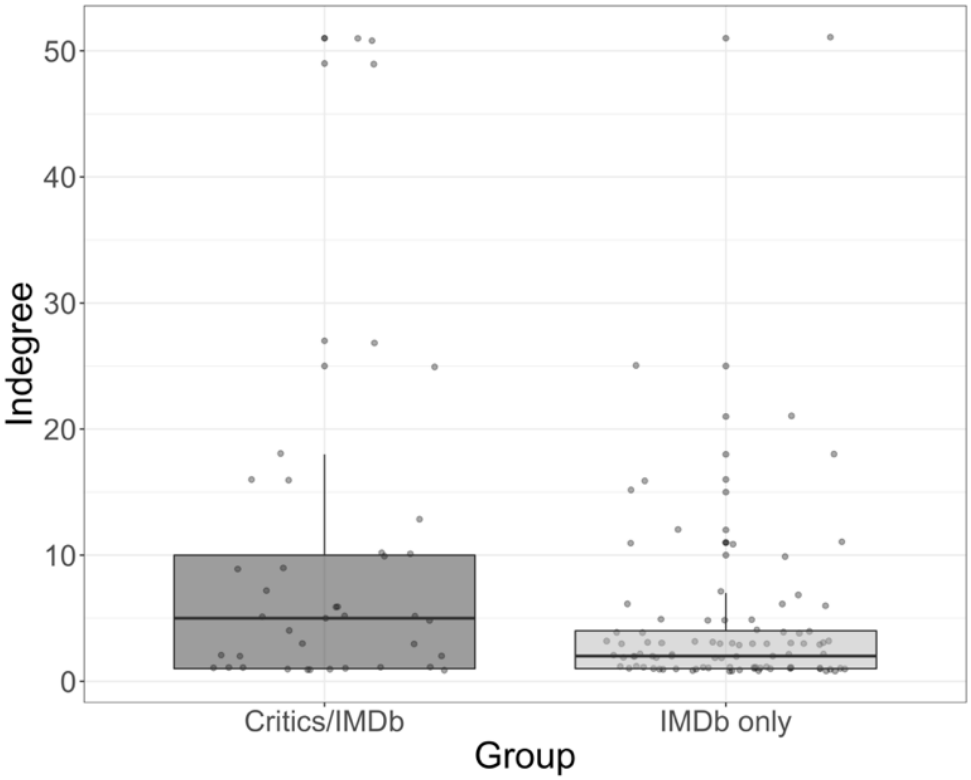

FIG. A.2—Distribution of the number of citations received (network indegree): comparison of referenced films identified by both IMDb users and film critics (left; n=39) and identified exclusively by IMDb users (right; n=90). Means comparison: 9.87 citations for the left group vs. 4.31 citations for the right group (t =2.44; p=.02

TABLE A.3 REFERENCES TO FILMS IDENTIFIED IN THE IMDb AND CRITICAL REVIEWS

Citing film	Cites listed by IMDb and critics (n=39, with 36 unique cited films)	Cites listed only by IMDb (n=90, with 88 unique cited films)	Source
Alice Doesn't Live Here Anymore (1974)	The Wizard of Oz; Coney Island	The Postman Always Rings Twice	NY Times (1975); Chicago Sun-Times (1974)
All That Jazz (1979)	8 ½; Lenny; 42nd street	A Streetcar Named Desire; Cabaret; National Lampoon's Animal House; The Wiz	NY Times (1979); New Yorker (1980)
Annie Hall (1977)	Scenes from a marriage; The Misfits; The Godfather; La Strada; Fellini's Satyricon; Fellini's Casanova	La Grande Illusion; Snow White and the Seven Dwarfs; The Wizard of Oz; Children of Paradise; Singin' in the Rain; Juliet of the Spirits; House of Evil; Messiah of Evil; The House of Exorcism; Face to Face	NY Times (1977); Washington Post (1977)
Apocalypse Now (1979)	The Sweet Life; The Bridge on the River Kwai	Citizen Kane; Lawrence of Arabia; Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb; The Birth of a Nation; 2001: A Space Odyssey; Kelly's Heroes; Deliverance; Nashville; Stachka; Aguirre, the Wrath of God; The Passenger	NY Times (1979)
Bananas (1971)	Battleship Potemkin	Duck Soup; Modern Times; Wild Strawberries; One, Two, Three; Casino Royale; The Incident	NY Timess (1979)
Bonnie and Clyde (1967)	Battleship Potemkin	-	New Yorker (1967)
Carrie (1976)	Psycho; Sisters	Battleship Potemkin; Lord of the Flies; A Man and a Woman; Deliverance; A Brief Vacation	NY Times (1976)
Love and Death (1975)	The Seventh Seal; Persona	The Hunchback of Notre Dame; Casino Royale; Crime and Punishment; A Night at the Opera; The Czar Wants to Sleep	NY Times (1977)
New York, New York (1977)	The Clock; Singin' in the Rain; A Star Is Born; On the Town	42nd Street; Paris Underground; Summer Stock; Guys and Dolls; West Side Story	NY Times (1977); Chicago Tribune (1977)

Obsession (1976)	Vertigo	Dial M for Murder; High and Low; Marnie	NY Times (1976; 1977)
Play It Again, Sam (1972)	Casablanca; The Big Sleep	The Barefoot Contessa; The Treasure of the Sierra Madre; A Star Is Born; The Maltese Falcon; Across the Pacific; They Drive by Night; The Jungle Princess; The Petrified Forest; Marked Woman; To Have and Have Not; Dead Reckoning; Key Largo; The African Queen; Sirocco; The Unfaithfuls; Safari; Le coppie; All Through the Night	NY Times (1977); Chicago Sun-Times (1972)
Star Wars: Episode IV - A New Hope (1977)	Metropolis; 2001: A Space Odyssey; The Searchers; Seven Samurai; The Hidden Fortress; Yojimbo; Sanjuro; The Wizard of Oz; Triumph of the Will; Flash Gordon	Alexander Nevsky; The Adventures of Tartu; Twelve O'Clock High; The Dam Busters; The 7th Voyage of Sinbad; Prince of Space; Battle in Outer Space; 633 Squadron; 21-87; The Magic Serpent; The Good, the Bad and the Ugly; Five Easy Pieces; THX 1138; A Touch of Zen; The Getaway; One of Our Dinosaurs Is Missing; Dersu Uzala;	NY Times (1977, 2015); Chicago Reader (1985); Chicago Sun-Times (1977)
The Last Picture Show (1971)	Red River; Wagon Master; Father of the Bride;	Winchester '73; Sands of Iwo Jima; White Heat; The Steel Helmet	Chicago Sun-Times (1971); NY Times (1977)
Three Women (1977)	Persona	Thoroughly Modern Millie; The Stepford Wives	NY Times (1977)

Artistic Referencing and Emergent Standards of Peer Recognition in Hollywood, 1930-2000.

Katharina Burgdorf

Abstract

How does an artwork's referencing of creative content affect its peer recognition? Artists constantly seek to balance the tension between originality and conformity. Previous research argues that peers tend to reward socially well-embedded artists that signal community involvement and literacy of established conventions. Another stream of sociological research argues that the criteria for peer recognition are not fixed but depend on the amount of legitimacy that a cultural field has acquired. This paper examines the emerging and shifting standards of peer recognition throughout 70 years in US-American filmmaking. I ask whether and to what extent a film's referencing of artistic content from earlier films –i.e., snippets of dialogue, camera shots, etc.– conditions its chances of being referenced. I analyze the reference styles of 5,414 US-American movies released between 1930 and 1995 and show how artistic standards emerged with the New Hollywood movement in the 1960s. While filmmakers of the New Hollywood (1960-1979) and Blockbuster era (1980-1995) were rewarded for signaling cultural literacy and openness in their reference styles, these standards did not apply yet to Golden Age filmmakers (1930-1959). Strikingly, in contrast to New Hollywood, filmmakers of the Golden Age and the Blockbuster era rewarded reference styles that signaled combinatorial novelty. These findings offer insights for sociologists of culture and organizations that ask how an artwork's embedding of existent ideas affects its recognition by contemporary peer audiences.

Introduction

A famous quote by Pablo Picasso states that "Lesser artists borrow; great artists steal." While it is debatable if he really said so, the phrase points to the artistic practice of picking up the ideas of other artists' works and incorporating it into one's work. Another proverb suggests that "Imitation is the sincerest form of flattery" (Lena and Pachucki 2013). Contrasting these two sayings points to the dual nature of referencing artistic content. On the one hand, referencing is a creative practice that guides the creation of outstanding work. It is also—if not equally— an act of paying tribute or recognition to other artists' work. Giving and receiving references is a form of allocating symbolic capital that mirrors status hierarchies within the community and translates into cultural status, consecration, and immortality (Bourdieu 1993; Crane 1976). Both sayings suggest that referencing other artists' content is a relational process

that signals group membership and belonging. Referencing ranges from sampling in rap music to borrowing specific brush techniques in visual arts. Films include references when they adopt camera shots, dialogue snippets, or stills from other movies (Bioglio and Pensa 2018; Carroll 1982; Spitz and Horvát 2014). In this study, I shed light on both sides of this relational process.

Why do some cultural products attract more peer recognition than others? Scholars in the humanities and social sciences have tried to answer this question by pointing to the tension between creative conventionality and differentiation (Askin and Mauskapf 2017; Becker 1982; Coman and Opazo 2020; Godart and Galunic 2019; Lena and Pachucki 2013; Silver et al. 2022; Wohl 2019) and historical legitimation processes through consecrating audiences and institutions (Allen and Lincoln 2004; Baumann 2007b; Bourdieu 1993; Janssen, Kuipers, and Verboord 2008; Lena 2019; Schmutz et al. 2010). Cultural producers constantly face the tension between adhering versus differentiating from artistic conventions. While fitting into established categories may come at the loss of creative autonomy but greater rewards from the community, distinctiveness reflects artistic independence but may include a lack of appreciation and support from community members. However, the standards artists adhere to or deviate from are not fixed but are historically contingent. They emerge and co-evolve with a communities' trajectory from avant-garde to an established genre (Lena 2012; Lena and Peterson 2008), respectively, a field's acquisition of artistic legitimacy (Baumann 2007a). Before a field gains artistic legitimacy, artistic standards may play no, or a less pronounced role compared to phases after a field establishes as an art world.

With this research, I contribute to the growing body of work in the sociology of culture that reveals how an artwork's signals of cultural proximity or distance affect its recognition by fellow artists (Cattani, Ferriani, and Allison 2014; Godart and Galunic 2019; Lena and Pachucki 2013; Rossman, Esparza, and Bonacich 2010). I develop a historically sensitive perspective to understand how evaluation standards emerge and shift over time (Baumann

2007b; Janssen et al. 2008; Lena and Peterson 2008; Schmutz 2009). The empirical setting of this study is the Hollywood film industry, one of the most influential film industries in the world. I ask to what extent a film's reference style affects its acquisition of peer recognition in the form of acquiring references. Reference style captures to what extent a film's references to other films reflect combinatorial novelty—i.e., the novel combination of references—literacy—i.e., the number of used references—and openness—i.e., the reference to foreign (non-US American) films. I use data from the Internet Movie Database (IMDb) on 5,414 American films released between 1930-1995. Using negative binomial regression analysis, I estimate the influence of reference styles on the number of acquired references five years after film release for three historical eras, the Golden Age of Hollywood (1930-1959), the New Hollywood (1960-1979), and the Blockbuster era (1980-1995). I consider these three time periods to account for different institutional conditions before and after Hollywood cinema became a legitimized art form in the 1960s (Baumann 2007b).

The tension between imitation and differentiation in cultural fields

Cultural producers face a tension between originality and conventionality when creating artistic work. While imitation tends to signal adherence to conventions but risks conflicting artistic autonomy, differentiation may preserve creative independence but risks less recognition by the artistic community (Becker 1982). Within communities of fellow artists, conventionality facilitates cooperation among different professional roles, such as directors, writers, or cinematographers. Outside of the community, conventionality facilitates the classification processes of critical and public audiences. Recent sociological research shows when and why artists acquire recognition through public audiences (Askin and Mauskapf 2017; Lena and Pachucki 2013; Silver et al. 2022), critics (Baumann 2001; Cattani et al. 2014; Chong 2020; Kersten and Verboord 2014; Schmutz 2009; Schmutz and van Venrooij 2018), and peers

(Cattani et al. 2014; Godart and Galunic 2019; Rossman et al. 2010). While critics favor experimentation and deviation from established conventions (Cattani et al. 2014), public audiences and peers tend to be more conservative.

Lena and Pachucki (2013) show that rap artists achieve more popular acclaim when imitating other artists in their use of artistic content rather than inventing new content. Askin and Mauskapf (2017) find that songs attract more public recognition when the combinations of their features reflect optimal differentiation, i.e., being neither too distant nor too close to other contemporary pieces. Empirical evidence by Silver et al. (2022) corroborates this finding in the case of the music industry. Sgourev and Althuizen (2014) find that public audiences favor stylistic consistency for lower-status artists while appreciating inconsistencies for high-status artists. This balancing act is also apparent in the struggle for peer recognition. Within the fashion industry, Godart and Galunic (2019) show that the embeddedness of creative content—i.e., the extent to which creative content connects otherwise disconnected creative content—drives its market popularity. Fashion creators prefer and adopt more creative content from culturally embedded creators. A similar pattern holds when conceptualizing peer recognition through awards. Peers tend to favor artists that signal embeddedness and adhere to the community's conventions (Cattani et al. 2014; Rossman et al. 2010). These findings suggest that cultural producers fare better if they follow established conventions, even though public wisdom holds up the myth of artists as convention-breakers.

Artists still find ways to achieve this balancing act between signaling community involvement and developing an individual signature style and aesthetic identity (Alvarez et al. 2005; Wohl 2019). Referencing the content of other artists' work is one way through which artists can create distinct works and, at the same time, signal membership and belonging (Lena 2004).

The rise of cinematic referencing during Hollywood's artistic turn

Artistic referencing

Referencing artistic content is part of the creative process in most art worlds. For example, visual artists adopt specific brushstrokes, patterns, or color palettes from other artists or their own previous work (Becker 1982; Coman and Opazo 2020; Wohl 2019). Jazz musicians pick up tunes and beats while improvising (Berliner 1994; Phillips 2013). Rap musicians repeat artistic content in the form of samples, i.e., "prerecorded sonic performances that are subsequently used in new songs" (Lena 2004: 298). By repeating samples other musicians picked up before, musicians build connections within their community and draw boundaries from other musical communities.

Filmmakers reference films when they borrow camera shots, dialogue snippets, or stills from previous films (Biguenet 1998; Bioglio and Pensa 2018; Carroll 1982; Spitz and Horvát 2014). References are a means to signal film historical literacy and cinephilia. Film scholar Carroll (Carroll 1982: 52) describes the different types of cinematic references in the following way:

> "Allusion […] is an umbrella term covering a mixed lot of practices including quotations, the memorialization of past genres, the reworking of past genres, homages, and the recreation of "classic" scenes, shots, plot motifs, lines of dialogue, themes, gestures, and so forth from film history […]".

As an illustration, consider the depicted scene in George Lucas' *Star Wars Episode VI* (1983) where Princess Leia strangles Jabba the Hutt (figure 1). This scene references a still from Francis Ford Coppola's *The Godfather* in which Luca Brasi gets killed similarly. Interestingly, George Lucas was not only a mentee but also an open admirer of Coppola's work to the extent that he based the *Star Wars* movie character Han Solo on him (Source: IMDb). By adopting the still from the Godfather, Lucas establishes an artistic lineage between Coppola's and his

own work. The still constitutes an indirect visual quote through which he creates an interpretative frame for peer, critical, and public audiences (Carroll 1982).

Referencing is strongly connected to the New Hollywood era during which filmmakers adopted this artistic device as a community-defining practice in line with their shared vision of auteur filmmaking. While filmmakers of the Golden Age already used references, the standards of using them likely varied compared to later periods.

Image:	Image:
The Godfather (Francis Ford Coppola, 1972)	*Star Wars: Episode VI* (George Lucas, 1983)

Fig. 1. Example of artistic references in filmmaking

Hollywood's artistic legitimation process

The empirical setting is the Hollywood film industry between 1930 and 1995 which covers Hollywood's Golden Age (1930-1959), the New Hollywood period (1960-1979), and the Blockbuster era (1980-1995). The term Golden Age of Hollywood refers to the organizational structure of the studio system and the visual and narrative style of the Classical Hollywood Cinema, favoring, among other aspects, continuity editing and linear narratives (Bordwell, Staiger, and Thompson 2015). The studio system consisted of a power oligopoly of the Big Five film studios (Paramount Pictures, 20th Century Fox, Metro-Goldwyn-Mayer (MGM), Warner Bros., RKO Pictures), and Little Three studios (Universal Studios, Columbia Pictures, United Artists). It was characterized by long-term employment of creative personnel and studios' unified ownership (vertical integration) of production, distribution, and exhibition enterprises, facilitating film's standardized, assembly-line production.

After two Supreme Court decisions, the Hollywood film industry had to divest from its exhibition chains and cease long-term employment contracts as of 1948. Driven by these legal

pressures, demographic changes in the audience—the baby boomers emerged as the largest viewer group—and the advent of TV, the industry faced a severe economic crisis by the 1950s (Baumann 2007b). Facing market uncertainty, studios opened their spaces to a young generation of filmmakers, later known as the New Hollywood movement. This generation of cinematic visionaries, among them Francis Ford Coppola and Martin Scorsese, pursued an artistic understanding of auteur filmmaking. Auteurism involves an individualistic approach to filmmaking in which the director, or director-writer, controls the whole filmmaking process (Allen and Lincoln 2004; Baker and Faulkner 1991; Hicks and Petrova 2006). Together with other consecrating institutions—such as an emergent artistic film discourse, film school departments, film festivals, and museums (Baumann 2001, 2007b)—New Hollywood filmmakers constructed a novel symbolic environment to appreciate film as an art form.

The unforeseen success of New Hollywood films such as Jaws (1975) and Star Wars (1977) marked the beginning of the blockbuster era. While in the years before studios granted artistic autonomy to directors, their regain of financial control shifted the focus back to commercial interests (Baker and Faulkner 1991). While peer and critical recognition added symbolic value to films, conglomerates that dominated the market evaluated success based on public appeal. As a result, the blockbuster period was characterized by film sequels of box-office hits such as Star Wars, Indiana Jones, or Back to the Future.

While referencing became more common and systematic among 1960s filmmakers, it was already a practice among a small number of filmmakers during the Golden Age (1930-1960). Figure 2 shows the number of referencing films (dotted line) and the mean number of used references (solid line) per film for different periods in Hollywood's history. During the so-called Golden Age of Hollywood, the number of referencing films remained below 100 most of the time. It increased steadily to 180 during the New Hollywood period. As of the

blockbuster era, referencing constitutes an established practice, with more than 300 referencing films in the 1990s.

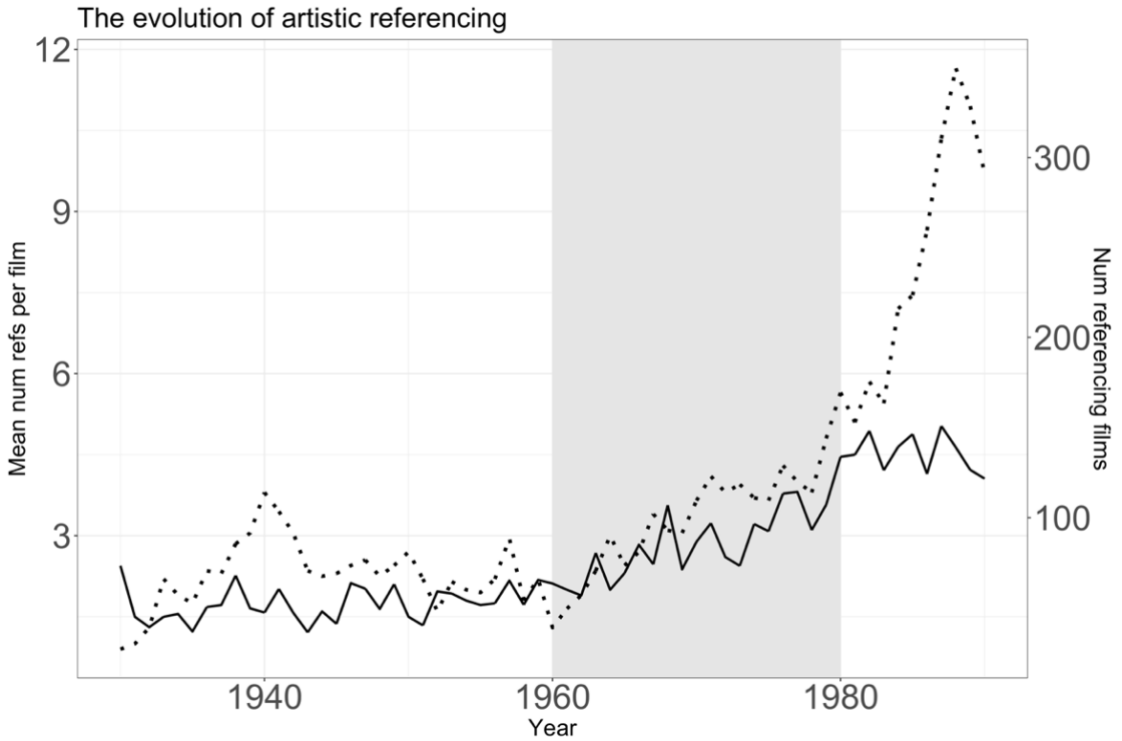

Fig. 2. Number of referencing films (dotted line) and mean number of used references per film (solid line) 1930-2000

A similar pattern holds for the mean number of references per film. While it remained below three during the Golden Age, it steadily increased to above three during the New Hollywood period, reaching more than four during the Blockbuster era. In sum, while already Golden Age filmmakers used the practice of referencing, it became a more and more established practice during the New Hollywood period.

