Placing Collaborative Circles in Strategic Action Fields: Explaining Differences between Highly Creative Groups*

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Abstract
Collaborative circles theory explains how innovative small groups develop and win acceptance of their creative work but assumes a single type of circle and would benefit from considering how circles are affected by the strategic action fields in which they operate. We do so by synthesizing research on art, science, philosophy, and social movements to identify five field characteristics that influence circles and their creative potentials (i.e., attention space, consensus, social control, resources, and organizational and geographical contexts). We then use primary and secondary data on science circles (the Resilience Alliance and Phage Group), combined with previous research on circles and group creativity, to show how field-level differences explain systematic variations in the structure and dynamics of art and science circles. We close by arguing that there exists of a family of circles operating in different fields, formulating a refined definition of circles, and postulating four propositions informing future research.

Keywords
collaborative circles, strategic action fields, creativity, small groups, collective action

Small groups, such as collaborative circles, float at the “meso” level of social life, and they are often ignored by sociologists who theorize at the macro level of class, culture, and social movements, as well as by those who theorize at the micro level of the individual.

—Michael P. Farrell (2008:3)

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Creativity is a topic of fundamental sociological interest, underpinning the elemental social processes of cultural production, sociality, collective action, and social change. Among classical theorists, the American pragmatists developed some of the most comprehensive theories of creativity, arguing that breaches in habitual patterns of action can lead to the creation of new ideas and new modes of action (e.g., Mead 1934). While in Europe, Fleck’s ([1935] 1979) pioneering work on thought collectives presaged modern creativity studies by decades. And although a handful of contemporary sociologists have tackled the issue directly (e.g., Burt 2005; Collins 1998; Sawyer 2007), creativity has remained a marginal subject within our discipline (Joas 1996). Research on creativity is instead dominated by psychologists, management scholars, and cultural geographers (see Kaufman and Sternberg 2010; Sawyer 2012), and as a result, it fails to sufficiently consider how creative work is structured by the social environments in which it occurs—precisely the sort of understanding that distinctively sociological approaches enable. Moreover, while the sociologies of art, science, philosophy, and social movements grapple with issues related to creativity, this work lacks integration and refinement.

This article contributes to the sociology of creativity by extending and refining collaborative circles theory (CCT) (Farrell 2001) to show how differences in the structure of strategic action fields (Fligstein and McAdam 2012) shape small group creativity across fields. Creative ideas, practices, and products are those that are (1) novel and (2) useful to members of a broader creativity community (Csikszentmihalyi 1996; Sawyer 2007), and CCT provides what is arguably the richest explanation of how innovative small groups develop their creative abilities and collaborate to win acceptance of their creative vision. As originally defined, collaborative circles are primary peer groups “who share similar occupational goals and who, through long periods of dialogue and collaboration, negotiate a common vision that guides their work” (Farrell 2001:11). Deeply affective relationships among members and extended collaboration toward specific creative goals result in the origination of a new creative vision and an attempt to win its acceptance, potentially transforming work in their field. CCT explicates the social processes by which group composition, dynamics, and roles interact across a circle’s life course to catalyze creativity and collective action. It has been used to explain the marked innovations of such influential groups as the French Impressionists, the American Suffragists, and the Frankfurt School (Farrell 2001; McLaughlin 2008a) and has substantially advanced our understanding of collective creativity (Collins 2004a; Corte 2013).

CCT complements mainstream theories of intellectual production within the sociology of science and philosophy. Much of this work contends that creativity necessarily derives from the efforts of high status actors operating at the center of creative networks and that success is primarily a matter of marshaling the necessary material, symbolic, and emotional resources required to articulate, frame, and win acceptance of creative products through processes of accumulative advantage (Collins 1998; Frickel and Gross 2005; Latour 1987; Merton 1968a). Sociological research related to creativity also tends to focus on networks (e.g., Cattani, Ferriani, and Allison 2014; De Vaan, Stark, and Vedres 2015; Uzzi and Spiro 2005; Wang and Soule 2016) or the infrastructure needed to pursue creative endeavors (e.g., Becker 1982; Hollingsworth and Hollingsworth 2012) rather than groups and the social roles, interpersonal dynamics, locations, and developmental processes formative of creativity. CCT instead shows how innovation can emerge at network margins by small groups collaborating in the shadows of creative citadels and explicates the group dynamics catalytic of collective creativity as they occur at specific places and times.

Collaborative Circles has become highly cited, with a handful of scholars building directly on Farrell’s (2001) theoretical foundation. McLaughlin (2008a) analyzed the Frankfurt School as a collaborative circle, arguing that CCT could benefit from more
structural analyses considering the institutional contexts in which circles exist and the resources needed to conduct their creative work. He contended that Erich Fromm’s interpretation of psychoanalysis and Marxism veered too far afield from other group members and that this combined with conflict over finances led to his departure from the circle. Parker and Hackett (2012) analyzed a collaborative circle in environmental science, showing how socio-emotional processes occurring in remote locations facilitated brief but intense bursts of scientific creativity that sparked a major scientific social movement. They further contributed to CCT by showing how those same processes made skepticism about their ideas more likely and more difficult to manage while increasing the odds of intragroup conflict between the circle and outsiders. Corte (2013) synthesized CCT with resource mobilization theory to analyze a circle in a lifestyle sport, refining Farrell’s concept of “magnet place” and demonstrating how circles are shaped by distinct arrangements of material, moral, and “locational” resources that facilitate and constrain creativity over time. Oberlin and Gieryn (2015), in their analysis of painting schools as collaborative circles, also emphasized the importance of place and co-presence for creative outcomes. In almost every one of the 49 schools they examined, artists lived in the same place because propinquity facilitates the kinds of social interactions that propagate distinct artistic cultures and styles and because certain locations provide social, institutional, and material affordances that enable and influence artistic work. Finally, Medema (2011) argued that the architecture and isolation of the building housing a circle of creative economists aided in the development of public choice economics at the professionally marginal Virginia Technical University.

Alongside its originality, the power and promise of CCT lies in its ambition to develop a general explanation of small group creativity, reintroduction of small group theory to the sociology of art and culture, and focus on how small groups propel social movements (Corte 2012; DeNora 2003). CCT also leaves ample space for integrating macro social structures and dynamics into its social psychological framework, a task for which there have been repeated calls (Collins 2004a; Forget and Goodwin 2011; Gross 2008; McLaughlin 2008a). Most importantly, it could benefit from a more complete consideration of reciprocal relations between small groups and the broader social environments in which they are nested (see Bortolini 2008; Corte 2013; Farrell 2008; McLaughlin 2008b).

In this article, we argue that collaborative circles, like all actors, operate within specific strategic action fields—meso-level social orders “where actors (who can be individual or collective) interact with knowledge of one another under a set of common understandings about the purposes of the field, the relationships in the field (including who has power and why), and the field’s rules” (Fligstein and McAdam 2011:3). The different strategic action fields in which circles operate (e.g., science, art, politics, business) differ in their internal logic, resource requirements, imposition of social control, and the structural and behavioral limit these factors place on collective actors, all of which shape creative processes in collaborative circles and their probability of achieving creative successes or failures (see e.g., Bourdieu 1993; Collins 1998; Parker and Hackett 2014). CCT was developed based primarily on data from creative art groups and so deviates in systematic ways from what is known about highly creative groups in other fields (see Collins 1998; Parker and Hackett 2012; Rochon 1998; Ruef 2010; Zuckerman 1977). Our main goal is to identify some of the ways whereby small group processes in collaborative circles are shaped by the character of the strategic action fields in which they operate, thereby enhancing CCT’s explanatory power and bringing its predictions into better alignment with what is known about creative groups in other creative domains.

