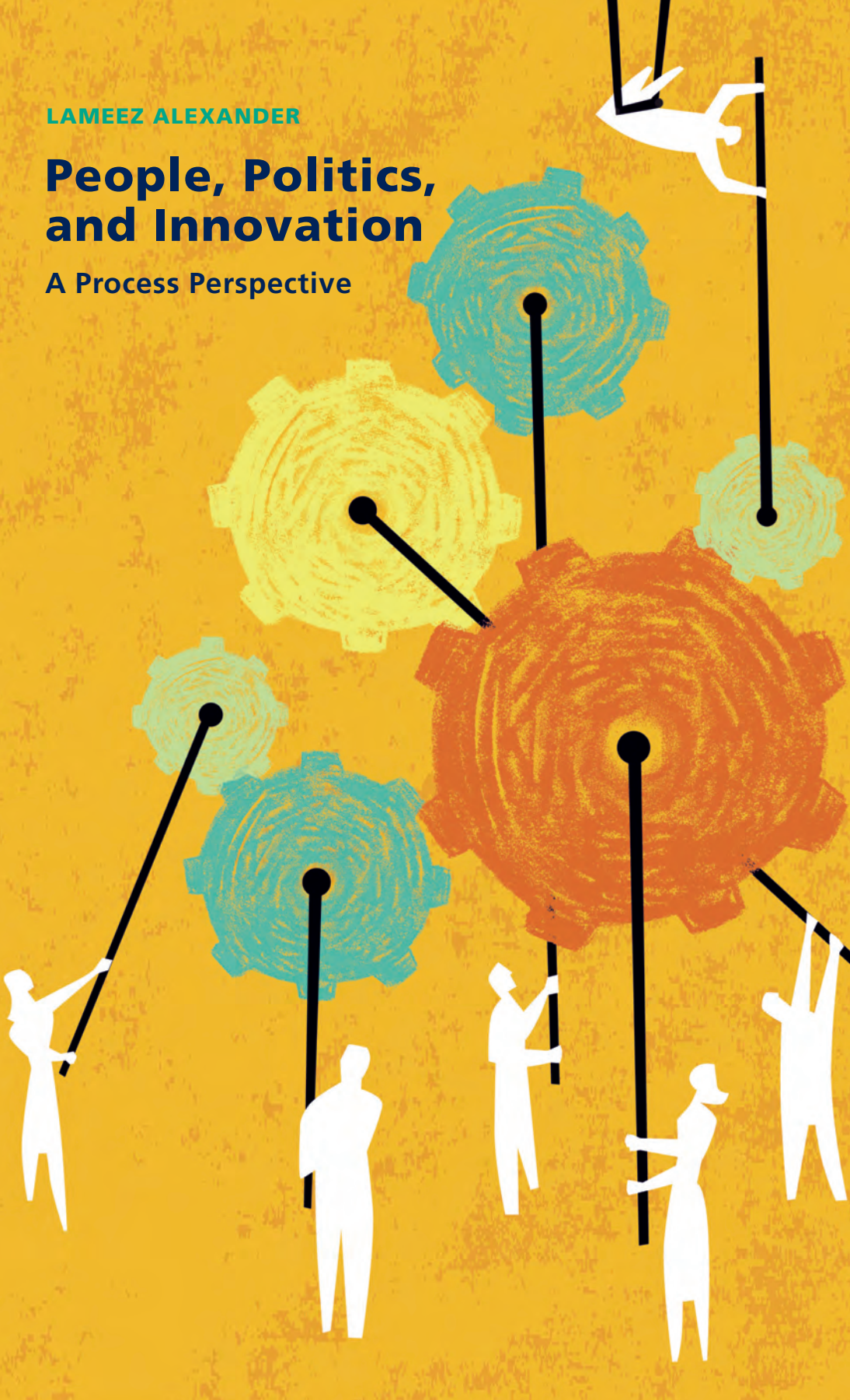
LAMEEZ ALEXANDER

People, Politics, and Innovation

A Process Perspective



People, Politics, and Innovation

A process perspective

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A process perspective

Mensen, politiek, en innovatie

Een proces perspectief

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Umntu ngumntu ngabantu. I am because we are.

Lameez Alexander

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Chapter 1

Introduction

1.1. A process perspective in studying innovation

Innovation involves the generation, acceptance and implementation of new ideas, processes, products, or services. Organizing for innovation therefore requires more than the knowledge of input factors needed to achieve desired innovation outcomes; it requires an appreciation of the structures and processes by which new ideas are created and transformed into reality. The innovation manager, in other words, needs a *process theory* that explains innovation development (Van de Ven & Poole, 1990).