While the figure merely provides a first impression of the increasing prevalence of referencing, I turn to the conceptualization of different reference styles in the following. I examine how a film's reference styles—reflecting novelty, literacy, and openness—affect its acquisition of references.

Novelty

A central debate in the sociology of culture involves the conceptualization and measurement of novelty (Mohr et al. 2020). Several studies have pointed out that cultural products that are optimally distinctive—in the sense that they connect unknown with known features—outperform other cultural products that are either too distinct or too similar to existing products. I build on recent research (Askin and Mauskapf 2017; Godart and Galunic 2019; Lena and Pachucki 2013; Silver et al. 2022) and conceptualize novelty in relational terms. I consider a film's reference style novel if it builds a bridge between previously unconnected artistic content. A film's reference style reflects little combinatorial novelty if its combination of creative content is too similar or detached from previous films' reference styles.

Figure 3 illustrates the conceptualization of combinatorial novelty. It displays reference networks among films at two points in time. The nodes represent films, and the arrows represent references between films. The grey nodes represent films that referenced each other in year 1. At that time, there are two separate communities of films that reference each other. In year 2, the previously disconnected communities connect through a new film (the darker node). This film combines artistic content in novel ways like no other film before. In sum, I conceptualize novelty as the quality of combining artistic elements that were previously unconnected. It differs from an absolute conception of novelty in which a film would refer to films no other film has referred to before. Combinatorial novelty, thus, captures less innovation and more the novel recombination of artistic content. It reflects a film's capabilities to build bridges in the contemporary cultural space by occupying cultural holes (Pachucki and Breiger 2010).[1] I expect that once the field of Hollywood filmmaking gains artistic legitimacy as of the 1960s, filmmakers reward combinatorial novelty.

[1] This conception of novelty builds on Burt's (2004, 2018) idea of structural holes and Pachucki's and Breiger's (2010) articulation of cultural holes. Structural holes theory argues that group-spanning

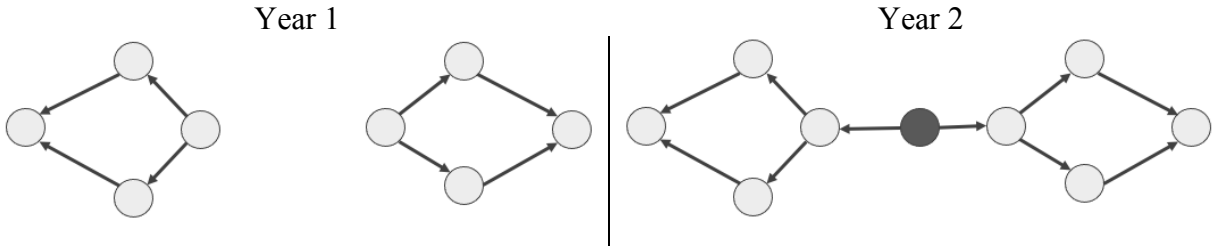

Fig. 3. References among films at two points in time. At time 1, two unconnected communities of films cite each other; at time 2, these unconnected communities get connected through a new movie. Films that occupy cultural holes bridge clusters of artistic content. They combine cultural elements that have not been combined before and are, thus, novel but still connected. They connect existing ideas in novel ways.

Literacy

The second reference style of interest is literacy which captures the number of used references. Filmmakers signal literacy when they incorporate many references into their films. Using a breadth of references signals a filmmaker's ability to create something new based on an existing body of conventions. For example, Tarantino's *Pulp Fiction* (1994) includes references to more than 150 films and by today is referenced by about 990 films (incl. all countries, TV, and feature films). Several film critics and industry publications discussed Tarantino's reference style—characterized by a wealth of references—as part of his artistic signature as a filmmaker.[2] While using many references certainly signals literacy, there may be a threshold that using too many references could be interpreted as simply copying rather than creating something new. I expect the number of used references to be conducive to peer recognition once the field has acquired artistic legitimacy. While referencing had no collectively defined meaning for Golden Age

brokers, in this case, films, may gain an advantage by bridging structural holes as they gain access to and can combine a diverse pool of ideas.

[2] Tarantino admits in a 1994 interview with Empire magazine that he steals "from every single movie ever made." His visual references have become part of his signature style (Wohl 2019). While some references are subtle hints, others constitute almost identical replications. Source: https://www.businessinsider.com/quentin-tarantino-movies-steals-cinema-homage-reference-2019-7?r=DE&IR=T

filmmakers, showing historical film literacy became fundamental for the artistic notion among New Hollywood filmmakers.

Openness

Filmmakers borrow artistic content from various sources, often spanning regional and genre boundaries as it signals awareness of other cultures (Janssen et al. 2008). I expect that including non-US film references is beneficial for attracting references as it indicates cultural openness and a universal understanding of film as an art form. Specifically, I expect references to European films as influential in acquiring peer recognition. European filmmaking had a significant impact on US filmmakers since the 1920s when film movements such as German Expressionism, Italian Realism (1940s), and the French Nouvelle Vague (1960s) emerged and when European filmmakers escaped Fascism in the 1930s and 1940s (Horak 1995). Referencing European films should be particularly rewarded as of the 1960s when New Hollywood built their identity of auteur filmmaking on the ideas of French Nouvelle Vague critics and filmmakers. As Carroll (1982: 72) describes it:

> "[A] number of the American auteurs of the new Hollywood were early admirers of French critic and filmmaker Jean-Luc Godard. Some features of Godard that caught their eye included his loose form, mood shifting, improvisation, and jump-cutting; his attempt at combining formalism and realism, documentary techniques and Eisensteinian montage; and, of course, his use of allusion to film history […]".

Though from today's point of view, citing European and, thus, other Western films seems far away from our notion of cultural openness, historically, I expect it to be a meaningful influence on peer recognition.

Analytical strategy

Data and Sample

I retrieve information on films and their references from the Internet Movie Database (IMDb). IMDb is a rich digital data repository, which includes information on movies and their respective crews and casts over an extensive time.[3] It is created open-source, and IMDb employees regularly revise its data quality and completeness. Several sociological studies have used this data source to examine diverse contexts (Cattani and Ferriani 2008; Cattani et al. 2014; Keuschnigg and Wimmer 2017; Lutter 2015; Max Wei 2020; Sorenson and Waguespack 2006; Zuckerman et al. 2003). Figure A.1 in the appendix includes analyses of potential selectivity concerns of IMDb as a data source.

I include information on references from the section on "connections" to other films on IMDb. There are different types of connections listed in the IMDb, ranging from active ones, such as "references," to passive ones, such as "version of" or "remade as." I only consider titles listed as "references" because I seek to show to what extent filmmakers actively implement the contents of previous films into their works (rather than spoofs or remakes). Following the IMDb's definition, a film includes a reference if it "references or pays homage to a previous title (i.e., a still/poster/artifact; mentioned by name; scene discussed by characters; dialog quoted in a non-spoofing way)."

The sample includes U.S. American referencing films released between 1930 and 1995. As the dependent variable measures how many times a movie was referenced up to five years after its release, the sample includes referencing films only until 1995. Referenced films can also come from earlier periods and countries other than the US. I include the following genres: action, adventure, animation, biography, comedy, crime, documentary, drama, fantasy, family, film-noir, history, horror, musical, music, mystery, romance, sci-fi, short, sport, thriller, war,

[3] The dataset was retrieved via ftp://ftp.fu-berlin.de/pub/misc/movies/database/ in September 2017.

western. This results in an overall sample of 5,414 films. Table 1 reports descriptive statistics on the number of released films that used references and the number of references per film.

Table 1
Descriptive statistics for each period.

	1930-1959	1960-1979	1980-1995
Overall number of released films	24,641	10,008	10,969
Num of referencing films	1,365	1,293	2,756
Mean num used references per film	1.75	2.92	5.06
SD num used references	2.06	3.82	10.27
Median num used references	1	2	3
Min	1	1	1
Max	26	51	260
Number of filmmakers	4,520	3,092	6,498
Mean num of filmmakers per film	3.31	2.39	2.36

It is important to note that between 1930 and 1995, many films did not include any references. Out of 45,618 films released during this time, only 11.86% used references. The subsample of 5,414 citing films is likely to differ in specific characteristics from films that include no references. Table A.1 shows results from a logistic regression analysis revealing the differences between films that use and those that do not use references. The results indicate that throughout all periods, films that were better equipped with economic resources—measured through crew size—were made by one director and not many, and, for the Golden Age and the New Hollywood, made by less experienced directors were more likely to use references. Horror, fantasy, and animation films were more likely to use references during the Golden Age. At the same time, there was no large genre effect during the New Hollywood or the Blockbuster era. These results suggest that the sample of films that used references varied significantly from films that did not use references. Filmmakers that used references were part of a small elite better equipped financially and in more creative control compared to others. However, these differences do not question the further analytical approach and findings because this study is

about peer recognition dynamics within a specific community of filmmakers. While this community constitutes a subset of the larger field, it is still sufficiently large in absolute terms.

Measurement of dependent variable: Peer recognition

I measure peer recognition through the number of references a film attracts from other American films until five years after its release. I focus on the first five years after a film's release to capture peer recognition rather than ex-post consecration by later filmmakers. For example, for *The Godfather*, which was released in 1972, I count all acquired references up until 1977. I consider three distinct periods: 1930-1959, 1960-1979, and 1980-1995. These periods are historically meaningful as they reflect the different stages of the field of Hollywood filmmaking from the so-called Golden Age, the New Hollywood period, and the Blockbuster era (Baumann 2007). For the first period, 1930-1959, the number of acquired references ranges between 0 to 12 (mean = 0.27). For the second period, 1960-1979, it ranges from 0 to 27 (mean = 0.51), and for the period 1980 and 1995 it ranges from 0 to 32 (mean = 0.78). Notably, most films (73.7%) do not attract references, and 15.5% attract only one reference within five years after release. This yields an extremely skewed distribution of the peer recognition variable (see also Figure A.2 for a graphical display of the dependent and all independent variables).

Measurement of independent variables: Reference styles

I examine to what extent a film's reference style influences its attraction of references. Reference style captures the used references' combinatorial novelty, literacy, and openness. I measure novelty by calculating a node's betweenness centrality in the cumulative reference network. Betweenness centrality captures to what extent a selected node builds a bridge between previously unconnected nodes. Higher betweenness centrality indicates a higher bridging capacity and, thus, a film's novel combination of film references. For each film, the

calculation is based on the cumulative network between 1920 and the year of a film's release. For a movie released in 1980, this would mean that the network consists of all referencing and referenced films between 1920 and 1980.

Figure 4 depicts the cumulative reference network between 1920 and 1980. The network shows a densely connected core in the middle and a periphery of small cliques. These smaller cliques consist of films that cite otherwise uncited films. For an illustration of a movie with high betweenness centrality and, thus, high bridging capacity, I zoom further into the network to the film *The Shining* (1980). In this network visualization, the film is placed at the bottom left with ties reaching out to all different directions. *The Shining* refers to a diverse set of films, combining films such as *Nosferatu* with *Last Year at Marienbad* and many more. The film's high betweenness centrality score indicates that it builds bridges between films that were not previously combined. It recombines artistic content in novel ways and, thus, differentiates itself from other films that either incorporate creative content that is too different or too similar to other films.

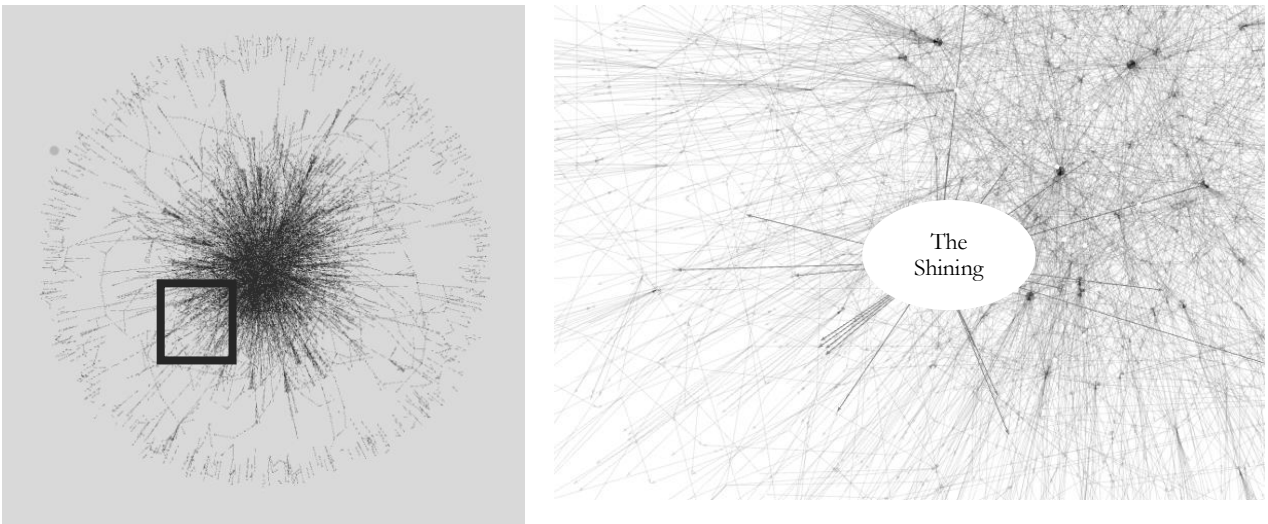

Fig. 4. Cumulative reference network 1920-1980. The left part shows the overall network, the right part zooms into the sub-community around *The Shining* (1980).

A low betweenness centrality indicates that a film uses references that connect either too much or too little with the contemporary community's used references. For example, *Forbidden Zone* (1980) includes six references that no other film has ever used before. While the film's combination of references is very original, it has low betweenness centrality because of its lacking overlap in references with other films. The other extreme would be a film such as *My Bodyguard* (1980). It also has a low betweenness centrality but one that stems from too much overlap with the references other films use. It refers only to films that other films have abundantly cited before, such as *King Kong* and *Star Wars*. The combination of references *My Bodyguard* uses is, thus, far from novel in that it builds no other bridges. In sum, a high betweenness centrality score occurs if a film builds a bridge between different cultural communities. A low betweenness centrality score occurs if a film uses references that no other film has ever used before or too many similar references that have been used in similar combinations.

I measure literacy through the number of references a film uses. I include a squared term as there may be a threshold to the extent that including more references may not be positively recognized but perceived as copying or simply confusing. To examine potential multicollinearity issues, especially between novelty and literacy, I calculate variance inflation factors (VIF). As table A.2 shows the results yield a VIF of 10.9 for literacy in the last period, which is still sufficiently close to the critical value of 10.

I measure openness through a dichotomous variable indicating if a film uses at least one reference to a European film (openness=1) or none (openness=0). This Western-centric notion of openness builds on the film historical literature that suggests the significance of French, German, Italian, and Russian cinema for Hollywood filmmakers (Carroll 1982; Horak 1995). Figure A.2 in the Appendix shows the distributions of the different reference styles.

I control for characteristics that may correlate with a film's reference styles. These are a film's compatibility with the auteur ideal, its economic resources, and filmmakers' mean experience. An important film characteristic is its compatibility with auteur standards. The auteur identity implies that only one director oversees the filmmaking process, not two or three directors. I include a binary variable that indicates if only one director made the film as opposed to many directors that shared the role. Being the only film director increases artistic autonomy and, as of the 1960s, may reflect a film's adherence to auteur standards. Economic resources may further influence a film's novelty, literacy, and openness as they allow for more artistic flexibility in the production process (Becker 1982). I use crew size as a proxy variable for a film's budget (for a similar approach, see Rossman et al. 2010). Finally, I include the average experience of the director and writer team by calculating the mean number of each filmmaker's projects. Filmmakers with more experience may be more trained in using references and therefore attract more peer recognition.

Method

I use negative binomial regression analyses for count data to consider that the distribution of the dependent variable (i.e., the number of attracted references) is extremely skewed and zero-inflated (variance exceeds mean, which indicates overdispersion; Mean = 1.019, SD = 3.29. See Lynn 2014 for a similar approach).[4]

Results

Figure 4 and tables 2-4 show results from the negative binomial regression analysis. The coefficient shows the expected log count of the number of attracted references for each one-

[4] The analyses are run in R using the MASS package.

unit increase in a variable. Since the calculations of the coefficients are based on different samples, I only interpret the direction and the significance of the estimates.

During Hollywood's Golden Age (1930-1959) and the Blockbuster era (1980-1995), a film's combinatorial novelty of used references positively impacted the number of attracted references. The higher a film's combinatorial novelty—i.e., the higher its betweenness centrality—the higher its number of attracted references within the next five years after release. Interestingly, films were not rewarded for combinatorial novelty during the New Hollywood era (1960-1989). The results from the stepwise regression (table 3) show that the effect of novelty is positive, but once controlling for the number of used references, it turns negative.

The effect of literacy—i.e., the number of used references—also varies across the three historical periods. While the number of used references during the Golden Age did not affect the number of attracted references, the effect turned positive for the New Hollywood and the Blockbuster era. The more references a film uses, the more references it receives from peers. The significant squared literacy term for the New Hollywood and Blockbuster era indicates that this relationship is reversed for those films using too many references: using too many references is associated with lower levels of acquired references.

Contrasting this finding for the Golden Age with the subsequent periods suggests a shift in the meaning of references. Even though Golden Age filmmakers already engaged in referencing, the wealth of citations did not play a significant role, and they did not penalize each other for using too many references. A reason for this may be that referencing as an aesthetic device had no collectively defined meaning before the New Hollywood era (Biguenet 1998; Carroll 1982). However, once the community had formed a consensus on the standards of peer recognition, using too many references may have been interpreted as copying rather than paying homage. Contrasting the positive coefficient for literacy and the negative coefficient for combinatorial novelty during the New Hollywood era suggests that filmmakers

of that time were more rewarded for experimenting with many references rather than combining stylistic elements in novel ways. This finding implies that avant-garde groups may not be so consumed with achieving a balance between originality and distinction but first must identify the set of conventions through constant and broad engagement in referencing (Lena and Peterson 2008).

The effect of cultural openness—i.e., using European references—is significantly positive for the New Hollywood and Blockbuster era. During these two periods, films that include at least one reference to a European film attract more references than films without any European references. One may argue that this pattern reflects the limited access to European films at that time. Overall, only 7.5% of Golden Age films referenced at least one European film, in contrast to 32% of New Hollywood films and 39% of Blockbuster era films. However, German Expressionism and Soviet Montage Theory (both 1910s-1930s) were important film movements that took place in the earliest days of Hollywood cinema. In addition, during the 1930s and 1940s, many filmmakers escaped European Fascism to Hollywood. The influence of European on American film could, thus, have been larger and more rewarded during the studio era. The contrast between the nonsignificant coefficient during the Golden Age and the significant coefficient during the New Hollywood and Blockbuster era indicates a shift in the meaning and appreciation of films with European influence. It also suggests the rise of a more global understanding of cinema as a universal art form.

