

Managing Governance and Capability Reconfiguration to Professionalize Scientific Associations: A Conceptual Framework

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Abstract: Scientific associations, traditionally grounded in voluntary academic governance, increasingly confront pressures that challenge the adequacy of their historical structures. Growing stakeholder expectations, the expansion of professional roles in the scientific community, digital transformation and new forms of societal engagement require associations to develop more formalized, professionally coordinated organizational models. Yet the professionalization of scientific associations remains theoretically underexplored. This conceptual article develops an integrated framework explaining how such associations transition from academically oriented volunteer structures to hybrid, professionally supported organizations. Drawing on institutional theory, organizational design, sociology of professions and capability-based perspectives, the framework identifies four interdependent mechanisms—strategic mission reframing, governance redesign, capability reconfiguration and institutional identity evolution—that collectively underpin professionalization. An integrated conceptual model is presented, highlighting the dynamic interactions among these mechanisms. The article contributes to research on hybrid organizing and nonprofit professionalization and offers association leaders a conceptual guide for navigating complex organizational transformations.

Keywords: Scientific associations, scientific community, digital transformation.

1. INTRODUCTION

Scientific associations have long operated as academically anchored collectives, designed to support disciplinary development through conferences, journals, scholarly communication and collegial governance. Their traditional organizational model—based on voluntary leadership, minimal formalization and a strong academic identity—emerged within an institutional environment in which academic logic dominated, and scholarly communities were relatively insulated from the demands of external stakeholders (Friedland & Alford, 1991; Whitley, 2000). This historical structure aligned well with the coordination needs of academic fields but is increasingly insufficient in the contemporary environment, where associations must satisfy more complex expectations related to professional development, digital engagement, external representation and societal legitimacy (Powell & Sandholtz, 2012).

Organizational theory shows that as environmental complexity grows, structures must adapt through differentiation, integration and increased formalization (Lawrence & Lorsch, 1967; Burns & Stalker, 1961). Scientific associations, traditionally oriented around collegial academic governance, now operate as hybrid organizations that integrate academic, professional and societal logics (Battilana & Lee, 2014; Thornton et al., 2012). Institutional complexity emerges when organizations confront multiple competing expectations, often leading to structural tensions, coordination challenges and identity conflicts (Greenwood et al., 2011). The resulting misalignment between legacy governance and contemporary demands places scientific associations in a position like other hybrid or mission-driven organizations undergoing professionalization, where historical forms of governance no longer support the scale or sophistication of required activities (Cornforth & Brown, 2014; Hwang & Powell, 2009).

At the same time, organizational learning and adaptive capacity depend on the development of stable routines and capabilities, which are difficult to sustain in volunteer-based systems (Eisenhardt & Martin, 2000; Feldman & Pentland,

2003). Without professional administration, associations struggle to maintain continuity across leadership cycles, pursue long-term strategies or establish digital infrastructures essential for member engagement (Edmondson & Harvey, 2018). Structural inertia—an established challenge in institutionalized organizations—slows adaptation and prevents the reconfiguration of core routines (Hannan & Freeman, 1984; Meyer & Rowan, 1977). Yet scientific associations must adapt not only structurally but also symbolically, as changes in governance and capabilities require corresponding shifts in organizational identity (Gioia et al., 2000; Ravasi & Schultz, 2006).

Despite the relevance of these dynamics, the professionalization of scientific associations has not been theorized with the same depth as similar transformations in nonprofits, hybrid organizations or knowledge-intensive firms. Scientific associations occupy a distinctive institutional space—they combine high institutionalization, rotating volunteer leadership, strong professional identities and a deep connection to disciplinary epistemic cultures (Ocasio, 1997; March, 1991). Their transformation requires reconciling academic autonomy with professional coordination, scholarly traditions with managerial innovation, and collegial governance with operational continuity (Ashforth & Reingen, 2014; Battilana & Dorado, 2010).

This article develops an integrated conceptual framework explaining how scientific associations evolve through four interconnected mechanisms: strategic mission reframing, governance redesign, capability reconfiguration and institutional identity evolution. Drawing on institutional theory, organizational design, capability-based perspectives and research on hybrid organizing, the framework explains how associations transition from academic collectives to professionally supported institutional actors capable of sustaining both scholarly and societal contributions.

