ORGANIZED CREATIVITY

Tobias Theel, Lukas Vogelgsang

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About the Authors

Tobias Theel is member of the DFG Research Unit "Organized Creativity" (FOR 2161) and doctoral student at the Department of Management, Freie Universität Berlin
Contact: Tobias.Theel@fu-berlin.de
https://www.wiwiss.fu-berlin.de/fachbereich/bwl/management/jackson/team/ttheel/index.html

Lukas Vogelgsang is member of the DFG Research Unit "Organized Creativity" (FOR 2161) and doctoral student at the Leibniz Institute for Research on Society and Space (IRS), Erkner
Contact: Lukas.Vogelgsang@leibniz-irs.de
https://leibniz-irs.de/personen-karriere/mitarbeiterinnen/person/lukas-vogelgsang-0405/

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Contact

Freie Universität Berlin, Department of Management
Prof. Dr. Jörg Sydow
Boltzmannstr. 20 (Raum 225)
14195 Berlin
Tel: +49 (030) 838-53783
http://www.wiwiss.fu-berlin.de/forschung/organized-creativity

Leveraging Hierarchy for Creative Collaborations? A Process Perspective on the Governance of Creativity in the Fields of Pharmaceuticals and Music

Tobias Theel, Department of Management, Freie Universität Berlin

Lukas Vogelgsang, Leibniz Institute for Research on Society and Space (IRS), Erkner

Abstract

Hierarchy is usually seen as the antithesis to creativity: a functional, yet un-creative mode of collaboration, which enables flow over friction. In this paper, we challenge this assumption while simultaneously problematizing the implicit idea of recent organizational creativity concepts that a singular static governance arrangement can provide ongoing optimal conditions for creative processes. Based on eight creativity biographies encompassing 36 semi-structured qualitative interviews in both arts and sciences, we describe collaborative creativity as carried out "in the shadow of hierarchy" – embedded in and enabled by hierarchical structures. In particular, we show that hierarchical governance can be leveraged for collective creativity when it is combined with other governance modes and fades in and out over the course of the creative process – thus enabling collaborators to rely on the benefits of hierarchy without being permanently exposed to it. However, we found that actors in arts and sciences have different ways of implementing hierarchical governance by either having a symbiotic (music) or an evasive (pharma) relationship to it. Our paper contributes to the literature on organizing collaborative creativity by addressing the neglected role of hierarchy and refining the theoretical concept of governance as a fluid and ongoing social process of overlaps, shifts, and recombination. Thus, we establish a process perspective on the governance of creativity.

Keywords

Introduction

Organizational and management studies no longer consider creativity solely as an outcome of creative individuals' genius (Amabile, 1988; Amabile & Pillemer, 2012; Simonton, 1975), but also as an ongoing social phenomenon resulting from collective interaction (Hargadon & Bechky, 2006; Harvey, 2014; Sawyer & DeZutter, 2009). Especially in fields of complex, expensive and lengthy development, like the pharmaceutical industry, the locus of creative development cannot be seen within a single person or a department. Instead, it has to be considered as a collaborative development involving scientific, legal and administrative experts working together within and across organizational boundaries in universities, start-ups, clinics and pharmaceutical "giants" (Dougherty & Dunne, 2011). Similarly, creative collaboration is evident in the creative industries, such as the music industry, where endeavors are typically carried out in collaborative settings such as jam sessions and band rehearsals, are contextualized in records labels and music scenes, and are carried out and directed by musicians, producers, recording engineers and managers (e.g. Lorenzen & Frederiksen, 2005; Becker, 1982).

Creativity in both these industries thus requires coordination of a large number of actors specialized in a variety of different activities. In this study, we approach such coordination of creative endeavors with the concept of governance. We define governance as forms of coordination between disparate agencies to achieve common objectives in situations of complex reciprocal interdependency (Jessop & Sum, 2005). Furthermore, we utilize the well-established notion that ideal-typical modes of governance such as hierarchy, market, network or community are not separate in practice but occur in hybrid governance recombination and multi-layered compounds (Crouch, 2005; Hollingsworth & Boyer, 1997; Powell, 1991).

Organizational research literature has so far pointed out several governance arrangements as beneficial for collaborative creativity, such as heterarchies (Stark, 2009), hybrid organizations (Jay, 2013), project-based forms of organizing (Lundin et al. 2015), learning networks (Perry-Smith & Shalley, 2003; Powell, Koput, & Smith-Doerr, 1996) and project ecologies (Grabher, 2004) that can span organizational boundaries (Dougherty & Dunne, 2011) and involve brokering activities (Lingo & O'Mahony, 2010). We claim, however, that these organizational concepts suffer from the implicit idea that one singular governance compound can provide ongoing optimal conditions for collaborative creativity. In contrast, we assume that creative processes are inherently indeterminate and uncertain (Austin, Devin, & Sullivan, 2012; Brinks, Ibert, Müller, & Schmidt, 2018) as well as fluid and dynamic (Fortwengel, Schüßler, & Sydow, 2017), thus pointing out to affordances of governance shifts and therefore contradicting the notion of singular optimal governance modes. Additionally, we scrutinize the neglected role of hierarchical governance for creativity. Hierarchy of command is typically considered a detriment to free, associative and unbound creativity in organizational and management literature (Spelthann & Haunschild, 2011; Stark, 2009). Nevertheless, all organizational forms of collaborative creativity mentioned above involve to some degree hierarchically organized firms for successfully generating collaborative creative products. Yet, the particular role of hierarchy for creative processes remains unclear.