The shift towards more artistic filmmaking also becomes visible in the increasing importance of auteur filmmaking. The compatibility with auteur standards positively affects the number of attracted references during the New Hollywood era and the Blockbuster era. Films made by only one director attract more references than films in which several directors share creative control. Crew size has a strong positive effect across all periods. Films that are better equipped with economic resources attract more references than films that are less

equipped. This finding is in line with Becker's (1982) reminder that successful art creation requires resources. The mean level of experience of the director and writer team has no significant effect during any of the periods. Films written and directed by filmmakers with more project experience do not attract more references than films with less experienced writers and directors. In a separate analysis, I measured experience by calculating the mean number of years per project team, but the results remain non-significant. This non-significant effect is essential to rule out that the observed results are conflated with filmmakers' career lengths. It also encourages the study of cultural objects and their properties rather than producers as the unit of analysis (Rawlings and Childress 2019).

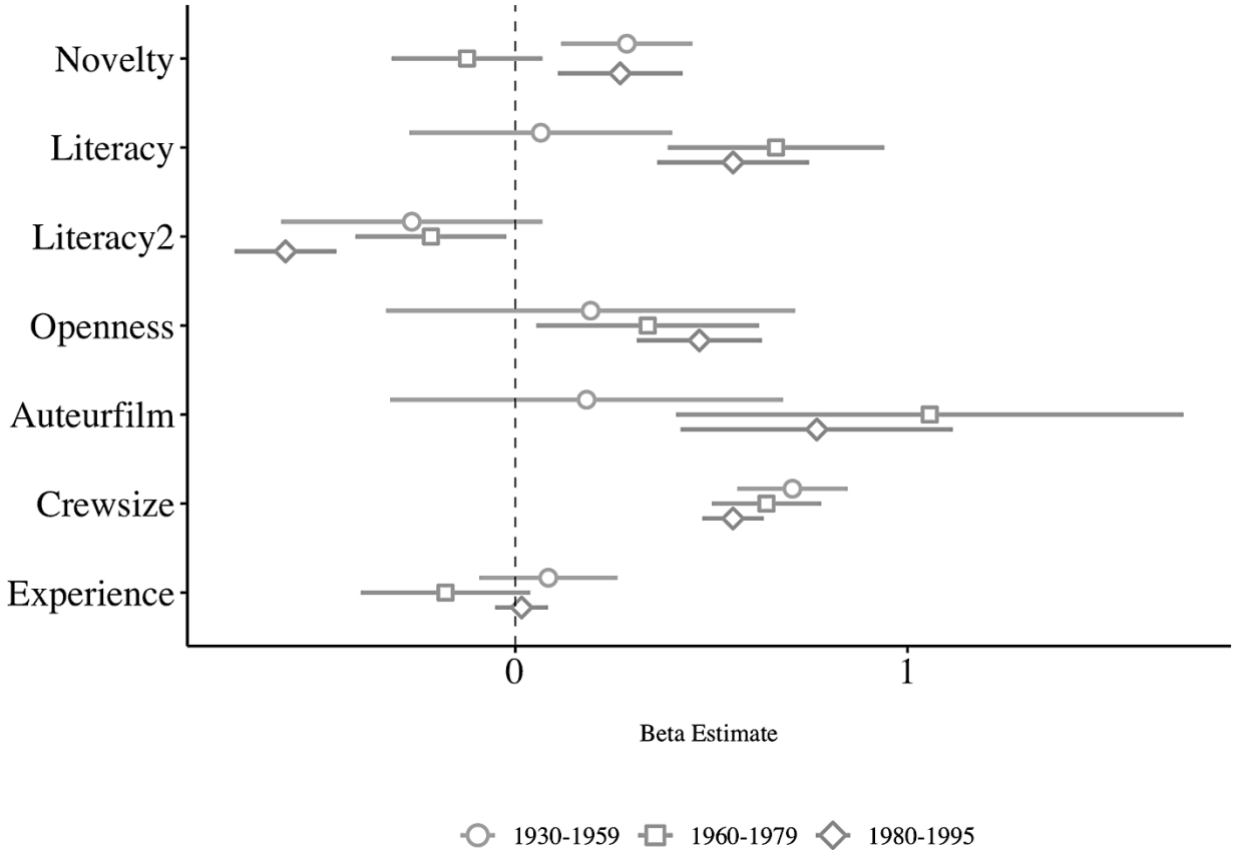

Fig. 5. The effect of reference styles on the number of acquired references. Standardized Coefficients with clustered standard errors from negative binomial models predicting the log count of acquired references by historical period. Horizontal bars represent 95% CI.

In sum, the results show that reference styles influence the amount of peer recognition differently throughout the history of Hollywood filmmaking. While combinatorial novelty matters during the Golden Age and the Blockbuster era, it does not play a significant role during the New Hollywood period. Signaling literacy through the wealth of references positively affects peer recognition during the New Hollywood era and the Blockbuster era. The effect, however, turns around once too many references are used. Signaling cultural openness toward European films gains importance in the New Hollywood period and remains relevant during the Blockbuster era.

Discussion and conclusion

The results provide evidence that a film's reference style affects its peer recognition but that the extent varies across different periods throughout the evolution of a cultural field. Revisiting my initial question, "Why do some films attract more peer recognition than others" I argue that a film's engagement with the community of filmmakers and their movies matters, but the extent depends on the historical conditions of the cultural field.

The findings show that films released during the Golden Age and the Blockbuster era benefitted from combinatorial novelty. Surprisingly films of the New Hollywood era did not attract more references by bridging different cultural communities. This may be because referencing as an aesthetic device had just emerged at that time, and filmmakers could freely experiment with references as long as they included many of them. Films benefited from signaling literacy but only as referencing, established as an artistic practice in the 1960s. Similarly, films of the New Hollywood and Blockbuster era did not benefit from extensive use of references as this may have been interpreted as copying rather than showing historical film literacy. Films benefitted from incorporating cultural openness, but only once the respective artistic standards—i.e., the consecration of European films throughout the 1960s— were

established. The same pattern applies to the significance of adhering to auteur standards. While Golden Age filmmakers had little shared understanding of themselves as individual artists, New Hollywood filmmakers established auteurism as a novel filmmaker identity in Hollywood that guided their valuation of films.

The results speak to a large sociological literature arguing that peers (and public audiences) favor artworks that balance originality and conformity (Askin and Mauskapf 2017; Godart and Galunic 2019; Lena and Pachucki 2013; Rossman et al. 2010; Silver et al. 2022). The findings, however, indicate that for emerging art worlds, overall literacy of cultural references may matter more than combining them in novel ways. The results also resonate with earlier sociological works that argue that standards for peer recognition are not fixed but evolve historically (Baumann 2001; Crane 1976; Schmutz et al. 2010; Schmutz and van Venrooij 2018). Once communities create consensus, new coming artists often adopt these standards and, thus, contribute to their institutionalization (Lena 2012; Lena and Peterson 2008).

In concluding, I would like to point out several limitations of my study. While the dataset provides comprehensive information about the field of Hollywood filmmaking, it misses some relevant film information. For example, I could not account for more fine-grained data on the used references or other stylistic elements, such as visual and plot features. Likewise, this large sample included no systematic information on studio affiliation, budgets, or box-office revenues. Since I only focused on the cultural field of Hollywood filmmaking, I do not know to what extent I can generalize the findings to other creative industries. It would be fascinating to compare the results to peer recognition dynamics in other contemporary cultural forms that underwent artistic legitimation, such as video gaming.

Table 2

Results of negative binomial regression analysis, 1930-1959. Effect of a film's reference style on the number of acquired references until 5 years after release. Non-dichotomous variables are z standardized.

	Model 1	Model 2	Model 3	Model 4
(Intercept)	-1.76 ***	-1.76 ***	-1.75 ***	-1.76 ***
	(0.25)	(0.25)	(0.25)	(0.25)
Novelty	0.28 ***	0.18 **	0.25 **	0.25 **
	(0.09)	(0.05)	(0.09)	(0.09)
Literacy	0.06		-0.12	-0.13
	(0.17)		(0.10)	(0.11)
Literacy2	-0.26			
	(0.17)			
Openness	0.19			0.20
	(0.27)			(0.27)
Auteurfilm	0.18	0.21	0.20	0.19
	(0.26)	(0.26)	(0.26)	(0.25)
Crewsize	0.71 ***	0.72 ***	0.72 ***	0.71 ***
	(0.07)	(0.07)	(0.07)	(0.07)
Experience	0.08	0.08	0.08	0.08
	(0.09)	(0.09)	(0.09)	(0.09)
N	1358	1360	1360	1358
AIC	1605.54	1604.66	1605.51	1606.26
BIC	1652.47	1635.95	1642.02	1647.97
Pseudo R2	0.11	0.11	0.11	0.11

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table 3

Results of negative binomial regression analysis, 1960-1979. Effect of a film's reference style on the number of acquired references until 5 years after release. Non-dichotomous variables are z standardized.

	Model 1	Model 2	Model 3	Model 4
(Intercept)	-2.24 ***	-2.18 ***	-2.16 ***	-2.25 ***
	(0.33)	(0.34)	(0.33)	(0.33)
Novelty	-0.12	0.41 ***	-0.18	-0.13
	(0.10)	(0.05)	(0.10)	(0.10)
Literacy	0.66 ***		0.60 ***	0.47 ***
	(0.14)		(0.10)	(0.10)
Literacy2	-0.22 *			
	(0.10)			
Openness	0.34 *			0.41 **
	(0.14)			(0.14)
Auteurfilm	1.06 **	1.19 ***	1.12 ***	1.06 **
	(0.33)	(0.35)	(0.33)	(0.33)
Crewsize	0.64 ***	0.69 ***	0.67 ***	0.65 ***
	(0.07)	(0.07)	(0.07)	(0.07)
Experience	-0.18	-0.28 *	-0.19	-0.19
	(0.11)	(0.12)	(0.11)	(0.11)
N	1260	1261	1261	1260
AIC	2023.48	2068.21	2040.92	2025.98
BIC	2069.73	2099.04	2076.89	2067.10
Pseudo R2	0.18	0.15	0.17	0.17

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table 4

Results of negative binomial regression analysis, 1980-1995. Effect of a film's reference style on the number of acquired references until 5 years after release. Non-dichotomous variables are z standardized.

	Model 1	Model 2	Model 3	Model 4
(Intercept)	-1.54 ***	-1.19 ***	-1.19 ***	-1.56 ***
	(0.18)	(0.18)	(0.18)	(0.18)
Novelty	0.27 ***	0.63 ***	0.22 *	0.28 **
	(0.08)	(0.03)	(0.09)	(0.08)
Literacy	0.56 ***		0.54 ***	0.24 **
	(0.10)		(0.09)	(0.09)
Literacy2	-0.59 ***			
	(0.07)			
Openness	0.47 ***			0.61 ***
	(0.08)			(0.08)
Auteurfilm	0.77 ***	0.68 ***	0.67 ***	0.76 ***
	(0.18)	(0.18)	(0.18)	(0.18)
Crewsize	0.55 ***	0.61 ***	0.57 ***	0.58 ***
	(0.04)	(0.04)	(0.04)	(0.04)
Experience	0.02	0.03	0.03	0.02
	(0.03)	(0.03)	(0.03)	(0.03)
N	2645	2666	2666	2645
AIC	5571.18	5771.27	5749.99	5620.00
BIC	5624.10	5806.60	5791.21	5667.04
Pseudo R2	0.20	0.16	0.17	0.18

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

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Appendix

Table A.1

Selection analysis on how films that use references differ from films that do not. All non-dichotomous variables are z-standardized by time period. (Genre reference category = action)

	Golden Age	New Hollywood	Blockbuster era
(Intercept)	-4.42 ***	-2.21 ***	-1.53 ***
	(0.19)	(0.17)	(0.14)
crewsize	0.59 ***	0.73 ***	1.15 ***
	(0.03)	(0.04)	(0.04)
auteurfilm.dir	0.44 ***	0.43 **	0.25 *
	(0.11)	(0.14)	(0.12)
mean.exp	-0.14 ***	-0.14 *	0.08
	(0.04)	(0.07)	(0.06)
genre1adventure	0.89 ***	-0.19	0.17
	(0.20)	(0.16)	(0.13)
genre1animation	2.11 ***	-1.10 ***	-0.17
	(0.17)	(0.20)	(0.18)
genre1biography	1.09 ***	-0.23	0.37 *
	(0.27)	(0.23)	(0.17)
genre1comedy	1.12 ***	0.41 ***	0.75 ***
	(0.17)	(0.11)	(0.08)
genre1crime	1.09 ***	0.10	0.23
	(0.19)	(0.16)	(0.13)
genre1documentary	0.34	-0.65 ***	-0.75 ***
	(0.26)	(0.16)	(0.14)
genre1drama	0.60 ***	-0.49 ***	-0.43 ***
	(0.18)	(0.12)	(0.09)

genre1family	0.97	-0.90	-0.02
	(0.76)	(0.54)	(0.38)
genre1fantasy	2.32 ***	-0.12	0.59 *
	(0.40)	(0.43)	(0.28)
genre1film-noir	1.50 **		
	(0.56)		
genre1history	1.47 **	-13.29	-11.45
	(0.50)	(482.31)	(196.77)
genre1horror	2.29 ***	0.54 ***	0.70 ***
	(0.25)	(0.15)	(0.11)
genre1music	-1.44 *	-0.99	-1.80 *
	(0.73)	(1.03)	(0.72)
genre1musical	0.59 *	0.35	0.18
	(0.26)	(0.53)	(0.60)
genre1mystery	0.19	-0.49	-0.64
	(0.42)	(0.50)	(0.39)
genre1romance	-12.86	-14.01	-1.67 *
	(157.20)	(233.59)	(0.77)
genre1sci-fi	1.55 **	-0.58	-0.22
	(0.56)	(0.42)	(0.32)
genre1short	0.13	-2.41 ***	-1.71 ***
	(0.32)	(0.36)	(0.24)
genre1sport	-12.70	-13.20	-11.55
	(1185.16)	(717.50)	(264.00)
genre1thriller	1.11	-0.26	-1.57 ***
	(0.76)	(0.39)	(0.30)
genre1war	-12.93	-14.13	0.15

	(749.65)	(502.39)	(0.98)
genre1western	-1.92 ***	-1.40 ***	-1.69 *
	(0.47)	(0.32)	(0.77)
N	24044	9200	9767
AIC	9513.60	6095.44	8485.06
BIC	9723.88	6273.62	8664.73
Pseudo R2	0.11	0.24	0.38

*** p < 0.001; ** p < 0.01; * p < 0.05.

Table A.2

Analysis of potential multicollinearity. The table shows the Variance Inflation Factor (VIF) and tolerance levels (TOL) for all independent variables.

	1930-1959		1960-1979		1980-1995	
	VIF	TOL	VIF	TOL	VIF	TOL
Novelty	2.03	0.49	3.41	0.29	8.16	0.12
Literacy	5.93	0.17	6.62	0.15	10.87	0.09
Literacy2	5.06	0.2	3.83	0.26	3.79	0.26
Openness	1.06	0.94	1.18	0.85	1.19	0.84
Auteurfilm	1.09	0.92	1.01	0.99	1.01	0.99
Crewsize	1.22	0.82	1.05	0.96	1.05	0.95
Experience	1.14	0.87	1.02	0.98	1.01	0.99

Fig. A.1

Analysis of sample selection. Distribution of IMDb user votes and average rating scores across indegree and outdegree. The figure shows that films that use references or are referenced do not significantly correlate with IMDb user popularity.

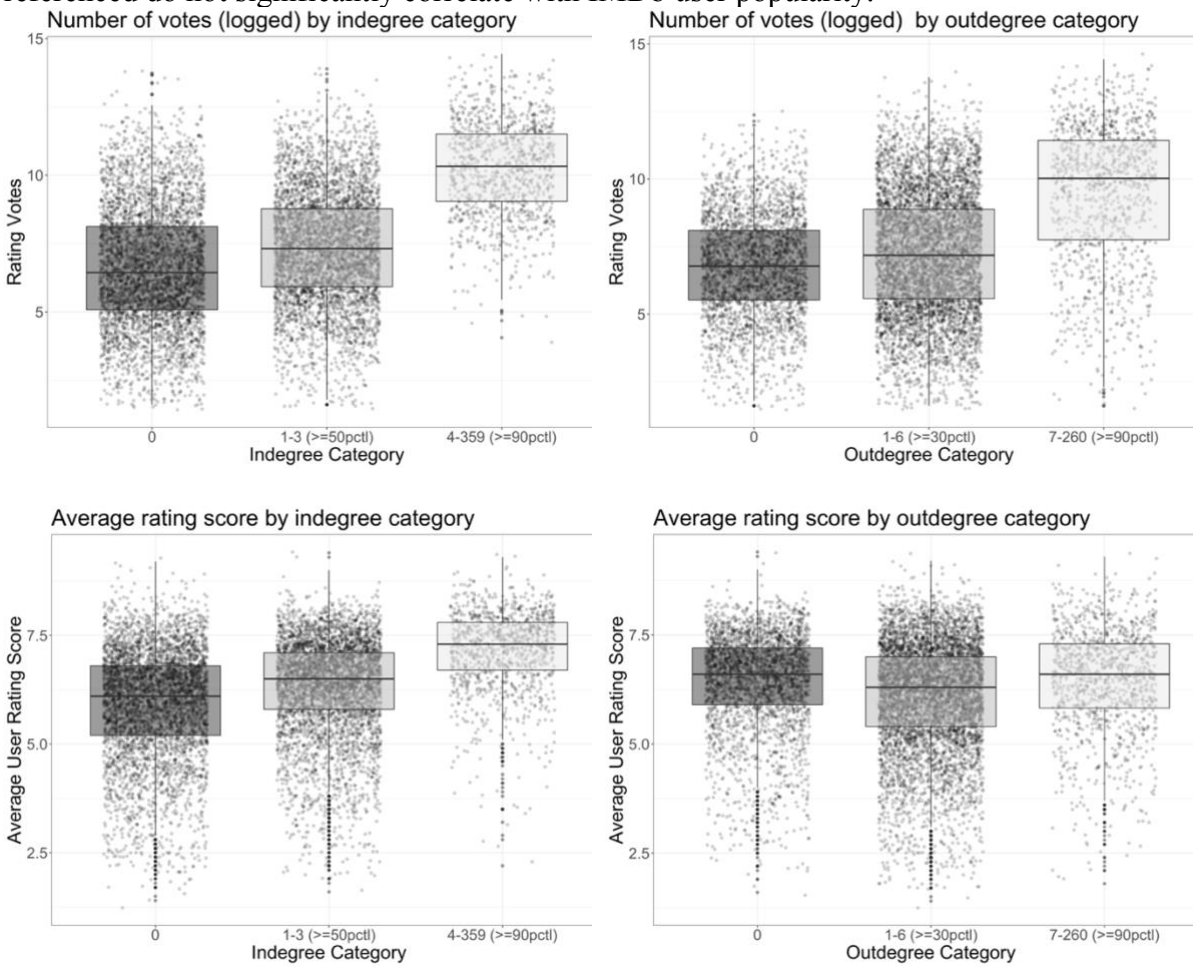
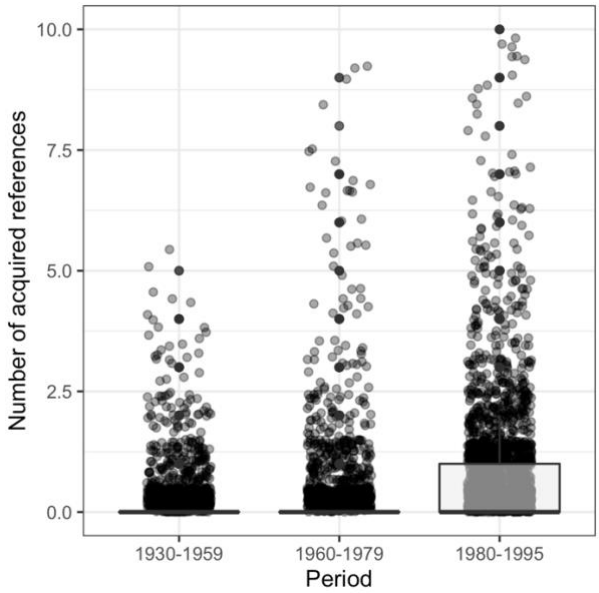
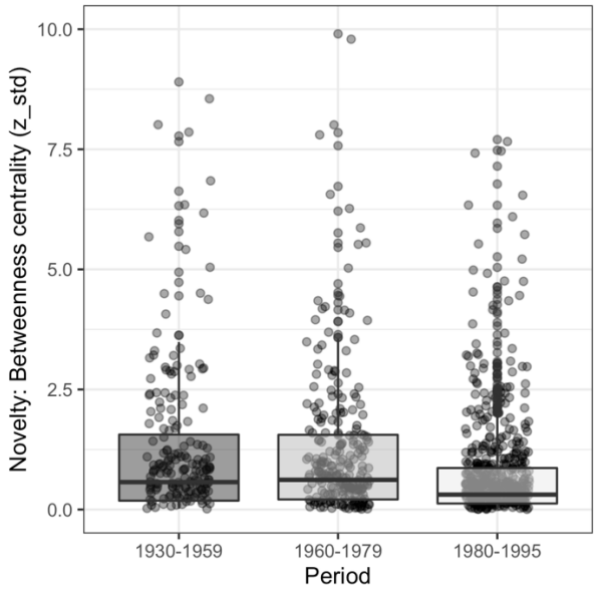


Fig. A.2
Distribution of variables. Outliers are cut at a value of 10 to improve graphical display.