We work to do so by pushing CCT in three main directions. First, we contextualize it by integrating it with research on strategic action fields (Fligstein and McAdam 2011, 2012).
This allows for considering correlative effects between circles and the fields they inhabit. Second, we add *empirical weight* by bolstering CCT with findings scattered across the sociologies of art, science, politics, philosophy, and social movements. Data and concepts from these subfields provide tools for specifying important differences between strategic action fields and considering how these matter for the functioning and fates of collaborative circles. These concepts are *attention space, consensus, social control, resources, and organizational and geographical contexts.* Our basic contention is that extending CCT via these concepts and the strategic action fields perspective can refine our understanding of how differences in strategic action fields shape circles, and show how key differences between art and science circles result from the character of those fields. Third, our theoretical extension leads us to a *refined definition of collaborative circles* that better captures the full range of empirical diversity exhibited by collaborative circles. A panoramic view of the sociologies of art, science, politics, philosophy, business, and social movements strongly suggests the existence a *family of different collaborative circles* organized and operating in different ways in these different strategic action fields. These circles share the core processes definitive of collaborative circles but also vary in predictable ways due to differences in their respective fields.

This research nurtures the budding sociology of creativity by helping explain how small group creativity can arise both from the margins and the center of creative networks and how field differences matter for these processes. It also advances the perspective that small groups are among the precipitating nuclei of broader patterns of social stability and innovation (Fine 2014; Fine and Harrington 2004; Shepard 2012). Civic social movements are often generated by small groups, as are movements in art, science, and business (Parker and Hackett 2012; Rochon 1998; Ruef 2010), but political sociology generally neglects the importance of groups in originating collective action (see Corte 2013; Farrell 2008; Oliver and Johnston 2000). This article also represents an initial attempt to theorize the place of small groups in strategic action fields—a connection notably absent in formative work on the subject (Fligstein and McAdam 2012).

Extending CCT also provides a productive “middle-range” path for approaching the sociology of knowledge and ideas. New work in this area, notably “the new sociology of ideas,” insists on the importance of historical contingencies, local social milieus, biography, and intellectual self-conceptions for knowledge production (Camic and Gross 2001; Gross 2002; Lamont 2009), criticizing classical and contemporary theories for relying on ahistorical, overly deterministic explanations of knowledge production. Clearly, creative ideas and innovations are historically produced, biographically contingent, and socially constructed, and claims that specific personalities and social interactions are irrelevant (e.g., Mullins 1973) are overblown. Still, this work has largely ignored the primacy of intellectual *groups* and the fact that, *mutatis mutandis,* general group processes and dynamics evocative of creativity clearly occur within them. CCT lies between these extremes, using highly detailed case studies to derive general theoretical insights and identify commonalities across creative groups (Gross 2008). Our extension of CCT aims for the same while also pushing the analysis “up” a level to consider how groups are shaped by fields.

We begin by summarizing collaborative circles theory. We then engage in theoretical extension and refinement (Snow, Morrill, and Anderson 2003) by synthesizing CCT with findings and concepts from research across subfields to identify five aspects of strategic action fields that structure circle development and behavior. Next, we use primary ethnographic and interview data from a longitudinal study of an extant science circle and secondary data on past science circles to explain the distinct character of science circles and why they differ in predictable ways from art circles due to field differences. We then argue that there exists a family of sibling groups that share the core processes definitive of
collaborative circles but that also vary in important ways due to the character of the fields in which they operate. We close by suggesting a more general definition of collaborative circles, postulating four testable propositions for their analysis, and proposing ways forward for future research.

COLLABORATIVE CIRCLES THEORY

Collaborative circle theory relates the social composition of highly creative groups; the characteristic stages of their formation, development, and decline; and the informal roles and social dynamics actuating their creative work. Typically consisting of at least two, but usually three to seven ambitious young professionals of roughly equal status in the early stages of their careers, circles blend the informal dynamics of a friendship group with the instrumental aims of a workgroup. For a variety of reasons, circle members feel themselves to be marginal in their field or blocked in their career development, which contributes to a critical orientation to traditions in their field and a drift toward experimentation with nontraditional methods and innovative theories.

Circles form in magnet places—centers of important professional activity that provide a gravity-like attraction to ambitious young professionals. They thus exist near the hot center of professional action but are marginal relative to the powerful leaders and networks operating there. This marginality drives circle members to join forces and begin behaving like a primary kinship group, socializing members into their discipline and providing the intellectual, emotional, and material support required to conduct creative work. Roughly equal levels of status, resources, knowledge, and experience aid in the free flow of ideas, cooperation, and maintenance of balanced interactions, furthering group stability and development. Members generally enter circles during their 20s, but what matters most are analogous levels of psychological and career development fostering egalitarian relations (as opposed to hierarchical relationships that could hinder equality). They first discover that they enjoy interacting together; then, through gradual escalation of exchanges of resources, disclosures of ideas, and tentative collaborations, they develop trust in one another. As commitment increases, the circle becomes the center of their creative and social lives. They are likely to ritualize a place for meeting where they discuss developments in their field, react to the latest work of their members, and develop strategies for gaining recognition. Over time, they clarify a new vision that guides their work, consisting of a theory or style and a method and consensus about what problems are worth working on. Creative work is generally conducted alone or in peer-to-peer dyads but codified and refined through whole group interactions.

A circle is formed, reaches its creative peak, and dissolves over stages, the entire process typically taking between 10 and 15 years. Two main social dynamics, seven stages of group development, and several key social processes are involved in the emergence, unfurling, and death of a circle. Each stage includes characteristic interaction processes, interpersonal relations, and informal roles and correlates with specific changes in group culture and relational dynamics. As the group evolves, members develop a common professional vision at odds with mainstream practice and devise idiosyncratic communication styles, work practices, and rituals. Up to 10 informal roles emerge during a circle’s life course, the salience of which changes over time (i.e., gatekeeper, charismatic leader, cork, lightning rod, tyrant, scapegoat, peacemaker, sellouts, executive manager, and devil’s advocate). These informal roles are “relatively stable patterns of behavior that come to be expected of each member” (Farrell 2001:21). Members may fulfill different roles at different times, and their importance varies over time.
Dynamics: Escalating Reciprocity and Instrumental Intimacy

Two main social dynamics actuate effective group functioning and contribute to unexpected innovations. As the members become acquainted, they tentatively explore the degree to which they enjoy and trust one another in the process of escalating reciprocity. Exchanges of resources, ideas, and self-disclosures gradually escalate in value and riskiness, and as each “gift” is matched by a “gift” of equal or greater value, trust increases. The trust and exchanges reach the highest levels within dyadic relationships embedded within the larger circle, wherein pairs experience instrumental intimacy, a type of exchange in which they share their wildest, half-baked thoughts and working together “discover” new ideas or techniques that neither would imagine alone. In this state, they often can predict what one another will say, as if they “were two computers . . . linked together so that each has access to the hard-drive memory and software programs of the other” (Farrell 2001:157–58). After episodes of instrumental intimacy, even when working alone, members of the dyad can anticipate what the other will say about their creative work.

Because transformative creativity is likely to be fundamentally deviant in opposing orthodox thought and practice, substantial emotional support is required to formulate unconventional thoughts and actions. Instrumental intimacy supports such deviance by promoting fearlessness and courage in sharing and developing ideas that dissent markedly from mainstream practice—ideas that would never be aired in the presence of any mistrusted outsider. For instance, a budding friendship between J.R.R. Tolkien and C.S. Lewis led the former to risk revealing his secret passion for expressing mythological themes in narrative poetry—a risky move for a noted Oxford linguistics scholar. Such exchanges were gradually ritualized in regular meetings of the Inkling circle, culminating in Tolkien’s *The Lord of the Rings* and C.S. Lewis’s *Chronicles of Narnia* (Farrell 2001:8). Tolkien credits Lewis for serving as his “audience,” responding critically to his drafts, and encouraging his creative work.