With these insights in mind, we will show in a cross-case comparison of creative collaborations between the pharma and the music industry that there is no singular optimal governance arrangement for creativity. Instead, governance of creativity is not only about multi-layered and hybrid forms of coordination but also needs to constantly shift and recombine over time in order to account for the open-endedness and indeterminacy of the "creative journey". Moreover, we will particularly point out the crucial role of hierarchical governance, focusing on its enabling properties as well as its limits for the creative process. Thus, by exploring the governance mechanisms through which collaborative creative processes are organized over time, we

establish *a process perspective on the governance of creativity*. This is accomplished in four steps:

First, we start off with an in-depth literature review of different ideal-typical governance modes and introduce the concept of recombinant governance compounds (Crouch, 2005). We then elaborate our research gap by discussing the literature on organizational forms of collaborative creativity. Second, we describe our methods of data collection and analysis, which are focused on eight "creativity biographies" (Butzin, Rehfeld, & Widmaier, 2012), that allow for a process perspective and stem from successful creative collaborations of both music production and pharmaceutical development. Third, using this data, we show that (a) hierarchical governance can be leveraged for creative processes when collaborators are enabled to rely on the benefits of hierarchy without being permanently exposed to it. We found creative collaborators to act "in the shadow of hierarchy" (Mayntz & Scharpf, 1995; Scharpf, 1994) in an either symbiotic (music) or evasive (pharma) way during crucial phases of creative development. We furthermore show that (b) successful creative processes consist of multiple simultaneous governance mechanisms that dynamically shift and change over time in presence and dominance.

As a result, our paper contributes to the literature on organizing collaborative creativity: we expand and refine the theoretical concept of governance as a fluid and ongoing social process of overlaps, shifts, and recombination. This theoretical contribution is valuable for management research as it deepens our understanding of the coordination mechanisms that foster collaborative creativity.

Literature Review

Contemporary management research no longer conceptualizes creativity solely as individual creative behavior embedded in a *social context* (Amabile, 1988; Amabile, Conti, Coon, Lazenby, & Herron, 1996). Instead, a growing body of literature is interested in the "collective side" of creativity and is concerned with how "collaborating groups of individuals collectively generate a shared creative product" (Sawyer & DeZutter, 2009, p. 82). The level of analysis thus changed from socially embedded individuals to creativity emerging from collaborative interaction (Dougherty, 2015; Hargadon & Bechky, 2006; Sawyer, 1999). Following this development in management and organization research, we want to scrutinize the coordination of collaborative creativity by examining the role of governance. Governance is here defined as ''the ways in which disparate but interdependent agencies are coordinated and/or seek to coordinate themselves through different forms of (self-)organization to achieve specific common objectives in situations of complex reciprocal interdependency'' (Jessop & Sum, 2005, p. 255).

In the following, we will first provide a description of the ideal-typical governance modes *market*, *hierarchy*, *network,* and *community* and specify the characteristics that constitute them. Second, we introduce the concepts of recombinant governance and governance compounds (Crouch, 2005) for approaching hybrid and multi-layered empirical governance arrangements. Third, we will provide an overview of the literature on organizational forms of collaborative creativity and end with a critique of these concepts. We then conclude with two research questions that motivated our study.

Ideal-types of governance

Market

Mechanisms of market governance rely on spontaneous forces of order that are directed by the relationship between supply and demand and result in the formation of market prices (Hayek, 1969; Smith, 1776). Stable market coordination is typically enabled by and embedded in institutional and cultural contexts such as free market access, proprietary rights or local conventions (Aspers & Beckert, 2017; Diaz-Bone, 2011; Polanyi, 1978). Market forces are particularly evident in the creative industries, that have experienced large-scale outsourcing of tasks and rely on short-term commissioned work and freelancers (Hracs, 2015; Lorenzen & Frederiksen, 2005; Sydow & Windeler, 2004).

The market as an abstract and ideal-typical coordination mechanism directs the exchange of goods and services between at least three actors based on a price formation: a buyer and two competing suppliers. Ideally, participation in a market transaction is unique, voluntary and anonymous and the relationship between the parties involved is therefore horizontal. Communication takes place on the basis of self-regulated price formation by signaling prices or willingness to pay by opportunistic actors (Czada, 2006).

Hierarchy

The concept of hierarchical governance stems from bureaucratic forms of organization in which the relationship between organizational management and employees is based on a contractually negotiated relation of order and wage payments (Kieser & Ebers, 2001; Weber, 1972). Hierarchical coordination is central to the organization of firms and is used for bypassing external uncertainty by internalizing production, reducing opportunism through employment contracts and overcoming time-consuming wage negotiations (Coase, 1937; Hollingsworth & Boyer, 1997; Williamson, 1975, 1981). Formal organization not only plays an important role in corporations but also in the administration of art and creativity – such as in the administration of museums, exhibition halls or academies (Schimank, 2007).

As an ideal type of governance, a hierarchy can be described as the relationship between instruction-giving authority and obedient employees, based on a contractually formalized long-term relationship. The power structure is thus vertical and the coupling of actors is characterized by dependence. The motives for action consist of self-interest and norm conformity. Hierarchical communication is conducted via signaling.

Network

In network analysis, actors are not characterized by rational or norm-oriented action, but by the quantity and quality of relationships they maintain with others, thus emphasizing the embeddedness of action in social structures (Granovetter, 1973). In flexible production systems, networks enable and maintain the ability to act under dynamic and uncertain conditions by building trust between actors. Networks can outlast individual projects and form for instance recruitment pools that are used for selecting suitable cooperation partners based on the exchange of information about reputations (Podolny, 2001; Powell, 1991; Sydow & Windeler, 2004).

Ideal-typical network governance is based on long-term trust and reciprocal exchange of resources between actors. The power structure in networks is horizontal and dialogical due to extensive exit options and limited assertiveness against the will of those involved. The actors are interdependent and can act both in self-interest as well as in accordance with established norms.

Community

Communities as a form of governance exhibit various productive qualities such as knowledge acquisition, knowledge transfer, and acquisition of competencies (Brinks, 2016; Brinks & Ibert, 2015; Ibert, 2010; Schiemer, 2018). Communities of practice are typically conceptualized as informal groups of practitioners that develop a shared repertoire of practices and resources for addressing recurring problems in a particular domain while voluntarily adhering to common standards (Lave & Wenger, 1991; Wenger, 1998; Wenger-Trayner, Fenton-O'Creevy, Hutchinson, Kubiak, & Wenger-Trayner, 2014). Through informal interaction such as asking peers for advice, knowledge is generated, shared and continuously updated.

As an ideal-type of social coordination, a community can be described as based on shared values and norms, built upon affective bonds or cognitive beliefs, which lead to the formation of a collective identity. Motives for action are oriented towards group solidarity, the power structure is horizontal, and communication is based on dialogue. Communities are typically long-term in orientation, mostly informal and the coupling of actors can be described as inherent.