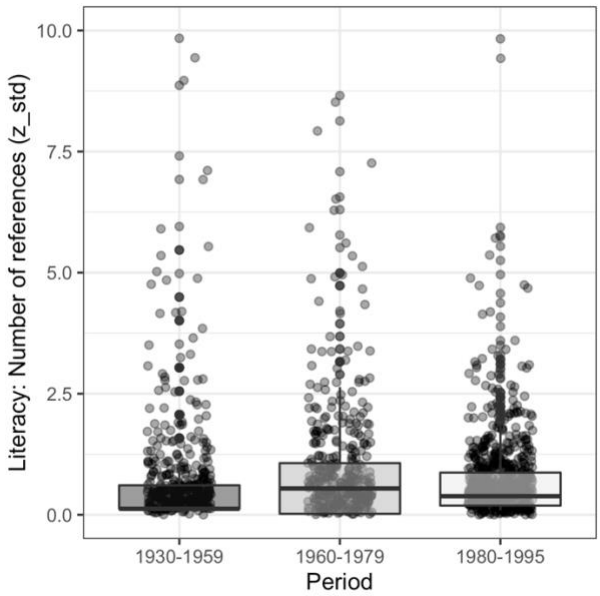
Number of acquired references



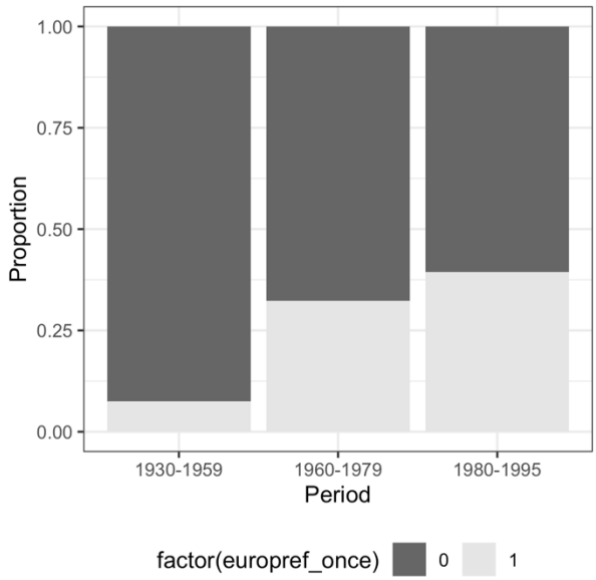
Novelty: Betweenness centrality



Literacy: Number of used references



Openness: Reference to European Film



The Emergence of Status Orders in Hollywood Filmmaking. Evolution of a Cultural Field, 1920 to 2000

Mark Wittek

Katharina Burgdorf

Abstract

How do status orders emerge in cultural fields? Our study sheds new light on this question by investigating the interplay of networks, status, and culture among Hollywood filmmakers from 1920 to 2000. Information on artistic references and collaborations of more than 13,000 filmmakers retrieved from the Internet Movie Database (IMDb) allows us to examine long-term changes in the social organization of this cultural field. Our findings suggest that the distribution of social recognition—measured by filmmakers' prominence in collaborative ties and artistic references—became more stratified as the field grew and matured. Furthermore, collaborations increasingly exhibited segregation according to filmmakers' artistic status during the New Hollywood era (1960-1985). This period was characterized by the rising prominence of a new generation of filmmakers who established film as an art form in the U.S. This article shows that contextual characteristics, such as a field's size and institutional environment, can foster or impede stratification and segregation in collaborative networks among cultural producers.

Introduction

Various fields of cultural production, such as literary writing, making music, and academia, are marked by an unequal distribution of recognition, esteem, and material resources (Anheier, Gerhards, and Romo 1995; Bourdieu 1993; Crossley 2009; Faulkner 1983; Lena and Pachucki 2013; Merton 1968; Newman 2001). In addition, cultural fields are often characterized by closed circles of status similar actors who interact and collaborate (Bourdieu 1988, 1993; Cattani, Ferriani, and Allison 2014; Lena and Pachucki 2013; Ma et al. 2020). Previous studies have shown how actors' field position and networks shape their individual trajectories (e.g., Borkenhagen and Martin 2018; Faulkner 2017; Jones 2001; Lutter 2015), and illustrated that access to collaboration partners or advantageous network positions is crucial for individuals' economic and cultural success (Burt 2004; Ferriani, Cattani, and Baden-Fuller 2009; Lutter 2014, 2015; Uzzi and Spiro 2005; Vedres and Cserpes 2020, 2021).

Yet, less systematic attention has been devoted to the question of how the network structure of cultural fields comes about in the first place and changes over time (Mohr et al. 2020). A

reason for this research gap is that collecting complete network data for an entire cultural field was impossible before large digital data sources became widely available—e.g., databases of scientific publications (Barabâsi et al. 2002; Moody 2004; Newman 2001) or artistic contributions (De Vaan, Stark, and Vedres 2015; Lena 2004; Rossman, Esparza, and Bonacich 2010). While analyzing how positional characteristics of individuals or project teams affect their outcomes is already methodologically challenging, modeling the structure of large networks is still in its infancy and riddled with technical problems such as model degeneracy, high requirements of computational power, and non-comparability of estimates across network models (Duxbury 2021; Hunter 2007; Martin 2020; Snijders 2011).

Using a dataset that includes collaborations and references among more than 13,000 U.S. American filmmakers over 80 years and recent advances in network analysis (Duxbury 2021), our study overcomes these methodological challenges and sheds light on the origins of stratification in artistic fields. By examining long-term changes in the social structure of one of the most influential fields of cultural production in the world, Hollywood filmmaking (Baumann 2007), we go beyond accounts that focus exclusively on the role of networks for individual-level outcomes. Thereby, we build on previous work that stressed the importance of social networks for cultural production (Becker 2008; Bottero and Crossley 2011; Crossley 2019; Lena 2012; Phillips 2013) and highlighted that social recognition structures artistic fields (Anheier et al. 1995; Bourdieu 1983, 1993; Lena and Pachucki 2013; Pachucki 2012).

Our investigation of Hollywood filmmaking synthesizes these streams of literature and offers the first network study that maps long-term changes in the interplay of networks and status in a cultural field. In particular, we trace during which periods Hollywood was characterized by a stratified order and socially closed cultural elites among filmmakers. Also, our analyses investigate the social correlates of major artistic developments identified by film history scholars, such as the turn from a studio based-system of filmmaking to the New

Hollywood era marked by a more artistic style of filmmaking (Baumann 2001; Biskind 1999; Bordwell, Staiger, and Thompson 1985; King 2002).

Our results indicate that the distribution of social recognition changed as the field of Hollywood filmmaking matured. More filmmakers entered the industry, and an elite of writers and directors formed, attracting disproportional shares of collaborative ties and artistic references. These findings resonate with previous accounts that relate the size of a context to its inequality in social recognition (Blau 1968; Mayhew 1973; Mayhew and Levinger 1976; McFarland et al. 2014). In addition, our findings suggest that artistic status influenced collaborations more strongly during the New Hollywood era of the 1960s and 1970s. This period saw the downfall of the studio system and a shift in the perception of Hollywood films from entertainment products to artworks in their own right (Baumann 2001, 2007; Becker 2008; Faulkner 2017).[1] We find that during the New Hollywood period, filmmakers of similar artistic status tended to form collaborative ties more often than status dissimilar filmmakers, while this tendency was less pronounced or absent in other periods.

Methodologically, our article shows the fruitfulness of applying computational tools to answer longstanding sociological questions (Edelmann et al. 2020; Lewis 2021; McFarland, Lewis, and Goldberg 2016) as we guide our analysis of a large, digital dataset by expectations derived from sociological theory and detailed consideration of Hollywood's historical development (Mohr et al. 2020). In addition, our results are important for the field of social network analysis and relational theories of social status. While the majority of applications of network models are still limited to analyzing relatively small networks among children, adolescents, or students, our investigation illustrates that it is possible and analytically fruitful

[1] The term "studio system" refers to the Golden Age of Hollywood (1920s-1960s) and describes the power oligopoly of the Big Five (Paramount Pictures, 20th Century Fox, Metro-Goldwyn-Mayer (MGM), Warner Bros., RKO Pictures) and Little Three studios (Universal Studios, Columbia Pictures, United Artists). It was characterized by the long-term employment of creative personnel and studios' unified ownership (vertical integration) of distribution and exhibition.

to analyze larger social systems with network models such as exponential random graph models (ERGMs; Lusher, Koskinen, and Robins 2013). Finally, our research highlights that the interplay between status and networks requires time to evolve and can change depending on the institutional environment in which a network is embedded.

STATUS ORDERS IN CULTURAL FIELDS

Previous sociological work suggests that cultural fields are marked by an unequal distribution of social recognition and material resources (Bourdieu 1993; Cattani and Ferriani 2008; Lena and Pachucki 2013; Lutter 2015). While inequality is often viewed as an average tendency—persistently shaping the structure of cultural fields—contemporary and earlier theoretical accounts suggest that the structure of organizational (Hannan and Freeman 1993; Padgett and Powell 2012), cultural (Baumann 2001; Becker 2008; Bourdieu 1984, 1993; White and White 1993), and scientific fields (Chubin 1976; Crane 1972; Frickel and Gross 2005; Jurgens et al. 2018; Kuhn 1970; Munoz-Najar Galvez, Heiberger, and McFarland 2019) changes over time. In the present study, we draw upon these dynamic perspectives and study the emergence of status inequalities in the cultural field of Hollywood filmmaking.

Our first theoretical considerations concern the question of whether a cultural field exhibits different levels of stratification in social recognition throughout its evolution. By social recognition, we mean filmmakers' prominence in collaboration and artistic reference networks. In the following, we build on previous scholars concerned with cultural fields (Becker 2008; Bourdieu 1993) and relational theories of status orders (Gould 2002; Podolny 2010) to argue that a field's size and maturity amplify inequality in the distribution of collaboration partners and artistic references.

Increasing Inequality in Collaborations

The first relational process under study is collaborative work, which is a constitutive of all labor in the arts and culture, including music (Becker 2008; Faulkner 1983, 2017; Lena 2012; Phillips 2013; Vedres 2017; Vedres and Cserpes 2020), theater and musicals (Serino, D'Ambrosio, and Ragozini 2017; Uzzi and Spiro 2005), video games (De Vaan et al. 2015), and films (Baumann 2007).[2]

Previous work on filmmaking suggests that collaborations facilitate the gathering of resources and information which allows filmmakers to manufacture artworks that are recognized and credited by an audience of peers (Cattani and Ferriani 2008; Lutter 2015).[3] Moreover, collaboration with high-status individuals increases filmmakers' odds of accumulating symbolic resources such as prizes (Ebbers and Wijnberg 2010; Rossman et al. 2010; Rossman and Schilke 2014). These benefits of collaborating with others should, in turn, facilitate further collaborations. This accumulation of a large stock of resources—including collaborators—by a small number of actors is commonly referred to as the Matthew effect (Bol, de Vaan, and van de Rijt 2018; Bothner, Godart, and Lee 2010; Merton 1968; Snijders and Steglich 2015). Just as the Matthew Effect produces an elite among scientists (Crane 1972; Eom and Fortunato 2011; Merton 1968; Newman 2001), we expect that a small number of filmmakers accumulated high numbers of collaborators over time.

In addition, we argue that the cycles of accumulation which link resources to collaborations and vice versa (for scientific fields, see Latour and Woolgar 1986) depend on the

[2] Outside of art worlds, the structure and consequences of collaboration continue to attract great interest in organizational sociology (Kilduff and Krackhardt 2008; Powell et al. 2005), the sociology of science (Blau 1994; Crane 1972; Friedkin 1978; Moody 2004), science and technology studies (Evans 2008; Knorr 1999; Latour 1987), and the study of political movements (Wang and Soule 2012).

[3] Often, resources are materials and tools such as pigments in painting (White and White 1993), cameras in photography or instruments in music (Becker 2008; Faulkner 1983, 2017). While some fields depend less on tangible resources—e.g., literary writing and poetry (Bourdieu 1993; Dubois 2018)—filmmaking is an art form that requires a lot of resources such as cinematic equipment and money to pay for large teams of personnel (Baumann 2007; Bordwell et al. 1985).

developmental stage of a cultural field. The beginning stage of cultural fields is typically characterized by a small avant-garde that pursues new artistic endeavors and is marked by a high turnover of members and a local mode of cultural production (Becker 2008; Lena 2012; Lena and Peterson 2008). Moreover, resources are scarce in nascent fields that exhibit little institutionalization, legitimation, or acclaim by public or critical audiences (Baumann 2007; Dubois 2018). Taken together, the lack of a stable community and potential access to funding and equipment during the early stages of Hollywood filmmaking should have made it harder for filmmakers to build a large number of collaborators. Only as more filmmakers entered the field, production companies emerged (Bordwell et al. 1985; Cattani and Ferriani 2008; Mezias and Mezias 2000; Schatz 1996), and an infrastructure of film distributors and cinemas developed (Bordwell et al. 1985). We expect that as field size increased more artists managed to forge long-term careers. Thereby, a new elite formed at the field's center, characterized by a small number of filmmakers who collaborated with many others.

This hypothesis can also be derived from a second stream of literature concerned with status orders in markets, organizational fields, and interactions in task-oriented groups (Borkenhagen and Martin 2018; Gondal 2018; Ma et al. 2020; Podolny 2010; Ridgeway 2019; Sauder, Lynn, and Podolny 2012). These theories define status as prestige, respect, recognition, and (psychological) deference received by others (Fiske 2011; Gould 2002; Manzo and Baldassarri 2014; Podolny 2010; Ridgeway 2019; Torlò and Lomi 2017). Following Podolny (2010), we assume that cultural producers derive information from status signals to reduce uncertainty when navigating cultural fields.[4] If uncertainty rises, status should play a more pronounced role for behavior since the heuristic usefulness of status recognition is greater in environments or

[4] The idea that humans draw upon cognitive heuristics to store and represent relational information is well supported by empirical evidence (Brashears 2013; Carnabuci, Emery, and Brinberg 2018; Krackhardt and Kilduff 1999). Perceiving others on a vertical dimension plays a crucial role in social cognition and shapes interaction in a variety of settings (Anderson, Hildreth, and Howland 2015; Berger, Cohen, and Zelditch Jr 1972; Fiske 2011; McMahan 2017; Ridgeway 1991).

situations that exhibit more uncertainty (Blau 1968; Fiske 2011; Mayhew 1973; McFarland et al. 2014; Podolny 2010). To retain their capacity to navigate the field—for instance, to decide whom they should collaborate with—humans tend to apply filters to the relational information they receive (Brashears 2013; Brashears and Quintane 2015; Dahlander and McFarland 2013; Lynn 2014; Mayhew 1973; Mayhew and Levinger 1976; McFarland et al. 2014).

In Hollywood filmmaking, only a few artists participated in the field in its first decades (Bordwell et al. 1985). Under these conditions, it is likely that artists were able to detailly monitor the actions of their peers. As the filmmaking industry matured, new filmmakers entered the field, and we assume that it became more difficult, or even impossible, to keep track of what others were doing. The field grew in size, and the uncertainty about the proficiency of potential collaborators increased. Therefore, we expect to see a heightened reliance on the one trait filmmakers could consider: the status of potential collaboration partners. Consequently, we expect more inequality in the distribution of collaborations over time because a growing field increases uncertainty, which in turn amplifies the effect of status recognition on the structure of networks.

Hypothesis 1. Inequality in the distribution of collaboration ties among cultural producers increases with a field's size and maturity.

Increasing Inequality in Artistic References

The second relational process we consider is artistic referencing. References among artists surface in artworks and are intelligible to other artists or informed outsiders such as critics or connoisseurs. Repeating the ideas of others is an important way to signal one's own position in a cultural field (Bourdieu 1993). Jazz musicians who imitate others' musical phrases, styles of playing (Berliner 2009) or selection of compositions (Phillips 2013), rap musicians who

sample tracks by fellow artists or repeat samples used by other musicians (Lena 2004; Lena and Pachucki 2013), and literary writers who refer to peers' books in their own texts (Bourdieu 1993) are all instances of artistic referencing.

Here, we build on previous studies that conceptualize Hollywood filmmakers' referrals to other movies as artistic referencing (Bioglio and Pensa 2018; Spitz and Horvát 2014). These references can take several forms, such as dialogue sequences or exact camera settings that one film borrows from another. According to scholars of film history, references can include "[…] quotations, the memorialization of past genres, the reworking of past genres, homages, and the recreation of 'classic' scenes, shots, plot motifs, lines of dialogue, themes, gestures, and so forth from film history […]" (Carroll 1982: 52). Biguenet (1998: 132) characterizes them as a "[…] direct reference by title or the inclusion of an actual clip from another film, a similarity to a famous character or a repetition of a classic shot, an imitation of a well-known scene or an allusion to an entire film genre." An example would be the final scene of Steven Spielberg's *Raiders of the Lost Ark* (1981). It includes a wide shot of aisles and wooden boxes stored in a warehouse, which is a reference to the final scene of Orson Welles' *Citizen Kane* (1941), see figure 1.

Figure 1. Example for Artistic References in Filmmaking

Image: *Citizen Kane* (Orson Welles, 1941) Image: *Raiders of the Lost Ark* (Steven Spielberg, 1981)

While past studies scrutinize the positive effects of collaborations on the accumulation of material and symbolic resources, such as career success or awards (Lutter 2015; Rossman et al. 2010), we know little about the role of artistic references in filmmaking careers. However, accounts from other cultural fields, such as music, indicate that references among artists are associated with higher chances to succeed (Lena 2004, 2006; Lena and Pachucki 2013; Phillips 2013).

Unlike collaborations, artistic references rarely occurred during the early stages of Hollywood. The so-called Golden Age of Hollywood (1920-1960) was marked by the dominance of film studios and a primarily commercial understanding of filmmaking (Bordwell et al. 1985). Throughout a transformation from the studio system to more artistic filmmaking in the 1960s (King 2002), filmmakers increasingly referenced each other.

During this time, *auteurism* inspired a new generation of filmmakers. Auteurism is a template for filmmaking that originated in French film criticism and continues to imply an artistic understanding of filmmaking (Allen and Lincoln 2004; Baumann 2001; Hicks and Petrova 2006). In particular, auteurism stresses the role of the individual filmmaker as the creative engine behind a film. American film critic Andrew Sarris formulated the auteur theory in 1962 (Sarris 1962, 1996) which provided a tool for critics and academics to assess the artistic value of films and included a list of consecrated auteurs.[5] According to auteurism, instead of being interchangeable—as in the previous studio system (1920-1960)—the director constitutes the author of a film and shapes its story and style.

