Power relations in organizational change: an activity-theoretic perspective

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Abstract

Purpose – The purpose of this study is to develop a multi-level and politically informed perspective on organizational learning and change based on the cultural-historical activity theory (CHAT) in order to contribute to a less managerialist and more multi-voiced understanding of change. The authors aim for a better understanding of the links between expansive learning, contradictions in and of activity systems and episodic and systemic power.

Design/methodology/approach – The authors develop a framework on expansive learning, integrating the concept of faces of power. The framework is applied to a case study.

Findings – The authors show productive and restrictive effects of episodic and systemic power for dealing with contradictions in expansive learning and organizational change. The productive role of change critics and non-managerial actors is shown.

Research limitations/implications – The case study is illustrative and findings need to be validated and expanded through more detailed empirical investigations. Future studies should particularly investigate how patterns of power could itself become the object of expansive learning.

Practical implications – The framework fosters an understanding of organizational change as multi-voiced, decentralized and driven by contradictions. Emancipation of actors and protected social spaces are essential for unfolding the productive potential of multi-voicedness against the backdrop of asymmetric power relations in organizations.

Originality/value – The authors step back from a managerialist perspective on organizational change by developing a politically informed, activity theoretic perspective on learning systems. The paper contributes to a better understanding of contradictions, related multi-voicedness and effects of episodic/systemic power in expansive learning and change.

Keywords Activity theory, Expansive learning, Contradictions, Multi-voicedness, Systemic power, Episodic power, Case study

Paper type Research paper

The authors are very thankful for the critical and helpful comments of two anonymous reviewers and the care of the editors of this special issue. An earlier version of this paper was presented at the OLKC 2017 in Valladolid, and the authors are grateful for the comments and suggestions offered by the participants of the symposium on “Power, Politics and Emotions in Organizational Learning and Knowing”. They are especially thankful for the comments of Reijo Miettinen and Yrjö Engeström on an early draft of this paper.
1. Introduction
Organizational change is usually considered a messy and complex process (Langley et al., 2013). Related research approaches, methods, and results are very heterogeneous (Poole, 2004; Boje et al., 2012; Jacobs et al., 2013; Wetzel and Van Gorp, 2014; Hayes, 2014). Among other things, previous research has been criticized for not understanding the links between different organizational levels, e.g. micro-level interventions and macro-level effects (Felin et al., 2015; Langley et al., 2013; Jacobs et al., 2013). Moreover, the mainstream research on organizational change has been criticized for being too normative, mainly taking a managerial, interventionist perspective on organizational change (Boje et al., 2012; Wetzel and Van Gorp, 2014). In turn, the principally polyphonic character of organizational change often appears as a struggle between managerial change agents (“the good”) and resisters to change (“the bad”) (Boje et al., 2012; Ford et al., 2008; Will, 2015). Thus, research shows that issues of power and politics are essential to understand processes of change. However, when power in change processes is primarily seen and explained through the lens of individual actors, i.e. in terms of the so-called “microfoundations movement in strategy and organization theory” (Felin et al., 2015), a systems perspective that analyses power, learning and change in its own terms is more and more disappearing, just as the opportunities to consider in detail the potential effects of social systems on individual learning and change.

In this article, we step back from a managerialist, i.e. ultimately normative, perspective on organizational change by problematizing basic assumptions of mainstream literature about organizational change management. Consequently, we adopt a non-managerialist, situated perspective on learning systems. Specifically, we draw on the cultural-historical activity theory (CHAT) and its notions of activity systems, contradictions, and expansive learning (Engeström, 1987, 2001, 2010; Blackler and McDonald, 2000; Engeström and Sannino, 2010). CHAT is a context-sensitive, multi-level learning system perspective that explicitly considers the multi-voicedness of change beyond the “change agent – resistor” dualism. It also allows to consider both the episodic power of actors (politics) and the systemic power of organizations (regime) (Hardy and Clegg, 2006; Fleming and Spicer, 2014) as triggers, instruments and constraints of change in organizations. The aim of our article is to refine and extend the political perspective on expansive learning. The focus is on the links between contradictions, different dimensions and levels of power, and the voices and perspectives of actors involved. We illustrate our conceptual reasoning by an in-depth empirical case study of expansive learning in the biotech company BioDiagnostics.

The contribution of our research is threefold. First, we develop an activity theoretical-framework on expansive learning, integrating episodic and systemic forms of power (multi-level approach). Second, we apply and discuss the usefulness of our framework based on an illustrative, qualitative case study. Third, we expect to contribute to a better understanding of contradictions, related power relations and interdependencies between different organizational levels in unfolding change processes.

In the following section, we first problematize basic assumptions of mainstream literature about organizational change management and, second, explain the activity theoretical framework on expansive learning, integrating the concept of faces of power. Then we explain and discuss the empirical case study of the BioDiagnostics company. Finally, we provide implications and an outlook on research directions.

2. Theoretical framework
2.1 Problematizing change management
There is no generally accepted definition of change management. In line with Barends et al. (2014, p. 2) we define change management as “[...] interventions intended to influence the
task-related behavior and associated results of an individual, team or entire organization. Based on this understanding and on recent literature reviews (e.g. Boje et al., 2012; Barends et al., 2014; Al-Haddad and Kotnour, 2015), we provide a brief overview of contemporary change management literature (CML). The focus is on basic assumptions motivating our specific lens of problematization and concept development in this article. “Problematization” means challenging assumptions of extant concepts about a specific subject matter with the aim of coming up with a new perspective or new research question(s) about a field, by means of dialectical interrogation of one’s own position, other stances and the domain of literature targeted for assumption challenging (Alvesson and Sandberg, 2011, p. 252). Specifically, we will problematize two root metaphors – assumptions – of extant CML:

1. that management has to take a driving role in organizational change; and
2. that scientific change management knowledge should abstract away from concrete situations in which change unfolds.

One basic assumption common to most streams of the CML is that management (as institution) and the manager (as actor) have to take the role as drivers of change, while non-managers within organizations are more or less the recipients of change initiatives (Boje et al., 2012; Taptiklis, 2012; also Palmer et al., 2009; Kanter et al., 1992/2003). This “managerialist” stance can be traced back to a specific (narrow) reading of the origins of change management, in particular the work of Kurt Lewin and his approach to planned social and organizational change and development (OD) (Lewin, 1947; Bennis et al., 1961; also French et al., 2004). Boje et al. (2012) conclude from their literature review that much of the current CML represents technocratic-scientific management methods, i.e. social technologies for managers to change individual, group and organization level behavior, which have their origins in organization development (OD). A state-of-the-art compilation of related tools can be found in Cummings and Worley (2013). Disciplines like psychology, social psychology and sociology have contributed concepts and tools with a focus on why people and organizations change their behavior or resist change. Management research have contributed by developing principles and practices for managers to plan, direct, control and shape change (Palmer et al., 2009). Even industrial and management engineering offer integrated systems and models of change management (Al-Haddad and Kotnour, 2015).