The intensity of dyadic exchanges resembles courtship processes; members come to idealize and view one another in almost exclusively positive terms (Farrell 2001). Lionizing one another, the pair feels grateful for the relationship but also anxious about whether they are worthy of inclusion. They feel obligated to match and exceed the quality of one another’s productivity and creative valence. The relationship between Freud and Fliess is illustrative: “Freud felt he owed something to Fliess, who seemed to pour out work endlessly. Freud was motivated to keep apace and to have something to present at their congresses in exchange for all he had received” (Farrell 2001:185). Instrumental intimacy and escalating reciprocity interact, ratcheting up group productivity and creativity well beyond what any member could produce alone, the collective result of which is the refinement and enhancement of the group’s novel perspective.

Group Stages and Informal Roles

Circles develop through seven stages. During (1) formation, members meet through an acquaintance network centered on a gatekeeper. The gatekeeper’s filtering function maximizes social homogeneity, facilitating cooperation and solidarity. The gatekeeper may recruit based on complementary expertise, but getting along and fitting in matter most.

The (2) rebellion against authority stage is pivotal for establishing deep trust and activating escalating reciprocity and instrumental intimacy in the following stages. The lighting rod, someone particularly adroit at expressing the group’s alternative vision and emotional grievances vis-à-vis the mainstream, leads this process. Criticizing the contemporary canon heightens mutual trust, creates strong collective identity, and helps the group understand who they are, what they reject, and what they stand for in their field. The group’s boundaries
and its vision coalesce as it identifies and expresses antipathies toward authorities in their field embodied by a scapegoat within the group and a tyrant outside of it. Group structure changes. The charismatic leader replaces the gatekeeper as the center of the group’s radial network. This narcissistic figure functions as a self-object (Kohut 1977) of group idealization, uncompromisingly critiquing mainstream ideas and energizing others to dare concerted rebellion against them. He or she is often the first to initiate a series of open exchanges of ideas by sharing his or her most secretive and treasured thoughts, setting a new and essential ritual for group development.

In the (3) *quest for a shared vision* stage, the group begins conceiving a new vision for accepted and valued work within a field, resulting in a shared working style and obdurate collective identity constituting an internal yardstick for quality work. The crucial role of the *boundary maker* arises and is undertaken by and alternates between the most conservative and most progressive members. Both frame the antipodes of group’s work and provide others with a reference point from which to draw through debate a viable creative vision—not too radical or too reactionary. Members begin pairing off and working closely together, originating a set of dyads who often work either together but periodically confront and collaborate with the rest of the circle. Most episodes of creative work leading to important new discoveries that will constitute the group vision happen within these dyads. The *devil’s advocate* emerges, challenging the dyads to clarify and refine their ideas. These pairs become deeply knowledgeable about and trusting of each other, occasioning instrumental intimacy, escalating reciprocity, and bursts of high creativity, or “collaborative moments” (Farrell 2001:23).

In the (4) *creative work* stage, group members further develop the circle’s vision by building on its established principles. While members previously alternated between dyadic and whole group work, they begin working alone, signaling growing maturity, clarification of the group’s vision, decreasing interdependence, and greater individuation. Group identity becomes further solidified, and the boundary between members and outsiders is clarified. Collective meetings provide the chance to solve problems that members may have encountered when working alone while also renewing their emotional energy and commitment to their craft. No new roles arise. Most groups don’t go past this stage.

During (5) *collective action*, circles decide to undertake a larger project to display and attempt to win acceptance of their deviant creative vision: an exhibition, launching a journal, or writing research proposals or programmatic statements. Two new roles arise: the *executive* and the *peacemaker*. The first organizes the project and mobilizes key resources (e.g., finding necessary money, space, and equipment). This phase brings new demands and duties additional to the pursuit of their craft, complicating original group dynamics. Members must for the first time manage relations with an outside world that is still generally hostile toward their work yet increasingly interested in it. Some, tempted by the chance to achieve individual success, venture out on their own. Further, while some work to execute the collective project, others lag behind and play the free-rider. The lightning rod tries to alleviate escalating tensions, talking to less productive members in the hopes that open conflict can be avoided. Nonetheless, the retrospectively idyllic group cohesion that marked its earlier phases becomes increasingly tilted by tensions, external opportunities, and previously absent duties. Outside success becomes partially responsible for group disintegration, particularly if some are recognized and rewarded while others are left behind.

(6) *Separation* occurs as tensions deepen. The group may initially split into two polarizing centers. The circle originally gelled around interdependence based on mutual need, but members now question whether staying together demands too much energy relative to the increasing effort required to maintain stable relations. Some also may now have previously
undreamed of opportunities, and feeling constrained by the group vision and their commitment to the circle, they pursue their own vision alone. Years later, members may reassemble for a (7) nostalgic reunion but never acquire the same synergy and solidarity.

**PLACING COLLABORATIVE CIRCLES WITHIN STRATEGIC ACTION FIELDS**

Enlarging the scope of CCT requires considering how circle compositions, roles, and dynamics are affected by field characteristics (Collins 2004a; Corte 2013; Farrell 2008; McLaughlin 2008a, 2008b). Situating circles within strategic action fields renders the theory more articulate with respect to explaining empirical variation among circles operating in different fields, providing a more encompassing understanding of small group creativity and insights as to when a circle might emerge or disintegrate.

**Dimensions of Strategic Action Fields**

Circles operate in the context of distinctive strategic action fields (SAFs)—the broader social environments in which circles exist and that shape their compositions and social dynamics as they vie with others for influence under a set of common understandings about the field’s purposes, rules, and relationships (Fligstein and McAdam 2011, 2012). SAFs have also been referred to as “fields of cultural production” (Bourdieu 1988, 1993; Collins 1998), albeit with different emphases (Fligstein and McAdam 2011). These are the social arenas in which circles exist and which they attempt to influence. The internal logic and social structure of SAFs impose structural and behavioral limits on collective action within them (Bourdieu 1975, 1993; Fligstein and McAdam 2012; Lui and Emirbayer 2016). Systematic differences in the SAF characteristics are in part what explain important differences in collaborative circle compositions and dynamics across fields. Developing a more complete theory of collaborative circles thus requires understanding the SAF characteristics impacting the character of collaborative circles within them. In the following, we synthesize literature from across subfields in sociology and creativity studies to identify five key dimensions of strategic action fields and theorize their relationship to collaborative circles. We draw heavily from the theory of scientific organizations (Collins 1975; Fuchs 1992; Whitley 1985), resource mobilization theory (Corte 2013; Edwards and Kane 2014; McCarthy and Zald 1977), and systems theories of creativity (Burns, Machado, and Corte 2015; Csikszentmihályi 1996; Sawyer 2006).

**Attention Space.** Research on strategic action fields and creative groups in philosophy and science indicates that SAFs are characterized by a finite amount of “attention space”—their social structure only admits a limited number of creative positions to be accorded attention and creative legitimation—this is known as the “law of small numbers” (see Bourdieu 1993; Collins 2000; Csikszentmihályi 1996; Parker and Hackett 2014). In philosophy, for instance, there tends to be between three and six major creative positions per generation (Collins 1998). Fields are in this sense competitive social arenas wherein creative groups vie for focal attention. CCT underemphasizes the relative scarcity of attention space, how it is apportioned across fields, and competition between circles operating within the same SAF.

**Consensus.** The psychology of creativity and sociology of science have long recognized that fields differ in the degree to which creators within them achieve consensus regarding creative techniques and what is considered a licit creative contribution (Collins 1975, 1994; Csikszentmihályi 1996, 1998; Whitley 1985). SAF theory focuses on the social
rules guiding field dynamics but does not meaningfully consider how the degree of consensus about those rules matters for creative groups, and neither has research on collaborative circles. For instance, in high consensus fields like physics, creators work at the edge of a finely delimited creative frontier with substantial agreement regarding important next steps and what counts as a truly creative act; in low consensus fields, such as sociology, the creative frontier is diffuse, and creative practice and judgments of excellence vary substantially (see Csikszentmihályi 1996; Fuchs 1992). Thus, for circles operating in high consensus fields, long-term experience and dense ties to creative elites are critical for enabling the group to link their work to the creative frontier while respecting established knowledge and practice (Hooker, Nakamura, and Csikszentmihályi 2003; Kuhn 1977) and also necessitates conversance with the latest creative techniques (cf. Collins 1994, 1998; Hackett 2005).

