

Identity from Symbolic Networks: The Rise of New Hollywood

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Abstract: To what extent may individual autonomy persist under the constraints of group identity? This dualism is particularly salient in new movements that value individual creativity above all, and yet have to muster community cohesion to establish a new style. Using the case of New Hollywood in the 1960s and 1970s, the authors show how this movement reconciled the demands of collective identity and collaboration in film production with their commitment to the individual filmmaker's artistic autonomy. Using information from the Internet Movie Database on 17,425 filmmakers who were active between 1930 and 1999, the authors show that a cohesive symbolic network, in which New Hollywood filmmakers shared references to a canon of 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, collaborations in film projects yielded a fragmented network that did little to support the creative enterprise of New Hollywood. The evidence suggests 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 old Hollywood studio system.

Keywords: social networks; symbolic networks; collective identity; cultural sociology

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
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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 Coleman 2015). 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; in settings as varied as cultural markets, political networks, and ethnic stratification, it also serves to draw symbolic and tangible boundaries that distinguish insiders from outsiders, to the extent that distrust of outsiders and skepticism towards boundary-spanning become measures of a community's cohesion and identity (Goldberg, Hannan, and Kovács 2016; Hillmann 2008; Wimmer 2013). The stronger the adherence to a collective identity, the more constrained are individual autonomy and freedom within the boundaries of the group.

Indeed, sociologists have long considered the potentially negative impact of strong social ties on individuality, suggesting that cohesion may foster social control and conformity, but risk the loss of individual expression (Portes 1998). Empirical evidence from various cultural domains supports the notion that cohesive networks may even hinder individual career success (Lutter 2015) and limit creativity (Phillips 2011; Uzzi and Spiro 2005; de Vaan, Vedres, and Stark 2015; Vedres 2017), whereas fragmentation can fuel cultural change (Sgourev 2013). For individuals to break out of the collective mold, they must 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, and this is the focus of our article, whenever individual autonomy is strengthened and individual creativity is free to transgress boundaries, we would expect them to chip away at the cohesive force of collective identity. Particularly in cultural fields and creative industries, we typically think of cohesion emerging from tangible ties through collaboration. But what are the consequences for cohesion if strong norms of autonomy prevent direct collaboration? How can a community build and maintain a collective identity when its members share an individualistic vision? Drawing on the case of the New Hollywood movement, we show that symbolic ties through co-citation rather than collaboration can facilitate a cohesive community and collective identity.

We further argue that the tension between group solidarity and individualistic attitude is particularly salient when new groups or movements emerge that require a healthy dose of cohesion to establish a new collective style, yet also place a premium on the expression of individual creativity, and hence the pursuit of individual autonomy. How do such emergent 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; Lena 2012; Pachucki and Breiger 2010).

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 "[t]o 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 must 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; this tension often induces instability.

We consider collective identity formation and symbolic boundary construction in the arts movement of New Hollywood as an exemplary case. This movement 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. Their radical new approach to filmmaking contrasted with the hitherto dominant studio identity of the Golden Age of Hollywood (1920-1960).¹

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. It was introduced into American film discourse during the 1960s by film critic Andrew Sarris (Allen and Lincoln 2004; Baumann 2001; Kersten and Bielby 2012; Sarris 1962). According to auteurism, and central to our concern, it is the individual filmmaker who controls the creative process of making a film. Auteurs establish their own recognizable style as expressed in specific forms of editing, narrative techniques, or dialogues. 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 (English 2008; Wu, Wang, and Evans 2019), and they praise the artistic visionary rather than the film team that is associated with the Academy Award for Best Director (Rossman, Esparza, and Bonacich 2010).

Whereas the New Hollywood 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 bedevilled 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. The same person taking on the responsibilities of both writer and director allows that person to exercise creative control over the entire filmmaking process (Baker and Faulkner 1991). 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

Despite its apparent rise, the New Hollywood movement, together with its core ideal of auteurism, had to confront a seemingly inescapable dilemma, which brings us back to the tension between collective identity and individual autonomy. For one, and technically speaking, filmmaking is, in its very nature, a collaborative art form. Assembling a film crew, from producers to cinematographers and editors; casting leading actors, actresses, and supporting roles; scouting and booking suitable locations for shooting; 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). This collective nature of filmmaking as team-work contrasts with auteurism's insistence on the creative genius of the individual writer-director. As filmmaker Paul Schrader (2006: 47) has remarked, "[M]otion 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'."

Second, socio-culturally speaking, and most important for our argument, forming and establishing a movement typically requires a cohesive network consisting of tangible ties among like-minded peers, which facilitates community visibility, the shared expression of artistic ideas, and the pooling of resources. Few new movements, whether in visual arts (Accominotti 2009; Sgourev 2021), music (Crossley 2009; Skaggs 2019; Wilderom and van Venrooij 2019), cinema (Hollands and Vail 2012), sciences (Brandt 2022; Crane 1972; Frickel and Gross 2005), politics (Diani and McAdam 2003; Nelson 2021; Wang and Soule 2012), or religion (Wurpts, Corcoran, and Pfaff 2018; Zerubavel 1982), will become visible and leave a mark in a competitive field such as filmmaking, if their adherents do not feel committed to a shared identity. As in comparable cases of cultural groups, we would expect