With its pre-emphasis on the driving role of management and managers, the mainstream literature on organizational change has been criticized for being too normative, mainly taking an interventionist perspective on organizational change and considering change management as a method or social technology in the hands of a dominant corporate elite (Boje et al., 2012; Wetzel and Van Gorp, 2014). In turn, in mainstream research the polyphonic, dialectical and unfolding character of organizational change often appears as a struggle between managerial change agents (‘the good’) and resisters to change (‘the bad’) (Boje et al., 2012; Ford et al., 2008; Will, 2015).

In addition, while the proliferation of change managements tools, methods and concepts is sometimes bewildering, their rigorous scientific evaluation is missing. Only few studies have been undertaken to do this (Pfeffer and Sutton, 2006; Barends et al., 2014). Moreover, previous research has been criticized for not understanding the links between change at different organizational levels, e.g. micro-level interventions and macro-level effects (Felin et al., 2015; Langley et al., 2013; Jacobs et al., 2013). In part, this may also be because of a general lack of rigorous evaluation studies regarding the effects of change interventions.

The managerialist stance toward organizational change in the CML is accompanied by conceptual impairment of sensitivity to context, concrete experience and the emergent character of change. This principal epistemological direction mainly results from the
tradition of scientific management (e.g. Taylor, 1911) and the professionalization and intellectualization of management knowledge (Clegg and Palmer, 1996; Tsoukas, 2005; Hardy and Clegg, 2006; Chia, 2017). This means that abstract and generalizable models, concepts or tools of how to change behavior and organizations “from a distance” are preferred to concrete knowledge and experience of actors involved in change, and its conceptualization respectively (e.g. Chia, 2017). The change situation is mostly considered as a set of “variables” at the individual, group or organization level, which moderate, mediate or otherwise influence the effects of managerial change interventions (Van de Ven and Poole, 1995; Poole, 2004). In this manner, Al-Haddad and Kotnour (2015) conclude from their review of the CML that five “situational factors” (scale, duration, amount of knowledge/skills, resources, and commitment) should be conceived that affect the outcomes of “change management” (e.g. Kotters’ 8 steps to change, Kotter, 1996) and “change systems” (e.g. six sigma). Prototypically for CML, to develop scientific knowledge they suggest aligning “two independent variables, change type (i.e., scale, duration; added by authors) and the change method to find the effect on a third variable, the change outcome” (Al-Haddad and Kotnour, 2015, p. 252). Accordingly, the lived experience and situation-specific knowledge of actors in an unfolding, emerging change situation, which potentially expands across individual or group boundaries, is conceptually de-emphasized (Tsoukas and Chia, 2002; Chia, 2017), as is the productive role of non-managerial actors in these unfolding situations.

In the following, we consciously step back from managerialist, i.e. ultimately normative and de-contextualized perspectives on organizational change. Instead, we adopt a learning systems’ lens based on activity theory to interpret the situated, decentralized and multi-level characteristics of change. We specifically conceptualize the multi-voicedness of change. In turn, also the interdependencies between micro-level political actions and macro-level political structures of domination and their effects on organizational change will be conceptualized.

2.2 Activity theory and contradictions
The perspective of CHAT and its notions of activity systems, contradictions and expansive learning (Engeström, 1987, 2001, 2010; Blackler and McDonald, 2000; Engeström and Sannino, 2010) is different from the majority of approaches to organizational change management in several respects. CHAT is a learning system perspective rooted in practice-based and situated learning approaches (Lave and Wenger, 1991) and explicitly considers the concrete knowledge of actors and the multi-voicedness of unfolding change beyond the ‘change agent – resistor’ dualism. Taking an activity systems view also allows to consider both the episodic power of managerial and non-managerial actors (politics) and the systemic power of organizations (regime) (Hardy and Clegg, 2006; Fleming and Spicer, 2014) as triggers, instruments and constraints of change in organizations. A main “root metaphor” (Alvesson and Sandberg, 2011) in this respect is the notion of “contradiction”.

CHAT offers a comprehensive approach regarding the interplay between individual (micro level) and collective (macro level) development (Engeström, 1987, 2005; Engeström and Kerosuo, 2007). This interplay is important for successful organizational change because:

[...] the system view of an organization is blatantly insufficient when the researchers try to understand and facilitate qualitative changes by means of expansive learning. Changes must be initiated and nurtured by real, identifiable people, individual persons and groups. [...] Organization must necessarily be translated back into a workplace inhabited by human beings. (Engeström and Kerosuo, 2007, p. 340).
From a CHAT perspective, each activity, and thus learning and change, takes place in so-called activity systems, which are understood as situated context. Activity systems are collective structures of relationships in work processes and organizations including the acting subject, the object (motive, aim) of activity, the used instruments, tools and artifacts, the specific form of division of labor, and the community with their implicit or explicit rules of cooperation (Engeström, 1987; Engeström and Sannino, 2010). Activity systems differ from each other through different objects. Both, whole organizations and parts of an organization can be understood as activity systems based on their distinctive object of activity. In this sense, complex modern work organizations can be characterized as interacting networks of multiple activity systems (Blackler, 2009).

In CHAT, micro and macro levels of organizational analysis, of learning and change are considered as ontologically distinct and analyzed in their own terms (e.g. cognitive capacity, division of labor), but they are related to each other in a dialectical way (Miettinen, 2009; Engeström, 2010). They are manifested in the system of activity, which is also the appropriate unit of analysis. Although social and structural features are assumed to shape the behavior of actors, CHAT does not assume that behavior of actors is fully determined by social/structural features. The actor is considered to be knowledgeable, i.e. able to choose among different strategies of action and reflect on them (Engeström and Sannino, 2010). Hence, learning and change can be understood neither from the lens of systems nor from the lens of actors alone. Hence, interpreted in accordance with Giddens (1984), theory of structuration, actor and system exist as a duality.

Activity systems evolve over lengthy periods of socio-historical time (Engeström and Sannino, 2010). These systems and their elements are constantly reconstructed in mutual interaction. Contradictions in (e.g. counterproductive division of labor) and between (e.g. used instruments and methods do not fit to objects of activity) the elements of the activity system as well as between activity systems (e.g. different understandings between management and production) trigger their expansive development (Engeström, 1987, 2001; Blackler and McDonald, 2000; Contu and Willmott, 2003; Miettinen, 2009). In a general understanding, contradictions are historically accumulating structural tensions, disturbances, breaks, dilemmas or different understandings within and between activity systems. They do not have to have inevitably negative connotations; rather, contradictions point out that actors perceive something as “different” in a positive or negative way (Engeström, 2001, 2005; Miettinen, 2009).