Consensus also matters in terms of the velocity of each field’s “credibility cycles”—the circulation of creative products through conception, production, dissemination, adjudication, and reward or rejection (see Csikszentmihályi 1998; Latour and Woolgar 1979).12 High consensus fields tend toward having one or a few central gatekeeping units that can quickly render decisive judgments about creative products, whereas low consensus fields tend to have several leading gatekeeping units, and creative products are assessed relative to a plurality of perspectives rather than a single dominant paradigm (Hermanowicz 2005; Mullins 1973). Low consensus fields also have higher rejection rates, increasing the odds that creators will have to submit to several gatekeeping units prior to creative legitimation (Hargens 1988). Consensus clearly matters for collective creativity, and CCT could benefit from further studying its effects on circles.

Social Control. Strategic action fields also vary with respect to the relative power and number of their socially legitimated gatekeepers—those with the power to enforce field rules and render creative judgments—and in the extent to which creators depend on collegiate control to legitimate creative work and allocate reputational and material rewards (Cattani et al. 2014; Csikszentmihályi 1999; Fuchs 1992). SAF theory argues for importance of field “governance” units for establishing order and enforcing rules but does not address the fact that they vary in terms of their character, number, and power (see Fligstein and McAdam 2011). For instance, in science, gatekeeping takes the form of formally organized peer review, while in art, gatekeepers include other artists but also critics, gallery owners, aficionados, and so on (Chong 2013; Crane 1976; Lamont 2009). Furthermore, some creative fields (e.g., architecture or philosophy) require elaborate training and certification processes to be considered a licit practitioner, limiting the number of potential creators—another important aspect of the social control of creativity (Ben-David and Collins 1966; Fuchs 1992).

Social control shapes creativity in other important ways. For example, in fields with a plurality of gatekeeping units, there are multiple potential venues for receiving creative legitimation, and some kinds of gatekeepers may be more likely to reward avant-garde contributions (see Cattani and Ferriani 2013; Cattani, Ferriani, and Colucci 2015). Contrarily, in fields where gatekeeping is centralized and conducted by peers, creative deviance is most often met with intense emotional resistance and criticism (Fleck [1935] 1979; Fuchs 1992; Lamont 2009; Parker and Hackett 2014). Gatekeepers thus act as creative filters, legitimating and admitting some forms of creativity in the field while ignoring or rejecting others. CCT stands to benefit from a nuanced conceptualization of the effects of gatekeeping and other forms of social control.

Resources. Following social movement theory, resources are a source or supply that aids a circle in achieving its goals, and six main types are distinguishable: human, material, moral, social-organizational, cultural, and locational (see Corte 2013; Edwards and Kane
Different fields require garnering and mobilizing resources of different qualities and magnitudes to develop creative products and compete for attention (Bourdieu 1996; McLaughlin 2008a; Parker et al. 2010). CCT focuses explicitly on resources, particularly in terms of the importance of magnet places and having roughly equal levels of resources among collaborators for facilitating creativity, but could also profit from greater attention to how resources interact with the social processes by which circles create, transmit, and win acceptance of their creative work. For instance, McLaughlin (2008a) has demonstrated the central role of financial struggle for fomenting acrimony within the Frankfurt School, while Corte (2013) demonstrated how resources interact with group dynamics to structure circle formation, growth, development, and decline and also how a lack of resources can actually enhance innovation. More broadly, creative groups must have sufficient resources to support their work, and these vary by field (see Baumann 2007; Becker 1982; Frickel and Gross 2005).

**Geographical and Organizational Contexts.** One of CCT’s strengths is that it theorizes the importance of specific locations for circle development, but the importance of place—geographic and organizational—requires further refinement, particularly across fields. For instance, some forms of creativity require formal organizations to support them (Collins 1998; Geison 1981; Weber [1917] 1946)—indeed, it is hard to imagine how creativity could flourish in fields like business, science, or politics in the absence of such organizations. Environmental and organizational contexts influence creative origination more generally (Csikszentmihalyi 1996; Hemlin, Allwood, and Martin 2008; Leonard 2011). Furthermore, the sorts of small group creativity that can lead to field transformations can be actuated when circles operate within a geographical environment sheltered from premature criticism but rich in key resources (Corte 2013; McKenzie and Galar 2004; Parker and Hackett 2012), and creative legitimation depends in part on where ideas originate and the mandates and vicissitudes of their organizational environments (Fine and Harrington 2004; Livingstone 2003).

In sum, circles operate within distinctive strategic action fields, the character of which structures their composition, interpersonal dynamics, and intergroup relations. Several field characteristics are clearly relevant in this respect: (1) available attention space; (2) the extent to which creative techniques and outcomes are predictable and consensus is reached regarding creative standards; (3) the relative number, kind, and power of gatekeepers serving as legitimated adjudicators of creative work; and (4) the quality and quantity of resources needed to conduct, transmit, and win acceptance of their creative vision. Finally, (5) circles exist within physical and organizational environments that shape their behavior and creative potential. Interactions among these variables generate different types of circles that are akin but differ in their compositions and dynamics.

**Coherent Groups as Science Circles**

A useful starting point for showing how fields bear on creative groups is to compare art and science circles. We illustrate these differences using findings from two comparative investigations of science circles (Griffith and Mullins 1972; Mullins 1973) and secondary and primary data from the two science circles for which the most complete information exists—the Phage Group in molecular biology (Mullins 1972) and the Resilience Alliance in environmental science (Parker 2006, 2010; Parker and Hackett 2012). We complement these data with reference to germane work in the sociology of science.

CCT is primarily grounded in an analysis of collaborative circles in literature and painting (Collins 2004a; Devere 2013; Farrell 2008). The theory thus best accords with what is
known about fine art circles. Science circles differ significantly in their origins, compositions, dynamics, roles, and life courses. Science circles are called “coherent groups” among sociologists of science (Griffith and Mullins 1972), but they are in fact a subset of the broader social phenomenon of collaborative circles. Like art circles, these small, deeply affective, consciously organized research groups are oriented toward common intellectual goals that oppose scientific orthodoxy. Operating much like kinship groups, they socialize members into a controversial scientific perspective and impart the necessary intellectual and socio-emotional support for developing and transmitting highly creative scientific ideas (Fleck [1935] 1979; Geison 1981; Morrell 1972; Parker and Hackett 2014). In doing so, they establish the challenge and found the intellectual beachhead for sparking new scientific intellectual movements (SIMs) by airing objections, crafting programmatic statements, and institutionalizing their position via publications, institutions, and new professional positions (De Mey 1992; Frickel and Gross 2005). They thus operate much like art circles but also differ in important ways due to differences in the structures and demands of their respective fields.

**Origins**

Art circles tend to form among marginal creators on the fringes of magnet places and at the peripheries of artistic networks (Becker 1982; Farrell 2001), but science circles are more likely to form at the center of scientific networks (Collins 1998; Griffith and Mullins 1972; Murray 1994; Parker and Hackett 2012). This makes sense in terms of the structure of these fields. Higher consensus and stronger social control in science mean that to gain attention and survive rigorous peer review, creative products must be closely aligned to the edge of a well-defined creative frontier (Fuchs 1992; Hermanowicz 2005; Lamont 2009). Those at the center of scientific networks are best oriented to this creative edge and best positioned to access the material resources and have the social and cultural capital required to conduct scientific research and package it for best chances at accreditation.