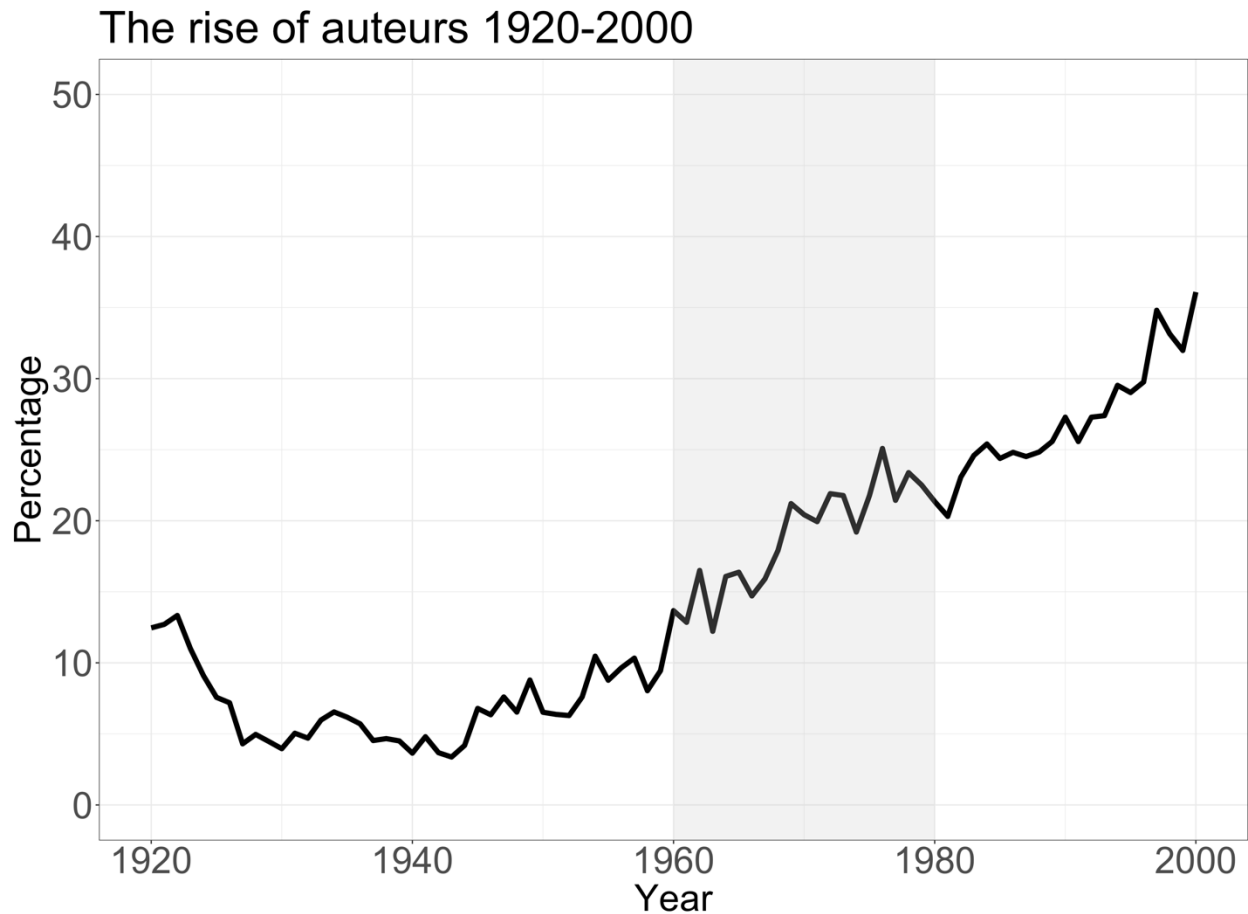


Figure 1: The rise of auteurs in American filmmaking, 1920-2000. *Note:* The figure shows the percentage of auteurs (defined as filmmakers who combined the roles of writer and director, divided by the number of all writers and directors in a given year). Source: IMDb, <ftp://ftp.fu-berlin.de/pub/misc/movies/database/>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

that establishing a novel artistic vision required a cohesive collaborative network among New Hollywood filmmakers who co-created films in line with their aesthetic ideals. However, these demands for collective efforts were not commensurate with the movement's motivating ideal that championed the artistic autonomy of each individual filmmaker.

Because its artistic ideals and its social organizational requirements were seemingly not aligned, 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 their deep commitment to individual auteurism and the demands of collective identity and community? This is the substantive empirical puzzle we seek to disentangle and resolve in this article.

We argue that the necessary cohesion for the New Hollywood movement to establish itself in the field was *not* found in collaborative networks that directly linked

writers and directors within joint film projects (i.e., the kind of project-based team networks we typically find in the sciences and knowledge-based industries; Borrett, Moody, and Edelman 2014; Powell et al. 2005; Skaggs 2018; Stark, Rambaran, and McFarland 2020; Wu et al. 2019). Indeed, social scientists who seek to understand cultural production from a relational perspective tend to focus on tangible ties of direct cooperation (Cattani, Ferriani, and Allison 2014; de Vaan et al. 2015).

Instead, drawing on comprehensive information about 50,831 films and 17,425 directors and writers from the Internet Movie Database (IMDb 2017), we show that New Hollywood filmmakers formed a cohesive alternative network of symbolic ties that linked their films through shared cinematic references to previous works in film history. Akin to, though not the same as citation networks in science, references were made to specific cuts, scenes, settings, and stills that were characteristics of films held in admiration as masterpieces in the eyes of New Hollywood auteur filmmakers. Not unlike scientific books and articles that are regarded as exemplars in their field and attract the most citations, New Hollywood filmmakers established a canon of classic films that stood as the perfect expressions of auteurism's artistic ideals.³ 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, 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.

An important insight from social network research is that people tend to be embedded in multiple networks at once. Informal relationships, such as friendships, that crosscut formal organizational and collaboration ties often play a significant role in the formation of new collective identities. This observation has been made in various contexts, including political movements (Gould 1995) and artistic communities (Anheier, Gerhards, and Romo 1995; Crossley 2009; Lena and Peterson 2008). Informal networks also played a crucial role in shaping New Hollywood filmmakers' aesthetic ideals and visions. As George Lucas noted, they formed a "support system for one another," and John Milius stated that they shared a taste for films directed by the likes of Hitchcock, Welles, and Ford (Pye and Myles 1979). Hence, the symbolic network of shared references to a canon of admired films may well be interpreted as an expression of these underlying informal networks of friendship and mutual support.

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; Hollands and Vail 2012; McAdam, McCarthy, and Zald 2012). 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 must 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 2017). Shared symbols and materials have also been central for the formation and cohesion of communities in the visual arts (Basov and Kholodova 2022; Sgourev 2021) and architecture (Jones et al. 2012). 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 symbols, but their alignment into a movement, organization, or party still happens through the tangible organizational networks in which they are embedded. 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 made to a canon of classic films gave rise to such a symbolic network. In addition, we move beyond the limitations in research design that previous studies faced. Although they offered valuable insights into comparable cases of cultural production focusing either on detailed narrative descriptions or general network effects, they left unclear the interplay between shifting historical context and relational processes (Cattani et al. 2014; Lutter 2015; Sgourev 2013, 2021). We combine qualitative insights that are sensitive to the historical setting with systematic evidence from longitudinal networks to support our argument.

With respect to our data, 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 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—as an indicator of the relational foundation of collective identity—in the collaboration and co-citation networks among 61 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, thus covering the time before, during, and after the height of the movement. In this first empirical step, our sample of New Hollywood filmmakers is 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. Our findings suggest that the collaboration network of this selective group of New Hollywood filmmakers shows a consistently fragmented pattern across all observed periods. In contrast, their co-citation network becomes increasingly cohesive throughout the 1960s and 1970s. The growth in cohesion from co-citation ties serves as our indicator of a relational foundation for collective identity formation.

In the second step, we extend our empirical analysis beyond this elite 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

place these two decades within the broader timeframe from 1930 through 1999, resulting in a sample of 17,425 directors and writers. Our reasoning to do so is twofold. First, the New Hollywood movement sought to distinguish itself from the studio-based and creative teamwork-focused 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 pattern of the collaboration and co-citation networks as we move from the Golden Age (1930-1960) toward New Hollywood (1960-1980). 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 during the subsequent Blockbuster era (1980-1999). Our results show that cohesion in the collaboration network decreases as of the 1950s and stagnates during the New Hollywood period whereas cohesion within the co-citation network increases steadily as of the New Hollywood period and continues to grow during the Blockbuster era. As in the first empirical step, the growth in cohesion from co-citation ties serves as our indicator of a relational foundation for collective identity formation.

Finally, in a third step, we provide 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 disproportionately prominent works.⁵

In sum, individual filmmakers who subscribed to the ideals of New Hollywood cinema and auteurism used cinematic references to previous films in the form of adopted scenes, dialogue snippets, or camera shots. They did so to pay homage, to signal their film 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 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 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 and gain visibility and recognition as a cultural movement by critics, audiences, and international peers 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 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 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 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 major legal decisions in the 1940s. First, the judgment in the court case of actress Olivia de Havilland versus her employer Warner Bros. Pictures (1944) made the enforcement of long-term employment contracts harder for studios by limiting contracts to 7 calendar years instead of 7 years of active work. The ruling gave filmmakers more freedom to collaborate and work with preferred colleagues and studios (Dixon and Foster 2018; Nelmes 2007). Second, in 1948, as a result of a Supreme Court decision in the Hollywood Antitrust Case, formally known as *US v. Paramount Pictures, Inc.*, the major studios had to divest themselves of their cinema chains and stop their profitable strategy of block-booking. This case contributed to the decline of the studio system because 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-director who controls the entire creative process and imprints a personal 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

(Neupert 2007; Rachlin 1993). Film critic Andrew Sarris forged these ideas into the framework of auteur theory and introduced it to the U.S. 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, at periods, attending one of the new American film school departments in the 1960s suggested a novel approach to their craft. Hence, Thompson (1999: 2) pointed out that several 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 a 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.⁶ 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 Martin Scorsese 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 a cohesive movement that established a cinematic canon.

What Are Cinematic References?

The director-writers of the New Hollywood movement used references to earlier films as an aesthetic tool to express adherence to an artistic identity and lineage within their works. These references can be interpreted as network ties that point from contemporary to past films, thereby linking a younger generation of filmmakers to their artistic ancestors and 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, two or more filmmakers must make the same references to films they decipher as meaningful.