The idea of contradiction as a source of change and development is based on the dialectical tradition in philosophy, especially in terms of the contradictions of activities in capitalism. The underlying idea emphasizes that dialectical contradictions are the motor of self-development in real systems (Il'enkov, 1977, 1982; Miettinen, 2009). Based on that, Engeström (2010) distinguishes between four types of contradictions: First, contradictions appear as latent primary contradiction between the use value and the exchange value of commodities (Engeström, 2001). These contradictions are understood as systemic and represent the pervasive inner contradiction of capitalist production (Engeström, 2010). The object of an activity (e.g. pharmaceutical) is always internally contradictory, which makes the object a moving, motivating and future-generating target (Engeström, 2010). Second, primary contradictions can openly manifest as secondary contradictions within or between two or more elements of an activity system (e.g. between a new object and an old tool). Such contradictions generate disturbances and conflicts, but also innovative attempts to change the activity (Engeström, 2001). Secondary contradictions have to be manifested as double binds perceived by the acting individuals to enable expansive learning (Bateson, 1972; Engeström, 2010). A double bind uncompromisingly demands qualitatively new
Instruments or methods for its resolution (Engeström, 1987; Miettinen, 2009). Third, tertiary contradictions appear between a newly established mode of activity and relics of the previous mode of activity. The forth type of contradictions are quaternary contradictions between the newly reorganized activity and their neighboring activity systems. Activity theory suggest analyzing conflicts, dilemmas, disturbances and local innovations as manifestations of the contradictions (Engeström, 2010).

The concept of contradictions appears as a central notion to link episodic and systemic interpretations of power with learning and change for two reasons: first, contradictions can be considered the result of former settlements and power relations in the historic development of an activity system; second, power relation can be considered as the trigger and moving force of expansive learning. In the following, we conceptualize power relations in terms of “faces of power” and then propose connections between faces of power and contradictions in expansive learning processes.

2.3 Faces of power

In work and organization studies, the concept of power has developed within half a century from an “under-explicated concept” (Hardy and Clegg, 2006, p. 757) to a multi-dimensional, ambiguous and rather contested concept. A diverse body of literature exists with different approaches and conceptualizations rooted in different social science traditions (Hardy and Clegg, 2006, p. 757; Clegg et al., 2006; Diefenbach et al., 2009; Fleming and Spicer, 2014).

The more recent literature usually acknowledges that power has to be conceived as a multi-dimensional phenomenon (Hardy and Clegg, 2006; Diefenbach et al., 2009; Fleming and Spicer, 2014). We follow the multi-dimensional perspective taken by Lukes (1975/2005) and Fleming and Spicer (2014), who suggest considering four dimensions of power, rooted in the historical development of power conceptions (often referred to as “faces” of power; Lukes, 1975/2005; Hardy and Clegg, 2006; Fleming and Spicer, 2014). Power can be interpreted as an expression of strength and coercion (1st dimension) and as manipulation of conflicts (2nd dimension). Both dimensions are called “episodic power” because they depend on actions between subjects. Domination (3rd dimension) is an unobtrusive form of power that makes specific interests and relations of power appear “natural” and inevitable. Subjectification (4th dimension) is a state that usually occurs when actors are attached to identities that are derived from structures of domination. The latter two dimensions are referred to as “systemic power” and do not depend on direct actions between actors (Fleming and Spicer, 2014).

Although there is no universally comprehensive definition of power, Max Weber’s classical definition still constitutes the core of many power conceptions (Hardy and Clegg, 2006; Diefenbach et al., 2009). According to Weber (1972), power means any ability to impose one’s own will in a social relationship, even against opposition, regardless of what this ability is based on. In line with Max Weber, the literature agrees that power should be considered as a relational phenomenon between subjects, i.e. power cannot be possessed like money (Fleming and Spicer, 2014).

According to Lukes (1975/2005) and Fleming and Spicer (2014), a relational perspective reveals a first (behavioral) dimension of power, i.e. how one person’s power over another person (or group of persons) is exercised in detail. In this respect, power relations are interpreted as expressions of strength and coercion between subjects (e.g. how a middle manager imposes his/her will on a first-line supervisor) that can be observed in open conflicts. Much of the management literature deals with this behavioral dimension of power, on how conflicts are settled by use of power resources and power tactics, by wheeling and
dealing between actors. Removing critics or opponents from a project team, e.g. is an extreme example of one-sided coercion to settle conflicts.

A second (behavioral) dimension (Lušes, 1975/2005; Clegg et al., 2006) of power is a less direct form of influence that is related to the manipulation of conflicts and the ability of actors to set their intentions, preferences and issues as the prevailing ones in organizations or social systems. Such intentions come into play when, e.g. decision alternatives have to be prepared or agendas for meetings have to be set. As a consequence, some conflicting issues may be found on the meeting agenda and become manifest in organizational debates and discussion forums, while others will not and remain latent (Fleming and Spicer, 2014). This kind of influence in organizations often relies on rhetorical and persuasion skills, like telling convincing stories, and access to key social networks (Fleming and Spicer, 2014).

The question arises whether power ceases to exist when there is no conflict at all (Hardy and Clegg, 2006). The concept of domination – the third dimension of power – takes into account this political quiescence, i.e. the lack of conflicting voices and the reasons for it (Lušes, 1975/2005). The focus is on social mechanisms that shape people’s perceptions, cognitions and preferences in a way that they accept their role in the existing social and material order. The order is deemed to be natural or inevitable. Therefore, domination shapes what is considered worthy of political attention, effort and conflict. Consequently, some conflicts do not rise at all. In the management literature this third dimension of power is addressed as “creation of legitimacy” (Pettigrew, 1977) or “management of meaning” (Pfeffer, 1981). Research has shown, for example, that change initiatives like total quality management (TQM) are accompanied by normative or ideological rhetoric that make them appear as inevitable and unarguable (e.g. with reference to global competition and market pressure).

The fourth dimension of power is subjectification, which is defined in relation to manipulation and domination as follows:

Here, the focus is […] on the constitution of the very person who makes decisions. According to [Michel] Foucault, power is achieved through the definition of the conditions of possibility underlying how we experience ourselves as people. Power, therefore, produces the kind of people we feel we naturally are (Fleming and Spicer, 2007, p. 23).

In organizations, rules and knowledge stocks, monitoring and evaluation systems, training and career systems or the use of professional tools reach this feeling of identity (e.g. Townley, 1994). A principal effect of subjectivation is the effective self-disciplining of people who embody the directives of the organization and enforce it upon their identities, aspirations, and relations with others (Hardy and Clegg, 2006; Fleming and Spicer, 2014).