Recombinant Governance & Governance Compounds

The governance forms explicated above, namely market, hierarchy, network and community, are typically regarded as ideal-typical representations of social coordination in the research literature. This means that they do not occur in such purity in empirical reality, but rather in various recombinant and compound forms (Benz, Schimank, Simonis, & Lütz, 2006; Crouch, 2005; Lange & Schimank, 2004; Powell, 1991).

Recombinant governance is based on the idea that governance modes in practice are constituted by an assemblage of various characteristics (Benz et al., 2006; Crouch, 2005; Hollingsworth & Boyer, 1997; Powell et al., 1996; Wald & Jansen, 2006). In order to approach recombinant governance in creative collaboration, we identified eight crucial characteristics in the literature that constitute governance modes: (1) coordination mechanism, (2) form, (3) power structure, (4) motive for action, (5) coupling, (6) formality, (7) duration and (8) form of communication. We compiled these characteristics based upon extensive studies of the governance literature and in order to capture the main features of governance in creative collaboration (see Table 1). Our choices for governance mode characteristics were influenced by 25 exploratory interviews in the fields of both pharma and music.

	Mechanism	Form	Power	Motive	Coupling	Formality	Duration	Communication
Market	Price	Purchase, transaction	Horizontal	Economicus	Independent	Formal	Singular	Signaling
Hierarchy	Authority	Instruction, obedience	Vertical	Economicus, sociologicus	Dependent	Formal	Persistent	Signaling
Network	Reciprocity, trust	Bond, reputation	Horizontal	Economicus, sociologicus	Interdependent	Informal	Long-term	Dialogue
Community	Common standard	Ethos, solidarity	Horizontal	Sociologicus	Inherence	Informal	Long-term	Dialogue

Table 1: Governance ideal types characteristics

According to Crouch (2005), actors can actively exchange the characteristics depicted in Table 1. Actors recombine governance mode characteristics into hybrid forms of governance if they deem them suitable for their respective aims and endeavors. Such choices for governance characteristics are usually derived from own or learned experiences, are imitated or transferred, or result from experimentation with hybrid arrangements. Actors strategically change forms and

characteristics of governance if they consider it necessary and have sufficient power resources as well as access to alternative coordination options:

> *"Governing actors can choose from existing instruments for the short term, create new ones from existing resource base for the medium term, or they can spend their governing energy developing new instrumental bases for the long term." (Kooiman, 2003, p. 49)*

Following this perspective, hybrid governance forms such as informal hierarchy (Dalton, 1992) can be depicted as in Table 2:

Mechanism	Form	Power	Motive	Coupling	Formality	Duration	Communication
Authority	Instruction, obedience	Vertical	Economicus, sociologicus	Dependent	*Formal* **Informal**	Persistent	Signaling

Table 2: Governance hybrid informal hierarchy

In contrast to an ideal-typical hierarchy, informal hierarchy recombination is characterized by an exchange of the formal structure with informality. While undermining formal organizational structures, informal hierarchy was found to have a productive function for the organizations' objectives.

Another form of recombinant governance can be seen in the temporary employment relation of commissioned work that is commonly used in project-based forms of organizing (Hobday, 2000; Lundin et al., 2015). Here, too, the social coordination of the project workers is predominately hierarchical but it only lasts for the duration of a service or respective project. In such cases, the ideal-typical hierarchical element of persistent duration is exchanged for the ideal-typical market element of singular interaction (see Table 3).

Mechanism	Form	Power	Motive	Coupling	Formality	Duration	Communication
Authority	Instruction, obedience	Vertical	Economicus, sociologicus	Dependent	Formal	*Persistent* **Temporary**	Signaling

Table 3: Governance hybrid commissioned work

Besides its recombinant features, governance in empirical reality oftentimes occurs in combinations of complementary governance compounds. This is due to the fact that every governance mode brings with it both advantages and disadvantages, which remain imperfect and one-sided when applied alone. This can be compared to

> *"the advantages of the mongrel over the pedigree animal. The latter has heavily reinforced characteristics, which means that vulnerabilities are exaggerated, while the mongrel avoids such reinforcement and may therefore appear more 'balanced'. At the same time, of course, the pedigree animal, because it does have exaggerated characteristics, does some things particularly well. Both types of animal offer advantages, but they are different types of advantage." (Crouch, 2005, p. 55)*

Such a governance compound can be seen, for example, in what is called the 'market economy'. The institution of a market economy is not solely coordinated by market governance but is enabled and in fact only made possible by a nation state that guarantees free market access and proprietary rights to its citizens. Furthermore, to a large extent, market-economy actors consist of hierarchically organized firms. Taken together, the 'market economy' is constituted by a complementary governance compound consisting of a combination of the governance modes market, nation state, and hierarchy (Crouch, 2005).

Organizational forms of collaborative creativity

Building upon a collective perspective on creative processes, several studies have already examined organizational forms that shape social relations and interactions for creative results. *Heterarchies*, for example, are described as an organizational form that "flattens hierarchy" and is characterized by "crosscutting network structures (…) of competing evaluative principles" (Stark, 2009, p. 25). That way, heterarchies enable and sustain creative friction, while maintaining a functional and controlled work environment (Spelthann & Haunschild, 2011). Meaning, heterarchies are not chaos without coordination, but rather a distinct mode of governance beneficial for collaborative creativity.

Another organizational form to foster collaborative creativity very similar to heterarchy is the *hybrid organization* (Jay, 2013). Hybrid organizations combine institutional logics in their efforts to generate innovative solutions to complex problems. Navigating these different logics through sensemaking creates opportunities for novel synthesis and capacity for innovation. For instance, discussing the success of an organizational outcome from perspectives of ambiguous and competing organizational logics can enable new perspectives on performance issues and increases the organizations' capacity for innovation.

An organizational form that is very common in the creative industries are *project-based organizations* (PBO) (Hobday, 2000; DeFillippi, 2015). In PBOs projects are sponsored or hosted by organizations for a limited time and commissioned with specific tasks that are typically conducted by interdisciplinary teams for generating new knowledge. In comparison to more stable organizational units such as departments, projects , not least because of their temporariness, are characterized by high degrees of flexibility and can mostly be terminated at low cost and little interruption for the corporation. Nevertheless, projects are typically nested with more stable and functional parts of organizational structures and processes and require structural elements such as roles, routines, and relationships.