In an interview with film critic Roger Ebert (1998), Martin Scorsese described cinematic referencing as an artistic practice he shared with his New Hollywood peers:

[W]e did tons of that [referencing]. Myself and DePalma and Spielberg and Coppola; in so many of our films we did things that relate to earlier films. There are several shots in 'Taxi Driver' that are inspired by 'Shane.' It's homage--the self-consciousness of saying, hey, here's a little nudge in the ribs to Truffaut; that's a nudge to Fellini; that's one to George Stevens; that's one to John Ford. You find yourself looking at old films a lot. The Hitchcock pictures I like looking at repeatedly, repeatedly, repeatedly.

Similarly, in a 1978 interview, Brian De Palma described how specific lighting or editing techniques of selected old Hollywood filmmakers served as his and his peers' cinematic points of reference: “[I]f I read a script and Marty's [Scorsese] gonna do it or George Lucas or Spielberg's gonna do I can see what they're gonna shoot because *you can sort of think in their grammar* [emphasis added]” (The Dick Cavett Show 2019). These statements by Scorsese, De Palma, and their peers offer illustrative evidence that their use of references to the same set of past works did indeed facilitate a collective sense of belonging to one artistic community, with a shared aesthetic vision, and hence a shared identity—to *think in their grammar*—as auteur filmmakers (Lena 2004).⁷

The role of Hitchcock references for New Hollywood and following generations of auteur filmmakers also appears in a 2010 conversation between Brian De Palma and contemporary auteur Noah Baumbach when they discussed specific editing and framing techniques in De Palma's *Blow Out* (1981) as inspired by Hitchcock's *Vertigo* (1958) (Nazari 2021). Hitchcock influenced not only New Hollywood and contemporary filmmakers but also French Nouvelle Vague filmmakers, who again inspired New Hollywood filmmakers. In 1966, François Truffaut acknowledged Hitchcock as his major cinematic inspiration and published the book *Hitchcock/Truffaut*, covering 50 hours of conversations between the two filmmakers (Hitchcock, Truffaut, and Scott 1993). Based on these conversations, Kent Jones' documentary *Hitchcock/Truffaut* (2015) presents interviews with 10 New Hollywood and contemporary auteurs who discussed the meaning of referencing Hitchcock's works (Daud 2021). Nouvelle Vague filmmakers also directly influenced New Hollywood filmmakers. For example, Martin Scorsese revealed that the jump-cut scenes in Jean-Luc Godard's *À bout de souffle* (1960) inspired the opening sequence of *Mean Streets* (1973) (Patterson 2008). In a commentary of *Taxi Driver* (1976), Scorsese and Schrader discussed their direct references to Godard's *Le mépris* (1963), as well as *Two or Three Things I Know About Her* (1967) and the various references to U.S. American films they described as “part of the lineage [...] of American cinema” (M.B. Archives 2020).

Although references often come in the form of framing or editing techniques, they also appear as stills or movement sequences. Consider another example in which the practice of citation links successive generations of filmmakers into a lineage of references. Godard's *Bande à part* (1964), itself an homage to Hollywood's film-noir genre, features a famous dance sequence where the three main characters suddenly begin improvising the Madison dance in a café (see the still in figure 2). Viewers familiar with that scene will recognize the barely hidden reference in Hal Hartley's quirky outlaw drama *Simple Men*, released in 1992 (Kehr 1992). Hartley, a prominent proponent of New Hollywood's auteur style who was influenced by New Hollywood filmmakers such as Terrence Malick (Sicha 2007), also 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 is staged in a café setting. Only the jazz tune in *Bande à part* is replaced with a contemporary Sonic Youth track. Not much later, 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

Jean-Luc Godard, *Bande à part* (1964)Hal Hartley, *Simple Men* (1992)Quentin Tarrantino, *Pulp Fiction* (1994)*The Pajama Game* (1957), choreography by Robert Fosse**Figure 2:** Citing impromptu dance sequences.

John Travolta break out into a Twist, seeking to win a dance contest in a cocktail bar. The reference 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 both place their creative work in an artistic lineage by referencing 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 Dance in *Bande à part* as an homage to Robert Fosse's choreography for the 1957 Hollywood musical film *The Pajama Game*. Hence, through such citations, we have come full circle from Classic Hollywood to the Nouvelle Vague and onward to New Hollywood and contemporary cinema.

These examples illustrate that the shared use of references to earlier movies is not just happenstance but intentional and collectively meaningful as an expression of their sense of belonging to an artistic community. 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 traditional filmmaking. "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 signals filmmakers’ literacy as elite 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 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 and signal scientific literacy to peers, 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.⁸

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 collaborations between them. As aesthetic practices, citation, allusion, and homage are 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 citation of an iconic scene, such as the dance sequence discussed above, is not mere imitation or an act of plagiarism but an expression of the artistic ideals of auteur cinema. The practice of referencing, therefore, also relies on a specific form of spectatorship among peers, critics, and an audience receptive to and appreciative of it. As film scholar Carroll (1982: 52) stated, New Hollywood filmmakers used references

in such a way that (1) informed viewers are meant to recall past films (filmmakers, genres, shots, and so on) while watching the new films, and that (2) informed viewers are not supposed to take this as evidence of plagiarism or uninspired derivativeness in the new film - as they might have in the works of another decade - but as part of the expressive design of the new films. [...] it is a rule of seventies film viewing, for example, that a similarity between a new film and an old film generally can count as a reference to the old film.

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 holds together communities of artists (Becker 1982; Jones et al. 2012; Lena 2004; Lena and Peterson 2008). 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) argued that the “construction of the canon provided not only an intellectual but also a symbolic solution to the internal 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. All the emphasis on shared conventions and community-building does not contradict 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 idea of individual 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 New Hollywood director-writers settled on the same set of films to quote in their own works. Film scholars have argued that the emergence of a film 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; Baumann 2007b; 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.

One important difference between citations in science and filmmaking concerns how recognizable references are for viewers. Coherence and clarity are the objectives of scientific publications. Scientific references are explicit and unequivocal so that readers can quickly grasp both the evidence and explanation presented. In contrast, proponents of auteur cinema across generations have emphasized an inherent ambivalence when they allude to iconic scenes in their films. Director Wes

Anderson, although not an auteur of the initial New Hollywood generation but a follower in its individualistic work ethic, remarked that filmmakers are in fact trying to hide citations. According to Anderson, “the reason why you hide your inspirational sources is because you try to steal them” (Guisset 2017). Stealing and concealing create an aura of exclusivity so that only the initiated few in the audience will be able to recognize these allusions.

Citing is an elite gesture. 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 Hip Hop where musicians use samples of 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 Hip Hop apart from other music 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 competing movements (Taylor and Whittier 1992; Wang, Piazza, and Soule 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).

In what follows, we show that shared cinematic references brought forth a cohesive symbolic network that embedded filmmakers into a community of like-minded peers and facilitated their collective identity as auteurs. As we present below, whereas New Hollywood filmmakers rarely engaged in direct collaboration, they expressed their shared understanding by referencing the same selected films. The symbolic network of co-citations, we argue, provided a relational foundation for identity that aligned neatly with the motivating ideal of auteurism, an ideal that championed the creativity of the individual writer-director.

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. We compiled the data via <ftp://ftp.fu-berlin.de/pub/misc/movies/database/> in September 2017. All raw and prepared data and the code can be accessed via <https://dataverse.harvard.edu/privateurl.xhtml?token=c81114da-6e97-44bb-9272-f19b302afcb9>. 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 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 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 U.S. 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 online supplement 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 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.⁹

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 1999. 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 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 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 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).”¹⁰ To consider the fact that IMDb data are user-generated and to rule out potential biases driven by user preferences, we conduct two additional analyses reported

Table 1: Empirical strategy

	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, Number of isolates, network integration	Modularity divided by logged number of nodes	Skewness of indegree distribution
Sample	61 selected New Hollywood writers and directors, 1950-1999	All American writers and directors, 1930-1999	All U.S. American citing films and all cited films, 1930-1999
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 structure of directed citation network

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

in the online supplement. As reported in appendix A.1 in the online supplement, we first examine to what extent a film's number of registered references in the IMDb is correlated with its popularity among users who enter this information into the database. We find little evidence to support this potential caveat. In a second analysis, reported in appendix A.3, we assess the match between references listed on IMDb and those mentioned in critical reviews that were published during the New Hollywood period. We find an extensive match between references listed in IMDb and those listed by critical reviews which suggests that references recorded in the IMDb are not mere artefacts of users' imagined references. Considering all selection criteria, our sample consists of 17,425 individual filmmakers, 50,831 films, and 26,516 references sent by 6,439 films to 8,273 films. All observations are contained within the 70-year period from 1930 to 1999.