2. THEORETICAL FOUNDATIONS AND THE NEED FOR ORGANIZATIONAL TRANSFORMATION

Professionalization refers to the adoption of specialized expertise, formalized structures and managerial routines to improve organizational coordination, performance and legitimacy (Abbott, 1988; Scott, 2008). In voluntary and nonprofit contexts, professionalization involves shifts from informal, member-driven governance toward administrative specialization and routinized operations (Hwang & Powell, 2009). Scientific associations exemplify this dynamic: they traditionally relied on volunteer labor, limited-term leadership and informal coordination, but contemporary demands require more stable structures and capabilities.

Institutional theory emphasizes that organizations embedded in multiple logics must develop systems to manage competing expectations (Greenwood et al., 2011; Pache & Santos, 2013). Scientific associations increasingly integrate academic and professional logics, creating institutional complexity that cannot be sustained by governance structures designed for exclusively scholarly purposes (Thornton et al., 2012). When formal structures fail to evolve, organizations often decouple mission statements from actual practices, resulting in inconsistencies between stated goals and operational realities (Meyer & Rowan, 1977; Bromley & Powell, 2012). Scientific associations are especially vulnerable to this decoupling due to their reliance on rotating leaders and volunteer labor.

Research in organizational design further highlights the challenges faced by associations whose scale or complexity has outgrown their original structure. As organizations expand their activities, they require mechanisms for differentiation, specialization and integration (Galbraith, 1973; Mintzberg, 1983; Okhuysen & Bechky, 2009). Without such mechanisms, coordination becomes fragmented, decisions become inconsistent, and operational reliability declines. These dynamics are already visible in many scientific associations as inconsistent event management, uneven digital communication or gaps in member services.

The capability-based view complements these insights by showing that organizational performance and adaptability depend on the development of dynamic capabilities—abilities to sense opportunities, mobilize resources and reconfigure structures (Teece, 2007; Eisenhardt & Martin, 2000). Traditional associations lack the routines and administrative stability needed to build such capabilities. Rotating leadership disrupts continuity, while volunteer labor limits capacity for sustained program management, strategic planning or digital innovation (Feldman & Pentland, 2003; Edmondson & Harvey, 2018).

Finally, organizational identity plays a critical role in shaping how scientific associations navigate transformation. Identity forms the interpretive core through which members understand the organization's purpose, legitimacy and boundaries (Gioia et al., 2000; Pratt & Foreman, 2000). When scientific associations adopt professional roles alongside academic ones, identity tensions emerge, requiring new narratives that reconcile historical values with emerging expectations (Ravasi & Schultz, 2006; Wry et al., 2011). Because scientific associations are deeply anchored in disciplinary traditions, identity evolution becomes essential to prevent resistance, fragmentation or perceived loss of academic integrity.

Taken together, these theoretical perspectives show why scientific associations experience increasing misalignment between traditional governance models and contemporary functional demands. This misalignment generates the need for professionalization—a coordinated transformation involving mission, governance, capabilities and identity.

3. PROFESSIONALIZATION IN SCIENTIFIC ASSOCIATIONS: STRUCTURAL LIMITS OF THE TRADITIONAL MODEL

Scientific associations have historically relied on a model shaped by voluntary leadership, collegial decision-making and minimal administrative infrastructure. This structure emerged in academic fields where scholarly logics dominated and external expectations were limited, creating an environment in which informal governance could function effectively (Friedland & Alford, 1991; Whitley, 2000). However, as contemporary associations operate in settings characterized by greater environmental turbulence, digital interdependence and stakeholder pluralism, the traditional model reveals growing structural limitations.

Volunteer leadership, typically short-term and episodic, struggles to support the operational intensity and continuity required by today's associations. Research on voluntary and nonprofit governance shows that when organizations rely too heavily on episodic volunteer effort, they experience fragmentation, inconsistent decision-making and reduced organizational memory (Hwang & Powell, 2009; Harris, 2011). These challenges become amplified as associations take on activities demanding sustained coordination—such as large-scale conferences, digital communication infrastructures, professional development programs and external representation—none of which can be reliably executed through rotating volunteer commitment alone.

Institutional theory suggests that organizations whose formal structures lag behind their evolving activities experience decoupling between mission and practice (Meyer & Rowan, 1977; Bromley & Powell, 2012). Scientific associations increasingly perform functions that require specialization, stability and responsiveness: interactions with policymakers, partnerships with industry, public engagement roles and digital operations. When these functions are pursued within outdated structures originally built for academic collegiality, the association becomes vulnerable to inconsistencies, operational bottlenecks and perceived lack of professionalism. As Ocasio (1997) notes, attention structures determine what organizations can actually execute; volunteer-based governance limits the association's ability to allocate sustained attention to emerging demands.