In general, sociologists have demonstrated that critics and legitimating institutions, such as museums or art schools, foster processes of canonization and consecrate selected art works (Film: Baumann 2001, 2007; Allen and Lincoln 2004; Hicks and Petrova 2006; Watson and Anand 2006; Jazz: Lopes 2002; Literature: Corse and Westervelt 2002; Impressionism: White and White 1993). The creation of a canon demarcates a subgroup of the art form that artists and critical or public audiences can refer to as representative of their role model for legitimate art (DiMaggio 1992). In the case of Hollywood, identifying "sacred" works and demarcating

[5] As Sarris (1962) describes it: "At the moment, my list of auteurs runs something like this through the first twenty: Ophuls, Renoir, Mizoguchi, Hitchcock. Chaplin, Ford, Welles, Dreyer, Rosselini, Murnau, Griffith, Sternberg, Eisenstein, von Stroheim, Buñuel, Bresson, Hawjs, Lang, Flaherty, Vigo [...]" (p. 563).

them from "the profane" allowed artists and critics to dismiss other films as a different kind of cinema, thereby establishing the artistic integrity of "real" cinema. (Baumann 2001: 416).[6]

The canonization of filmmakers by early 1960s film critics entailed a call for a new filmmaker generation to study their consecrated peers and ancestors carefully. Many young filmmakers were exposed to auteur theory through their film school education during the 1960s and articulated their career strategies as imitations or emulations of these stars (see Pye and Myles 1979). For instance, filmmaker John Milius reported his admiration for established auteurs in an interview from 1994: "We wanted to be like Tom Ford, Howard Hawks, Orson Welles but we never thought we could be" (quoted in Pye and Myles 1979). Moreover, the emerging critical discourse around auteur theory and the rise of film school departments were indicative of Hollywood's legitimation process and the field's increased maturity (Baumann 2007). We expect that these institutional changes were necessary conditions for filmmakers to develop referencing as a novel aesthetic practice.

In addition to the increasing prevalence of references, we also expect that the distribution of references became increasingly unequal as the field formed a consensus on who's work should be regarded as artistically valuable and should, thus, be referenced disproportionally. While critics and institutions contributed to the initial formation of a film canon, filmmakers fostered canonization whenever they used references. Considering the accumulation of attention on a small subset of cultural producers leads us to the expectation that a rising number of filmmakers who used references is linked to increased inequality in the distribution of artistic

[6] Film scholar Noel Carroll (1982: 52) describes the interplay between critics and filmmakers as follows: "During that period, a canon of films and filmmakers was forged. An aggressive polemic of film criticism, often called auteurism, correlated attitudes, moods, viewpoints, and expressive qualities with items in the putative canon. These associations became available to contemporary filmmakers, who were able to lay claim to them by alluding to the original films, filmmakers, styles and genres to which certain associations or assignments were affixed in the emerging discourse about film history. Thus, Body Heat, a film based on references to film history, a film that tells us that for this very reason it is to be regarded as intelligent and knowing, a film that demands that the associations which accrued to its referents be attributed to it and that it be treated with the same degree of seriousness as they were."

references as a canon of highly acclaimed artists formed. Note that only because filmmakers used *more* references, this does not necessarily imply rising *inequality* in the distribution of references. Without a process of canonization, we would expect no noticeable increase in the inequality of the distribution of artistic references as they should spread among a larger proportion of filmmakers without concentrating on a cultural elite.

As outlined above, larger fields exhibit more uncertainty and make it harder for field participants to process information about others (Mayhew 1973). Consequently, cognitive heuristics—such as status recognition—are more consequential for actors' perceptions of each other (McFarland et al. 2014; Podolny 2010). In the case of Hollywood, the film industry faced a severe economic crisis during the 1950s and 1960s, driven by legal pressures, demographic changes in audiences, and the advent of TV (Baumann 2007). During this time, fewer filmmakers participated in the field, and it took several decades before the industry regained its economic strength. We expect that the associated influx of filmmakers between 1960 and 2000 led to more inequality in the distribution of artistic references. In general, previous scholarship on cultural fields indicates that cultural fields exhibit more artistic referencing and the formation of a canon of consecrated art works once a field gained legitimacy (Allen and Lincoln 2004; Baumann 2007; Bourdieu 1993; Dubois 2018; Lopes 2009).

Hypothesis 2. Artistic referencing becomes a widespread practice after a field gains legitimacy. Subsequently, inequality in the distribution of artistic references among cultural producers increases with a field's size and maturity.

The Advent of Artistic Status in Hollywood Filmmaking

So far, we have considered how the distribution of social recognition in the form of collaborations and artistic references changed over time. While we have hereby discussed

collaborations and artistic references independent of each other, we subsequently argue that the re-orientation of cultural producers towards artistic criteria during the New Hollywood period also affected the interplay between collaborative ties and artistic references. In particular, we expect that artistic status is increasingly intertwined with filmmakers' prominence as collaboration partners and that cliques of artists with a similar status emerge after Hollywood's transformation into an art world (Baumann 2007).

Previous studies suggest that cultural producers who excel artistically are more sought after as collaboration partners (Berliner 2009; Bourdieu 1993; Rossman et al. 2010). High-status artists are attractive as collaboration partners because they offer individuals several benefits. First, being associated with esteemed cultural producers can elevate artists' visibility and increase their likelihood to succeed (Lang and Lang 1988; Rossman et al. 2010). Second, working with artistic idols is rewarding on a creative level for most cultural producers (for the case of Jazz musicians, see, e.g., Berliner 2009). Moreover, it is reasonable to expect artistic status and social prominence to cooccur because having many collaboration partners can help artists mobilize resources, spread their reputation, and gain artistic status (Ebbers and Wijnberg 2010; Giuffre 1999; Skaggs 2019). Therefore, cultural producers holding a high artistic status should exhibit more collaboration partners. In addition, we expect that this link between artistic status and prominence as a collaboration partner is more pronounced in periods during which cultural fields are marked by an artistic orientation (Bourdieu 1983, 1993).

Another implication of artistic status for network structure is the emergence of cliques of filmmakers holding a similar status. Status homophily—the tendency to collaborate with status-similar others—may result from actors' fear to associate with others who hold a lower status because public display of a connection would endanger their reputation (Podolny 2001). Previous scholarship on homophily in social networks argues that persons with similar traits and characteristics tend to understand each other better, often communicate more easily, and

find each other more likable and predictable (Blau 1977; Byrne et al. 1971; McPherson, Smith-Lovin, and Cook 2001; Wimmer and Lewis 2010). In the case of status, the reversed causal direction is also plausible as status and collaborations change over time actors might gain or lose status based on their former collaboration partners' status (Dijkstra et al. 2010; Torlò and Lomi 2017). We assume that both processes—status homophily and the influence of ego's collaboration partners on her own artistic status—foster status homogeneity, i.e., the formation of status-similar collaborations.

Applying these arguments to the case of Hollywood filmmaking, collaborations between filmmakers of similar artistic status may provide several advantages. First, filmmakers secure their status by avoiding collaborations with others who have a lower status than themselves (Podolny 2010). Second, connections to other filmmakers high in artistic status allow filmmakers to be perceived as artistically sophisticated by peers and audiences and to construct artistic rather than commercial identities (Goldberg and Vashevko 2013; Zuckerman et al. 2003). Third, collaborating with status similar artists creates a bond against the commercial demands of producers. As in other creative contexts, filmmaking is characterized by the dilemma between commercial vs. artistic interests (see Baker and Faulkner 1991; Becker 2008). This is reflected in the conflict between the producer's interest to make a film on time with a limited budget, and the director's interest in creating a work of art. Fourth, status-similar collaborations support realistic expectations of the collaborative process and outcome. When two filmmakers of high artistic status collaborate, they can tacitly assume that they both share an interest in creating a work of art rather than a commercial product. Both kinds of filmmaking—artistic and commercial—employ different aesthetic conventions that may smooth or hinder the collaborative process (Becker 2008; Skaggs 2019).[7]

[7] One could argue that status homophily is unlikely because auteur theory stresses the role of the individual filmmakers as the sole mastermind behind a film. Consequently, filmmakers are potentially confronted with a dilemma: if two auteurs collaborate, who will be seen as the creator of the film?

Filmmaking careers are embedded in collaborative contexts that shape rewards and recognition (Cattani et al. 2014; Rossman et al. 2010). Therefore, we expect that holding a high artistic status—reflected by the volume of artistic references a filmmaker attracts—became a socially relevant trait during the New Hollywood era as an artistic status order crystallized throughout the field's artistic legitimation process (Baumann 2007, see H2). This legitimation process induced a crisp distinction between art and non-art that could then guide filmmakers' decision-making when choosing a collaborator (for a similar distinction between science vs. non science, see Gieryn 1983).

We argue that the changing institutional environment of Hollywood filmmaking fostered the emergence of an artistic status order which in turn shaped filmmakers' collaborations. The collapse of the studio system during the 1950s offered filmmakers more freedom in choosing whom to collaborate with.[8] At the same time, critics, as well as institutions, fueled a novel understanding of filmmaking as a mode of artistic expression. While artistic status might have already played a role during the studio era, we assume that the grip studios held over the production of films and filmmakers' creative process did not permit the emergence of a strong artistic status order among filmmakers. As Bourdieu (1993) pointed out, increasing autonomy of a cultural field from economic constraints paves the way for field-specific standards of evaluation and a social organization centered around the idea of art for its own sake. This leads us to our third hypothesis.

Yet, despite the ideals of auteur theory, filmmaking remained a collaborative effort involving many different professional roles from directors to writers, cinematographers, and editors. Though the literate interpretation implies the combination of writers and directors, many filmmakers split these roles while still identifying as auteurs. For example, Martin Scorsese counts as an auteur, but he collaborated with writer Paul Schrader several times. Taken together, we expect that auteurs continued to collaborate with others and that artistic status influenced their collaboration choices.

[8] A Supreme Court decision in 1948 ruled that Hollywood studios had to cease long-term employment contracts and allow filmmakers to freely engage in collaborations with other studios (De Haviland v. Warner Bros. Pictures, 67 Cal. App. 2d 225 - Cal: Court of Appeal (1944)).

Hypothesis 3. Artistic status increasingly shapes collaborations among cultural producers as a field gains artistic legitimacy. Consequently, cultural producers with a high artistic status are more prominent as collaboration partners and cultural producers with a similar amount of received references tend to collaborate more often than dissimilar ones.

In addition, we expect a decreased importance of artistic status for collaborations in the decades after New Hollywood which were marked by an institutional environment that was less supportive for the ideal of artistic filmmaking. The unforeseen success of New Hollywood films "The Godfather" (1972) and "Jaws" (1975) rang in the era of blockbusters (Neale 2013). This era was characterized by an increasing re-commercialization of movies. The auteur identity served as a marketing tool to promote films (Baker and Faulkner 1991) and a star and celebrity culture increasingly influenced Hollywood's public perception. Due to the renewed economic success of Hollywood, production companies gained more power over creative decisions. One sign for this development was the introduction of sequels and the tendency to produce several films based on previous successes casting the same stars repeatedly (Braudy 1998). Like major record labels that tried to establish an assembly line of commercial successes (Lena 2012; Phillips 2013), production companies aimed to decrease risks by re-furbishing former blockbusters. Also, filmmaking became increasingly expensive and involved larger casts and more technology during this period. In sum, we expect that these developments are linked to a decreased importance of artistic status among filmmakers during the Blockbuster era (1985-2000). More broadly, we expect that collaborative networks in cultural fields are less structured by an artistic status order if the institutional environment of the field becomes detrimental to an artistic orientation (Bourdieu 1983, 1993).

Hypothesis 4. The role of artistic status for collaborations among cultural producers decreases during periods which offer less institutional support for an artistic ideal of cultural production.

DATA

We use information on collaborations and references as listed in the Internet Movie Database (IMDb), a rich data repository, which includes all films and their associated crew and cast over the course of the entire history of filmmaking. IMDb is a crowd-sourced platform where a community of film enthusiasts submits, edits, and updates information. Unless the information is submitted by users with a proven track record, IMDb publishes new data entries only after screening them for consistency and correctness. We are not the first to draw on this exceptional source for scientific purposes. Several studies have relied on the IMDb and confirmed the validity of its entries with regard to information on casts, crews, and genres (Cattani and Ferriani 2008; Cattani et al. 2014; Max Wei 2020; Sorenson and Waguespack 2006; Zuckerman et al. 2003) user ratings (Keuschnigg and Wimmer 2017), acting credits (Rossman et al. 2010), and artistic references (Bioglio and Pensa 2018; Spitz and Horvát 2014).

We discuss data quality aspects in a separate analysis (see appendix A). Since we focus on filmmakers in this study, we only include writers and directors in our sample. We limit the sample to filmmakers who participated in the production of a film during at least three different years.[9] We do not consider artists with other professional roles, such as actors or composers. Moreover, we exclude the following genres: news, talk-show, gameshow, reality-tv and adult movies as these genres follow different organizational logics compared to filmmaking. Details on the selection of our analytical sample are provided in appendix A.

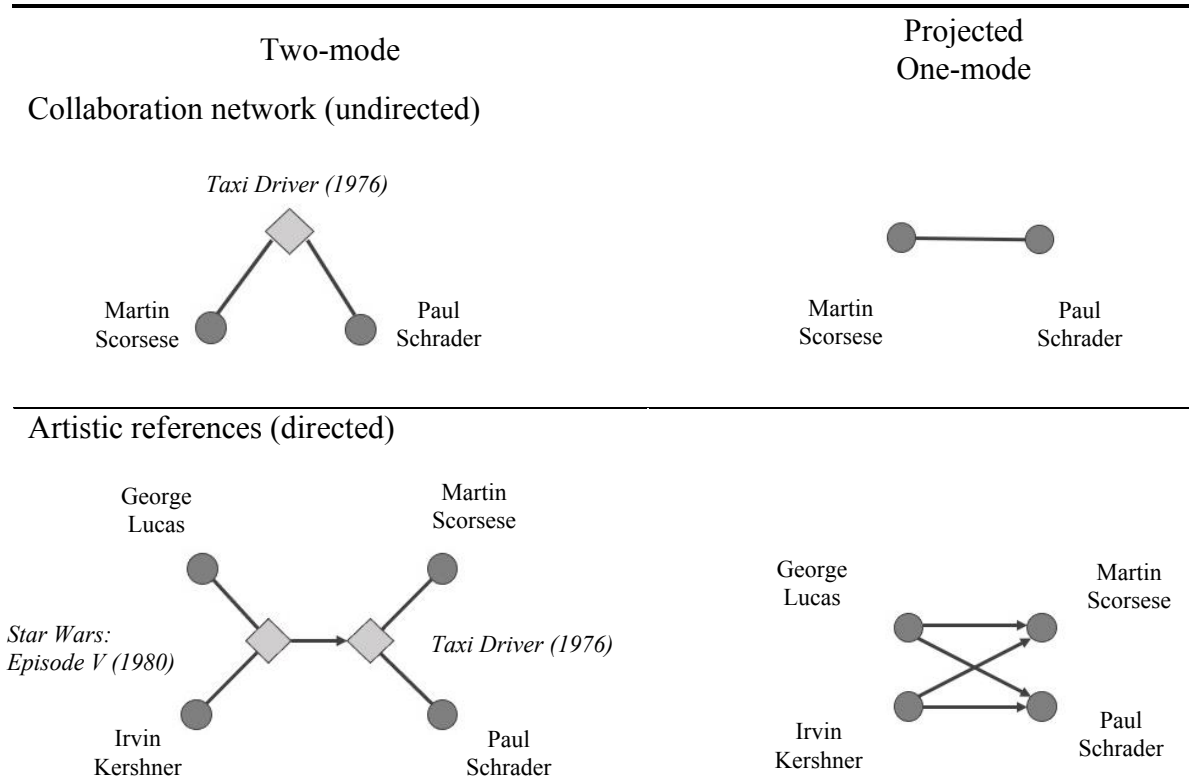
[9] A high proportion (61%) of filmmakers drops out of the industry after only one project. We focus on filmmakers that were active in at least three different years because these filmmakers are more likely to contribute to the field's development.

MEASURES

Collaboration Networks

We used the co-occurrence of filmmakers in IMDb entries for particular films to derive collaboration ties between filmmakers. Since realizing a film usually takes several years, we decided to aggregate collaboration ties stemming from multiple years into windows (for a similar approach, see De Vaan et al. 2015). We report analyses for three-year windows, because three years are close to the overall average production time of a film (Follows 2018). For instance, the window from 1930 until 1932 contains collaboration ties among filmmakers who collaborated either in 1930, 1931, or in 1932.

Figure 2. Operationalization of Collaboration and Artistic Reference Networks



Artistic Reference Networks

To measure artistic references, we collected all information from the section on "connections" to other films in IMDb. There is considerable variation in the types of connections listed in the

IMDb: they range from active ones, such as "references," to passive ones, such as "version of" or "remade as" (Spitz and Horvát 2014). We only consider titles that are listed as "references" because we seek to show to what extent filmmakers were paying homage to previous works in film history. We are less interested in remakes or spoofs of earlier films. According to the IMDb's stated definition a film includes a reference if it "[…] references or pays homage to a previous title (i.e., a still, poster, or artifact; mentioned by name; scene discussed by characters; dialog quoted in non-spoofing way)".

Thereby, we also coded a reference if filmmakers reference works of their peers from previous periods. For instance, Quentin Tarantino's film *Pulp Fiction* (1994) references Francis Ford Coppola's *The Godfather Part II* (1974). As Coppola is an active member of the film industry in the period from 1993 to 1995, an artistic reference is established from Tarantino to Coppola although *The Godfather Part II* was produced in a previous period.

Stratification

We use the skewness of the degree distribution of the collaboration networks and of the indegree distribution of the artistic reference networks to measure the overall inequality during a given period. If the degree distribution is positively skewed, this is indicative of a small number of individuals having many ties, while many have none or only a few ties (Fisher 2018: 57; Moody et al. 2011: 103).

Artistic Status

In addition to the question of how artistic references are distributed among filmmakers, we consider artistic status among filmmakers. To measure popularity and homogeneity in collaboration networks according to artistic status, we first computed a score for each filmmaker that summarizes all references she received from other filmmakers who participated

in a focal window. Next, we z-standardized these scores for each window to account for the increasing number of references over time.

Incorporating artistic status in our network models allows us to study if filmmakers with a high volume of artistic references are also more likely to attract additional collaboration partners. We also consider whether filmmakers with a similar volume of artistic references are more likely to collaborate.

Experience

To account for filmmakers' experience in the industry, we calculated how many years a filmmaker participated in Hollywood filmmaking. Thereby, we use the year when a filmmaker released her first film as the starting point of her career and subtracted it from the focal year. Subsequently, we z-standardized the accumulated years of experience to account for time trends in the length of careers.

Productivity and Resources

To capture filmmakers' ability to harness resources from production companies and to successfully finish film projects, we calculated the number of films a filmmaker made in a particular period. Also, we derived the crew size—which includes composers, costume designers, cinematographers, and further production personnel—for each film a filmmaker was involved in and averaged the crew sizes for each window. Thereby, we account for the fact that filmmakers engaging in projects with larger crews have more access to resources such as funding and participate in economically more profitable films (for a similar approach, see Rossman et al. 2010). We z-standardized these measures as they show time trends.

METHODS AND MODELS

Exponential Random Graph Models (ERGMS)

We use exponential random graph models (ERGMs) to measure changes in the social structure of Hollywood filmmaking (Lusher et al. 2013).[10] These network models allow us to test whether inequality in collaborations and artistic references intensified over time, and whether artistic status played a more prominent role for collaboration networks during the New Hollywood era.

The dependent variable for ERGMs is the global structure of a given network. The independent variables are count statistics for local structures, such as the number of dyads sharing the same characteristic—e.g., filmmakers who collaborate and have a similar artistic status. ERGM coefficients indicate whether a particular local structure occurs more often in the observed network than a random allocation of ties would suggest, conditional on all other local structures considered in the model specification (Lusher et al. 2013; Robins 2011). An advantage of this method is that it allows researchers to study the global structure of networks with a generative model, which models multiple local tie-formation processes simultaneously (e.g., Goodreau, Kitts, and Morris 2009).

Another strength of ERGMs is that they allow researchers to simulate networks from a particular model specification. Consequently, global statistics that capture the structure of simulated networks can be compared with empirical values (e.g., Gondal and McLean 2013a, 2013b). Our analytical strategy uses this possibility to assess which models are capable of reproducing observed levels of inequality. This procedure enables us to test Hypothesis 1 and 2—stating that inequality in the distribution of collaborations and artistic references increases with field size—because we account for the mechanical link between a network's size and

[10] The analysis was carried out in R. The ergm package was utilized to conduct the ERGM analysis (Hunter et al. 2008).

density with graph level indices (Anderson, Butts, and Carley 1999). Thereby, we can assure that observed trends in inequality are not a mere byproduct of the overall probability of tie formation.

We implement this part of our analytical strategy by calculating descriptive measures capturing the stratification of ties in each period (27 periods from 1921 to 2000). Subsequently, we obtain 1,000 random networks—based on parameters from a baseline ERGM specification—which had the same size, and density as the corresponding observed network. This yields a distribution of graph-level statistics stemming from simulated networks. Finally, we investigate whether measures of empirical networks are substantially different from those we find in simulated networks (Gondal and McLean 2013a, 2013b; Snijders and Steglich 2015). This procedure does not provide a test of statistical significance. However, it indicates whether empirical changes in network structure point to substantial differences and allows us to test Hypothesis 1 and 2.