Empirical Strategy

We pursue our empirical analysis in three complementary steps. We begin with a comparison of cohesion in the collaboration and co-citation networks among 61 prominent New Hollywood filmmakers who are widely considered 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.

Cohesion Among the New Hollywood Elite, 1950-1999

Measurement

In this section, we consider the extent of cohesion—as an indicator of the relational foundation of collective identity—in the collaboration and co-citation networks among 61 prominent New Hollywood writers and directors that most sources in the film history literature recognize as the leading members of the movement. The main source for our sample is the list “Directors: New Hollywood,” as it has been compiled and included in the IMDb.¹¹ We undertook an extensive cross-validation of this list, using well-established accounts of the New Hollywood movement in the film history literature (see Appendix A.2 in the online supplement for the sampling procedure). We merged the list of names with information on the 1,042 films that these filmmakers were involved in, either as directors or writers, and with information on the 1,941 distinct films they cited in their work, yielding a total of 3,450 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. Focusing on the years 1950-1999 allows us to observe if filmmakers were active before, during, and after the formative period of the New Hollywood movement (1960-1980).

We present systematic evidence that cohesion within the New Hollywood elite between 1950 and 1999 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 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.

Intuitive measures of cohesion in such small to medium-sized networks are 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. We apply three component-based cohesion measures. We calculate the proportion of nodes in the largest component, the proportion of isolates, and network integration to take into account that filmmakers may be integrated in cohesive bi-components rather than one large component (Erikson and Bearman 2006).

Figure 3 shows illustrative examples of what constitute collaboration ties and co-citation ties. In the collaboration network, ties are formed through direct collaboration between writers and directors in the production of a film. An example is

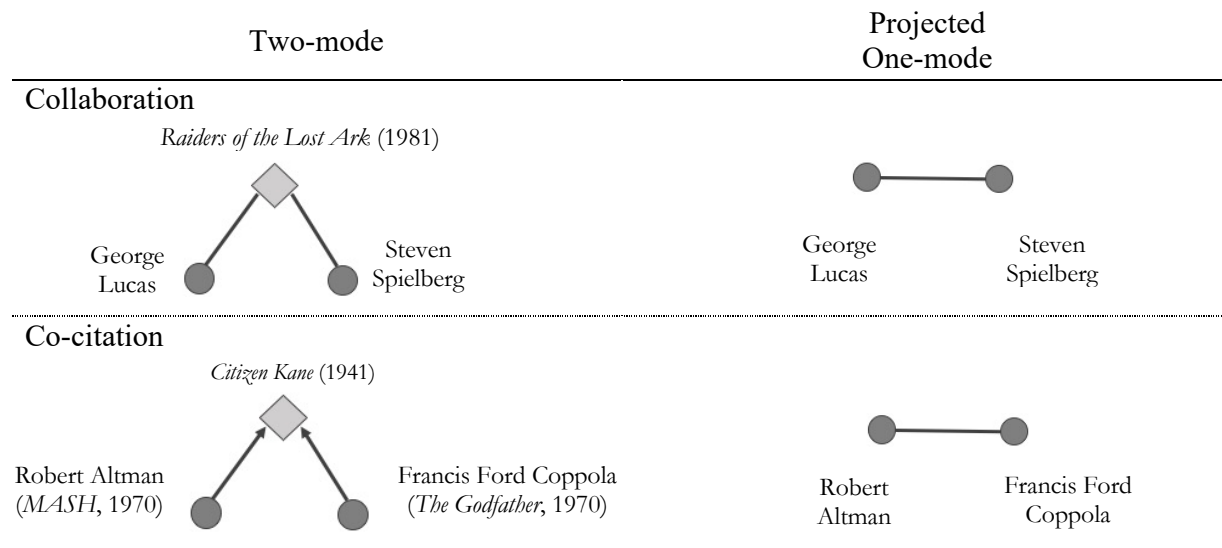


Figure 3: Examples of tie creation through collaboration and co-citation.

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, both 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 *M*A*S*H* (1970), and Francis Ford Coppola made a reference to *Citizen Kane* in his film *The Godfather* (1970). Again, the one-mode projection of the citation network turns this into an undirected tie between the two directors Altman and Coppola.

Because we are interested in the emergence of New Hollywood, we 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: 1950-1959; 1960-1969; 1970-1979; 1980-1989; 1990-1999. For each period-specific network, Table 2 reports descriptive statistics for the average number of directors and writers involved in a film, the average number of films a filmmaker made, and the average number of citations filmmakers included in their own works.¹² Our choice of periodization rests on substantive grounds. It usually took filmmakers 2 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 2 years. As Table 2 shows, this corresponds to about four to five films per filmmaker over the course of each period (except for the 1950-1959 period). Each period thus offers ample opportunities for filmmakers to build ties through successive

Table 2: Descriptive information on the New Hollywood elite

	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999
	Num Filmmakers per Film				
Median	2	2	2	2	2
Mean	2.46	2.40	2.60	2.55	2.63
Min	1	1	1	1	1
Max	6	13	8	10	21
	Num Films per Filmmaker				
Median	2	4	5	4	4
Mean	6.17	4.60	5.23	4.95	4.20
Min	1	1	1	1	1
Max	27	24	13	12	11
	Num Citations per Filmmaker (if citing)				
Median	6	4	11	11	12
Mean	7.71	7.16	17.93	27.44	23.60
Min	1	1	1	1	1
Max	16	31	84	152	92

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* (1972) but is not mentioned as a New Hollywood filmmaker in the historical sources.

collaborations. Hence, bias that leads us to underestimate cohesion within the collaboration network is limited.

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 focus on directors and writers. We recognize that these directors and writers occasionally took on additional responsibilities in filmmaking such as producing, cinematography, or editing, and these activities may have yielded additional network ties of cooperation. In a separate analysis, reported in Table A.3 in the online supplement, we show that our findings remain robust if we consider that 58 out of our 61 filmmakers also occupied positions as producers, cinematographers, or editors. In Appendix A.4 in the online supplement, we also compare differences in cohesion in the collaboration and co-citation networks between New Hollywood directors and random selections of Golden Age filmmakers. The results likewise support our argument and inferences.

Results

The network plots in Figure 4 present 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. In the collaboration network, writers and directors are linked through edges that represent direct teamwork on a

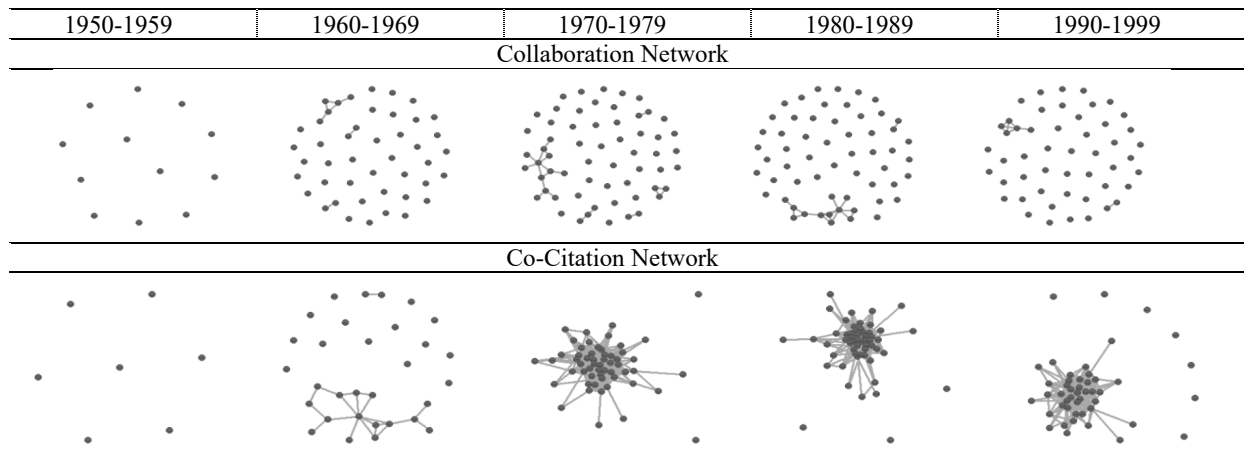


Figure 4: Collaboration and Co-Citation Networks of elite New Hollywood filmmakers.

film project. In the co-citation network, two filmmakers are linked if they referenced the same film in their own film (see Figure 3).