Furthermore, projects are often nested within so-called *project networks* (DeFillippi & Sydow, 2016; Sydow & Windeler, 2004), which are again typical for flexible production systems like the creative industries that are faced with ever-changing market situations. In this sector that relies predominately on time-limited individual projects, freelancing and sub-contracting, inter-organizational cooperation builds trust among collaborators and thereby stabilizes relationships that lead to recurring cooperation between these actors. Such project networks outlast individual projects and form a kind of recruitment pool that are used repeatedly for selecting cooperation partners: „It is the networks of participants, however, that are stable and enduring, not the film studios, where employees come and go and ownership changes frequently." (Powell, 1991, p. 308)

The concept of *project ecologies* (Grabher, 2004) also provides a contextual and relational understanding of organization, and describes them as interwoven with their social environment that consists of epistemic communities and not only inter-organizational but also interpersonal networks. Within project-based fields such as the creative industries, socially embedded project cultures were found not only to create new knowledge but also to sediment and distribute the created knowledge within the project ecology due to the frequent interchanges of personnel. In a recursive co-constitution of project and ecology, the created knowledge then forms the base for new creative productions.

Similarly, Powell et al. (1996) argue for "*networks of learning*" in cases where the knowledge base of an industry is complex, expanding and expertise is dispersed, like in biotechnology or the pharmaceutical industry. They state, that in these instances, the locus of innovation and creativity cannot be within a single organization, but is more efficiently organized in inter-

organizational network relations. Thus, firms should opt to sustain exploration via interdependence by means of vertical integration.

It is, however, not enough to explain collaborative creativity simply by relying on network governance. Recent network studies point to the positions, ties, relations and the brokerage of networks to explain creative processes (de Vaan, Vedres, & Stark, 2015; Fleming, Mingo, & Chen, 2016; Lingo & O'Mahony, 2010; Perry-Smith & Shalley, 2003; Vedres & Stark, 2010). Structural folding, for instance, denotes that memberships in two distinctive cohesive groups can overlap through intercohesion (Vedres & Stark, 2010). This topology of collaboration pulls participants closer while the dissimilarities between the folded groups pull them apart, thus creating generative tension (de Vaan et al., 2015). In a similar manner, brokerage can foster outcomes of collective creativity through activities of managing and maintaining the social relations of diverse actors within network structures (Lingo & O'Mahony, 2010).

We want to problematize and refine two assumptions that we identified in this strand of literature on organizational forms of collaborative creativity (Alvesson & Sandberg, 2011): Our first critique addresses the implicit assumption that a singular static governance arrangement provides ongoing optimal conditions for collaborative creativity. In contrast, we assume that these organizational forms explicated above do not encompass creative productions in their entirety. For example, projects in PBOs and, in particular in project-supported organizations (PSOs) are often installed with the intention to change the organizational structures they are embedded in (Lundin et al., 2015). Yet, it is unclear how the newly created knowledge is translated and adapted by the hierarchical corporation – which is, in the end, a critical variable for its success. Additionally, creative processes were found to be indeterminate and uncertain (Austin et al., 2012; Brinks et al., 2018) as well as fluid and dynamic (Fortwengel et al., 2017), thus pointing towards affordances of governance flexibility and shift. These insights contradict the notion of a singular optimal governance mode for collaborative creativity, but instead bring up issues of adaptability, transformation and change. Subsequently, we examine the governance of creativity from a process perspective to understand the dynamics of coordination for "organizing creativity".

Our second problematization addresses the one-dimensional assumptions that are inscribed in certain governance mechanisms concerning creativity. The organizational forms of collaborative creativity depicted above tend to assume that less hierarchical governance is beneficial for creativity, whereas more network governance holds positive implications. Nevertheless, all of them revolve around the crucial role of hierarchically organized firms that ultimately enable and manage organizational forms such as hybrid organizations, heterarchies or PBOs. Yet, the role of hierarchical governance remains underexposed and its possible contradiction to creativity not well understood. We, therefore, want to examine this crucial role of hierarchical governance by focusing on its enabling properties and its limitations for creative processes and scrutinizing how it interacts with and relates to other governance modes. This leads us to our two research questions:

1. How do governance arrangements change during creative processes?
2. How does hierarchical governance enable creative processes and how does it thereby interact with other governance forms?

Data collection & analysis

In order to scrutinize the procedural development of governance mechanisms and the recombination of its characteristics, we conducted a multi-case study design (Yin, 2014) and selected eight cases in total according to the principles of theoretical sampling (Eisenhardt, 1989). We applied two selection criteria: first, we were looking for cases representing the arts as well as the science in order to compare two fields with highly different creative processes for reaching maximum variance, saturation and thus robustness of our findings. The music industry was examined as an exemplary case of highly informal and more network-based creativity in the arts field, while the pharmaceutical industry served as a data source for a more formal and organization-based scientific field. We collected four cases in each field and identified music record albums and pharma patents as materializations of creative ideas and their collaborative realization that can be compared across the two domains. Second, we followed a differentiation between push and pull regimes of creative collaboration, introduced by Hagel, Brown, and Davison (2010). We did so to ensure that our sample systematically included different organizational settings for collaboration. According to Hagel et al. (2010), *push-based regime* is found among large companies marked by hierarchical top-down decisions, mass production, and economies of scale. Actors in push regimes work together to bundle resources in the search for new products according to predefined evaluation criteria and are motivated with explicit incentives. In a *pull regime*, on the other hand, actors work together to solve emerging problems that they are confronted with in their daily practice, leading to ad hoc creation of new rules or evaluative logics. Pull refers to creativity in which collaboration is driven by enthusiasm and to the mobilization of resources that are widely distributed across different actors. Creative product design in pull regimes is strongly embedded in network and community contexts, using loosely coupled networks as well as different backgrounds, knowledge and intrinsic motivation of actors.