Process studies in organizational research and can take one of three forms (Van de Ven & Poole, 2005). The first approach conceptualizes change as a succession of events, stages, cycles, or states in the development or growth of an organizational entity. Process theories of innovation that stem from this developmental perspective focus on explaining the temporal sequence of activities involved in the creation, implementation and diffusion of new ideas. Cooper's (2001) Stage-Gate model is probably the most well-known developmental innovation process theory, and one that is widely used in practice. The model represents the development of new products as an ordered process of four to five discrete stages of tasks and activities, the outputs of which are used to evaluate progress and inform managers' decisions to advance to subsequent stages. Some researchers have

chosen to focus on just one broad phase of innovation development such as processes in the front end (e.g. Khurana & Rosenthal, 1998) or the diffusion stage (e.g. Rogers, 1995).

The second approach presumes that the world is composed of processes and examines questions of how organizational processes such as sensemaking (Weick, 1995) unfold over time. These processes are in a constant state of flux and often involve generative mechanisms that are mutually determined. For example, Tsoukas and Chia (2002) have argued that organizational change is in itself a process of ongoing, continuous change that is pervasive rather than a momentary departure from stability and routine. In their view, change must not be thought of as a property of organization. Instead, organization must be understood as an emergent property of change in that it is constituted and shaped by change, and at the same time, is an attempt to bring order, stability and meaning to the ongoing stream of fluctuating human actions. While organization is aimed at bring order to change it is also an outcome of change. Organization and change are therefore mutually determined. This form of process research is considered a "strong" approach as it based on the assumption that reality is socially constructed or produced through human interaction and cannot be known objectively. Its aim is to capture the dynamic, unfolding, and emergent qualities of organizational processes as they are shaped and given meaning through social interaction. Innovation scholars rarely adopt this process approach.

The third and final approach to process studies in organizational research involves the analysis of an event series in order to understand the temporal sequence, pattern, or structure of a process as it unfolds. Event-driven process theories rely on explanations that tell a narrative or story of how a sequence of events unfolds to produce a given outcome in order to uncover the generative mechanisms that drive the process. This form of process research is more commonly known as the narrative approach (Abbott, 1990).

Here the focus is on an evolving central subject or actor(s) around which the narrative is woven. Events are what key actors participating in the narrative do, but also what happens to them, as the process unfolds. In the narrative approach, events are viewed as natural units of the social process. The aim is to discern a common process in range of complex and seemingly disparate events and sequences. This complexity is a defining feature of process narratives. The Minnesota Innovation Research Program, one of the most comprehensive studies on innovation to date, employs this event-driven narrative approach (Van de Ven, Polley, Garud, & Venkataraman, 1999). This detailed longitudinal field research of fourteen innovations was conducted by 30 researchers over a period of 17 years. The purpose was to move beyond antecedent-outcome models of innovation in order to understand the innovation process in its complexity. Researchers tracked the development of innovations in real time and used sequence analysis to determine the temporal order among events and examine similarities and differences between events.

By explicitly focusing on events, the narrative approach is able to preserve the inherent complex flow of occurrences rather than disassemble the process into combinations of independent variables. As a result, process theories of this kind employ necessary and efficient causality to explain development and change (Van de Ven & Poole, 2005). Causal influences come to bear "event-wise" through one or more events rather than continuously and uniformly throughout the process. Each event moves the developing subject down a particular path toward a certain outcome. However, subsequent events and combinations of events may also influence the subject and alter the causal path imparted by earlier events. For this reason, no one cause is sufficient to explain development and change. Narrative processes are enacted through sequences of events and can themselves be viewed as macro-level events that represent qualitative

shifts in an organizational entity. Thus, efficient causality is used to explain the influence of particular events, as well as to explain the underlying mechanisms of transitions between events and macro-level units. The temporal order in which causal forces come to bear is crucial in narrative accounts as it determines when efficient causes come into play. This is because narratives that can be explained by the same theory may vary considerably in specific sequences due to the nature and pattern of causal events that transpire. To this extent, the generalizability of a narrative process theory stems primarily from its versatility across cases than from its uniformity and consistency.

Although technically not process research in its pure form, a common approach to "process" in organizational studies is to examine the underlying logic that explains a causal relationship between independent and dependent variables. While this view of process does not explain how organizational entities unfold, develop and change over time, it nevertheless relies on stories to undergird explanations. These "mini-narratives" provide an in-depth understanding of the causal process and explain why a particular change occurs. Research of this nature abounds in the organizational and innovation literatures.