Model Specification

To test Hypothesis 3 and 4—increasing importance of artistic status for collaborative ties during the New Hollywood era and decreasing importance during the Blockbuster era—we included two terms in our model specification. First, we incorporated a term that models whether filmmakers with a higher artistic status also maintain more collaborations which we call the "Popularity according to artistic references" term (see table 2). Second, we added a term that captures homogeneity according to artistic status which we call the "Difference in artistic references term". This term reflects whether filmmakers who are dissimilar in their volume of received artistic references are more or less likely to exhibit a collaborative tie. For instance, a statistically significant and negative coefficient for this term would indicate that

filmmakers who display a difference of one standard deviation in artistic status are more likely to collaborate—i.e., the presence of homogeneity according to artistic status.

In addition to the terms for artistic status, we estimated several model specifications including various terms for endogenous network processes and decided to report a specification that worked for all periods. We followed an iterative procedure similar to the one described in Wimmer and Lewis (2010: 625) and considered terms for endogenous network processes, such as the GWDEG, GWESP, and GWNSP terms for the degree distribution and triadic structures. As the inclusion of most terms for higher-order structures led to degeneracy issues in several periods, we decided to estimate a simpler model specification that allowed for comparisons between all periods. This approach offers a straightforward interpretation of the role of actors' attributes in the generation of network structures. In contrast, higher-order terms can complicate interpretation, as Martin (2020) recently pointed out. While including more endogenous network processes would be desirable, network models often show problems with degeneracy and model fit when estimated for large networks (cf., Lewis and Kaufman 2018; Stark et al. 2020). As Hypothesis 3 and 4 are concerned with homogeneity according to artistic status, we are confident that the analytical strategy we pursued here is sufficient because it accounts for the networks' opportunity structure and considers multicollinearity between measures of artistic status and filmmakers' career outcomes (for a similar line of argumentation, see Rubineau, Lim, and Neblo 2019).

Our final specification includes the edges term, which accounts for the networks' density and captures the baseline probability for forming a tie (Smith et al. 2016). In addition, we included terms that account for popularity[11] and homogeneity according to filmmakers' productivity, experience, and resources.

[11] As we had no information on aspirational collaborations, the network is undirected. Consequently, we use the term "popularity" here because we assume that collaborations are based on filmmakers' mutual agreement. Methodologically, main effects for actors' characteristics combine popularity—the

We measured homogeneity according to productivity, experience, and resources by including absolute difference scores. This is a common way to capture homogeneity according to continuous attributes in the ERGM framework (Smith et al. 2016: 1240). For instance, the "Difference in experience" term in table 2 estimates whether two filmmakers who showed a difference of one standard deviation in experience were more or less likely to collaborate given all other terms in the specification. A statistically significant and negative "difference in experience" term would indicate that filmmakers with a similar experience showed a higher likelihood of collaborating than filmmakers who were dissimilar in experience. These terms consider the *difference* in experience, productivity, and resources. Thus, negative values indicate the presence of homogeneity, while positive values indicate heterogeneity.

In addition to terms that measure homogeneity, we also added terms that consider how filmmakers' popularity as collaborators is linked to the volume of films they already produced (productivity), their career length (years of experience), and their access to resources (average crew size). These main effects of our set of control variables reflect whether a filmmaker is more often chosen as a collaboration partner if she exhibits more productivity, experience, or resources. For example, the "Popularity according to experience term" in table 2 measures whether one standard deviation of more years of experience in the industry is associated with a higher or lower likelihood of attracting additional collaboration ties. Here, statistically significant and positive values indicate a higher likelihood of attracting additional collaboration partners. Including these control variables is crucial as they allow us to consider the role of artistic status for tie formation net of other factors that may correlate with a high artistic status. For example, highly referenced filmmakers may also exhibit longer careers, more films, and larger crew sizes.

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tendency to receive ties—and expansiveness—the tendency to send ties—in undirected networks (Goodreau et al. 2009; Lusher et al. 2013).

In our interpretation of ERGM estimates, we compare the direction and statistical significance of coefficients in different periods. In addition, we calculate average marginal effects (AMEs) introduced by Duxbury (2021) to account for changes in Hollywood's network size and composition. Similar to AMEs for logistic regressions, they let us compare the relative magnitude of parameters within model specifications and between different periods (Mood 2010). We discuss AMEs in relation to the baseline probability to form a tie in a given window allowing us to make comparisons of effect sizes over time. As (Kreager et al. 2021: 59, footnote 12) pointed out recently: "AMEs differ from odds ratios in that they are on a probability scale and so their magnitudes should be interpreted relative to the baseline tie probability (i.e., network density)." This property of AMEs is crucial for our application since the network density of filmmakers' collaborations varies strongly over time.

RESULTS

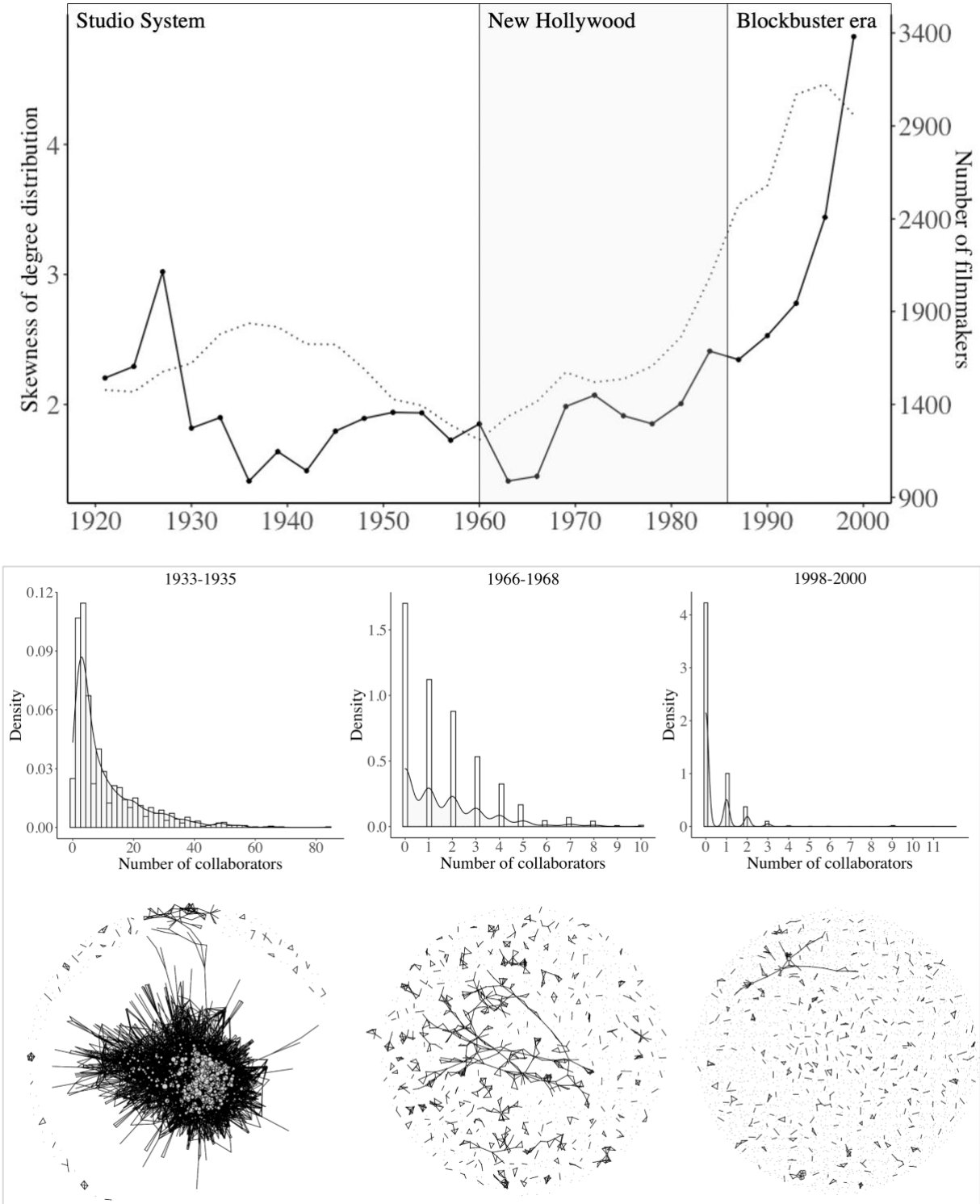
Table 1 displays the number of collaborations and artistic references among filmmakers over time. Whereas the first two decades showed an increase in the number of filmmakers, the New Hollywood era exhibited a decrease in size due to the economic crisis of the industry and the collapse of the studio system. However, the field regained in size throughout the 1960s. A new dynamic is visible from 1984 onward: during the Blockbuster age, the number of filmmakers rapidly increased due to the unprecedented economic success of films. Regarding the practice of artistic referencing, our descriptive results are in line with the expectation that referencing needed time to evolve. The share of filmmakers who referred to the work of others lies below 27% until 1966. Subsequently, the share of referencing filmmakers rises until 1989; here it reaches the highest value of 44%, corroborating our expectation that artistic referencing became a widespread practice among filmmakers during the New Hollywood era. The pattern also illustrates that the share of referencing filmmakers did not increase further during the

Blockbuster era and that around one-fifth of filmmakers already engaged in referencing before the dawn of auteur filmmaking (see 1933-1960).

Table 1. Information on Collaboration and Artistic Reference Networks

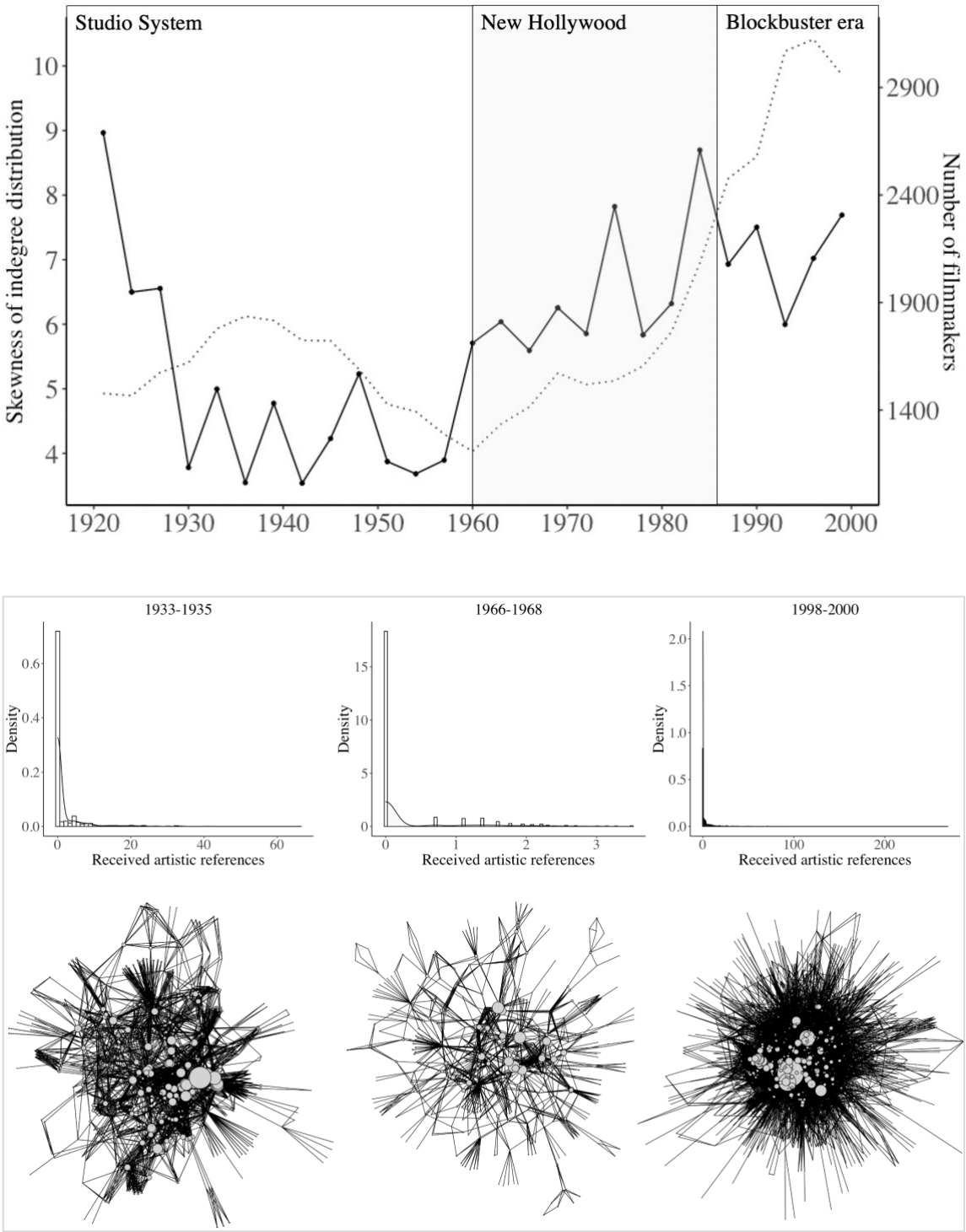
Years	Size	Mean # of films	SD of # films	Mean # of collab.	SD of # collab.	Mean # of references	SD of # references	Share referencing
1921-1923	1478	4.86	6.92	10.97	12.11	0.07	0.46	0.01
1924-1926	1468	5.90	8.38	15.62	17.69	0.14	0.81	0.03
1927-1929	1576	6.40	9.82	20.88	24.59	0.31	1.41	0.05
1930-1932	1622	5.42	8.54	19.26	20.80	0.99	2.92	0.11
1933-1935	1779	4.83	6.97	21.77	23.86	1.62	4.94	0.18
1936-1938	1837	4.82	6.74	22.54	21.37	1.86	4.45	0.20
1939-1941	1817	4.38	5.46	17.85	17.13	3.30	9.11	0.26
1942-1944	1725	4.05	4.99	16.92	15.62	1.85	4.38	0.22
1945-1947	1723	3.41	4.53	11.91	10.75	1.96	5.01	0.21
1948-1950	1591	3.43	4.91	10.72	10.25	1.40	4.21	0.20
1951-1953	1428	3.22	4.69	9.73	9.61	1.32	3.31	0.18
1954-1956	1394	2.74	3.82	7.61	6.87	1.10	2.72	0.21
1957-1959	1289	2.18	3.10	6.61	6.14	0.84	2.32	0.20
1960-1962	1209	2.07	3.33	4.81	4.84	0.94	2.88	0.21
1963-1965	1336	2.06	3.49	4.16	4.18	0.86	2.62	0.25
1966-1968	1416	1.94	2.75	3.49	3.68	0.92	2.98	0.27
1969-1971	1573	1.71	2.04	2.98	3.44	0.80	2.69	0.26
1972-1974	1520	1.55	1.86	2.54	3.05	0.96	3.23	0.30
1975-1977	1537	1.54	1.46	2.68	3.25	1.20	4.43	0.30
1978-1980	1606	1.40	1.33	2.14	2.74	1.54	4.97	0.38
1981-1983	1764	1.34	0.82	2.02	2.79	1.87	6.18	0.40
1984-1986	2084	1.42	0.95	1.78	2.64	2.65	9.68	0.44
1987-1989	2477	1.44	1.02	1.71	2.49	2.42	8.34	0.44
1990-1992	2579	1.42	1.02	1.98	4.35	2.25	7.92	0.40
1993-1995	3069	1.42	1.28	1.38	2.32	3.04	10.86	0.38
1996-1998	3124	1.42	1.14	1.16	2.17	2.99	11.34	0.38
1998-2000	2959	1.44	1.03	0.95	2.01	3.58	12.69	0.38

Figure 3. Inequality in Collaborations and Field Size over Time



Note: The straight line in the upper panel indicates the skewness of the degree distribution of collaboration networks over time. The dotted line represents changes in field size measured as the number of filmmakers. In the bottom panel, nodes in the sociograms are filmmakers who participated in the production of a film during at least three different years; ties between them indicate that they worked on the same film. Histograms are based on the distribution of collaboration ties. The x-axis denotes the number of collaborations per filmmaker and the y-axis the density of the distribution.

Figure 4. Inequality in Artistic References and Field Size over Time



Note: The straight line in the upper panel indicates the skewness of the indegree distribution of artistic reference networks over time. The dotted line represents changes in field size measured as the number of filmmakers. In the bottom panel, nodes in the sociograms are filmmakers who participated in the production of a film during at least three different years; a tie indicates an artistic reference between two filmmakers. Histograms are based on the distribution of artistic reference ties. The x-axis denotes the number of references per filmmaker and the y-axis the density of the distribution. To ease interpretability of the sociograms, we only depicted the largest component of artistic reference networks.

Inequality in Hollywood's Social Organization: Descriptive Trends

We now turn to the question of how social recognition was distributed among filmmakers during different historical phases of the field. Figures 3 and 4 summarize changes in the stratification of collaborative ties and artistic references over time (straight lines) and trends in field size (dotted lines). In the figures' bottom panels, we also visualize the degree distribution and sociograms of collaboration and artistic reference networks during three exemplary periods.

The results indicate that stratification in social recognition increased over time and was associated with a corresponding increase in field size. In line with our first and second hypothesis, we observe more skewness in the distribution of collaboration partners and received artistic references as more filmmakers entered the industry. While this trend is consistent for both network types, the periods 1960-1962 and 1963-1965 are an interesting exception: although the number of filmmakers was quite low during these periods, we see a steep increase in the inequality in artistic references in comparison to the time before. A possible explanation is that these periods constitute the onset of the New Hollywood era in which artistic standards of evaluation played a prominent role in filmmakers' creative process. Accordingly, the jump in the inequality of artistic references may indicate the new artistic style of filmmaking and the emergence of a cultural elite during these periods. In addition, figure 4 shows that the rising inequality in the distribution of artistic references levels-off during the Blockbuster era (1985-2000) although field size further increases. This pattern could point to a decreased relevance of artistic status after the end of New Hollywood.

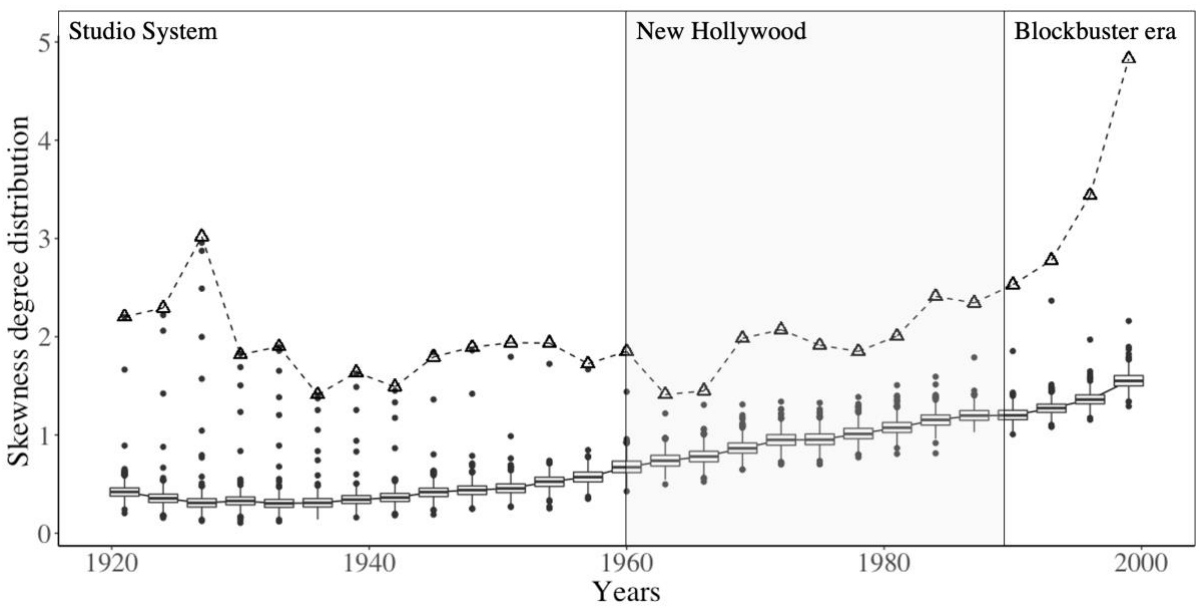
In summary, our descriptive findings provide preliminary support for our theoretical expectations concerning the social structure of filmmaking. Yet, we cannot rule out that the link between inequality and size is only a byproduct of network density. We account for this possibility in the next section.