At the same time, institutional complexity intensifies these vulnerabilities. As associations integrate academic, professional and societal logics, they must navigate competing expectations regarding authority, coordination and legitimacy (Greenwood et al., 2011; Thornton et al., 2012). Academic members often value autonomy, epistemic norms and rotational leadership, whereas professional members and external stakeholders prioritize reliability, service quality and managerial competence. When governance structures are not adapted to mediate these competing logics, organizations are prone to internal tensions, role ambiguity and conflict—dynamics well documented in hybrid organizations (Battilana & Dorado, 2010; Besharov & Smith, 2014).

Organizational design research reinforces this conclusion: as activities diversify, organizations must develop mechanisms for differentiation, specialization and coordination (Galbraith, 1973; Mintzberg, 1983; Okhuysen & Bechky, 2009). Scientific associations engaging in multiple domains—scholarly, professional, societal—must manage increasingly complex interdependencies. Volunteer-only structures lack the integrative mechanisms needed to coordinate committees, working groups, digital teams, partner organizations and staff. Without formalized coordination, organizations experience delays, miscommunication and inconsistent performance.

Moreover, the absence of sustained routines undermines the development of dynamic capabilities. Organizations adapt effectively when they can sense opportunities, seize resources and reconfigure structures (Teece, 2007; Eisenhardt & Martin, 2000). Yet scientific associations relying solely on volunteers often operate through ad hoc improvisation rather than repeatable routines, inhibiting their ability to plan strategically or respond systematically to external opportunities (Feldman & Pentland, 2003). Research on knowledge-intensive and project-based organizations shows that continuity and routinization are essential for high-quality execution—both of which are limited when leadership turns over annually or biennially (Edmondson & Harvey, 2018).

Identity tensions further complicate these structural challenges. Associations rooted in disciplinary traditions often define themselves as academic communities rather than institutional actors. As they incorporate professional members or expand toward external engagement, they face identity misalignment, wherein legacy understandings of “who we are” conflict with

emerging expectations of “what we must do” (Gioia et al., 2000; Pratt & Foreman, 2000). Without intentional identity work, members may perceive professionalization as mission drift, thereby resisting governance reforms or capability development (Ravasi & Schultz, 2006; Wry et al., 2011). Research on hybrid organizations shows that unresolved identity tensions destabilize change processes and create persistent internal conflict (Ashforth & Reingen, 2014).

Internationally, scientific associations are also exposed to external legitimacy pressures. Stakeholders—including universities, professional communities, funding bodies and policymakers—expect associations to demonstrate reliability, strategic clarity and representational authority (Suchman, 1995; Powell & Sandholtz, 2012). When associations lack professional coordination capabilities—such as data management, digital communication, program oversight or policy engagement—they risk being perceived as slow, inconsistent or insular, undermining their credibility as institutional actors. In short, the traditional volunteer-based academic model no longer aligns with the demands of contemporary scientific associations. Structural inertia, institutional complexity, fragmented routines and identity tensions combine to create organizational vulnerabilities that hinder performance, constrain adaptation and erode legitimacy. These pressures make professionalization not only desirable but necessary for sustaining scholarly relevance and institutional effectiveness.

4. A CONCEPTUAL FRAMEWORK FOR THE PROFESSIONALIZATION OF SCIENTIFIC ASSOCIATIONS

Professionalization in scientific associations can be understood as a multidimensional transformation involving strategic, structural, operational and symbolic changes. Drawing on institutional theory, research on hybrid organizing, organizational design and capability-based perspectives, the framework articulated here identifies four interdependent mechanisms: *strategic mission reframing*, *governance redesign*, *capability reconfiguration*, and *institutional identity evolution*. These mechanisms do not unfold linearly but reinforce one another through recursive loops similar to those observed in organizational learning and adaptive change processes (Weick, 1979; March, 1991). Together, they explain how scientific associations transition from traditional academic collectives to professionally supported institutional actors.