Our understanding of power encompasses both structure and agency and systemic and episodic power, which are related to one another (Giddens, 1984).

2.4 Expansive learning and power relations
Expansive learning leads to new activity structures (including new objects, instruments, rules, etc.) out of actions solving the inner contradictions of the preceding form of the activity in question. The contradictions are reflected in the different and often conflicting voices of the acting subjects, which is described with the concept of heteroglossia resp. multi-voicedness:

This means: all the conflicting and complementary voices of the various groups and strata in the activity system under scrutiny shall be involved and utilized. […] Expansive learning is an inherently multi-voiced process of debate, negotiation and orchestration. (Engeström, 2010, p. 78).
Expansive learning is a journey across the uncharted terrain of the zone of proximal development (Vygotsky, 1978; Engeström, 2010), which is the distance between the present everyday actions of the individuals and the historically new form of the activity, which can be collectively generated as a solution to the double bind potentially embedded in the everyday actions. More precisely, Blackler and McDonald (2000) describe expansive learning by means of two dimensions: first, the emergence of relations within or between groups, and second, the emergence of the collective activity. The latter regards the development of the activities, their objects and the interpretation patterns (meaning). The former refers to the question of participation. Expansive learning is therefore understood as a process of both individual and collective development (Engeström and Kerosuo, 2007; Engeström, 2000, 2010).

CHAT argues that contradictions are the main drivers of expansive learning. Power relations both allow and hinder the journey across the terrain of the zone of proximal development leading to more (or less) expansion in terms of divergent interpretations and social inclusion of divergent actors. Beyond that, power relations can also be the root cause of contradictions and therefore the object of expansion. Figure 1 visualizes the theoretical framework.

Learning refers first to the social relationships within and among groups (vertical axis) and, second, to activity (systems) (horizontal axis). Expansion leads to a qualitatively new form of activity and is thus the deepest form of organizational change concerning both the social relational patterns and the interpretation patterns of activity. Expansive learning can be interpreted as collective “inquiry” (Stark, 2009, p. 4; Dewey, 1989/1909) in an indeterminate situation where usual operations do not work (i.e. contradictions arise; Miettinen, 2009) and neither “the problem” nor “the solution” is at hand. Quite the contrary, contradictions imply the coexistence of multiple logics of action, activity and related standpoints and voices. Nothing can be taken for granted and disagreement about what
counts is characteristic. Therefore, the reflexive and productive effects of multi-voicedness in both facets – inclusion and interpretation – have to be mobilized.

Expansion, however, does not take place as a straightforward process from quadrant one to quadrant four \(\text{Blackler and McDonald, 2000}\). Learning in organizations is most probably a non-linear movement between the four quadrants. Setbacks in terms of stagnation and shrinkage (quadrant 1) are expected to appear at any time \(\text{Engeström, 2009; Engeström and Sannino, 2010}\). This might be especially the case when potential learning opportunities arise from contradictions, but the coexistence of multiple voices is prevented or restricted – instead of embraced – by the (mis)use of power, or by effects of extant power structures. Expansive as well as restrictive effects of power can result from coercion, manipulation of conflicts, domination, and subjectification.

CHAT argues that power is basically productive for learning \(\text{also Antonacopoulou and Chiva, 2007}\). To participate in social learning \(\text{also Lave and Wenger, 1991}\) and to become a subject of expansive learning instead of being subjected to learning \(\text{i.e. becoming an object of behavioral intervention}\), the actor needs a minimum amount of power \(\text{requisite power}\). We interpret this as a capacity to act in order to produce intended effects \(\text{Pettigrew and McNulty, 1995}\), even against the will of others \(\text{Weber, 1972}\). In terms of activity theory, power can have productive effects on learning when it helps expand the field of actors, social relations and multiple voices \(\text{inclusion}\), and fosters the richness of emergent conceptions, meanings and ways of seeing things differently \(\text{interpretation}\). Nevertheless, it would be naive to assume that actors share the same goals and interests when interpreting situations, given that organizations are imbued by hierarchical relations, occupational differences and vested interests \(\text{Hardy and Clegg, 2006; Thomas et al., 2011}\). Accordingly, self-interested, micro-political behavior is common in organizations. Therefore, we also assume that power may be used to prevent learning \(\text{i.e. to restrict or close access to a learning community \(\text{inclusion}\) or to defeat extant ways of seeing things and interpreting situations \(\text{interpretation}\)}\), thereby protecting one’s own \textquote{turf} in terms of vested interests, occupational preferences or hierarchical positions \(\text{Thomas et al., 2011; Buchanan and Badham, 2008}\).

In terms of faces of power, we propose that the productive effects of power \(\text{i.e. to expand inclusion and interpretation}\) will most probably be related to episodic forms \(\text{power as coercion and manipulation of conflict}\) and to a lesser degree to subjectification. Restricting power effects, i.e. constraining the web of social relations and defeating extant ways of seeing the world \(\text{interpretation}\) will most probably be related to systemic forms of power, primarily to domination, to a lesser degree to subjectification. This is deemed to be the case because systemic forms of power are primarily considered in the literature as means of stabilizing social systems in the long run \(\text{Clegg et al., 2006; Fleming and Spicer, 2014}\). In terms of activity theory, it is a way of institutionalizing logics of action, activity and activity systems that have emerged from prior learning experience and contradiction solving \(\text{Miettinen, 2009; Engeström, 2010}\).

Effective domination is seen here as political quiescence, i.e. a lack of conflicting voices. In terms of CHAT and the assumed productive function of multi-voicedness, effective domination may result in a lack of genuine forces for expansive learning. For example, if TQM nowadays can be seen as an effective system of domination rooted in instrumental thinking \(\text{Fleming and Spicer, 2007}\), serious conflicts regarding the meaning of TQM itself would probably not arise at all and opportunities for expansive learning would not be created \(\text{e.g. to create a basically new understanding of assuring quality}\). In addition, if a system of TQM \(\text{or another managerial, technical or professional system}\) in organizations is enforced by monitoring, training, performance evaluation and a career system, this will
most probably have self-disciplining effects on people and their relations with others (subjectification; Hardy and Clegg, 2006; Fleming and Spicer, 2014). Discipline and subjectification may have ambiguous effects on dealing with contradictions and expansive learning: they both enhance the capacity of people to act by developing expertise (i.e. it can have productive effects on expansive learning; Foucault, 1980) and conduct and constraint their interaction with others and their experiencing, according to the standards of discipline. This in turn stabilizes activity systems and restricts aspirations to expand it, i.e. restricts learning (Lawrence et al., 2005).