During the first period (1950-1959) we find a limited number of future New Hollywood filmmakers who neither collaborated with each other, nor cited the same films. During this period, 12 filmmakers participated in a film project, whereas only seven 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 (1960-1969), 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.¹³ Put differently, here we find the 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, their shared use of cinematic references provided a cohesive relational foundation for 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

Table 3: Network statistics on the New Hollywood elite

	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999
Collaboration Network					
Num Filmmakers	12	45	60	58	50
Num Edges	0	7	20	17	8
Mean Degree	0	0.31	0.67	0.59	0.32
SD Degree	0	0.73	1.14	1.31	0.91
Num. Comp.	12	39	43	46	45
Prop. in Largest Comp.	0.08	0.11	0.20	0.21	0.10
Network Integration	0.08	0.03	0.06	0.06	0.03
Prop. Isolates	1.00	0.80	0.63	0.76	0.86
Co-Citation Network					
Num Filmmakers	7	31	56	55	47
Num Edges	0	21	399	441	253
Mean Degree	0	1.35	14.25	16.04	10.77
SD Degree	0	1.78	9.98	11.81	8.39
Num. Comp.	7	16	3	4	8
Prop. in Largest Comp.	0.14	0.48	0.96	0.95	0.85
Network Integration	0.14	0.25	0.93	0.89	0.73
Prop. Isolates	1	0.45	0.04	0.05	0.15

The table reports network statistics on the collaboration and co-citation networks of the 61 New Hollywood elite directors and writers between 1950 and 1999.

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 (1950-1959), 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 Hollywood (1960-1969), the striking difference between the two network patterns comes to the fore. Within the collaboration network, the number of separate components (39) still was nearly as large as the number of individual filmmakers (45). Such a large number of components confirms fragmentation as the defining pattern of the collaboration network among New Hollywood directors and writers.¹⁴ Very little in this ratio of components to filmmakers changed over the course of the following periods. In contrast, even though the number of 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 56 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 (85-95 %) 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 comparing additional cohesion measures, network integration and the proportion of isolates, further supports our findings (see Table 3).

Ideally, we would compare the scale of cohesion among New Hollywood filmmakers and among their artistic predecessors during Hollywood's Golden Age. Such a comparison would tell us how unique the pattern of ties among New Hollywood filmmakers was. As mentioned earlier, in the online supplement, we compare cohesion measures among a random draw of 60 writers and directors active during the height of the Golden Age (1930-1939) with the observed cohesion measures of 60 writers and directors active during the height of the New Hollywood (1970-1979). The evidence supports our argument that the proponents of New Hollywood relied much less on direct collaborations to cohere as a movement than filmmakers had done in the past. Instead, cohesion among New Hollywood filmmakers as a movement came primarily from symbolic ties through joint references. In addition, to consider that 58 out of these 61 New Hollywood elite filmmakers also occupied other professional roles, we analyze network cohesion among New Hollywood filmmakers, not only including writers and directors, but also cinematographers, editors, and producers (see Table A.3 in the online supplement). The findings still support our previous results indicating largely fragmented collaboration but cohesive co-citation networks. In sum, these results are consistent with our argument that filmmakers who subscribed to the artistic ideals of New Hollywood tended not to engage in direct collaboration. Any cohesion that existed among the elite members of New Hollywood was born largely out of shared references to earlier films they considered classics and exemplars of their artistic vision.

Cohesion in American Filmmaking, 1930-1999

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 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 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 61 elite writers and directors. Consequently, we would expect that a much broader set of filmmakers adopted the practice of referencing and paying homage to canonical films. In what follows, we consider a broader sample of 17,425 directors and writers who worked on at least two film projects between 1930 and 1999. Within this sample, we treat New Hollywood as a more inclusive movement and define it based on the period when the artistic ideal of auteurism became most salient (1960-1980).

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

Table 4: Descriptive information on all filmmakers

	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999
Num Filmmakers per Film							
Median	2	2	2	2	1	1	1
Mean	2.81	2.75	2.45	1.94	1.74	1.79	1.57
Min	1	1	1	1	1	1	1
Max	23	37	18	13	12	19	29
Num Films per Filmmaker							
Median	3	3	2	2	1	1	2
Mean	8.70	7.02	4.98	3.07	2.34	2.02	2.12
Min	1	1	1	1	1	1	1
Max	325	180	148	109	99	63	105
Num Citations per Filmmaker (if citing)							
Median	2	2	2	2	2	4	5
Mean	3.21	3.66	3.39	4	4.89	8.22	11.21
Min	1	1	1	1	1	1	1
Max	51	74	37	54	84	152	362

The table reports descriptive statistics on filmmakers, films, and citations for 17,425 directors and writers, 50,831 films and 8,273 unique references between 1930 and 1999.

collaboration network decreased or stagnated, 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.

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 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 4-year moving windows for both networks because ties typically form before the focal year of a film's release,