Inequality in Hollywood's Social Organization: Simulation Results

We simulated 1,000 networks for each period from baseline exponential random graph models that considered only the density and size of empirical networks. These simulated networks can tell us whether an unequal degree distribution could also have been a byproduct of basic network properties, such as the baseline probability of ties in combination with the networks' opportunity structure. Figures 5 and 6 summarize the skewness in simulated networks in box plots and show how empirical values—depicted by triangles—differed from simulated values.

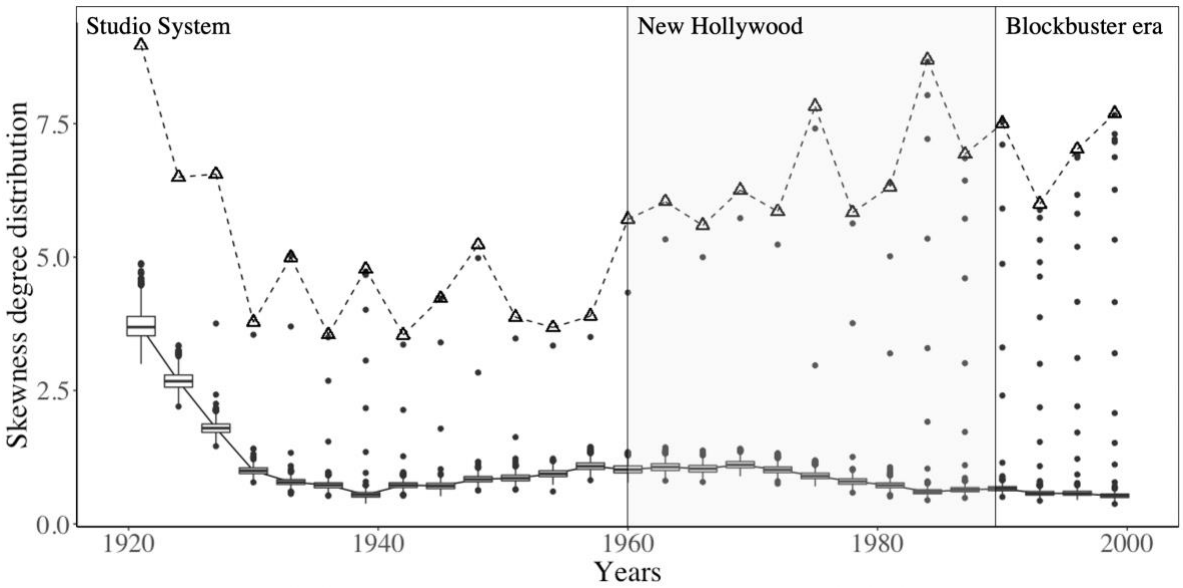
While simulated collaboration networks indicate a trend toward more inequality, empirical values show much higher inequality. These results suggest that the rising inequality in the distribution of collaboration partners is substantial beyond the increases in skewness we would expect from the networks' changing densities and opportunity structure.

Figure 5. Simulated Inequality vs. Empirical Inequality in Collaboration Ties over Time



Note: Each box plot represents the distribution of skewness values calculated in simulated collaboration networks obtained from baseline network models only including the edges term. We simulated 1,000 networks for each period. Triangles indicate empirical values, i.e., the observed skewness of the degree distribution in a particular period. The dashed line connects empirical values, while the straight line follows the medians of simulated values.

Figure 6. Simulated Inequality vs. Empirical Inequality in Artistic References over Time



Note: Each box plot represents the distribution of skewness values calculated in simulated artistic reference networks obtained from baseline network models only including the edges term. We simulated 1,000 networks for each period. Triangles indicate empirical values, i.e., the observed skewness of the degree distribution in a particular period. The dashed line connects empirical values, while the straight line follows the medians of simulated values.

Likewise, trends in the distribution of artistic reference networks differ noticeably from simulated values. The increase in inequality from the 1960s onward supports our hypothesis that artistic referencing centralized on a novel cultural elite during the New Hollywood era. However, the periods in the time from 1921-1929 also show high values and inequality stabilized at high levels during the Blockbuster age.

In sum, simulations support our expectations that inequality in social recognition increased over time and covaried with the size of Hollywood filmmaking (H1 and H2). Yet, we also discovered that the 1920s saw strong inequality in artistic references, which could point to early artistic filmmaking prior to the dawn of the studio era. Next, we turn to the results of network models to assess the role of artistic status for collaborations.

Table 2. Exponential Random Graph Model (ERGM) Estimates for Collaboration Ties over Time

Years	1921-1923	1924-1926	1927-1929	1930-1932	1933-1935	1936-1938	1939-1941	1942-1944
Edges	-4.57***	-4.24***	-3.90***	-3.98***	-4.07***	-3.85***	-4.06***	-4.31***
Popularity according to average crew size	0.59***	0.61***	0.49***	0.49***	0.62***	0.52***	0.52***	0.62***
Difference in average crew size	-1.27***	-1.07***	-1.27***	-1.21***	-1.17***	-1.25***	-1.77***	-1.28***
Popularity according to number of films	0.60***	0.65***	0.65***	0.70***	0.73***	0.70***	0.61***	0.61***
Difference in number of films	-0.30***	-0.47***	-0.40***	-0.58***	-0.48***	-0.46***	-0.41***	-0.35***
Popularity according to experience	0.16***	0.13***	0.05***	0.05***	0.03**	0.01	0.06***	0.06***
Difference in experience	-0.11***	-0.15***	-0.13***	-0.1***	-0.1***	-0.12***	-0.08***	-0.09***
Popularity according to artistic references	0.24***	0.10***	0.13***	0.24***	0.21***	0.25***	0.22***	0.16***
Difference in artistic references	-0.31***	-0.07***	-0.14***	-0.20***	-0.25***	-0.33***	-0.21***	-0.23***
GOF	0.37	0.51	0.56	0.40	0.43	0.31	0.33	0.36

Years	1945-1947	1948-1950	1951-1953	1954-1956	1957-1959	1960-1962	1963-1965	1966-1968
Edges	-4.35***	-4.5***	-4.35***	-4.41***	-4.81***	-4.91***	-4.89***	-5.04***
Popularity according to average crew size	0.49***	0.56***	0.59***	0.45***	0.59***	0.64***	0.51***	0.49***
Difference in average crew size	-1.71***	-1.60***	-1.54***	-1.92***	-1.47***	-2.25***	-2.59***	-2.71***
Popularity according to number of films	0.57***	0.55***	0.54***	0.46***	0.50***	0.54***	0.49***	0.39***
Difference in number of films	-0.32***	-0.3***	-0.32***	-0.2***	-0.29***	-0.34***	-0.31***	-0.25***
Popularity according to experience	0.07***	0.09***	0.03**	0.12***	0.15***	0.07***	0.19***	0.13***
Difference in experience	-0.10***	-0.07***	-0.16***	-0.26***	-0.29***	-0.18***	-0.19***	-0.21***
Popularity according to artistic references	0.20***	0.18***	0.28***	0.20***	0.06*	0.16***	0.16***	0.2***
Difference in artistic references	-0.29***	-0.24***	-0.39***	-0.28***	-0.13**	-0.17***	-0.37***	-0.27***
GOF	0.27	0.21	0.26	0.27	0.31	0.31	0.34	0.58

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Years	1969-1971	1972-1974	1975-1977	1978-1980	1981-1983	1984-1986	1987-1989	1990-1992
Edges	-5.50***	-5.24***	-5.29***	-5.23***	-5.62***	-6.02***	-6.11***	-5.89***
Popularity according to average crew size	0.57***	0.63***	0.46***	0.38***	0.38***	0.37***	0.17***	0.26***
Difference in average crew size	-2.49***	-3.44***	-3.62***	-3.69***	-3.47***	-3.38***	-2.9***	-3.92***
Popularity according to number of films	0.47***	0.53***	0.42***	0.49***	0.35***	0.39***	0.43***	0.48***
Difference in number of films	-0.36***	-0.44***	-0.25***	-0.42***	-0.14***	-0.18***	-0.31***	-0.4***
Popularity according to experience	0.18***	0.26***	0.20***	0.28***	0.27***	0.16***	0.27***	0.21***
Difference in experience	-0.19***	-0.37***	-0.24***	-0.32***	-0.34***	-0.27***	-0.37***	-0.34***
Popularity according to artistic references	0.20***	0.12**	0.02	0.07	-0.09	0.04	-0.08	0.09
Difference in artistic references	-0.27***	-0.35***	-0.11	-0.31***	-0.24**	-0.28***	-0.22*	-0.41***
GOF	0.52	0.60	0.55	0.52	0.58	0.63	0.77	0.77

Years	1993-1995	1996-1998	1998-2000
Edges	-6.35***	-6.64***	-6.69***
Popularity according to average crew size	0.31***	0.27***	0.25***
Difference in average crew size	-3.81***	-3.04***	-3.36***
Popularity according to number of films	0.66***	0.53***	0.48***
Difference in number of films	-0.62***	-0.44***	-0.38***
Popularity according to experience	0.24***	0.14*	0.22**
Difference in experience	-0.27**	-0.20	-0.19
Popularity according to artistic references	-0.17	0.00	0.00
Difference in artistic references	-0.07	-0.24	-0.37
GOF	0.68	0.61	0.66

Note: All continuous variables are z-standardized to enhance the comparability of estimates across models. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ (two-sided).

Table 3. Average Marginal Effects (AMEs) Scaled at the Baseline Probability of a Tie in a Particular Period

Years	1921-1923	1924-1926	1927-1929	1930-1932	1933-1935	1936-1938	1939-1941	1942-1944
Popularity according to average crew size	0.57***	0.59***	0.47***	0.47***	0.60***	0.51***	0.51***	0.60***
Difference in average crew size	-1.23***	-1.03***	-1.22***	-1.16***	-1.13***	-1.22***	-1.71***	-1.25***
Popularity according to number of films	0.58***	0.63***	0.62***	0.67***	0.71***	0.68***	0.59***	0.59***
Difference in number of films	-0.29***	-0.45***	-0.38***	-0.56***	-0.46***	-0.45***	-0.39***	-0.35***
Popularity according to experience	0.16***	0.13***	0.05***	0.05***	0.03**	0.01	0.06***	0.06***
Difference in experience	-0.11***	-0.14***	-0.12***	-0.1***	-0.1***	-0.12***	-0.08***	-0.09***
Popularity according to artistic references	0.23***	0.10***	0.13***	0.23***	0.20***	0.24***	0.21***	0.16***
Difference in artistic references	-0.30***	-0.06**	-0.13***	-0.19***	-0.24***	-0.32***	-0.2***	-0.23***
GOF	0.37	0.51	0.56	0.40	0.43	0.31	0.33	0.36

Years	1945-1947	1948-1950	1951-1953	1954-1956	1957-1959	1960-1962	1963-1965	1966-1968
Popularity according to average crew size	0.48***	0.55***	0.58***	0.44***	0.58***	0.62***	0.50***	0.49***
Difference in average crew size	-1.68***	-1.57***	-1.50***	-1.88***	-1.43***	-2.19***	-2.54***	-2.67***
Popularity according to number of films	0.56***	0.54***	0.53***	0.45***	0.49***	0.52***	0.48***	0.39***
Difference in number of films	-0.31***	-0.30***	-0.31***	-0.20***	-0.29***	-0.33***	-0.30***	-0.25***
Popularity according to experience	0.07***	0.09***	0.03**	0.12***	0.14***	0.07***	0.18***	0.13***
Difference in experience	-0.10***	-0.07***	-0.16***	-0.25***	-0.29***	-0.17***	-0.18***	-0.21***
Popularity according to artistic references	0.19***	0.18***	0.27***	0.19***	0.06*	0.16***	0.16***	0.19***
Difference in artistic references	-0.29***	-0.24***	-0.38***	-0.28***	-0.12**	-0.17***	-0.36***	-0.27***
GOF	0.27	0.21	0.26	0.27	0.31	0.31	0.34	0.58

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Years	1969-1971	1972-1974	1975-1977	1978-1980	1981-1983	1984-1986	1987-1989	1990-1992
Popularity according to average crew size	0.57***	0.63***	0.46***	0.38***	0.38***	0.37***	0.17***	0.26***
Difference in average crew size	-2.46***	-3.39***	-3.58***	-3.66***	-3.46***	-3.37***	-2.88***	-3.91***
Popularity according to number of films	0.46***	0.52***	0.42***	0.48***	0.35***	0.39***	0.43***	0.48***
Difference in number of films	-0.35***	-0.43***	-0.25***	-0.42***	-0.14***	-0.18***	-0.31***	-0.4***
Popularity according to experience	0.18***	0.26***	0.20***	0.27***	0.27***	0.16***	0.27***	0.21***
Difference in experience	-0.19***	-0.37***	-0.24***	-0.32***	-0.34***	-0.27***	-0.37***	-0.34***
Popularity according to artistic references	0.20***	0.12**	0.02	0.07	-0.09	0.04	-0.08	0.09
Difference in artistic references	-0.26***	-0.35***	-0.11	-0.31***	-0.24**	-0.28***	-0.22*	-0.41***
GOF	0.52	0.60	0.55	0.52	0.58	0.63	0.77	0.77

Years	1993-1995	1996-1998	1998-2000
Popularity according to average crew size	0.31***	0.27***	0.25***
Difference in average crew size	-3.82***	-3.04***	-3.37***
Popularity according to number of films	0.66***	0.53***	0.48***
Difference in number of films	-0.62***	-0.44***	-0.38***
Popularity according to experience	0.24***	0.14*	0.22**
Difference in experience	-0.28**	-0.20	-0.19
Popularity according to artistic references	-0.17	>0.00	>0.00
Difference in artistic references	-0.07	-0.24	-0.37
GOF	0.68	0.61	0.66

Note: All continuous variables are z-standardized to enhance the comparability of estimates across models. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ (two-sided).

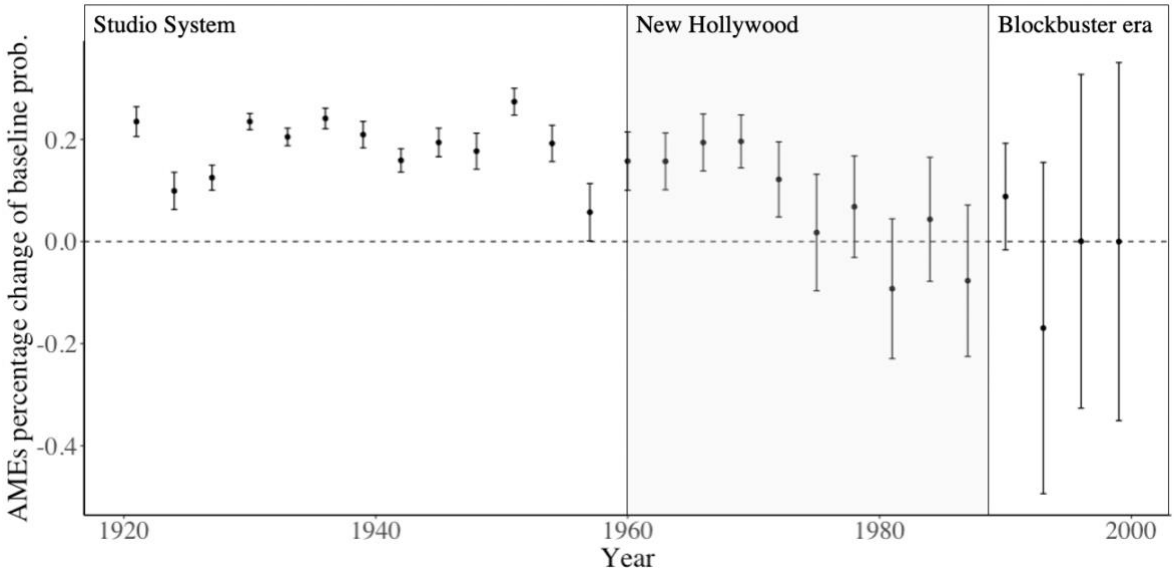
The Role of Artistic Status for Filmmakers' Collaboration Networks over Time

We estimated exponential random graph models (ERGMs; Lusher et al. 2013) to investigate the role of artistic status for the formation of collaborations. Details on the goodness of fit of models are provided in the appendix. We include two terms to capture the impact of artistic status. First, we measure the popularity of filmmakers as collaborators according to their artistic status. Second, to capture whether filmmakers' collaborations exhibit homogeneity according to artistic status, we include an absolute difference term. This term denotes whether a collaborative tie between two filmmakers became more or less likely if the difference in their artistic status—i.e., how many references they received by their peers—increased by one standard deviation given all other terms in the model. While table 2 reports ERGM coefficients, table 3 reports average marginal effects (AMEs) divided by the baseline probability of a tie in a given period. AMEs allow for a more intuitive interpretation as they report the percentage change in the baseline probability for a one unit change in a given network variable (see Kreager et al. 2021). For instance, the baseline probability of forming a tie increased by 16% in the period 1921-1923 for a filmmaker who had one standard deviation more years of experience in the industry than the average filmmaker.

We now turn to the test of our theoretical expectation that artistic status and filmmakers' collaboration networks should be particularly intertwined during the New Hollywood era (H3, H4). Concerning the relationship between artistic status and artists' prominence as collaborators, our findings suggest that artistic status is interconnected with collaboration prominence during the first 50 years of the field's development. After the late 1970s, AMEs capturing the link between artistic status and collaboration prominence are closer to zero and statistically insignificant (see figure 7). In periods with significant coefficients, effect sizes suggest that a change of one standard deviation in artistic status is associated with a 10%-25% higher likelihood to exhibit an additional collaboration tie in comparison to the baseline

probability. These effects of artistic status for the prominence as a collaboration partner are, on average, smaller than the effects of a filmmaker's number of projects but similar to a filmmaker's previous industry experience in years.

Figure 7. Popularity According to Filmmakers' Artistic Status over Time

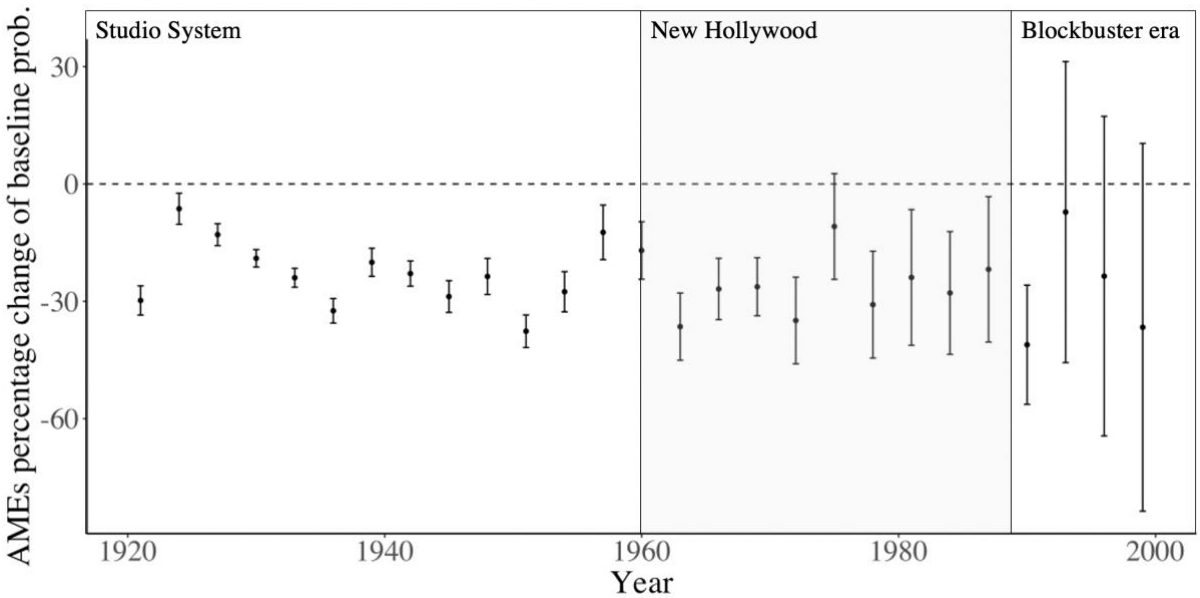


Taken together, these results suggest a substantial link between filmmakers' artistic status and their prominence as collaborators before the dawn of the New Hollywood era, and that this link weakened during the Blockbuster era. While the early importance of artistic status is not in line with our expectation that artistic status should only start to play a role after Hollywood's artistic legitimiation process (H3), the decreased importance of artistic status for collaborations is in line with our hypothesis stating that the Blockbuster era showed an institutional environment that provided less support for an artistic status order (H4).