Episodic forms of power, on the other hand, are to be (more) effective when it comes to expanding social relations and interpretations, although episodic forms may also be used to restrict learning. The control over scarce resources like money, time, personnel and the legitimate control of organizational rules, is a prerequisite for coercive power and primarily vested in positions of formal authority. Such control allows to decide about the inclusion of actors (or the exclusion of “opponents”, Lawrence et al., 2005, p. 185), the amount of time potentially allocated for learning (e.g. time spent on projects) and the rules that are applied to control access to a learning community, to structure work processes and how to evaluate performance. Coercive power thus can have immediate effects on whether and how social relations are expanded, on their quality and on the reasons why access is allowed or denied.

Manipulation of conflicts is closely related to the interpretation of activity systems and is a basic means of dealing with expansion. A key requirement of expansive learning is dealing with a growing ambiguity and uncertainty of unfolding interpretations. In terms of expansive learning, productive power effects of agenda setting result from building shared cognitive maps (Argyris and Schön, 1978) out of heterogeneous interpretations by influencing the perceptions of reality (e.g. potential courses of action and their consequences in terms of market share, capability building) in an indeterminate situation that presumably unfolds in unpredictable ways over time (Argyris and Schön, 1978; Blackler and McDonald, 2000). Related means of influence include, among others, appraisal, persuasion and rational reasoning (Lawrence et al., 2005; Thomas et al., 2011).

To conclude, there are good reasons to assume that power has productive effects on expansive learning, as there are good reasons to assume restrictive effects. The literature suggests that in hierarchically structured organizations the productivity of power and critical voices in organizational learning and change most probably depends on a generalized acceptance of the basic governmental rationality of the organization. If this is questioned and the legitimacy and rationale of the whole system of power is contested, the productive effects of power for learning will be limited (Courpasson and Clegg, 2012). Then, in terms of activity theory, the political context of activity no longer remains a means of learning but turns into an object of expansive learning itself. In the worst case, the learning process may be blocked completely. This can lead to stagnation or even shrinkage of the activity and/or the social relations. We assume that this is especially the case if institutionalized power structures and social relations within an activity hamper multi-voicedness. A long-term (2008-2012) empirical case study regarding the learning process of a steering group in a small biotech company illustrates this.

3. Illustrative empirical case study

The case company BioDiagnostics was an industry partner in a publicly funded research project aimed to develop and test methods for the analysis, evaluation and development of the innovative capacity of companies. During the research of this complex case company, it turned out that issues of power are very important dimensions of change and learning. For this article, we explicitly reinterpret the data in order to analyze the learning process of the
company from the perspective of dimensions of power. We understand this case as an illustrative case study aimed to discuss our conceptual framework.

3.1 The BioDiagnostics company
Since 1999, the BioDiagnostics Company has developed and produced molecular biology products with a focus on DNA analysis for forensic, human, and veterinary medicine. The company is equipped with advanced technology and, at the time of the research, 30 employees worked there. Since 2006, the company has been committed to expanding their business by not only manufacturing products for a clearly defined market with an established technology but also by breaking out of this shell. The goal is to develop the existing specialized technical skills for new applications. In order to establish this new business, BioDiagnostics increasingly invested in research and development. In 2009, the managing director announced that they had sold the company’s key business to a larger company, which significantly increased the pressure to come up with new innovative products.

From an organizational point of view, BioDiagnostics consists of four hierarchical levels. Under the management level (technical and commercial), there is a second management level in the areas of production management, business development, research and development (R&D), and sales. Below there are the project managers (administrative and operative support of the R&D projects) and finally the laboratory personnel (operative tasks). Management and staff of the second level meet regularly in the steering group to decide about research and development projects and to discuss important events concerning the company.

The difficulties in developing a new business area were the starting point of the realignment of the steering group as a key instrument of strategic development, R&D management, and strategic project management. The work of the steering group is vital for the company, as the accurate assessment of the development projects’ potential market success is a prerequisite for the efficient allocation of resources. In this article, we focus on the development of the steering group for two reasons: first, its work is crucial for the company and second, the development process of the steering groups is pervaded by the different “faces of power”.

3.2 Research design
With respect to our theoretical background, we were first interested in identifying types of contradictions and how they emerged. Second, we analyzed the processes of learning and organizational change to identify how the participants solve these contradictions and double binds. Third, we focused on occurred forms of episodic and systemic power and how they affected the learning process.

For the analysis we used various empirical data (see Table I). “Prior instrumentation” (Miles and Huberman, 1994, p. 36) of the research process was avoided, putting emphasis on contextual richness and close connections with the lived experience of the people in the study (Eisenhardt, 1989; Miles and Huberman, 1994; Yin, 2013).

Data were analyzed by means of a content analysis with a list of codes (Mayring, 2014). We focused on four research categories (Appendix): the expansion of (A) activities and (B) social relations as two sides of learning of the steering group, the perceived (C) contradictions within and/or between activity systems as triggers for change, and (D) the four faces of power influencing the learning process of the steering group. Regular data reviews and theoretical discussions within the research team were an important measure to develop our understanding of the categories.
3.3 Findings

The steering group is an activity system with the “object” of establishing new business fields through projects and accurately assessing the potential market success of new products. Acting subjects include the top management, executives of the second management and project leaders. Over time, specific rules of conduct (formal and informal) and of decision-making as well as forms of division of labor have been institutionalized within the steering group. These rules are to be reconsidered in relation to the intensifying primary contradiction, i.e. the establishment of new business fields and the assessment of new product projects, which became necessary after the division was sold. The actors involved perceived that the established practices of the steering group were contradictory. These contradictions particularly concerned historically established rules of decision-making and participation, as well as the established division of labor between the executives and the commercial and technical managers. They became manifest in double binds (secondary contradictions) such as insufficient project management tools (instruments), unclear criteria for decision-making and nontransparent rules for participation as well as unclear tasks, roles and expectations among the members of the steering group (division of labor). A reorganization of the steering group was becoming indispensable in the actors’ perception. This potentially expansive learning process was to be supervised by an external consultant.

The first workshop on organizational development (OD) was held in 2008. In this workshop, which was deliberately held without the presence of the owner and senior management to avoid social control, the participants perceived the need for action, e.g. in terms of “project guidelines, reporting, business priorities/business development, resource planning, roles and responsibilities of staff” (source: photo documentation of the workshop).