Such was the case with the Phage Group, the science circle originating molecular biology. Max Delbrück, Salvador Luria, and Alfred Hershey conducted the early phage research and its first crucial experiments. The trio was later jointly awarded the Nobel Prize (1969) for their pioneering work on the replication mechanism and genetic structure of viruses. Delbrück had been a pupil of Niels Bohr (Stent 1968); Luria had studied physics at the university of Rome with (among others) Enrico Fermi (NIH n.d.). Their talent and contacts enabled them to escape to America at the beginning of WWII where they met Hershey, who had been a professor at Washington University for nearly a decade. The same is true of the Resilience Alliance, a circle that has sparked a new theory of environmental change (Parker and Hackett 2012). At its founding (circa ~1998), group leader C.S. “Buzz” Holling was already a senior ecologist and prize-winning theorist. Other founding members included Steven Carpenter, then one of the world’s 10 most highly cited ecologists; eminent economists Elinore Ostrom (later becoming the first woman to receive the Nobel Prize in economics) and William “Buz” Brock (who, like Carpenter, would later be inducted into the National Academy of Sciences); and high-profile biological mathematician Martin Scheffer (Spinoza Prize winner and member of Royal Netherlands Academy of Arts and Sciences) (Parker fieldnotes). Successful science circles generally originate among high status researchers working from the center of professional networks.

**Composition**

While art circles can form among youthful peer groups, science circles are typically hierarchically structured, containing well-positioned junior researchers and established senior scholars
leading the process (Frickel and Gross 2005; Geison 1981; Kanigel 1993; Morell 1972). They are also more intellectually and technically diverse, with members contributing complementary forms of specialized expertise (Hackett 2005; Hooker et al. 2003). This also accords with field differences. Linking group work to a rapidly moving, high consensus research frontier is only possible through long-term experience and dense social connections to creative elites. Only well-established senior scholars have the knowledge and social capital to socialize young researchers and orient them to the creative frontier (Hackett and Parker 2011; Zuckerman 1977). Concomitantly, cutting-edge research methods enable the high consensus, rapid discovery nature of science (Collins 1994; Hackett 2011), necessitating conversation with the latest scientific techniques—aspects of practice with which younger scientists are most familiar (Hackett 2005). Altogether, these factors render science circles larger and more socially diverse than art circles.

Data from the Phage Group and Resilience Alliance support this conclusion. Art circles typically contain an initial core of two to seven members working in the same area of art, but the first generation Phage Group consisted of 14 researchers from specialties ranging from physics to virology, chemistry, nutrition, bacteriology, medicine, and beyond (Mullins 1972:Table 3). Age differentials are also apparent. A generative mix of senior scientists and student protégées was essential to the Phage Group’s successes (Mullins 1972). The Resilience Alliance exhibited similar properties. Seven senior researchers formed the group, and these were joined in its first five years (~1998–2003) and most creative period by 8 graduate and postdoctoral students and 15 more senior scientists with expertise in ecosystems ecology, ecological economics, applied mathematics, political science, and social vulnerability studies (Parker and Hackett 2012). Science circles tend toward more stratified interpersonal dynamics, with members consciously emulating senior scientific role models while depending crucially on the energy and skills of junior scientists. Or, as Griffith and Mullins (1972:962) bluntly note in their comparative investigation, “groups without students die.”

**Roles**

Ten informal roles enable creative work in art circles, but some are more salient and emerge at different times in science circles. CCT maintains that the formation stage is marked by the importance of the gatekeeper; the executive only appears during the collective action stage. However, because science circles are larger and more socially diverse, they require more social engineering, rendering the executive role critical for success from their inception (Geison 1981; Morrell 1972; Vermeulen, Parker, and Penders 2010). This role also takes on heightened importance in science circles because the funding requisite for research is accessible primarily through complex bureaucratic means, requiring someone with the connections, prestige, and knowledge to shepherd the group through the process (Collins 2004a).

The importance of the executive early on is evinced in the first major comparative study of science circles, wherein early executive leadership played a crucial role in every one of their six cases (Griffith and Mullins 1972). Early executive leadership by Talcott Parsons and Herbert Blumer was also critical for the success of the social science circles in early twentieth-century sociology that developed structural functionalism and symbolic interactionism and was one among several factors related to the death of small group theory (Mullins 1972). This is recapitulated in the Resilience Alliance case study. Holling initially worked in this capacity, organizing meetings and garnering seed funding from the Swedish Royal Academy of Science’s Beijer Institute for Ecological Economics, the MacArthur
Foundation, and profits from the sport drink Gatorade (by virtue of his professorship at University of Florida, which owns the product). When Holling approached retirement, Carpenter and noted ecosystems ecologist Brian Walker took on this role. Carpenter garnered additional funds from the McDonnell Foundation; Walker reduced his full-time appointment with Australia’s Commonwealth Scientific and Industrial Organization to 50 percent and accepted a paid position as Resilience Alliance director (by then an officially registered nonprofit). The significance of this role became ever more obvious after Walker’s retirement—the group struggled mightily to remain intact absent a full-time organizational leader. This issue continues to pose a major existential threat to what has now become a large network organization (Parker fieldnotes).

The depth of knowledge, sense of social relations, and reputation necessary to aptly select group members, instill gravitas, and guide scientific work also tend to result in the gatekeeping and charismatic leader roles coalescing within a single senior scientist (see Parker and Hackett 2012; Zuckerman 1977). The charismatic/intellectual leader functions as the group’s scientific “truffle dog” (Merton 1973:426), intuiting and admitting or rejecting new scientific talent. For instance, Holling insisted that only “good island personalities”—those with specific personal traits and scientific capacities and that he would wish to be stranded with alone on a desert island for several days—would be allowed to join the group (Gunderson and Holling 2001). The charismatic Delbrück also played the gatekeeper, holding summer phage courses at Cold Springs Harbor as a means of selecting and recruiting new members (Griffith and Mullins 1972).

**Dynamics**

CCT maintains that in art circles, creative visions are crafted via instrumental intimacy and escalating reciprocity occurring in peer-to-peer dyads that are then absorbed, refined, and assimilated by the larger group. However, autobiographic, historical, and ethnographic evidence indicates that within science circles, this vision is instead produced in latent form by the charismatic senior and subsequently refined and annealed via deeply emotive interactions between the senior and junior group members (Cairns, Stent, and Watson 1966; Griffith and Mullins 1972; Kanigel 1993; Parker fieldnotes).

Max Delbrück was the charismatic force behind the Phage Group, originating its perspective, motivating scientific excellence, and emotionally energizing the group in questing against the status quo in biology (Holmes 2006; Mullins 1972; Shropshire 2007). Phage Group member Frank Stahl (2001) notes that the group was sometimes referred to as “The Phage Church” due to the vehemence of its members’ scientific convictions, and “Delbrück’s status as founder and his ex-cathedra manner made him the pope [of the group].” Ethnographic observations of the Resilience Alliance indicate the same to be true of Buzz Holling. One early Resilience Alliance member noted that Holling’s brand of brilliance was to “to paint these really broad-brush strokes of an interesting world and leave them for [juniors] to fill in the details.” Another junior recounted that when meeting with Holling “he was incredibly exciting. He gave [one] a feeling of hope.” Another said that Holling taught the juniors “that science should be fun, and that science needs a heart to it” (Parker fieldnotes). In science, initial creative visions usually originate from senior members who then motivate younger scientists to further specify them.

Socio-emotionally, the senior’s charisma and status thus also motivate highly creative work from juniors wishing to win his or her approval, while valorization and idealization by juniors provide the senior with the affective support needed to develop a potentially important but insufficiently developed creative vision when “the creative innovation could be crushed
by a full-scale critique inspired by the competitive animus of the older man’s peers” (Gouldner 1967:177–78). The intensity of instrumental intimacy and escalating reciprocity also tends to be lower in science circles than art circles because the greater diversity of ages, levels of seniority, skills, and social roles makes it difficult to achieve these social relationships (see Devere 2011; Farrell 2001; Goodwin 2011).