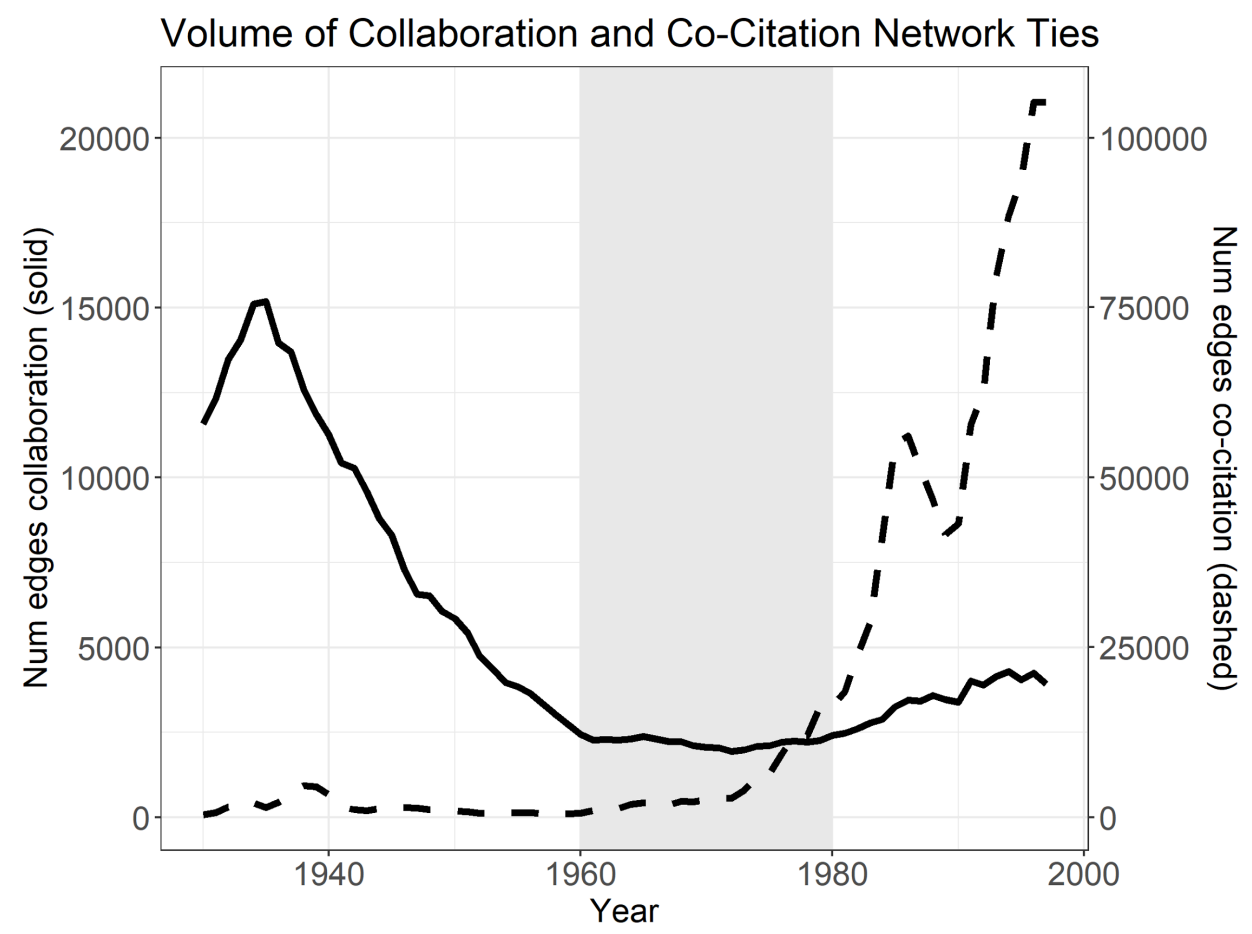


Figure 5: Number of edges in collaboration (solid line) and co-citation networks (dashed line), 1930-1999. The shaded area marks the New Hollywood period. Note that the numbers report edge size for 4-year moving windows. For example, the calculation for 1970 includes ties from 1970, 1971, 1972, and 1973.

and they also tend to persist after the film's release (see de Vaan, Vedres, and Stark 2015).

Results

First, we consider the collaboration ties and co-citation ties across the entire period (1930-1999) in Figure 5. The solid line traces the number of collaboration ties between writers and directors, whereas the dashed 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 collaborative ties steadily decreased and stagnated at a low level throughout the 1960s and 1970s. In contrast, excepting a slight increase in the early 1940s, the number of co-citation ties stayed at a low level until the mid-point of the New Hollywood movement.

In the 1970s, at the height of New Hollywood, the co-citation ties 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 that the use of cinematic references was a known practice 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.¹⁵

We also test to what extent the degree of cohesion in the collaboration and co-citation network among all filmmakers changes as we move from the Golden Age to the New Hollywood period and the Blockbuster Era. Table 5 contrasts cohesion in the collaboration and co-citation networks for 10-year periods. For ease of interpretation, we visualize the modularity findings in Figure 6 for 4-year moving windows. The solid line represents the weighted modularity score for the collaboration network over the entire period, from 1930 through 1999. Modularity, and hence fragmentation of the collaboration network, increased until 1970, the mid-point of the New Hollywood period, remained at about the same level until the 1980s, and decreased slightly thereafter.

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 1999. 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 gained such prominence in filmmaking that it could serve as a symbolic foundation for cohesion and a collective identity around the idea of auteurism.

In a separate robustness analysis, we analyze network cohesion among all filmmakers not only including writers and directors, but also cinematographers, editors, and producers (see Table A.4 in the online supplement). The findings still support our previous results indicating that cohesion decreased and stagnated over time in the collaboration network but steadily increased in the co-citation network as of the 1960s.

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

Table 5: Network statistics on all filmmakers

	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999
	Collaboration Network						
Num Filmmakers	3,445	3,177	2,888	3,077	3,818	5,094	7,738
Num Edges	31,895	22,261	10,976	5,623	4,988	6,871	9,252
Mean Degree	18.52	14.01	7.60	3.65	2.61	2.70	2.39
SD Degree	24.40	15.98	9.13	4.19	3.08	3.45	4.60
Modularity/Log Nodesize	0.048	0.061	0.069	0.100	0.104	0.103	0.097
Prop. in Largest Comp.	0.95	0.93	0.86	0.67	0.52	0.47	0.39
Network Integration	0.90	0.87	0.75	0.45	0.27	0.22	0.15
Prop. Isolates	0.03	0.04	0.06	0.17	0.23	0.22	0.35
	Co-Citation Network						
Num Filmmakers	733	909	693	817	1,197	2,169	2,790
Num Edges	5,871	10,665	3,594	6,679	25,144	171,196	365,428
Mean Degree	16.02	23.47	10.37	16.57	42.01	157.86	261.96
SD Degree	21.07	31.05	15.04	23.71	54.00	176.10	281.90
Modularity/Log Nodesize	0.084	0.075	0.090	0.073	0.052	0.030	0.023
Prop. in Largest Comp.	0.66	0.76	0.62	0.72	0.84	0.93	0.95
Network Integration	0.44	0.58	0.38	0.51	0.71	0.87	0.90
Prop. Isolates	0.32	0.24	0.37	0.28	0.15	0.07	0.05

The table reports network statistics on the collaboration and co-citation networks of 17,425 directors and writers between 1930 and 1999.