Inspired by the innovation biography approach (Butzin et al., 2012), we conducted *creativity biographies* as ex-post reconstructions of novel ideas that culminated in the creation of either a music record album or a pharmaceutical patent. Our cases represent particularly creative results because we have focused our analysis on albums and patents that have been recognized by field representatives, e.g. through creativity awards, critics or recommendations from field experts. Once we had access to participants of the product development, we received first-hand information about creative collaborations via semi-structured interviews. We asked participants to indicate the novelty and utility of each album and patent, mapped all collaborators involved, and asked for interaction- and decision-making processes that shaped and structured each creative process.

Since not all collaborators participated in every single development phase, we identified and interviewed the key actors. On average, four to five central persons, e.g. label owners, producers, biologists, chemists, etc. were interviewed in order to obtain all relevant information. Because we were regularly confronted with memory gaps and ex-post rationalizations of interviewees especially when reporting micro-interactions of creative processes, we compensated the interview data with further secondary material. We collected documents such as journalistic interviews with the involved key actors in print, TV and online media channels from the time period under study, gained access to written reports and online database entries such as on discogs.com, allmusic.com and the European patent database (epo.org), and scrutinized scientific publications that reported about the respective patents. We then verified the information by comparing several subjective representations of the creative process between interviewees and triangulated interviews with document data. Contradictory or deviating conclusions required interpretation. In total, our study encompasses 36 qualitative interviews

(19 in music, 17 in pharma) with three to five interviews per case. For an overview of our eight cases, see Table 4 below.

		Push Regime (predominately market and hierarchy governance)		Pull Regime (predominately network and community governance)	
		Strong push	Weak push	Weak pull	Strong pull
Music	Case Name	*PaganRock*	*HabibiRap*	*LeftfieldPop*	*SoulRock*
	Interviews	five	five	five	four
	Label	"Major"-label	"Major"-label	"Independent"-label	Unsigned
	Description	Top 20 folk band that established their own subgenre	Top 20 hip hop artist that established a new linguistic style	Renowned electronic synth-pop artist with genre-spanning approach	Renowned soul & funk artist that started a solo career
Pharmaceutics	Case Name	*BigIndi*	*NatureComp*	*HeartComp*	*CancerStop*
	Interviews	four	five	three	five
	Development at	Pharmaceutical „Giant"	Medium-sized Company Start-Up Public Research	Start-Up Joint Venture Public Research	Public research
	Description	First compound to successfully target a specific lunge disease	Replica of natural substance for targeting heart disease	Compound to help without invasive procedure	Compound to inhibit metastisation of tumors

Table 4: Creativity biography cases

We analyzed our data by using qualitative content analysis (Mayring, 2015). In line with this approach, we used characteristics of governance mechanisms explicated above as tentative theoretical concepts providing indicators and categories for data analysis. For each case, we created a timeline based on the interview data that included all collaborators as well as procedures and respective governance modes. We then triangulated these data with information from media, patent- and copyright-databases. We did not define subcategories of the production process in advance in order to consider the complexity and non-linearity of empirical reality and avoided the simplification of ideal production process models. We paid particular attention to the dynamics and changes in governance mode configurations over time.

Findings

In this section, we elaborate on the multiple simultaneous and shifting governance mechanisms that were involved in the creative biographies of both the music and the pharma cases. We particularly stress the crucial role of hierarchy for successful creative collaboration by showing that hierarchical governance can be leveraged for collective creativity when collaborators are enabled to rely on its benefits without being permanently exposed to it. We found that successful creative processes in both the music and the pharma industry are similar as they are almost always carried out "in the shadow of hierarchy" (Mayntz & Scharpf, 1995; Scharpf, 1994). Yet, by comparing these two fields, we found that participants had different ways of implementing such conducive handling of hierarchy by either having a symbiotic (music) or an evasive (pharma) relationship to hierarchical governance during crucial phases of creative development and along the trajectory of the creativity biographies. In addition to pointing out governance hybrids and overlaps, we show how governance mode arrangements dynamically changed over the course of the creativity biographies and how governance modes even shifted in prevalence

and dominance during development phases in order to maintain and foster the creative process and account for the open-endedness and indeterminacy of the creative journey.

Leveraging hierarchy for collaborative creativity through dynamic shifts

Music

In all four music cases, the initial idea creation for the music albums as well as the actual content creation encompassing songwriting, recording, and mixing were mainly carried out in horizontal, trust-based and informal modes of dialogue that resembled features of network governance in order to account for emergent collaborative creativity.

> *"I explicitly didn't want to decide upon the albums' topics or the songs or something beforehand [...] I was deliberately interested in what happens when you start with nothing at all. So what really is the common intersection [of collaborators], what interests you right now. [...] I wanted to have this specific creative process. What happens, when we do it together? [Main artist, LeftfieldPop]*

At the same time, hierarchical governance mechanisms were prominently present during the crucial development phases in all four cases – parallel to the horizontal governance of the creative collaborators. Hierarchical governance especially occurred in the cases of *PaganRock*, *HabibiRap,* and *LeftfieldPop* where record labels were involved. Based on financing the projects, the records labels held the potential power of authoritarian influence.

> *"As always in life. If people spend a lot of money, they want to have a say. And that's okay because at [record label] or at every big record company there are people working who do that every day, so I assume that they know what they are doing." [CEO record label, PaganRock]*

In the case of *SoulRock*, where no record label was involved, hierarchical governance was nonetheless involved as part of the internal organization of the band itself. Here, the main artist and the bass player organized the overall band, consisting of five musicians, as a co-producing organization team. As such, they were responsible for the planning and the decisions on the procedure for the album development, for selecting band members and for bringing in song sketches as well as conceptualizing the overall aesthetic focus.

> *That was a 50-50 thing between [main artist] and me. [...] [Before,] there was the catalytic or the organizational thing missing, what the alignment brings or something so that the necessary decisions are made and [...] to bring forward the process. That's why I was like this, I was something like a musical leader in the constellation. As I said, I co-produced it too. Nevertheless [main artist] still had, that was also clear, always a lot of say. [Musical director & musician, SoulRock]*

However, even though hierarchical governance was present over the course of all four creativity biographies, hierarchical decision-making was only rarely involved in creative processes themselves. Instead, authority and order were collectively agreed-upon and then subsequently disavowed from, forming an enabling background structure that only occasionally came to the fore in order to maintain and finalize the creative process. The hierarchical background structures were built upon reciprocal obligations of either formalized contracts or informal agreements and could be utilized in situations of goal commitment violation or ambiguity. Hierarchical interventions were legitimated due to financing the album developments. However, the actors in all four cases disavowed from hierarchical decision-making during content creation processes in order to enable egalitarian dialogue and emergent collaborative creativity. The resulting forms of dialogical communication resembled network governance

structures and actually encompassed the largest parts of the album developments and especially of the creative interactions, thus forming the core of collaborative creative processes.