<table>
<thead>
<tr>
<th>Data origin</th>
<th>Types, participants and point in time</th>
<th>Main purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant observation</td>
<td>Daily work processes, especially daily laboratory work (particularly in the beginning of research 2009/2010)</td>
<td>To understand work processes and decision-making processes</td>
</tr>
<tr>
<td></td>
<td>Formal meetings of the steering group (regularly between 2008-2012)</td>
<td>To identify types contradictions within work activities and between activity systems</td>
</tr>
<tr>
<td>Document analysis</td>
<td>Field notes, memos, summary sheets, maps from workshops (regularly between 2008-2012)</td>
<td>To identify forms of power</td>
</tr>
<tr>
<td>Two employee surveys</td>
<td>2009, 2010: all employees</td>
<td>To understand work processes and decision-making processes</td>
</tr>
<tr>
<td>14 semistructured interviews</td>
<td>Employees including the owner, managers of all levels and functions, and professionals</td>
<td>To describe and analyze activity systems with specific focus on the steering group to identify types contradictions</td>
</tr>
<tr>
<td>Two organizational workshop (OD)</td>
<td>OD workshop 1: June 2008, members of 2nd management level, project leaders, external consultant</td>
<td>To analyze main contradictions of work and assessing the areas with the greatest development needs of the company</td>
</tr>
<tr>
<td></td>
<td>OD workshop 2: February 2009, CEO/owner, members of 2nd management level, project leaders, external consultant</td>
<td>To analyze potential markets and to develop ideas for future product development</td>
</tr>
</tbody>
</table>

Table I. Data sources
Primarily, the second management level perceived the defined need for action. The workshop participants concluded that future project ideas in the steering group should be discussed, evaluated, and kicked off on the basis of more transparent and reliable criteria. Moreover, decisions should be recorded, constituting a formalization of the practices. Ideas were reported to the top management after the workshop. However, differences regarding the top management’s and the other management level’s assessment of the priority of the individual problem areas and further steps appeared. In particular, the top management steadily rejected suggested rules for project control, stating that this would diminish the probability of making good intuitive decisions. The management only accepted those changes in the company’s practices that were discussed and decided in the workshops if they corresponded with their ideas. A greater systematization of the project decisions by defining fundamental guidelines would mean that each deviation from this systematization would need to be explained. The top management’s right to free dispositions regarding resources and projects would thus be limited. Hence, there was an underlying hidden conflict of objectives, a quaternary contradiction between the different openly stated and rationally explained assessments by staff and management. This concerns the question of whether there should be greater systematization of decisions or preservation of the free disposition.

Besides, the participants of the first OD workshop decided, without the top managers, to split up meetings into technical and commercial parts to increase the efficiency of the steering group meetings. The technical part was to be attended by the technical manager only. The objective was to be able to extensively and calmly discuss technical issues, which was only possible to a limited extent in the presence of the commercial manager (owner). After the meetings were held separately for some weeks, the commercial manager also attended the meetings of the technical steering group on the grounds that he needed to obtain detailed information when deciding on projects:

Sometimes he said, ‘So, why didn’t you involve me?’. That was when we had discussed a topic that was very interesting for him, too. So we sat together on Monday and talked it out. Then I wanted to prepare everything for him to sign and he said, ‘No, we will have to meet again. I want to hear that, too’. And so you lost time. (2nd level manager)

Staff were disappointed but eventually had to accept the end of this separation. As a reaction, some of the technical discussions were held on the occasion of laboratory meetings, which had already existed before. Important issues, however, were once again discussed with the commercial manager. The productive potential of identified contradictions had slacked in everyday working.

In the second OD workshop, the steering group became an issue again. All executives complained about the restoration course that came to no advancement. As a result, workshop attendees decided to initiate a role development for all executives, which was to be supervised by the OD consultant. The owner again contested the usefulness of the role development program:

Owner: We have made steps forward in comparison with the last workshop. But we cannot assign roles yet.

Project manager: This company is afraid of fixing things. The creation of structures is obstructed.

Owner: We have not yet made enough progress as a team. It’s like soccer. First, we must be able to master the basic techniques, and then we can go on to practice the complex setup.
Project manager: That's exactly what I'm criticizing. You don't trust us to [. . .] I mean we don't have to define that the striker is standing at the penalty box line, but at least it must be clear that he is standing in the front.

Eventually, owner and executives once again committed themselves to adopting already decided practices of project management in the steering group. However, the self-perception of project managers and executives is deeply rooted in the company’s culture and is hard to change. The learning process of the steering group was pervaded with backslides, fizzling and stagnation, which were mainly rooted in BioDiagnostics’s power structures.

4. Discussion of findings

Based on our analytical framework, the learning process of the steering group at BioDiagnostics covers five steps (see Figure 2).

4.1 Driving role of contradictions

The learning process starts with apparently narrowly defined (1) functional-instrumental contradictions within the activity and new external market requirements (primary contradiction). The staff perceives traditional practices of decision-making and project management as no longer being appropriate for meeting the more complex tasks in the new business field (secondary contradiction, double bind). To analyze the current situation and to develop new ideas (a), the top management consults an (2) external consultant (inclusion). Under his/her direction, the participants of first OD workshop (b) productively use the manifesting secondary contradictions by developing ideas for the activity of the steering group. This (3) expansion step of the activity system “steering group” yields better instruments (instruments of planning, controlling, creativity, and moderation) and new forms of cooperation (moderated team meetings in the steering group). However, the (tertiary) contradictions between old and new practices of project management, in particular the new structure of the steering group, the moderation techniques, and the extended decision-making authority of executives, lead to (c) conflicts over fundamental issues of “good project management”. The conflicts acuminante in the question of how autonomous the entrepreneur’s freedom of action (ownership authority) can be in project management if the project managers’ and R&D professionals’ scope of action is to be extended. Because of
the withdrawal of decisions by the owner (4), the old model of decision-making and project management was partly restored. In the (5) second OD workshop, the participants tried again to initiate an expansive learning process.

The contradictions in the activity system spread to both the historically grown “paternalistic power and social order” (Kotthoff and Reindl, 1990) of the company and the new challenges of project management. According to activity theory, quaternary contradictions between activities arise, here between the activities of management and the steering group. Such contradictions are usually based on relations of superiority and subordination that result from the cultural and historical development of activities, in this case the successful founding history of BioDiagnostics. We discuss this with regard to power and the decreasing dynamics of critical-productive voices, the power of meaning and institutionalized power structures.

4.2 Power and the decreasing dynamics of critical-productive voices
The learning process is driven by contradictions, which emerge as conflicts between actors; they reveal “the resistant”, the contradictions within the system itself (Miettinen, 2009). Functional contradictions in project management trigger repeated conflicts between a complex medical-microbiological product development on the one hand and ‘free intervention’ by the owner on the other hand. Taking a power-political perspective (Fleming and Spicer, 2014), actors’ relations during the first three expansion steps (Figure 2) can be interpreted as critical-productive multi-voicedness. The use of power (first face: coercion and control over resources) on the side of the dominant corporate elite (the entrepreneur) plays an enabling role; at the beginning, he gives leeway to staff members. They, in turn, enact (Weick, 1995) this leeway, express very critical ideas and create new project tools on their own. In contrast to managerialist assumptions on organizational change (Al-Haddad and Kotnour, 2015; see 2.1), the affected actors themselves (both professionals and managers below top management) jointly initiate change and push forward ideas for development. Critical engagement and inclusion of actors have a positive effect on expansive learning, improving the activity system (process reliability, transparency, extended but closely controlled scope for decision-making). In the daily work activities after the first OD workshop, however, the project managers’ critical potential is slackening, which leads to a stagnation of expansion. As the owner is subverting (by means of episodic power; Fleming and Spicer, 2014), agreed-upon procedures in terms of division of labor and decision-making power, old practices are restored. Thus, we can see the crucial role of decentralized inclusion of managerial and non-managerial actors for expansive learning and the still important role of top management.