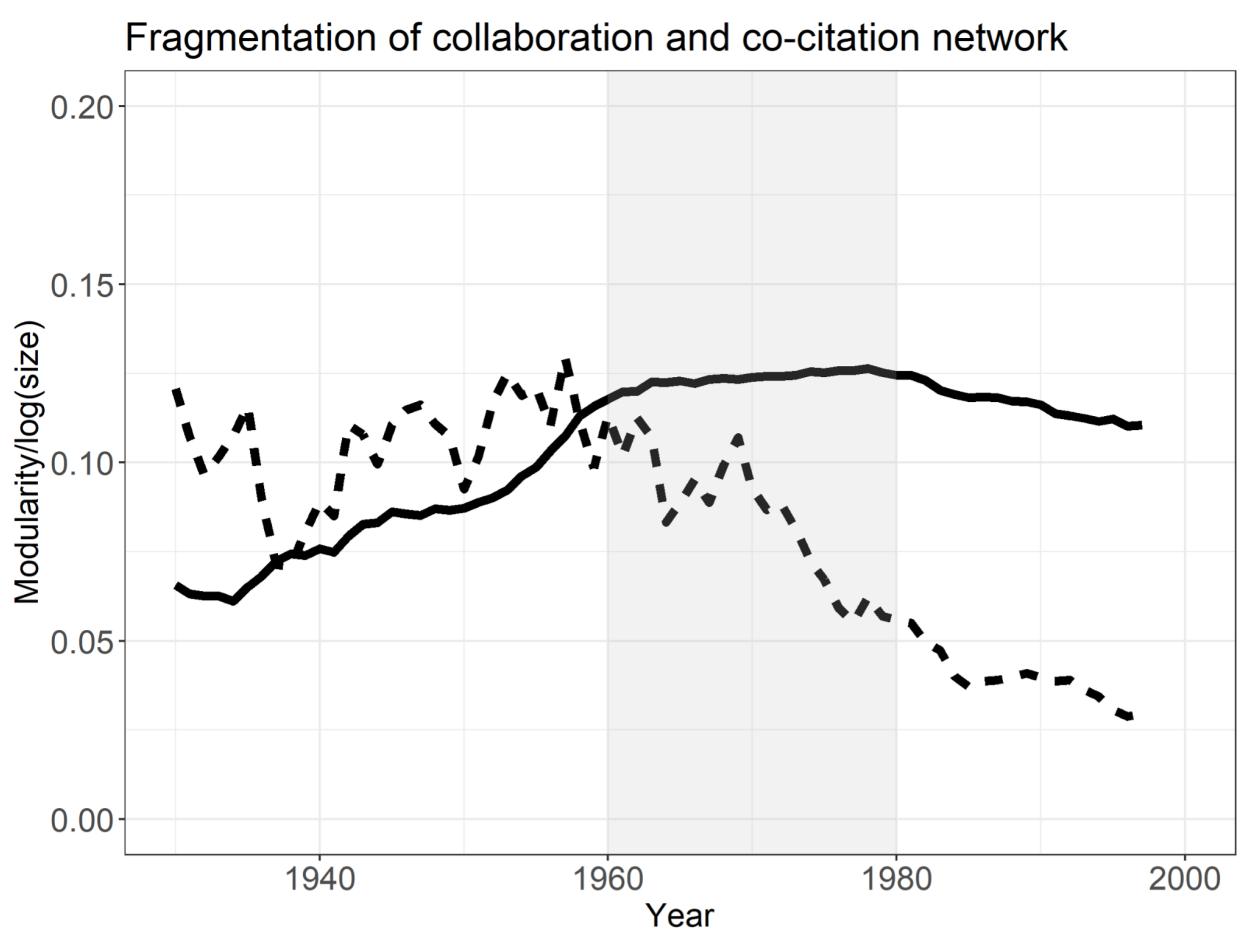


Figure 6: Modularity (scaled by logged number of nodes) over time. The solid line reports fragmentation in the collaboration network, the dashed line does the same for the co-citation network. The shaded area marks the New Hollywood period. Note that the numbers report network modularity for 4-year moving windows. For example, the calculation for 1970 includes ties from 1970, 1971, 1972, and 1973.

through shared references. In ways that may be best understood as symbolic boundary-making, the new generation of filmmakers shunned direct collaborations 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, 1930-1999

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 be-

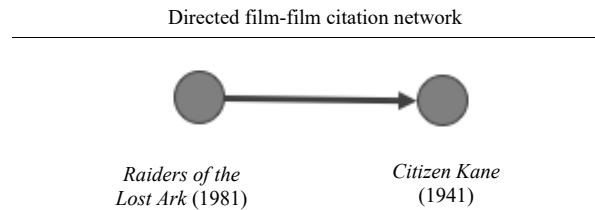


Figure 7: Nodes are films that generate a tie by referring to each other.

came ever more focused on a set of valued films that reflected the taste and vision they shared with their peers.

Measurement

To reveal canon formation, we turn to the directed citation network among films over the entire period from 1930 through 1999. The network consists of 6,439 citations and 8,273 cited films. 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 writer 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]

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 clear 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 1999. The perhaps most obvious, and expected, trend is the continuous increase in the number of citations and cited films as well as in the number of citations per film (Table 6). These first descriptive results indicate the increasing legitimacy and use of references in filmmaking.¹⁶

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 references by the time of New Hollywood's rise to prominence in the 1960s and 1970s.

Table 6: Descriptive information on citation network (Canon)

	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999
Num Released Films	10,670	8,102	5,869	4,862	5,146	5,744	10,438
Num Citing Films	392	538	435	501	797	1,571	2,205
Num Cited Films	664	931	788	1,245	2,542	7,169	13,177
Num Unique Cited Films	464	620	585	869	1,467	3,042	4,776
	Num citations per film						
Median	1	1	1	1	2	3	3
Mean	1.69	1.73	1.81	2.49	3.19	4.56	5.98
Min	1	1	1	1	1	1	1
Max	26	25	22	22	51	112	260

The table reports descriptive statistics on the directed citation network between 1930 and 1999. The network consists of 6,439 unique citing and 8,273 unique cited films

Table 7: Network statistics of citation network (Canon)

	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999
Num Nodes(Citing and/or Cited Films)	795	1,072	962	1,289	2,107	4,131	6,389
Num Edges	664	931	788	1,245	2,542	7,169	13,177
Mean Indegree	0.84	0.87	0.82	0.97	1.21	1.74	2.06
SD Indegree	1.22	1.33	1.06	1.26	2.15	4.11	5.03
Skewness Indegree	5.17	5.09	4.39	4.77	7.53	10.11	11.50

The table reports network statistics on the directed citation networks between 1930 and 1999.

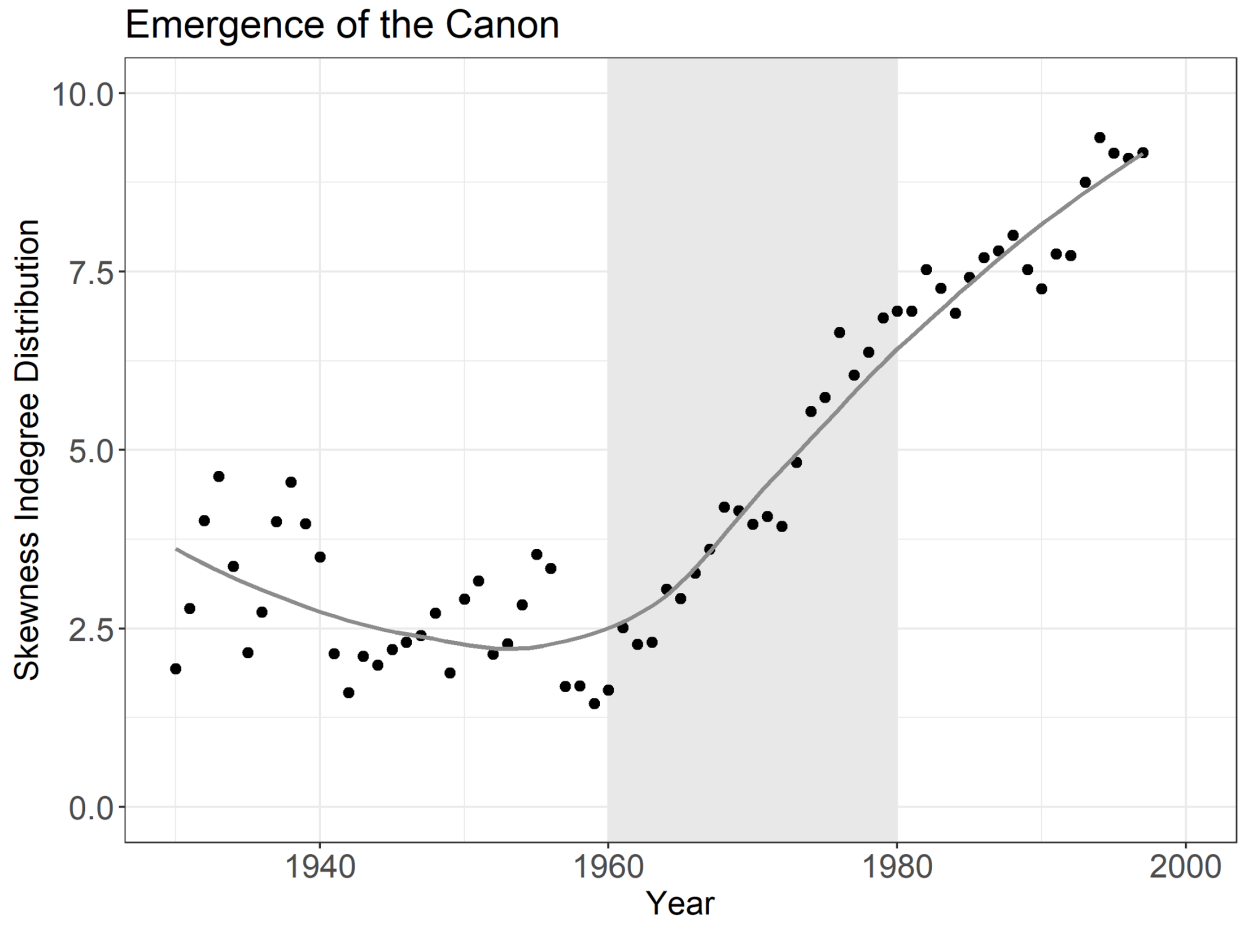


Figure 8: Skewness of indegree distribution (4-year moving windows) with loess curve. The shaded area marks the New Hollywood period. Note that the numbers report network skewness for 4-year moving windows. For example, the calculation for 1970 includes ties from 1970, 1971, 1972, and 1973.