> *"When a new piece was done, the artist was always sending it over and we were discussing it. However, of course, it's like, I say something about it, but in the end it's always the main artists' decision. [...] I didn't touch the material myself [...]. I only told the artist "This and that could somehow be different", but in the end, it is still up to the artist. And that's okay. I think it is important for the artist to have a contact, who is not just a fan or something like that, but with whom you can discuss stuff [...]." [Record label CEO, LeftfieldPop]*

Similarly, in the *HabibiRap* case, the major label played a consultative role in managing the artist's relation to the media and consumers and gave advice regarding the removal of politically controversial lyric passages:

> *"I think we've been to [artist]'s studio three or four times to listen to songs from time to time, to kind of talk to him about why you might want to delete certain lyrics [...] "Yo, don't you think you should change that maybe here or there?" or "Yo, you could really get that wrong. I don't want to censor you, but do yourself a favor and maybe don't say that" and stuff. Just some advice. [...] Because he doesn't make this music to deliberately provoke, but he does it the way it gets into his mind and then sometimes he just gets a little too rough [...]." [A&R record label, HabibiRap]*

Here again, hierarchical governance was introduced at first but suspended in favor of a more egalitarian dialogue among collaborators. Nevertheless, the possibility and legitimacy of hierarchical intervention remained as a background structure that would have come to the fore in case the major label would have been unsatisfied with the created content. Therefore, the musicians had to regularly check back in with the record label for presenting their progress and also for providing preliminary content for the conceptualization of public relation strategies. Since the records labels had signed the artists for an already existing artist profile, they respected their creative freedom and supported them as a consulting instance that was professionalized in managing the relation to consumers and to the market. Thus, record labels worked with artists in forms of consulting and gave advice without instructing or giving orders. Furthermore, record labels disavowed from hierarchical governance and enabled dialogical communication in order to maintain long-term relationships with musicians and keep their artist identity. Decisions were typically made in close consultation of the involved parties.

> *"You don't actually do that by decree, but explain to people ,Look, that's photographer XY, check out the website. That and that is what he has already done, we would like to have him, what do you think about it?'. So it's much more cooperative than you think. Because as I said, experience teaches that if you don't include the artists, they'll drop out at some point. Then they're sick or can't come (laughs) or... Well, that doesn't work at all.. trying to enforce something with power." [Product manager record label, PaganRock]*

In the *SoulRock* case, content creation was also most of the time conducted in modes of egalitarian and collective dialogue without making use of hierarchy. Nevertheless, hierarchical decision-making was repeatedly introduced in situations of unproductive ambiguity that arose among band members during collective content creation. Here, hierarchy was utilized in order to foster the creative process:

> *"[It is] helpful in processes when there is a person who ultimately makes the decision [...] It is especially important when indecision arises about how to continue. And all over sudden you have three variations of something or the question: ,How are we gonna do the transition from the bridge to the chorus?' [...] and three people in the room saying 'Well, I think they are all good. Then it's*

important that someone says 'Okay, let's do variation two'." [Musician and musical director, SoulRock]

Towards the ends of the creativity biographies, the album developments entered a phase of product finalization encompassing audio post-production, artwork design, and music video production. Here, the hierarchical structures of the record labels took over, in case a record label deal existed – which was the case for *PaganRock*, *HabibiRap,* and *LeftfieldPop*. Although the record labels organized the product finalization, the actual tasks were outsourced to external freelance service providers that were acquired via professional music business network structures. The shift from egalitarian content creation to hierarchically organized finalization was agreed upon before by collaborators and took place because the record labels held long-time professional experience in public relations management and marketing. The album developments profited from this governance shift due to a more professional management of the adaptability to the media and to consumers. The major labels in the *HabibiRap* and *PaganRock* cases also brought in an orientation towards mainstream markets that resulted in an impact of market governance on the content creation and its evaluation.

> *"We are in the mainstream market, we want to entertain people, we want, so the aim is: Creating music entertainment. [...] That means we have a commercial ambition, we have to take care of commerciality." [CEO record label, PaganRock]*

All in all, hierarchical governance was utilized in symbiotic relationships among collaborators in the music industry cases. Potential hierarchical interfering was considered legitimate due to financing the album developments but disavowed from in order to enable emergent collaborative creativity during content creation processes and maintain long-term relationships with the artists. As a result, record labels and musical directors worked with musicians in forms of respectful consultation instead of instructing or giving orders. Nevertheless, hierarchical structures situationally came to the fore for coping with unproductive ambiguity and hierarchically organized record labels took over the album development for product finalization in order to design successful commercial products. Furthermore, hierarchical structures could have been utilized in situations of goal commitment violation. For an overview of the hierarchy-related governance shifts as well as the role of hierarchy in the music cases, see Table 5.

Case (music)	Shift of governance — Fade out of hierarchy			Shift of governance — Fade into hierarchy		
	Description	Aspects	Purpose	Description	Aspects	Purpose
PaganRock	Dialogue-based content creation of record label, producer and band for benefitting from occupational expertise and enabling long-term relationship			Financing of project; PR management by hierarchy	Shift to hierarchy	
HabibiRap	Record label observes content creation but disavows from interfering; consultative role as interface to media and consumers	Shift to network; potentiality of hierarchy	Disavowing from hierarchy in order to enable collaborative creativity, respectful professional consultation and long-term relation; Hierarchy is kept as a reactive background structure.	Financing of project and artist; PR management by hierarchy	Shift to hierarchy	Utilizing hierarchy for financing, organizing product finalization and coping with ambiguous situations & potential goal commitment violation.
LeftfieldPop	Horizontal deliberations of artist and record label for benefitting from occupational expertise while respecting creative freedom			Financing, commissioning and instructing mixing engineer, graphic & video designer, PR agency, pressing plant	Shift to hierarchy-market	
SoulRock	Dialogue- and trust-based interaction when musicians work on (new) songs			Decision-making in ambiguous situations during content creation	Situational shift to hierarchy	

Table 5: Overview of governance shifts & role of hierarchy in music cases

Pharma

A substantial issue for the governance of creative processes in the pharmaceutical industry is the tension between hierarchical control and the need for scientific indeterminacy during drug development: the financial and technological resources of hierarchical organizations are necessary for conducting scientific research, yet at the same time hierarchical governance is highly averse to the necessary indeterminacy of scientific creativity. Hence, the main issue for drug developing scientists is to find a way of accessing these resources without being subjected to hierarchical control. As a result, the actual involvement of hierarchical governance changes along the course of the collective creative process.