Further, CCT holds that extensive social interactions in informal settings such as cafés or group members’ homes within the outskirts of a magnet place are critical for fomenting radical creativity (Farrell 2001, 2008). This is generally untrue of science circles. Science is conducted principally in formal organizations, and universities can rarely afford large research groups working on analogous problems. A university may thus provide the intellectual impetus and social nucleus for a research program capable of supporting a science circle, but it will almost certainly be necessary to include researchers from other places (Mullins 1973; Murray 1994). Science circles tend for these reasons to tradeoff intensive for extensive social interactions by holding regular meetings at widely distributed locations—such as conferences, meetings, or retreats, where they develop their ideas in short, intense bursts of collective creativity (see Collins 1998; Coser 1965; Gross and Fleming 2011). These “hot spots and hot moments” (Parker and Hackett 2012) blend concentrated scientific work with informal interactions to create deep personal bonds and generate the emotional support and trust required to motivate rebellion against scientific orthodoxy among such a diverse and distributed group.

For these reasons, Max Delbrück held regular meetings and ritualistic social interactions among the Phage Group at remote locations such as the Anza Desert, Cold Springs Harbor, and Cal Tech’s Marine Biological Station at Corona del Mar (Cairns et al. 1966; Mullins 1972). The Resilience Alliance, a globally distributed science circle, developed its transformative theoretical perspective by meeting once every nine months on a different remote island at various locations around the world (Parker and Hackett 2012). Rock climbing retreats among Bohr’s quantum physics group further exemplify this characteristic facet of science circles (Griffith and Mullins 1972). These practices may also help explain the “bursty” nature of creative production within them.

### Stages

Developmental stages in art and science circles are also likely affected by field differences, but here evidence becomes sparser, so we must proceed in part on theoretical grounds. What we do know is that stage transitions in natural science circles have been found to be sharper and more marked than in social science circles. Mullins (1973) suggests that this is because the social sciences tend toward less powerful gatekeeping units lacking the central authority to rapidly render decisive judgments, peer review takes longer, and criteria for evaluation of scientific contributions are more various—all of which are related to field consensus. By extension, transitions between the creative work and collective action stages should be sharper in science circles relative to art because less time lag and fewer mixed evaluative messages make it easier to gauge their creative potential. The creative work stage should also be shorter for science circles because greater consensus makes it easier to know how to relate group work to the ongoing state of creative practice (cf. Csikszentmihályi 1988, 1996). All of this should accelerate the credibility cycle and creative work stage in science circles. These dynamics also mean that processes of accumulative advantage (i.e., “the Matthew effect,” Merton 1968a) will be faster and more intense in science.

Science circles are also prone to more numerous pulls toward separation. CCT emphasizes interpersonal and developmental explanations for group collapse (Farrell 2001).
Members leave the group because they have achieved emotional and professional maturity, quarrels can arise if some feel their contributions have been ignored, and they have arrived at a different life stage. At least two additional factors exacerbate pulls toward disintegration in science circles. First, unlike art, research requires employment in large organizations—typically universities. The visibility of the group’s success leads to graduate students being hired away and to high status seniors moving to other positions or switching to high-level service or policy work (see Hackett 2005; Zuckerman 1977). Second, higher consensus in science means that requirements for novelty are higher and there thus arises a larger risk of obliteration by incorporation as the group’s work becomes accepted as true and important but no longer original, or worse, outmoded and passé (Merton 1968b).

**DISCUSSION**

*A Family of Circles and a New Definition*

Having related the facets of strategic action fields that shape collaborative circles and indicated their differential effects on circles in art and science, we are now in a position to expand and refine our conceptualization of collaborative circles. Contrary to Farrell (2001), we maintain that circles are not of a single type. Instead, research from across a broad range of fields strongly suggests the existence of a family of related but analytically distinguishable collaborative circles. Hyper fragmentation within sociology and CCT’s principal focus on artistic and literary groups obfuscate this fact (Collins 2004a; Devere 2013). Five types of circles are readily identifiable; more may be reasonably posited. Coherent groups are collaborative circles in science. These small, intensely interacting research groups collaborate in transforming scientific thought and practice and spearheading scientific social movements (Frickel and Gross 2005; Griffith and Mullins 1972; Parker and Hackett 2012, 2014). Art groups are collaborative circles that develop new artistic techniques, ideas, and forms that oppose current practice and launch artistic movements (Becker 1982; Mercer 1994; Oberlin and Gieryn 2015). Critical communities are collaborative circles in politics that conceptualize new social problems and conduct the ideological work of new civic social movements (Rochon 1998; Schurman and Munro 2006). We may also distinguish subcultural circles (Corte 2013) and entrepreneurial circles (Bradshaw and Brown 2008; Ruef 2010).19

All of these sibling groups are collaborative circles—intimate groups sharing goals, garnering collective resources, providing one another with emotional and creative support, engaging in extended collaboration, and negotiating and attempting to realize an innovative vision guiding their creative work—but several differ in important respects from Farrell’s (2001) definition. As originally formulated (Farrell 2001), collaborative circles are primary peer groups consisting of a core of between two and seven young professionals who are marginalized relative to the creative mainstream and who through persistent emotive interaction develop a framework that guides their creative quest. While generally true of art circles, this definition omits inclusion of larger groups, those with hierarchical compositions and dynamics, and those formed by creative elites (e.g., science circles) or whose creative work may be unrelated to their occupation (e.g., subcultural or leisure circles). It also fails to include other aspects of creative groups such as their attempts to achieve creative legitimation, resources, and the fact that the group is embedded within and aims to fundamentally transform a strategic action field. We propose a more encompassing and precise definition: Collaborative circles are a family of primary groups operating in different strategic action fields who through prolonged, intensely intimate interactions work to generate the requisite emotional, cognitive, and material resources and support to develop and attempt to win acceptance of their markedly creative work. This modified definition allows CCT to be
applied to a wider range of creative groups across fields and enables more nuanced and comparative analyses of the dialectical relationship between creative origination and legitimization, bringing social psychological explanations of creativity to bear conjointly with macro social factors, acknowledging that “the generation of novelty and its legitimation are two sides of the same coin” (Cattani, Ferriani and Colucci 2015:83)—two distinct yet related processes (Burns et al. 2015; Farrell 2008).

**Analyzing Circles across Fields**

Taken together, our work is useful for developing testable propositions about the dynamics of circles and fields for further developing CCT. We offer four such propositions, but our synthesis provides the potential for developing many more. More work will be needed to confirm, refute, or refine them.

First, following McLaughlin (2008a), circles should be least common in fields where substantial resources are needed to produce and win acceptance of creative work (see also Collins 2004a). Different forms of creativity require mobilizing resources of different magnitudes to develop creative products and compete for attention. Achieving a breakthrough in particle physics, for instance, requires substantial resources relative to literature. The odds of a circle accessing and profitably employing resources at these levels are thus lower. Further, resource-intensive fields tend to be characterized by dense social networks, lesser attention space in which to exhibit creative products, and stronger social control (Fuchs 1992; Whitley 1985). For the same reason, it should also be more difficult for marginal groups to consequentially impact resource-intensive fields, and mentor-protégée relationships should take on heightened importance. The opposite should also hold: Less resource-intensive fields will likely have more circles, peer-to-peer circles will be more common, and it may be easier for marginal groups to break into the mainstream.

Second, the proportion of “radical” to “elite” groups should be higher in high consensus fields. Mullins (1973:24) distinguishes between “elite” and “radical” creative groups. Groups are elite when the field views their new perspective as different but important (e.g., the structural functionalists in sociology); groups are radical when the field views their work as incorrect or as threatening the mainstream (e.g., the ethnomethodologists). This appears counterintuitive—it would seem that in low consensus fields “anything goes” and so radical creativity will be common. However, judgments of what is “radical” are always made relative to the existing state of consensus (Collins 1998; Durkheim [1893] 1960). Only high consensus fields have clear notions of “correct practice,” potentiating marked departure from that standard (Hermanowicz 2005). Low consensus fields have no precise benchmark of deviance because there is no obdurate mainstream. Further, high consensus fields tend to be characterized by strong solidarity among creators and intense moral opprobrium with respect to creative deviance (Fuchs 1992; Merton 1970; Parker and Hackett 2014). Radical groups should therefore be more common in high consensus fields, and the creative community’s moral reaction to their deviance will be stronger.