4.1 Strategic Mission Reframing

Strategic mission reframing constitutes the conceptual foundation of professionalization. Historically, scientific associations have defined their missions narrowly around scholarly advancement, prioritizing research dissemination, academic networking and disciplinary development. Yet organizational research shows that missions evolve when environmental demands require new forms of organizational engagement (Dutton & Dukerich, 1991; Wry, Lounsbury & Glynn, 2011). Associations increasingly operate at the intersection of academic, professional and societal arenas, requiring a broader mission that encompasses practitioner development, external representation, digital engagement and contributions to public discourse.

Reframing the mission thus represents a sensemaking process through which leaders reinterpret the association’s role considering environmental changes, constructing a shared understanding that legitimizes new activities and resource allocations (Weick, Sutcliffe & Obstfeld, 2005). Mission expansion also serves as an institutional positioning strategy, enabling associations to maintain relevance and legitimacy in fields undergoing rapid change (Suchman, 1995). As hybrid organizations commonly do, associations must articulate missions that bridge competing institutional logics, ensuring that professional aims complement rather than undermine academic purposes (Battilana & Lee, 2014; Thornton et al., 2012). Through mission reframing, scientific associations establish the conceptual rationale for structural and operational transformation. It grants legitimacy to the introduction of professional staff, the creation of new services and the redesign of governance systems that support activities previously considered outside the association’s mandate.

4.2 Governance Redesign

Governance redesign operationalizes the reframed mission by reconfiguring the association’s decision-making architecture. Organizational design theory emphasizes that as organizations grow and diversify their activities, they must adopt structures that support differentiation, coordination and accountability (Galbraith, 1973; Mintzberg, 1983). Volunteer-based governance—effective when activities are limited and homogeneous—struggles to accommodate the scale, scope and specialization demanded by contemporary associations.

Hybrid organizations require governance systems capable of mediating competing logics and integrating heterogeneous actors (Besharov & Smith, 2014; Jay, 2013). Scientific associations must distinguish between strategic leadership, academic oversight and operational management, assigning clear responsibilities to committees, elected officers and staff. Governance redesign commonly involves establishing executive roles (e.g., executive director), creating professional

departments (communication, digital operations, membership), formalizing committee mandates and implementing decision-making processes that ensure continuity across leadership cycles (Cornforth & Brown, 2014).

Coordination research shows that organizations perform effectively when roles, routines and communication pathways are clearly articulated and reliably enacted (Okhuysen & Bechky, 2009; Feldman & Pentland, 2003). This is particularly critical in associations that depend on collaboration among volunteers, staff and external partners. Without governance redesign, associations experience the coordination failures typical of under-structured hybrids: role ambiguity, conflicting priorities, and inconsistent execution (Pache & Santos, 2013). Governance redesign thus provides the structural backbone that enables associations to sustain a broader mission and develop professional capabilities.

4.3 Capability Reconfiguration

Capability reconfiguration forms the operational core of professionalization. Scientific associations must develop capabilities that support reliable performance, strategic planning and meaningful external engagement. The capability-based view argues that organizations adapt effectively when they cultivate dynamic capabilities—those enabling them to sense opportunities, mobilize resources and reconfigure structures in response to environmental change (Teece, 2007; Eisenhardt & Martin, 2000). Traditional volunteer-based systems rarely support the development of such capabilities due to limited continuity, insufficient specialization and the absence of routinized processes (Edmondson & Harvey, 2018). To sustain expanded missions and governance systems, associations must build a range of capabilities. Strategic capabilities include long-term planning, scenario analysis and resource alignment. Operational capabilities involve conference management, publication support, accreditation processes, digital communication and event coordination. Coordination capabilities become essential in environments where work is distributed across committees, task forces, staff and external partners; as research shows, effective coordination requires shared understandings, clear role structures and stable routines (Okhuysen & Bechky, 2009; Feldman & Pentland, 2003).

Digital capabilities are increasingly fundamental: modern associations rely on data infrastructures, learning platforms, virtual conferencing, analytics and integrated communication systems. Studies of digital transformation demonstrate that organizations lacking such capabilities fall behind in member engagement and operational efficiency (Brynjolfsson & McAfee, 2014). Finally, institutional capabilities allow associations to act as credible interlocutors with policymakers, industry bodies and societal stakeholders, paralleling dynamics described in research on boundary organizations (O'Mahony & Bechky, 2008).

Without capability reconfiguration, governance redesign remains symbolic rather than functional. Developing effective capabilities transforms associations from loosely coordinated academic communities into professionally supported organizations able to deliver consistent, high-quality services.