Pharmaceutical development in the four creativity biographies took place during basic research in pharmacology, biochemistry or other related sciences conducted in hierarchical organizations, either in public research facilities or in R&D-labs of research-oriented pharmaceutical companies. That is because basic pharmaceutical research is in need for advanced technological infrastructures and high amounts of resources, which cannot be supplied in network or community governance. However, hierarchical organizations typically show no interest in basic pharmaceutical research, as they evaluate the chances of success as too slim and its benefit thus as too uncertain. The uncertainty necessary for scientific development thus stands in contradiction to the interests of managerial control in hierarchical organizations:

> *"[Basic research] is too undirected and unspecific. Too many things don't work and it is too expensive. We just don't do basic research – we are not able to and we don't want to afford it (…). Instead, we keep a constant overview of the research landscape, and find all the cherries that possess the potential to get to the patient at some point." [R&D management, Big Indi]*

The core issue in pharmaceutical development is, therefore, that the hierarchical organizations, that have the capacity to conduct the basic research necessary for creative breakthroughs, are also highly averse towards the uncertainty and openness that is needed for collaborative creative processes. As a result, the scientists in our cases that were tasked with conducting basic research tried to utilize the advantages provided by hierarchical organizations, without being subjected to its control and supervision. They did so by evading hierarchical control and by unnoticeably "cross-subsidizing" their research activities with resources from other already established projects.

To evade hierarchy, the scientists in the pharmaceutical cases embedded network aspects, based on reciprocity, trust, and mutual interest, into the hierarchical structures of their organizations. The resulting compounds of hierarchical employment and network-based collaboration provided resources to conduct open-ended research without being subjected to too much hierarchical control. Using these evading strategies, the participants compensated the aspects of hierarchy that stifle creativity through network coordination, while keeping the benefits of infrastructure and resources provided by the firms. For instance, in the case of *HeartComp,* the initial development idea was at first considered too uncertain by potential investors. In addition, the developers were unable to convince public financiers to fund research. Without funding, neither public nor private, but still convinced by their idea, the three lead scientists partly shifted away from hierarchical coordination and formed a solid and reliable *network* – informal, interdependent, trust-based, yet with a clear goal in mind – to establish first robust insights for potential development. In order to do so, they expended resources from other projects that they were working on within their employing organization without authorization. Accordingly, they conducted the *HeartComp* research after hours on a voluntary base and financed it with resources of the hierarchical organization, which was unaware of these activities.

> *„[LeadScientist1] was employed at [research institute] together with his team (…) And therefore he had the freedom to deal with that, just because he did not take care of income. For me, there was a salary. And [biochemist] was also employed, and so we did not need to find investments, but we had time to take care of the actual work."* [Lead Scientist2, HeartComp]

Something similar happened in the case of *CancerStop*. To finance the first development steps such as preliminary experiments, the developers used funds from other projects to cross-subsidize their research. They utilized their organizational positions in pharmaceutical corporations to work on their passion project that was yet too indeterminate to convince internal or external investors. That way, the project was conducted discreetly and not announced publicly until enough insight was gathered to convince hierarchical decision-makers to further finance the project:

> *„That is kind of the problem in research funding, you need a little bit of freedom to start something, but projects are very prescribed – apparently. You need to develop a culture, to take something from ongoing projects and use it to do pre-experimentation for your next projects."* [Lead Scientist, CancerStop]

Eventually, however, the possibilities of evading the hierarchy were exhausted in all four cases. At a certain stage in the creative processes, further development required clinical trials and scientific publications, which could not be established in after-hour network collaboration embedded within hierarchies. Instead, it required large-scale and investment-intensive experiments to generate the necessary data for market admission. Yet, before any investment was granted to conduct these trials and experiments, the initially scientific projects had to be transformed into commercially appealing projects that merit this sort of investment. That meant that the projects that were successfully faded out of hierarchy at first, needed to be faded back into hierarchical control at a later point. The clear structure and control of hierarchical governance needed to be re-implemented into the projects in order to convince investors of commercial possibilities.

Such re-implementation of hierarchy can be best illustrated using the cases of *HeartComp* and *NatureComp* (and can be found in all four pharmaceutical cases). Both cases started in public research facilities when scientist cross-subsidized project funding for a "passion project". Over time they acquired more insights and became convinced that these insights can be used to develop an actual pharmaceutical compound. At that point, more money and infrastructure were necessary to conduct clinical trials. Therefore, bigger funding and technological infrastructure were necessary. However, to get this kind of investment the projects needed to be changed from a scientific passion project to a commercially appealing investment opportunity. This was accomplished by drastically reducing any openness involved in the development and converging to a clear "development road" to convince investors:

> *"Of course: the existing investor-syndicate, must first see success on the road and they cannot accept that we fritter away. That is not how it can be. The determination on the road must be kept."* [Lead Scientist 1, Nature Comp]

The participants needed to explicate several features of the drugs under development and its intended use in therapeutic areas, which were intentionally left undetermined before for the creative collaboration. This explication of development processes and therapeutic areas re-enforced hierarchical governance. Consequently, after re-integrating hierarchical governance into the collaborative creative process, scientific freedom and the project's indeterminacy were severely reduced:

> *"The freedom of research is just not as big anymore. Especially, when you now live and work in this context of a company, with investors, with its hierarchies.*

There is a financial plan and they look relatively closely that everything is in the budget." [Management, NatureComp]

Taken together, the shift into and out of hierarchy during pharmaceutical development was crucial for the collaborative creative processes: collaborative creativity was not enabled in one optimal governance compound. Rather, a processual shift between evading and embracing hierarchical governance enabled collaborative creative processes in the creativity biographies of the pharmaceutical industry. For an overview of the governance shifts regarding hierarchy as well as the general role of hierarchy in the pharma cases, see Table 6.