Regarding the question of whether artistic status segregated the network into cliques of status-similar filmmakers, our results indicate that peers' appreciation of artistic status substantially structured filmmakers' collaborations in almost all periods. The smaller the AMEs displayed in figure 8, the more filmmakers tended to form collaborations with status-

similar others. The effect sizes for artistic status are similar to the effect sizes for experience and productivity. For example, during the period 1963-1965, a one standard deviation increase in the difference in artistic status decreased the probability of a tie between two filmmakers by 36% in comparison to the baseline probability (see figure 8). While homogeneity according to artistic status was already present during Hollywood's studio era, it became even more pronounced during the New Hollywood period. During most times of this period, a one-unit increase in the difference in artistic status decreased the probability of a tie between two filmmakers by about 30%. Interestingly, whereas we expected a clearer discontinuity in our third hypothesis (H3), we observe a rather smooth downward trend in the acceptance of artistic status differences for collaboration as indicated by decreasing AMEs. This suggests that the transformation towards artistic filmmaking was less abrupt than often assumed and portrayed in historical accounts (e.g., Baumann 2007).

Figure 8. Homogeneity According to Filmmakers' Artistic Status over Time



Overall, the results provide suggestive evidence in support of our expectation that collaboration networks were less marked by artistic status homogeneity during the Blockbuster era (H4).

This conclusion is based on a careful analysis of the statistical and substantive significance of AMEs in the context of exponential random graph models. On the one hand, figure 8 shows that effect sizes do not differ noticeably between the New Hollywood and the Blockbuster era. On the other hand, the coefficients for status homogeneity become statistically insignificant in the last three periods of the Blockbuster era. While statistical insignificance does not necessarily imply substantive irrelevance, there are methodological and theoretical reasons to believe that this insignificance indicates a decreased importance of artistic status for collaboration. In particular, as AMEs are scaled at the baseline probability, even small initial values can become very large if the network has a low density. This is especially the case for the Blockbuster era, as the number of filmmakers increased, but the average number of films per filmmaker decreased (table 1). Hence, even small values are amplified in the scaled version of the AMEs. This is desirable as it allows for a comparison of effect sizes over time, but it also means that statistically insignificant effects should be interpreted as substantially insignificant as even small deviations of AMEs from zero can show noticeable magnitudes in scaled AMEs. Another reason for the increasing statistical uncertainty in the last three periods could be that artistic status retained its relevance for a subset of auteur filmmakers but became less important for the majority of filmmakers who focused on commercial success rather than artistic filmmaking (Lena and Peterson 2008).

To summarize, our results support our theoretical expectation that inequality in the distribution of social recognition was especially pronounced during periods in which the field was large (H1 and H2). Yet, strong inequality in artistic references was already present at the outset of the field—although only a small share of filmmakers (less than 6%) used references before 1930. This finding could point to the importance of Hollywood's institutional environment as early filmmaking was less controlled by the studio system which possibly allowed filmmakers to reference each other more freely according to their own artistic

standards of evaluation. Regarding the role of artistic status for network formation (H3 and H4), our findings are less straightforward. On the one hand, we see a link between artistic status and collaboration prominence and a trend towards more homogeneity according to artistic status. On the other hand, the link between artistic status and collaboration prominence is already present before the New Hollywood era begins and the trend toward a stronger presence of cultural elites is more gradual than we expected based on the literature on Hollywood's artistic legitimation process (e.g., Baumann 2007). Moreover, we find that the segregating role of artistic status may not have ceased completely during the Blockbuster age, which could point to a differentiation of the field into artistic filmmaking and mainstream productions (King 2005; King, Molloy, and Tzioumakis 2013).

DISCUSSION

Our results provide evidence that status orders in cultural fields emerge as field size increases and that artistic status becomes more important for collaboration as a cultural field gains legitimacy. To arrive at these conclusions, we analyzed 80 years of Hollywood film history and information on more than 13,000 filmmakers captured in the Internet Movie Database (IMDb). We derived networks of collaboration and artistic references to investigate whether this cultural field became more stratified and segregated during its development.

Our article contributes to several literatures. We synthesized past research that highlighted the role of individuals' network position for their creative and economic success (Becker 2008; Bottero and Crossley 2011; Crossley 2019; Lena 2012; Phillips 2013) with scholarship on social recognition in cultural fields (Bourdieu 1983, 1993; Dowd et al. 2002; Lena and Pachucki 2013; Pachucki 2012). This allowed us to map long-term changes in the link between artistic status orders and networks with a vast, process-produced data source for the first time. We expected that changes in size are associated with increasing inequality in the distribution

of social recognition captured by filmmakers' prominence as collaboration partners and the volume of artistic references they receive. Furthermore, we discussed the role of artistic status for collaborations and argued that collaboration networks should show a link between artistic status and collaboration prominence and segregation into status-similar circles of artists during the New Hollywood period. In general, our results support our hypotheses and illustrate that the development of the structure of artistic fields can be studied from a network analytical perspective (Bottero and Crossley 2011; Fuhse and Gondal 2022).

We showed field size to be linked with stratification in social recognition and demonstrated that changes in the networks' opportunity structure and density are not sufficient to account for the association between inequality and size (Anderson et al. 1999; Gondal and McLean 2013b; Snijders and Steglich 2015). These findings resonate with previous accounts, which point to a relationship between network size and inequality (Mayhew 1973; Mayhew and Levinger 1976; McFarland et al. 2014). To model the structure of collaboration networks during different periods, we used exponential random graph models (ERGMs; Lusher et al. 2013) and applied recent advances that allow credible comparisons between models (Duxbury 2021). Thereby, our study also makes a methodological contribution as most applications of network models are limited to relatively small networks among children, adolescents, or students and short periods of time, seldom longer than ten years.[12]

In addition, the results showed that collaborations were segregated along artistic status and that this tendency moderately increased during the New Hollywood era, while estimates

[12] A caveat of our study is that we did not use genuine longitudinal network models, which allow for a separation of selection and influence effects (Snijders, van de Bunt, and Steglich 2010; Steglich, Snijders, and Pearson 2010). For instance, stochastic actor-oriented models would have helped us to assess whether status-similar filmmakers collaborate or whether collaborating filmmakers become more status-similar over time (Torlò and Lomi 2017). We tried to apply these models, but model degeneracy, violation of model assumptions in large datasets, poor goodness of fit, and continuing problems with comparisons of effect sizes across models forced us to abandon SAOMs as our analytical strategy. We hope that future methodological developments will pave the way for longitudinal analyses of the presented dataset.

retained their size but became insignificant during the Blockbuster age. Artistic status was significantly associated with collaboration prominence during the first 50 years of the field's development while this tendency was absent during the Blockbuster era. These findings are of interest for scholars who study status orders, as an often-implicit assumption in status theories is that status orders crystallize relatively quickly out of micro-interactions and remain stable over time (Gould 2002; Lynn, Podolny, and Tao 2009; Manzo and Baldassarri 2014; Ridgeway 2019; Smith and Faris 2015). The results also speak to sociologists of culture that study the role of artistic status orders throughout the emergence and evolution of genres (Lena 2012; Lena and Peterson 2008; Van Venrooij 2015; van Venrooij and Schmutz 2018). The finding of elevated importance of artistic status for segregating collaborations after the collapse of the studio system and before the onset of the Blockbuster era is mostly in line with historical perspectives on Hollywood (Baumann 2007; Bordwell et al. 1985; King 2002), and the notion that cultural fields exhibit artistic standards of evaluation more strongly if they are increasingly decoupled from the economic field (Bourdieu 1993). Yet, we also discovered that artistic references played a substantial role for collaborations in the early stages of Hollywood filmmaking which points to the emergence of an early artistic status order prior to auteur filmmaking.

In concluding, we would like to point out several limitations that further research should address. While our dataset allows for a unique long-term view of the field of Hollywood filmmaking, it lacks some relevant information about filmmakers, such as their education or socio-economic background. Also, it would be desirable to have more information on the level of studios, e.g., on box-office returns, studio size, and variation in their economic situation (Cattani et al. 2008). Finally, our study focused on one particular cultural field. Therefore, we do not know whether our findings generalize to other fields of cultural production such as music, literature, or painting. It would be fascinating to compare collaborations and artistic

references in multiple cultural fields to arrive at a more general perspective on how social systems organize the distribution of social recognition under different contextual conditions.

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APPENDIX A.

DERIVATION OF ANALYTICAL SAMPLE FROM COMPLETE DATASET

The IMDb dataset which served as starting point for our analyses encompasses a time span from 1900 to 2000, entails 102,905 persons, 123,980 films, and 9,024 films that included at least one artistic reference. The following professional roles are present in the full dataset: cinematographer, composer, costume designer, director, editor, producer, production personnel, and writer. Note that actors and actresses as well as other professional roles were excluded upfront. Likewise, the following genres: news, talk-show, gameshow, reality-tv, and adult movies were omitted during the process of scraping our initial dataset from IMDb. The included genres are: action, adventure, animation, biography, comedy, crime, documentary, drama, family, fantasy, film-noir, history, horror, music, musical, mystery, romance, sci-fi, short, sport, thriller, war, and western.

As our theoretical considerations are geared toward the cultural field of filmmaking, we decided to exclude all professional roles except writers and directors. The other roles contribute decisively to the creative process of filmmaking, but constitute cultural fields in their own right that often traverse the boundaries of the film industry. For instance, composers and musicians strongly influence the overall feel and aesthetic appeal of a film, yet they can only seldom decide in which films they participate, often have professional engagements outside Hollywood, and form a distinct community with their own standards of evaluation (Crossley 2019; Faulkner 1983, 2017; Lena 2012; McAndrew and Everett 2015).

Furthermore, we only included filmmakers who participated in at least two films and had a career length of at least three years. The majority of filmmakers participated in only one film before they left the industry (~62% of all writers and directors). We focus on the stable part of the sample, because we are interested in how filmmakers who manage to participate regularly in film projects form collaborations and artistic references among each other. In addition, we

focused on the time from 1921 onward, because previously there are very few artistic references with less than one 1% of filmmakers referencing. Table A1 summarizes the different steps we took to arrive at our analytical sample.

Table A1. Criteria for Analytical Sample Overview

Time frame	Roles	Career length	Minimal number of films	Total number of filmmakers	Total number of films	Total number of referenced films
1900-2000	Writer, Director	At least 1 year	At least 1 film	44,259	97,284	8,918
1900-2000	Writer, Director	At least 1 year	At least 2 films	16,699	88,432	8,583
1900-2000	Writer, Director	At least 2 years	At least 2 films	15,691	87,571	8,558
1900-2000	Writer, Director	At least 3 years	At least 2 films	14,070	85,922	8,536
1921-2000	Writer, Director	At least 3 years	At least 2 films	13,544	61,129	8,522

APPENDIX B. GOODNESS OF FIT (GOF)

We assessed the goodness of fit (GOF) of all models by simulating networks from estimated ERGMs and comparing their degree, edgewise-shared partner, and geodesic distance statistics with the observed statistics in the corresponding network (Hunter et al. 2008). As becomes clear from table 2 and 3, the GOF was insufficient (far below 90%) in most periods. An insufficient GOF is not unusual in large networks (similar issues are reported for SAOMs by Lewis and Kaufman 2018: 1736; Stark et al. 2020: 458). We tried to increase the GOF by adding geometrically weighted statistics—such as the GWDEG and GWESP terms (Hunter

2007). Yet, these statistics led to model degeneracy in several periods, which is probably due to the different estimation procedures used by models considering higher order structures.[13] Consequently, we decided to report simpler specifications that worked for all periods.

While a high GOF is desirable, we would like to point out that hypotheses 3 and 4 are concerned with the role of filmmakers' attributes for network structure (i.e., the role of artistic status for network structure). Therefore, specifications without higher order terms are sufficient for our purpose. Moreover, terms beyond dyadic configurations introduce complex interdependencies among parameters and thereby complicate interpretation (Martin 2020; Rubineau et al. 2019).

APPENDIX C. ROBUSTNESS CHECKS: USER PREFERENCES AND PROBABILITY OF INCLUSION IN THE IMDb

Because IMDb is a user-generated database, we may wonder to what extent the number of a film's listed references correlates with IMDb user preferences. Otherwise, we risk ending up with a selective sample of films and references if the number of listed references per film reflects IMDb user tastes more than the actual number of a film's references. This selectivity is potentially problematic for our investigation as we study the *status order* of films in the field of filmmaking, and not the *popularity rank* of films among IMDb users. Hence, we wonder if some films score high on degree because they are truly influential among filmmakers, or because they are popular among IMDb users.

We address this caveat in two ways. First, we measured correlations between the number of user votes for films and their average user rating scores, on the one hand, and, on the other, the

[13] While models that operate only on the dyad level use pseudo-maximum likelihood estimation, models that include terms beyond dyadic interdependence rely on Monte Carlo Markov Chains (Hunter et al. 2008). The latter simulation-based estimation procedure probably caused model instability in the networks under study.

indegree and outdegree in the artistic reference network among films. The number of votes for a film reflects how recognized it is among the IMDb audience, whereas the rating score tells us how valued it is. Together, both numbers indicate how popular a film is in the eyes of IMDb users. Network indegree measures the number of references a film received by other films, and network outdegree measures the number of references made to other films that a given film entails. We assess the correlation between network degree and user votes and ratings for the subset of 9,436 films that sent (n = 6,686 films) or received (n = 8,578 films) at least one reference. This may include cases where either indegree > 0, and outdegree = 0, or indegree = 0, and outdegree > 0.[14]

We find only a very moderate correlation between network degree and user scores. Certainly, IMDb users constitute a select group of film connoisseurs who are well versed in film history, and if a canon of influential films does exist, they should be able to identify such classics in the field. Hence, we expect some moderate correlation between a film's centrality in the reference network and user votes. Indeed, the number of references that a film received (network indegree) correlates modestly with the number of rating votes (r = .44), which suggests that IMDb users are able to recognize canonical films. When it comes to the valuation of films, however, the correlation between indegree and the average rating score is smaller (r = .20). Problematic for our investigation would be a strong correlation between network outdegree and user scores because it could imply that, for films they value, users see references that don't even exist. However, this is not the case as the correlations between outdegree and

[14] We do not consider the correlations for all 52,353 films in our dataset because the vast majority of films would show a degree of 0. Substantively, these cases are not meaningful for our purpose because they played no influential role in film history, and thus are unlikely to have contributed to the emergence of an artistic status order. Including such network isolates in our robustness check would effectively amount to testing if influential films and those that left no trace in film history differed in the number of user votes and ratings they received. Instead, our purpose here is to assess to what extent any network degree > 1 is systematically related to IMDb user votes and ratings. An additional obstacle is that information on user scores is missing for about 25% of all films in the complete dataset.

the number of rating votes (r = .35), and between outdegree and the average rating score (r = .05) are even weaker than for indegree.

Second, beyond these summary statistics, we further show that the status order among films (as measured by the number of references received and sent) is not strongly connected to the popularity rank of films (as measured by users' votes and ratings). In the boxplots in figure C.1, we compare three broad status groups of films (high, medium, low network degree) with respect to their average user votes and ratings.[15] For indegree, we group films that received no references into the lowest status (indegree = 0; n = 4,127 observations), films that received 1-3 references into the medium status (equal to, or above the 50th percentile in the degree distribution; n = 4,269), and films that received 4 and up to 359 references into the highest status (equal to the 90th percentile in the degree distribution; n = 1,040). For outdegree, the low status group includes films that made no references to other films (n = 2,809); the medium status group includes films that made 1-6 references (equal to, or above the 30th percentile in the degree distribution; n = 5,545); and the high-status group entails films that made 7 and up to 260 references to other films (equal to the 90th percentile; n = 1,082).[16]

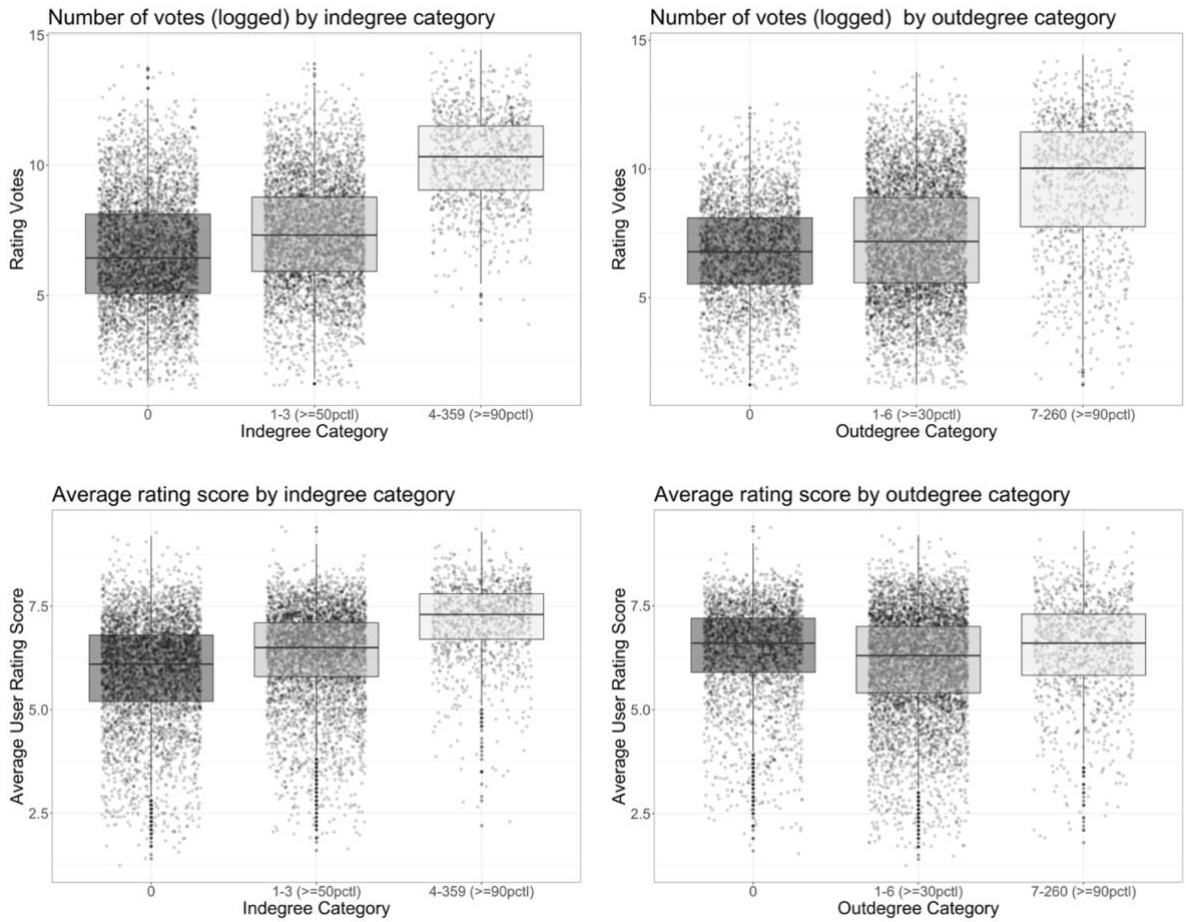
If a film's IMDb user popularity dictates the number of sent and received references, then we should observe little, if any overlap in the distribution of user votes and ratings between the three status groups of films, and references should be concentrated on the most popular films.

Again, we may expect some moderate positive relationship because filmmakers as well as IMDb film connoisseurs may consider some films as canonical. The boxplots suggest a slight tendency towards this relationship for the number of user votes. More important, however, we find that the distributions of all three status groups overlap. In other words, films with few,

[15] We logged the number of user votes because the underlying distribution is highly skewed (mean = 19,153.05; sd = 74,819.99).
[16] Recall that the exchange of references is not necessarily reciprocal or generalized: a given film may reference others but receive no references in return, and vice versa.

middling, or large numbers of references are likely to receive low, middling, or high scores from IMDb users.[17] This finding is particularly striking for the comparison of rating scores, and hence the valuation, not only identification, of films by users. In sum, we find little evidence that supports the caveat that the recorded references among films merely reflect IMDb user preferences.

C1. Distribution of IMDb User Votes and Average Rating Scores across Indegree and Outdegree Category



[17] We, thus, extend the sensitivity analysis by Spitz and Horvát (2014), who only focused on the top-50 cited films.