This distinction bears on CCT in important ways. Radical group success will require generating maximal emotional support within the rebellion against authority and quest stages to motivate truly deviant practice in the face of substantial resistance from the creative community. The collective action stage should also be elongated because the group’s work will be received with greater skepticism, requiring that it be “shopped around” before receiving legitimation by gatekeepers. Radical groups may also need to create nontraditional venues to exhibit their creative products and develop new professional positions to institutionalize their perspective (see Ben-David and Collins 1966; Geison 1981). For instance, the
Resilience Alliance and the Public Choice Economists used their in-house journals *Ecology and Society* and *Papers on Nonmarket Decision Making* to disseminate their ideas (Parker fieldnotes; Medema 2011). Finally, because radical groups are more intensely affective, the separation stage should last longer and take a greater emotional toll, while the force of their affective ties enhances the likelihood of a nostalgic reunion.

Third, intragroup competition should be more intense in high consensus fields with highly centralized social control. The finely delimited creative frontiers of high consensus fields increase substantially the probability that multiple groups will be working on cognate problems at the cutting-edge of creative practice. Further, where social control is centralized, different groups must convince the same concentrated network of gatekeepers and governance units of the value of their work. Instances of multiple discoveries and vicious priority disputes are axial features of the history of science for this reason (Collins 2002; Merton 1969; Tesla 2013). Contrastingly, in low consensus fields with polycentric forms of social control, it is unlikely that multiple circles will be working on precisely the same topics, there are multiple avenues for winning acceptance of creative work, and gatekeepers have little power to enforce decisive creative judgments and establish priority of creation.

Fourth, collaborative moments will be rarer within larger, socially engineered groups but potentiate greater creativity. Collaborative moments—instances of mutual ideation and discovery facilitated by instrumental intimacy—are crucial for generating creativity within circles (Farrell 2001; Parker and Hackett 2012). Others have referred to this same process, albeit with different terms. Collins and Fleck emphasize the importance of mutual entrainment for instilling heightened intersubjectivity among collaborators (Collins 1998, 2004b; Fleck [1935] 1979), and Sawyer (2007) has developed the concept of “group flow”—a state of heightened collective consciousness, focused attention, and total immersion in the task at hand that facilitates peak performance. Intersubjectivity stimulates creative social interactions that could not occur otherwise, and social homogeneity is key for facilitating these states because it provides shared cultural capital and enables personal familiarity and deep trust. Self-formed groups tend toward social homogamy, enhancing the chances of collaborative moments. Oppositely, hierarchical groups with diverse memberships selected on the practical basis of complementary skills, as in science and industry, will be more heterogeneous. These factors hinder collaboration (Farrell 2001; Levine and Moreland 2004) but simultaneously heighten the potential for creativity (Hampton and Parker 2011; Hemlin et al. 2008; Milliken and Martins 1996). Overall, collaborative moments should be less frequent in science and business, but their creative potential will be greater and more important for developing the group’s ideas.

**CONCLUSION**

We have argued for an amended CCT attending to differences in the strategic action fields in which circles exist and how these matter for their composition and functioning. The time for this undertaking is propitious. Recent theoretical advances and the accumulation of a large body of cognate but disconnected research has set the stage for an ambitious research program aimed at relating the effects of larger scale social structures on the foundational social processes of creativity and knowledge production. Sociology is uniquely positioned to provide holistic explanations for understanding how, when, and why creativity occurs across scales and fields. These were key concerns of our forbearers (Durkheim [1898] 1953; Fleck [1935] 1979; Mead 1934). It is past time that we took up that mantle to realize their ambitions.
There are many paths forward. Our contribution has been to build on Michael Farrell’s theory of small group creativity by synthesizing it with research on strategic action fields, art, science, philosophy, and social movements to develop a comparative framework for analyzing circles across fields. This reconceptualization enhances the analytic power of CCT, helping to explain variation among circles types and elucidating interactions between circles and the fields they seek to influence. We have used this framework to explain characteristic differences in circle social structures and dynamics within two ideal typical strategic action fields—art and science—and to indicate how these are shaped by field-level characteristics. Circles are elemental agents of collective action, and we have supplied a refined definition of circles and four propositions for guiding future research.

This effort advances small group research, which belongs at the core of sociology (Fine 2012; Homans 1950; Zelditch 2013) but has waned since the mid-1950s (Harrington and Fine 2006; Wittenbaum and Moreland 2008). Small groups are among the principle bases of social change, as was originally recognized by Simmel, Durkheim, Weber, and Tocqueville (see Fine 2012). CCT enriches this tradition by identifying the roles, processes, relationships, and stages by which small groups engage in collective action. We have furthered this by synthesizing a large body of knowledge revealing the existence of a family of collaborative circles, articulating important differences between them in relation to their fields, and considering how these matter for collective creativity.

Additionally, research on collaborative circles permits identifying the relative challenges that circles working within different fields face in unifying, garnering resources, developing ideas, and attempting to win legitimacy for the social change they promote. Small groups are often the main social units that craft a clear vision for collective action and work to turn bystanders, free-riders, and opponents into movement adherents—a classic topic within social movement research (Rochon 1998; Snow et al. 1986; Summers-Effler 2010). Both processes support collective action, but research on the former topic is rare and could be improved by focusing on those small groups that plan, organize, and potentiate creative social movements. Small groups provide substantial leverage for understanding the intersection of the micro and macro orders (Fine 2014), and our perspective provides new conceptual tools for undertaking such research.

While recent work on strategic action fields promises to unite research on collective action by providing concepts and variables of sufficient generality to explain strategic action within organizations, political movements, and social institutions, the small groups that often propel social change remain undertheorized within this perspective. Our work aids in this project by bridging SAF research and work on collective action in small groups and enunciating fundamental differences between the fields of art and science. As Fligstein and McAdam (2011) note, SAF research must counterbalance enthusiasm for generality with attention to meaningful differences between SAFs and collective actors to realistically account for collective action across fields.

Furthering CCT will require novel research approaches. An obvious first step is sampling circles from across strategic action fields to understand their distinctive group structures and social dynamics (Collins 2004a). CCT has also focused on wildly successful circles, and so we need data on failed circles to understand the correlates of circle failures and successes (see McLaughlin 2008a). We would also do well given pressing social and environmental problems to gather data on circles of different sizes and with different combinations of social and intellectual diversity to understand the conditions that foster circles capable of developing deeply integrative forms of applicable expertise (see Cundill, Roux, and Parker 2015; Hackett and Parker 2016). Or, to employ a stoichiometric metaphor, what proportions and combinations of the elements of diversity can be successfully assimilated into a creative
compound, and are different types or ratios of group diversity associated with creative products of particular qualities or impact? Also, is it possible to consciously engineer or encourage such circles, or must they emerge organically?

CCT could also benefit from fresh methods and data. Gross (2008) has suggested linking CCT’s stage theoretical framework with quantitative data to enable probabilistic causal analysis and improved understanding of group development over time in relation to specific social conditions; Burt’s (2005) analysis of brokerage and closure in social networks, modified for small groups, represents another potentially powerful tool for furthering our understanding. Combining qualitative methods with survey data on a larger number of circles would also enhance the reliability and validity of findings. For instance, Farrell, Schmitt, and Heinemann (2001) combined survey data and Bales and Cohen’s SYMLOG method to study informal roles and developmental processes in a large sample of groups. We would do well to follow their lead.