Case (pharma)	Shift of governance Fade out of hierarchy			Shift of governance Fade into hierarchy		
	Description	Aspects	Purpose	Description	Aspects	Purpose
BigIndi	Sharing of company secrets with members of epistemic community. Idea unfunded by hierarchy	Shift to community; evading hierarchy		Funding granted by hierarchy; re-emersion into hierarchical collaboration	Shift to hierarchy	Utilizing infrastructure of hierarchy and market supplier for enhancing drug development
NatureComp	Including network contacts to fill knowledge gaps. Idea unfunded by hierarchy	Shift to network; evading hierarchy	Evading hierarchical restrictions but keeping hierarchical infrastructure;	Funding of a start-up company to attract investors	Shift to hierarchy-market	
HeartComp	Including network contacts to fill knowledge gaps. Idea unfunded by hierarchy	Shift to network; evading hierarchy	Expanding on ideas not supported by hierarchy	Establishing a joint venture to create infrastructure	Shift to hierarchy-market	
CancerStop	Sharing with community to get new insights. Idea unfunded by hierarchy	Shift to community; evading hierarchy		Applying for public funding to formalize a project team with human resources	Shift to hierarchy	

Table 6: Overview of governance shifts & role of hierarchy in pharma cases

Discussion: Recombination with hierarchy for fostering creative processes

Building upon our eight creativity biographies from the fields of music and pharma, we found that the governance of creativity is not simply about one optimal governance compound, but rather expresses governance *fluidity*: governance mechanisms shift between and even during production phases according to respective affordances of the creative process. In both music and pharma, actors worked together in egalitarian and trust-based arrangements during crucial parts of the creative processes – such as musical content creation and basic drug research. These arrangements mostly resembled network governance structures and enabled emergent collaborative creativity. Nevertheless, these creative processes were simultaneously embedded in other governance structures – most prominently hierarchies that, at the very least, continued to work in the background. Creative collaborators benefited from these hierarchical structures in terms of financial investments, technology, and knowledge infrastructures, enabled actors to cope with unproductive ambiguity and covered for potential situations of goal commitment violation.

The recombination of hierarchical governance with other governance modes thus plays an important role in fostering creative processes. Hierarchy is usually seen as the antithesis to creativity: a functional, yet un-creative mode of collaboration, which enables flow over friction (Spelthann & Haunschild, 2011). We found instead that hierarchy is central to creative processes but brings with it limitations that need to be compensated for through dynamic governance mode shifts. Because authoritarian top-down decision making is detrimental to the actual synergetic, emergent and indeterminate content creation phases as well as the identities of musicians and scientists as creators, creative collaborators need to be enabled to rely on its benefits without being permanently exposed to it.

We describe collaborative creative processes as carried out "in the shadow of hierarchy" (Mayntz & Scharpf, 1995; Scharpf, 1994) – embedded in, enabled by and under the surveillance of hierarchical structures. In the music industry, these were the record labels that provided for expertise in product management, public relations management, marketing and financial resources for the actual physical and digital production of the music albums. In the pharmaceutical industry, the big industry firms provided technological infrastructures for drug research as well as financial investments for medical trials and drug production. Including hierarchically organized firms in both industries was thus necessary for successfully realizing creative products. However, by comparing these two fields, we found that participants had different ways of implementing such a conducive utilization of hierarchy by either having a symbiotic (music) or an evasive (pharma) relationship to hierarchical governance during crucial phases of creative development and along the trajectory of the creative journey.

Contribution

The central aim of this study was to understand the "governance of creativity", meaning the structural coordination mechanisms that constitute processes of collaborative creativity, from a process perspective. By analyzing cases from the fields of music and pharma using the heuristics of governance compounds, our empirical cases illustrated the necessity of governance shifts for successful collaborative creativity. A central challenge to understanding the optimal organization of collaborative creativity lies in its constant affordance for change: governance arrangements are not stable and long-lasting in successful creative collaboration. Rather, and in order to foster collaborative creativity, dynamic changes of organizational coordination are

necessary. This insight adds another layer to the metaphor of mongrels and pedigrees as used by Crouch (2005). In addition to the "balance" that a mongrel provides over a pedigree, it also possesses an adaptive capacity (Staber & Sydow, 2002). Instead of optimal stable conditions for creative collaboration, the question of organized creativity needs to focus on optimal conditions for governance mode shifts. Such transition moments are crucial for successful creative product development, but also for the domain of managerial action. Future research needs to provide more insights on particularly managing these governance transitions during collaborative creative processes.

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Organized Creativity - Practices for Inducing and Coping with Uncertainty

The aim of this DFG-sponsored Research Unit (FOR 2161) is to examine different dimensions of uncertainty in several practice areas and investigate what role they play in creative processes in different contexts and over time. Therefore four different projects will be conducted in which the dynamics in both the music and pharma industries will be compared. The focus of all these projects will thereby by the creative process both in organizations and in interorganizational networks.

Principal Investigators

Prof. Dr. Jörg Sydow, Professor of Management, Freie Universität Berlin (Spokesperson)

Prof. Jana Costas, Ph.D., Professor of Human Resource Management, Europa-Universität Viadrina, Frankfurt/Oder

Prof. Dr. Leonhard Dobusch, Professor of Business Administration, Universität Innsbruck

Prof. Dr. Gernot Grabher, Professor of Urban and Regional Economic Studies, HafenCity Universität (HCU) Hamburg

Prof. Dr. Oliver Ibert, Professor of Economic Geography, Freie Universität Berlin, and Leibniz Institute for Social Science-based Spatial Research (IRS), Erkner

Prof. Gregory Jackson, Ph.D., Professor of Human Resource Management and Labor Politics, Freie Universtität Berlin

Prof. Dr. Sigrid Quack, Professor of Sociology, Universität Duisburg-Essen

Prof. Dr. Elke Schüßler, Professor of Organization Theory, Johannes Kepler University, Linz

For further information

Organized Creativity Discussion Paper