4.4 Institutional Identity Evolution

Institutional identity evolution represents the cultural and symbolic dimension of professionalization. Identity provides a cognitive frame through which members interpret the association's purpose, values and boundaries (Gioia, Schultz & Corley, 2000; Pratt & Foreman, 2000). Scientific associations, deeply embedded in disciplinary traditions, often possess strong academic identities that resist expansion into professional or societal domains.

Identity research shows that organizational change succeeds only when structural and operational adjustments are accompanied by corresponding interpretive shifts (Ravasi & Schultz, 2006; Weick et al., 2005). As associations adopt hybrid roles, members may question whether new activities threaten the association's academic legitimacy or distort its mission. Such conflicts are common among hybrid organizations, where competing logics create identity tensions that require careful narrative construction (Ashforth & Reingen, 2014; Battilana & Dorado, 2010).

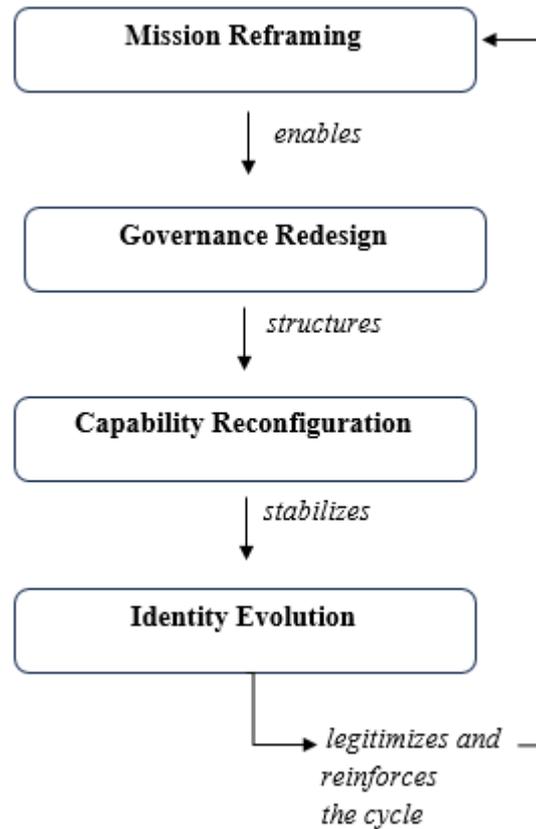
Institutional identity evolution thus involves articulating a coherent narrative that links professionalization with the association's historical academic values. This narrative reframes professionalization as an enhancement of scholarly purpose—enabling more effective coordination, broader impact and stronger representation—rather than a departure from disciplinary tradition. When identity work is successful, members perceive hybridization not as dilution but as expansion of the association's institutional role (Wry et al., 2011).

Only when identity evolves in parallel with mission, governance and capabilities can professionalization achieve durable legitimacy. Identity alignment mitigates resistance, strengthens cohesion and ensures that members support rather than hinder structural transformation.

5. INTEGRATED CONCEPTUAL MODEL

Figure 1 illustrates how the conceptual building blocks of the model create a causal relationship from mission reframing to identity evolution, and ensures a feedback mechanisms to keep the organization flexible and dynamic over time

Fig. 1: Integrated conceptual model of professionalization of scientific associations



This model illustrates a dynamic system: mission reframing sets direction; governance redesign aligns structure; capability reconfiguration enables execution; and identity evolution provides cultural legitimacy. Together, they constitute the professionalization cycle.

6. ORGANIZATIONAL AND LEADERSHIP IMPLICATIONS

The professionalization of scientific associations generates wide-ranging organizational implications, reshaping both internal functioning and external positioning. As associations adopt more formalized structures and coordinated routines, they transition from loosely organized scholarly collectives to structured institutional actors capable of sustained engagement across multiple domains. Organizational research suggests that increased formalization enhances reliability by reducing variance in performance and clarifying expectations among actors (Mintzberg, 1983; Okhuysen & Bechky, 2009). For scientific associations, this translates into more consistent conference execution, improved communication processes, stable financial management and more predictable member services.

Professionalization also alters the distribution of authority. Traditionally, elected academic leaders have held both strategic and operational responsibilities, but as associations grow more complex, operational competence becomes increasingly dependent on professional staff and routinized administrative processes (Hwang & Powell, 2009; Cornforth & Brown, 2014). The shift toward hybrid governance structures—combining academic oversight with managerial expertise—reflects broader findings that organizations operating under multiple institutional logics require differentiated roles to maintain coherence (Besharov & Smith, 2014).