We measure the tendency towards inequality using change in the skewness in the distribution of indegree centrality across successive 4-year moving windows.¹⁷

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 (1930-1960), referencing was already a practice, but inequality, such that a few films received a disproportionate number of citations, was not pronounced. In contrast, with the rise of New Hollywood in the 1960s the slope of the skewness indicator rises markedly, and it continues to do so through the end of our observation window. Our findings, thus, suggest that the proponents of New Hollywood did indeed succeed in establishing a canon of films that set the aesthetic standard for others to follow.

An alternative explanation for the observed canon formation suggests that it was not an expression of New Hollywood's collective identity, but rather the result of New Hollywood filmmakers putting into practice what film school had taught them. We know that 32 out of the 61 prominent New Hollywood writer-directors we examined earlier did indeed attend film or theatre study programs, including enrollments at NYU Tisch ($n = 6$), USC Cinematic Arts ($n = 4$), and UCLA ($n = 3$; see Table A.2 in the online supplement). Unfortunately, we lack sufficient systematic evidence from syllabi, textbooks, and other course materials to document that a film canon was already well-established in these programs and left its mark on the future founders of New Hollywood. If anything, anecdotal evidence suggests that these students' budding cinematic tastes were partially at odds with their school's curriculum. In a 1979 interview with the *New York Times*, one USC student remembers (Honeycutt 1979):

The thing that I did find surprising at USC was that there was a lot of analysis of European movies [...]. I was one of the people who said, 'Look, I came here to learn about American movies.' The bulk of the students — I'm talking of George Lucas, John Milius, John Carpenter, Randal, that whole group — were all into looking at old Hollywood pictures. We organized a number of retrospectives of people like Hitchcock, Disney, Welles, and John Ford.

Martin Scorsese likewise recalled his experience at NYU Tisch, where his admiration for Tom Ford's *The Searchers* (1956) was met with disapproval by his instructor. When he submitted an enthusiastic essay on *The Third Man* (1949), written by Orson Welles, his instructor reminded him that this film "was just a thriller" (NYU Tisch School of the Arts 2014). Other sources indicate an endogenous dynamic. Here is New Hollywood filmmaker John Milius, who graduated from USC in 1969:

I don't know if it was the film school as such or the meeting of this group of people who became very involved and enjoyed the experience of going to film school. There was obviously some sort of magic in that class. (Pye and Myles 1979: 57)

Most likely, as students, future New Hollywood filmmakers mutually influenced each other with new ideas just as much as their school's curriculum left an institutional imprint on their developing aesthetic preferences.

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 often-strained relationship between individual autonomy and the constraints of group dynamics. The question how individual autonomy may persist under the imperatives of community cohesion has attracted most of the attention. In contrast, our case of New Hollywood exemplifies settings in which the empirical puzzle is turned on its head: how can communities achieve robust cohesion and a strong collective identity when their members adhere to a pronounced

belief in individual autonomy? Other artistic and literary movements, most prominently Romanticism, that sought community yet similarly celebrated the idea of the artistic genius, invite immediate comparisons with our case (Sapiro 2016). Insights from our case may also generalize to settings where well-tuned team performance is essential for success, yet individual (super)stars are the most venerated. In professional sports, teams composed of various star-players often fail to win because they do not perform as a well-orchestrated collective. In parliamentary politics, displays of unity are necessary to secure majorities for legislative initiatives, yet rivalries between prominent figures may fracture the party line into competing factions. Closer to home, advances in science tend to stem from collaborative efforts, yet evidence of an independent research profile is expected of individual scholars and stardom is just as valued in academia as it is in professional sports. The important general lesson from our study for understanding the relation between cohesion and individual autonomy in other contexts is that one must find functional equivalents to the role that co-citation ties played in community-building in the case of New Hollywood.

Here 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 community cohesion among their members to establish a new artistic vision. 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 was perceived as limiting the artistic autonomy of the individual director and writer. Collaborative relationships 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 have demonstrated that, instead of direct collaborative ties, these filmmakers achieved their cohesion through shared references to revered films. Referencing the same set of canonical films 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.¹⁸ Alignment through symbolic networks, we suggested, offered a relational basis for reconciling the demands of community cohesion and the preservation of individual artistic autonomy. Using data from the IMDb, we have presented supporting evidence for our argument (IMDb 2017), both for the inner circle of New Hollywood directors and writers, and for the extended set of all American filmmakers between 1930 and 1999.

We have also shown that New Hollywood has been 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 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 making 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.

Notes

- 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 U.S. American film industry. The term "Golden Age of Hollywood" captures the period between 1920 and 1960. It includes the organizational structure of the studio system and the aesthetic style of the Classical Hollywood Cinema favoring, among other aspects, linear narratives (Bordwell, Staiger, and Thompson 2015).
- 2 The relatively large share of writer-directors in the early 1920s has nothing to do with auteurism but reflects the lack of 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).
- 3 We do not mean to suggest that citing in filmmaking is the same as citing in science. Although scientists must reveal the source of their influence, this norm is not established in the arts. In addition, the meaning of scientific citations may be much less symbolic or creative when they are demanded by reviewers rather than being initiated by authors.
- 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).
- 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).
- 6 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 full well that partisans of the auteur movement put Orson Welles on a pedestal as an “absolute auteur.”

- 7 Unfortunately, beyond such interview data, systematic evidence that documents a causal link from co-citations to the creation of a collective identity is scarce at best. The likely reason is that New Hollywood was an ideational movement rooted in aesthetic choices. As such, the collective action problems we typically find in political, protest or religious movements, for example, were not as salient in the case of New Hollywood: there was little, if any proselytizing because power did not primarily come from numbers. Joining the movement also carried no risk of physical or mental harm, hence there was no need for selective incentives to mobilize followers. New Hollywood as an artistic movement was also not a primary vehicle for mobilizing material resources. Consequently, we should not expect to find evidence that co-citation networks helped with solving common collective action problems. Likewise, New Hollywood did not imply a card-carrying membership, and therefore it is hard to think of any members who were excluded or marginalized because they did not engage in co-citation.
- 8 Again, a major 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.
- 9 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). In an additional analysis that we report in the online supplement (Tables A.3 and A.4) we also include cinematographers, editors, and producers because New Hollywood filmmakers may have also worked as, for example, producers who oversaw economic decisions.
- 10 https://help.imdb.com/article/contribution/titles/movie-connections/GNUNL9W2FTZDGF4Y?ref_=helpsrall# (accessed September 20, 2023).
- 11 <https://www.imdb.com/list/ls073927086/> (accessed September 20, 2023).
- 12 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.
- 13 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 and Figures 4 and 5). If citing was 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.

- 14 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% when considering directors and writers and 42% when also including producer, cinematographer, and editor roles) 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.
- 15 It is not unlikely that a growing audience of filmviewers who appreciated New Hollywood’s aesthetic choices contributed to the rise of referencing. As we noted earlier, the relationship between New Hollywood filmmakers and initiated moviegoers was a symbiotic one: “The film-historically conscious directors and viewers grew up together. They encourage each other by a reward system based on reciprocal recognition. Each side of the exchange abets the other’s view of itself (that is, reinforces the criteria for serious film viewing, on the one hand, and for serious filmmaking, on the other)” (Carroll 1982: 55).
- 16 Readers may wonder if the increase in citations is an artifact of more accurate measurement in later years because IMDb users may prefer newer films and therefore register references that appear in those films more carefully. In Appendix A.1 in the online supplement, we show that there is little evidence to support such a taste-based selectivity. Further, in Appendix A.3, we show that a substantive match exists between references registered by IMDb users and those detected by film critics.
- 17 Our dataset consists of the population of citing and cited films in the period 1930-1999. Although 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.
- 18 Of course, we recognize that collective identity formation in this and comparable settings tends to be endogenous: Citing the same films places these filmmakers in similar network positions just as much as befriending each other and attending the same film schools, festivals, and institutes gave rise to a sense of community whose members appreciated and cited the same films.

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