4.3 Power of and struggle for meaning
Activity theory argues that expansive learning processes, related contradictions and organizational change are dependent on context-specific features of the cultural and historical development of the activity system (Miettinen, 2009; Engeström, 2010) – a fact which is often neglected in mainstream change management approaches (see 2.1). Seen from this perspective, the critical voices and conflicts that emerge around project instrumentation and practices in the steering group at BioDiagnostics and the struggle for expansive learning also indicate an upcoming struggle for meaning among actors in different functional and hierarchical positions. At stake are the historically grown and culturally consolidated validity claims and power effects of functional management knowledge and related tools, between owner, project managers, and R&D professionals (power through knowledge, Weber, 1972; Foucault, 1980, 2010). The informal, implicit entrepreneurial knowledge of
BioDiagnostics’s founder is contested, who does not yet think that his technically and scientifically educated executives are capable of correctly applying this knowledge with the aid of management tools. This also leads to the generation of quaternary contradictions as an expression and illumination of unequal hierarchical relations in the company. Hierarchical relations are increasingly called into question because the genesis and acquisition of new, formalized knowledge concerning “good project management” begins as a multi-voiced, productive common striving (“struggle”; Fleming and Spicer, 2007, p. 47; Antonacopoulou and Chiva, 2007) of managerial and non-managerial actors. They struggle for adequate interpretations of the “double bind” that triggers the learning at BioDiagnostics (see first quadrant, Figure 2). This enriches the actors’ emancipatory potential and their capacity to act (i.e. their personal power base; Pettigrew and McNulty, 1995) and to imagine zones of proximal development (Vygotsky, 1978; Engeström 2010) beyond the institutionalized power structures.

4.4 Institutionalized power structures
Blackler and McDonald (2000, p. 848) contend that the “pragmatism of daily interaction is intertwined with institutions and dogma”. BioDiagnostics is marked by a paternalistic social order (Kotthoff and Reindl, 1990) with the personality of the entrepreneur having the highest impact. Up to the first OD workshop, the company is managed in a very informal way, with only a few explicit rules transferring responsibilities to certain positions or individuals. The central position of the top management (owner) in the decision-making process and its existing right to the free disposition of resources and projects represent an important power base for the owner. The managing director’s authority is largely accepted by the staff. However, the development of the steering group generates contradictions with BioDiagnostics’s paternalistic management system. Unexpectedly, this power structure itself is becoming the object of expansive learning. Using means of simple coercion (disposition right of the owner; first dimension of power), the steering group is, after a short trial stage (3), factually initiating the (4) reversion of the expansive development (Figure 2). Expansive learning reaches a major obstacle here. This interlacing of immediate activities of product development and project management with the management culture paralyzes the change process. Noticeable at BioDiagnostics are institutionalized power relations between owner, project managers and R&D professionals that are embedded in dogmas focused on “good entrepreneurship”. However, the power issue is not a subject of open discussions. This conflict is not openly dealt with but ‘solved’ by not complying with OD decisions, which restricts expansive learning in the steering group. The conflict can be transformed in a second OD workshop into a second, less open phase of expansion (see Figure 2). The owner also attends this workshop. Decisions include a training program for executives that intends to promote a new “entrepreneurial understanding of roles” (owner) on the part of project managers and R&D professionals, thus softening the paternalistic leadership relations. This is only possible because BioDiagnostics’s paternalistic management culture does not principally suppress conflicts but tolerates them depending on the owner’s preferences. In addition, this step of expansive learning initiates a subjectification process (fourth face of power; Fleming and Spicer, 2014). The culturally rooted self-perception of managers and professionals is to be developed in view of entrepreneurial spirit and behavior.

5. Implications
5.1 Theoretical implications and future research directions
At the outset, we argued, in line with critics of mainstream CML, that this literature pre-emphasizes the driving role of managers and takes an interventionist perspective on change,
considering change management mainly as a social technology in the hands of a dominant corporate elite (Boje et al., 2012; Wetzel and Van Gorp, 2014). CML therefore tends to de-emphasize the multi-voiced, dialectical and unfolding character of organizational change and the productive role of change critics and non-managerial actors (Boje et al., 2012; Ford et al., 2008; Will, 2015). Moreover, an interventionist perspective tends to de-emphasize the lived experience and situation-specific knowledge of actors in an unfolding, emerging change situation (Tsoukas and Chia, 2002; Chia, 2017).

We suggested that a non-managerialist, situated perspective on learning systems could be useful to illuminate and understand the multi-voiced, dialectical and unfolding character of organizational change. Specifically, we have drawn on the CHAT and its notions of activity systems, contradictions and expansive learning (Engeström, 2010; Blackler and McDonald, 2000; Engeström and Sannino, 2010). We argued that an elaborated conception of power (“faces of power”; Fleming and Spicer, 2014) should be integrated in the activity theoretical framework and refined it respectively.

The case study of BioDiagnostics demonstrates that our politically refined framework of CHAT is a useful starting point for further research to develop a non-managerialist, multi-voiced perspective of expansive learning and organizational change. CHAT considers expansive learning as an expanding momentum of contradictions and multi-voicedness (Engeström 2010). The politically refined framework helps to grasp and conceptualize one of the essences of expansive learning: the conflicting and complementary voices of various groups and strata in the activity system under scrutiny, their debates, wheeling and dealing and orchestration.

We integrated a multidimensional conception of power (“faces of power”; Fleming and Spicer, 2014) into CHAT, given that organizations are imbued by hierarchical relations, occupational differences, vested interests and turf games (Thomas et al., 2011). Against the background of our case example, we suggest that this conception should also be used in further studies of learning and change informed by CHAT. It helps to understand in more detail the individual and systemic capacities and restrictions of actors (i.e. learners) to make their voices heard, to act (Pettigrew and McNulty, 1995) and expand their activity systems. In particular, in contrast to studies of change management informed by mainstream CML, our framework appears to be useful to shed more light on the productive contributions of non-managerial actors and critics of change to the momentum of expansive learning, and the productive use of power beyond the “change agent – resistor” dualism (Ford et al., 2008; Will, 2015). The case study also shows that the supposed relations between power at the micro-level (coercion, manipulation) and macro-level (domination, subjectification) are of importance for the momentum of expansive learning and change processes. Productive effects of power (i.e. to expand inclusion and interpretation) are mostly related to their episodic forms (micro-level), while restricting power effects (i.e. constraining the web of social relations and defeating extant interpretations) are mostly related to systemic forms of power (macro-level) that stabilize extant social institutions, primarily to domination. However, given the obvious limits of an exemplary case study, much more research is needed into the productive and restrictive effects of episodic and systemic power on expansive learning.