In terms of future research topics, one of the more exciting tasks will be working to understand the conditions that make it more or less likely that a circle will spark a new social movement in their field, and how this relates to the group’s centrality or marginality within the creative community. Collins and Guillén (2012) find that the probability that a given individual started a movement in modernist architecture was a function of their horizontal network ties to creative peers and vertical network ties to high-profile mentors and protégés, while McLaughlin (2001, 2008a) has argued that individuals occupying a position of optimal marginality between core and peripheral positions can allow them to perceive and act on important opportunities in their field while freeing them from pressures to conform. But what factors shape the probability that a collaborative circle will start a social movement within a given field? We contend that CCT can help account for creativity emerging from the margins and the core if we appreciate how fields shape circles and what it takes for a circle to make a creative contribution in a given field. For instance, most evidence suggests that science circles accrue greater benefits from being closer to the center of professional networks than do art circles (see also Patriotta and Hirsch 2016). We suggest as a working hypothesis that optimal marginality for circles is a function of the mean of positions among group members, and that the optimal array or continuum of such positions for starting a new movement should differ according to the character of the SAF in question.

It will also be important to revisit Farrell’s stage theoretic model relative to Mullins’s model and to data on circles in other fields. Farrell (2001) and Mullins (1973) find that art and science circles exist for between 10 and 15 years, but neither estimate specific lengths of their developmental stages. Our synthesis suggests that the significance and length of circle stages may differ between art and science, and Farrell suggests that the Suffragists moved rapidly to collective action because that is the raison d’être of social movement circles—another important field difference impinging on circle stages. Systematic comparisons will be needed to understand if circles in different fields develop through the same stages and if and how fields shape the sequence and length of those stages. It will also be beneficial to consider the literature on small groups as complex systems to think about alternate ways of conceptualizing circle development (e.g., Arrow, McGrath, and Berdahl 2000; Summers-Effler 2010) and test for equifinality—the possibility that circles can arrive at similar ends through different developmental paths.

Overall, our work provides a common starting point for developing a general understanding of how creativity in small groups is shaped by strategic action fields. We encourage others to join us in using, testing, and modifying our reconceptualization of collaborative circles theory. The benefits should justify the effort. Intellectually, such an undertaking will enhance general understanding of the elemental social processes of collective creativity by forging
links between the processes that take place inside creative groups and that can drive people toward amazing accomplishments and the communities and fields that ensconce them. Practically, it has the potential to enhance our ability to foster productive forms of creativity or block their malevolent counterparts (Cropley, Kaufman, and Cropley 2008). Ultimately, we hope it contributes to the development of a distinctly sociological approach to understanding the intersection of collective creativity and social structure.

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AUTHORS’ NOTE

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NOTES

1. More specific pragmatist contributions to understanding creativity are Mead’s conception of spontaneity within the self (i.e., the “I”), Peirce’s concept of abduction, and Dewey’s (1934) understanding of aesthetic and ethical judgement as emerging from interactions between personal preferences and communal standards (Joas 1996).
2. Farrell (2001) also notes that creativity is fundamentally deviant in its opposition to established ideas and practices within a given field.
4. We extend collaborative circles theory (CCT) by using field-level variables to explain differences in circle structures and dynamics, and we refine it by modifying its assumptions according to data and theory from existing research on small group creativity in other fields (see Snow, Morrill, and Anderson 2003).
5. Our goal in comparing art and science is not to essentialize these fields or cast them as crystalized Mertonian institutions. What constitutes art and science changes over time, in part through the efforts of collaborative circles. For instance, the Impressionists broke the monopoly on artistic gatekeeping in the Paris art scene by organizing alternate exhibitions to those held by the conservative Salon judges, transforming the aesthetic norms governing painting (Galenson and Jensen 2002). We treat art and science broadly because as practiced over the past century, they are sufficiently distinct in social organization to constitute meaningful categories for comparing different types of creative groups. We are not alone in doing so. Many have made useful and telling comparisons about the organization and practice of creativity in art and science (e.g., Crane 1976; Fuchs 1992; Csikszentmihalyi 1996; John-Steiner 2000; Sawyer 2006; Simonton 2006), though never through the lens of strategic action fields.
6. In this, Farrell’s work complements that of social exchange theories that incorporate emotions as central aspects of the exchange process (e.g., Lawler 2001).
7. The importance of anticipating the response of others for creative action is also apparent in Mead’s (1934) pragmatist social philosophy of the communicative act and Collins’s (1998) notion of “coalitions of the mind.”
8. Csikszentmihalyi (1988, 1999) also uses the term field, but differently. For him the “domain” is the creative arena (e.g., art, science), the “field” is its gatekeepers, and individuals (not groups) are agents of creative innovation.
9. Strategic action fields exist at levels ranging from small social networks to the global economic system, but an appropriate starting point for our purposes is conceptualizing strategic action fields broadly as distinctive arenas of cultural production.

10. This list isn’t meant to be comprehensive but to relate what we know based on current knowledge. Identifying other aspects of fields that matter for groups is an empirical matter best left for future research.

11. Though they have used different terms—namely, professional field (e.g., Fuchs 1992) and domain (Csíkszentmihályi 1999).

12. The bibliometric measure immediacy partially captures this reality within science.

13. Science is far from monolithic, and field differences also shape knowledge production across disciplines (Collins 1975; Fuchs 1992; Whitley 1985). We discuss science circles broadly, but cross-disciplinary comparison will be necessary.

14. Farrell also analyzes Freud and Fliess’s relationship, but early psychoanalysis differs substantially from modern science. More data on science circles exist in the sociology of science.

15. Similarly, Carlsberg Breweries sponsored Bohr’s quantum physicists.

16. Tellingly, Resilience Alliance has also employed administrators who do the requisite planning for Island Time.

17. Though solidarity within “radical” science circles may even exceed that of art circles (Mullins 1973).

18. The social processes central to creativity in science circles have been transmitted across groups. For instance, Delbrück resided at Bohr’s institute. In sociology, Talcott Parsons (leader of the circle propounding structural functionalism) taught Harold Garfinkel (leader of the circle launching ethnography); W.F. Ogburn (another functionalist leader) taught O.D. Duncan (a leader of the circle instantiated causal theory) (Mullins 1973).

19. McLaughlin (2008a) has hypothesized that social science circles may occupy a middle position between art circles and circles in the physical and life sciences, and research by Whitley (1985) and Fuchs (1992) appears to support this assessment.

20. Fields are like nested sets of Russian dolls—that is, fields exist within fields (Fligstein and McAdam 2012). The general field of art, for instance, is comprised of the various aesthetic forms, each with its own subfield characteristics. Our postulates also admit analyses of these subfields. For instance, within art, opera and theater are highly resource-intensive subfields; poetry and painting occupy the other end of the spectrum. Our first postulate should also hold relative to these two artforms.

21. Whether a group is radical or elite depends on the response of the creative community, not its centrality or marginality relative to mainstream creative practice. For instance, the circles developing ethnomethodology and behavioral psychology were considered radically deviant despite their members’ centrality within their respective networks (Mullins 1973).

22. Radical science circles are often castigated as “cults” for this reason, as was true of the Skinnerians, Phage group, and Resilience Alliance (see Parker and Hackett 2014).

23. See also Fine and Corte’s (2017) recent analysis of the relationship between small group structures and dynamics and their relationship to flow, fun, and group performance.

24. The two failed circles about which the best data exist are the Kent group (Farrell 2001) and the small group theorists (Mullins 1973). While each member of the Kent group was successful alone, the group never developed a shared style. Differences in age, stage of careers, and cultural background contributed to the breakdown of the group (Michael Farrell, personal communication, 2017). The failure of the small group theorists has been attributed to their lack of student protégées, social psychology’s interdisciplinary status, lack of an intellectual and organizational leader, and the lack of a major programmatic statement (Mullins 1973).

REFERENCES


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