Organizational resilience increases as well. Research on dynamic capabilities indicates that organizations with stable routines and administrative continuity are better positioned to adapt to environmental changes (Teece, 2007; Eisenhardt & Martin, 2000). Scientific associations with professional infrastructures can respond more effectively to emerging

opportunities—such as policy influence, international collaboration or digital innovation—because they are not constrained by the episodic nature of volunteer labor.

Externally, professionalization enhances legitimacy. Stakeholders increasingly expect scientific associations to act as credible institutional interlocutors; when associations develop capacity for public communication, data stewardship, policy engagement and program oversight, they better satisfy these expectations (Suchman, 1995; Powell & Sandholtz, 2012). Professionalization therefore not only improves internal functioning but also strengthens the association's position within the broader institutional ecosystem.

Professionalization places new demands on leadership. Academic leaders historically guided associations based on scholarly authority, collegial norms and disciplinary reputation. Yet as associations become hybrid organizations, leadership must balance academic traditions with managerial innovation and institutional positioning. Leading professionalization requires the capacity to articulate an expanded mission, design hybrid governance structures, develop organizational capabilities and support identity evolution (Gioia et al., 2000; Jay, 2013).

Research on hybrid organizations shows that successful leaders act as translators between institutional logics, aligning actors with divergent expectations and fostering shared understandings (Battilana & Dorado, 2010; Ashforth & Reingen, 2014). In scientific associations, this involves explaining how professionalization enhances scholarly values rather than threatening them, ensuring that members perceive new structures and capabilities as enabling academic impact. Leaders must also engage in identity work—constructing narratives that integrate professional competence with disciplinary heritage (Ravasi & Schultz, 2006; Pratt & Foreman, 2000).

Moreover, leadership increasingly depends on collaboration between elected officers and professional staff. Research on coordination demonstrates that effective collaboration requires role clarity, shared goals and stable communication routines (Okhuysen & Bechky, 2009; Edmondson & Harvey, 2018). Leaders must therefore cultivate working relationships that combine academic judgment with administrative expertise, ensuring that strategic decisions are paired with operational capability.

Overall, leadership in professionalizing associations becomes a form of institutional stewardship—balancing continuity and change, managing multiple logics and maintaining member legitimacy while guiding organizational evolution.

7. CONCLUSION

Scientific associations today operate in increasingly complex institutional environments that place demands far beyond those envisioned by their traditional volunteer-based structures. Drawing on multiple theoretical perspectives, this article has proposed an integrated framework explaining how such associations professionalize through mission reframing, governance redesign, capability reconfiguration and institutional identity evolution. These mechanisms together illuminate the organizational, cultural and strategic dimensions of transformation that enable associations to sustain academic excellence while expanding their professional and societal roles.

By viewing scientific associations as hybrid institutional actors rather than purely academic communities, the framework invites new avenues of empirical inquiry and provides practical guidance for association leaders navigating organizational transition. Professionalization, in this sense, is not a departure from scholarly values but a necessary adaptation that enhances the association's ability to fulfill its evolving mission in the contemporary landscape.

8. LIMITATIONS AND FUTURE RESEARCH

This conceptual framework provides a theoretically grounded understanding of the professionalization of scientific associations but carries several limitations. Because it is not derived from empirical data, the model requires validation across diverse disciplinary, geographical and organizational contexts. Associations vary widely in size, resource endowments, member composition and institutional history; these differences likely shape the trajectory and feasibility of professionalization (Hwang & Powell, 2009; Greenwood et al., 2011). Future research should employ comparative and longitudinal designs to examine how these contextual factors influence transformation.

A second limitation concerns the assumption that professionalization is both possible and desirable. Some associations may lack the resources, leadership capacity or member support necessary to implement structural changes, and strong academic identities may generate resistance to managerial innovations (Ravasi & Schultz, 2006; Wry et al., 2011). Future studies should investigate the conditions under which professionalization is embraced, contested or selectively adopted.

Finally, the model treats the four mechanisms as analytically distinct, yet empirical work should examine how they interact dynamically. Hybrid organizations often experience recursive and nonlinear change processes in which identity, governance and capabilities evolve together (Jay, 2013; Ashforth & Reingen, 2014). Studying these interactions in scientific associations would deepen understanding of hybridization processes more broadly.

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