A bearing concept both in our analysis and for further studies is the notion of “contradiction” as the primary trigger for change, learning, and expansion movements. Contradictions as an “objective” side of learning refer to the collective activity systems; however, acting individuals tend to perceive contradictions as double binds and therefore as triggers for learning (“subjective” side of learning). In contrast to the dominant, criticized managerialist logic in the CML (see 2.1), an activity-theoretic perspective of learning argues that change must be initiated and nurtured by affected real, identifiable people, individual
persons and groups (Engeström and Kerosuo, 2007). The framework and corresponding case study methods help to grasp these affections, particularly from the perspective of power relations and the capacities of actors to act, i.e. to expand activities on their own initiative.

We suggest studying contradictions as contradicitive relations between needs for change (e.g. development of the steering group), power on the micro-level (e.g. the owner of BioDiagnostics using the power of his individual position to reverse collective decisions), and power on the macro-level (e.g. the paternalistic regime as an example of systemic power). The case study demonstrates that the paternalistic regime limits the multi-voicedness of ideas to solve contradictions. Therefore, in future studies of change from a CHAT perspective, we suggest principally conceiving power relations as both means and objects of expansive learning.

5.2 Practical implications
If managers want to enable expansive learning processes to resolve contradictions, a protected social framework is required, especially under the conditions of strong asymmetric power relations. OD workshops could provide this framework presupposed they explicitly cross the institutionalized regime and social order and facilitate multi-voicedness. From a political perspective, this can be seen as a mirror image of the learning theory principle of multi-voicedness (heteroglossia). It is a movement towards an ‘institutionally protected social space for criticism’. There, power is invested in multiple people (see also Courpasson and Clegg, 2012). Thus, in an expansive learning process, the emancipation of actors and their growing capacity to act is essential for unfolding the productive potential of multi-voicedness against the backdrop of systemic forms of power like “institutions and dogma” (Blackler and McDonald, 2000, p. 848) in organizations. Our case example demonstrates that episodic power – the manager “allows” expansion – is also strongly needed to unfold this productive potential. To support bottom up change processes we suggest in accordance with Dahl (1997) that institutionalized forms of freedom of expression, freedom of information acquisition, and freedom of association be imperative in this regard. Mandatory procedural rules of participation enable politically weaker and less experienced (i.e. less powerful) actors to articulate themselves and to be heard. This can lead to the knowledge-promoting participation of non-managerial actors (inclusion) in expansive learning processes. Institutionalized, decentralized power distribution (defined in these rules) and the right to free information acquisition may support decentralized learning communities. If organizations exploited the full potential of an expansive learning and change process, the “culture of power” (i.e. the shared values on which the exercise of power can depend) should be considered as a potential object of learning as well since it influences the problem-solving level (enlightened understanding).

6. Conclusion
Based on critical points of mainstream research on organizational change, we suggested that cultural historical activity theory can be useful to develop a non-managerialist, more context-sensitive and multi-level perspective on organizational change in terms of a learning perspective. Taken together, we conclude that our politically refined activity theoretical framework is useful for the development of such an understanding of organizational change.

In this article, we have demonstrated through an illustrative case study that matters of power are extremely important if one aims to understand expansive learning and change processes in organizations. We conclude that forms of episodic and systemic power (Fleming and Spicer, 2014) are to be conceived as motors and restrictions of expansive
learning process and its outcomes, and thus should be considered within a multi-level framework informed by CHAT. However, this illustrative case study can only suggest some patterns and principles that need to be validated and expanded through more detailed empirical investigations. Future studies should particularly show how the patterns of power could themselves become the object of learning.

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**Further reading**


### Appendix

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristics</th>
<th>Operationalizing in case of <em>BioDiagnostics</em> (encoding)</th>
</tr>
</thead>
</table>
| (A) Activities  | (1) Expansion of activities concerning the object itself (systematic, development-related)  
(2) Expansion of the perception and interpretation patterns (meaning) of the decision-making framework (definition of the situation) and everyday rules and routines (anticipating-temporal) | Re 1) New instruments of the activity (project management); new decision-making rules; new rules for cooperation; new allocation of responsibilities within the activity system; new personnel composition of the activity system  
Re 2) Assessment of alternatives of the activity expansion; assessment of the reference of the alternatives; revision of a commenced activity expansion |
| (B) Social Relations | 1) Expansion of the number and type of participants in learning processes (socio spatial expansion)  
2) Expansion of decision-making rights and responsibilities of participants in learning processes (ethical-ideological expansion) | Re 1) Type and number of participants in the expansion of activities; type and number of affected participants; type and number of involved functions, levels, and positions;  
Re 2) Type and extent of decision-making rights (delegation, participation) claimed by the parties concerned and involved |
| (C) Contradiction | (1) Contradictions between the exchange value and practical value of objects  
(2) Contradictions within and between the elements of an activity system  
(3) Contradictions between the prevalent type of activity and the more developed type of activity  
(4) Contradictions between activity systems sharing the same object | Re 1) Development of new business opportunities for the company after selling a division vs. requirements of the market  
Re 2) Arising tensions/contradictions/conflicts between instruments, rules, division of labor, involved actors, product, and other participants of the steering group and the management in general  
Re 3) Arising tensions/contradictions/conflicts between the new type of activity of the steering group and the previous type of activity  
Re 4) Arising contradictions between activity systems such as management, R&D, laboratory, sales, steering group |
| (D) Power       | 1) Coercion (*power in conflicts*)  
2) Manipulation (*power over conflicts; non-decision making*)  
3) Domination (*power of symbols and meaning*)  
4) Subjectification (*power by means of discipline*) | Re 1) Use of formal authority (e.g. owner position); operational or disciplinary orders, allocation or deprivation of resources  
Re 2) Influence on the rules of decision making, the composition of committees, or the agenda of meetings  
Re 3) Regular reference to the values of corporate culture, not only in the event of conflicts; appeal to the general interest  
Re 4) Control of and by means of institutionalized rules and practices of everyday actions (understanding of leadership and roles, tools, instruments, expertise) |

*Table AI.* Research categories
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