1.2. Dissertation Overview

This dissertation consists of two studies that share several attributes. First, each study employs a process perspective, albeit in different ways. Second, both studies aim to advance new theoretical concepts and models of the innovation process. Third, both studies draw on concepts from organizational psychology and behavior in order to explain different aspects of the innovation process. This, however, is where the similarities end.

In the first study I conduct a theoretical analysis of the literature on team goal orientation – a collective motivational state based on group goal preferences in an achievement context – to explain how teams can succeed in getting their radical innovation ideas implemented. I propose a novel approach for managing motivational states of innovation teams that involves dynamically adapting group goal preferences at key points in the innovation process. I argue that these dynamic shifts in goal preferences, when facilitated by an ambidextrous leader and achieved in a timely fashion in line with changes in the innovation process, predict team innovation implementation success.

In this study, I invoke a process perspective in two ways. First, I adopt a view of the innovation process not as a highly structured, linear and relatively predictable system of activities, but rather as a complex, dynamic process that is vulnerable to external events (Van de Ven et al., 1999). The radical innovation lifecycle in particular is marked by numerous discontinuities, gaps, and critical transitions, and punctuated with occasional periods of manageable, routine uncertainty (Leifer et al., 2000). These "shocks" make the process appear chaotic and trigger actions to adapt and change according to the nature of the event. The theoretical model developed in this study uses the occurrence of unpredictable, critical events in the innovation process as its foundation for determining team innovation implementation success. Second, although the study as a whole conforms to the more general approach to processes in organizational research, it does aim to move beyond underlying causal explanations by theorizing how dynamic shifts in group goal preferences may unfold over time.

The second study is an empirical analysis based on ethnographic field research of three R&D projects in a large, multinational organization. In this study, I draw on organizational psychological theories of psychological ownership and territoriality, as

well as sociological theory on workplace resistance, to analyze political disputes about control between innovators and managers during the innovation process. Using a variety of qualitative analytical techniques I develop and propose a novel theoretical concept referred to as "innovation ownership struggles". I define innovation ownership struggles as disputes for control between innovators with a strong sense of psychological ownership towards the innovation and managers with formal control over the innovation.

This study could be viewed as pure process research and in fact synthesizes two different approaches. First, the struggle for innovation ownership is conceptualized as an organizational "entity" in its own right and an inherent part of the innovation process. It involves an ongoing process of innovators and managers attempting to gain or maintain control over the innovation and simultaneously attempting to shape and fix the meaning of ownership and control in the innovation process. To this extent, I show how meanings of innovation ownership and control are mutually determined and emerge through the interactions of innovators and managers as they compete for control over the innovation. Second, I use a narrative event-driven approach to track how innovation ownership struggles unfold over time. Using a combination of discursive analysis and comparative sequence analysis, I examine innovators' and managers' practices of resistance and control and show how different combinations of resistance and control tactics lead to dominant managerial, dominant innovator, or shared structures of control. Third, I consider the temporal order of shifts in control and its influence on the innovation ownership struggles as a macro-event. In doing so, I uncover the presence of a "tipping point" in which control shifts from managers to innovators for the first time. I propose that this tipping point serves to expose imbalances in control between innovators and managers during the innovation process. Once such imbalances are brought to light,

innovators and managers can begin to consider more shared and participative control structures that are critical for successful innovation.

The research presented in this dissertation aims to advance a more complex and dynamic understanding of innovation and places people – their motivations, behaviors, and political agendas – at the heart of the process.

Chapter 2

Teams in Pursuit of Radical Innovation: A Goal Orientation Perspective[1]

ABSTRACT

Existing theoretical models of team innovation emphasize internal team processes and external conditions that facilitate or hinder innovation, but tend to be more suited for incremental than for radical innovation. Teams developing radical innovations face greater uncertainty and risk of failure, and often encounter unanticipated challenges that require concerted efforts of the team as a whole to move the project forward rather than face termination. Drawing on state goal orientation theory, we analyse the motivational drivers that position teams to effectively deal with such challenges. We propose a novel approach for managing team motivational states that involves adapting team goal preferences at key points in the innovation process in order to achieve radical innovation success. We advance a model that highlights teams' ability to dynamically shift shared goal orientations to meet acute 'shocks' that disrupt regular team activities and threaten the survival of the innovation project. The role of ambidextrous leadership and reflexive team processes in achieving goal orientation shifts are identified as important factors in radical innovation success. Although unanticipated challenges related to idea development and idea promotion may occur in both radical and incremental innovation

[1] A version of this paper is published in the Academy of Management Review and is co-authored with Daan van Knippenberg.

projects, we argue that the effects are stronger the more radical the innovation.

2.1. Introduction

Innovation has become the Holy Grail for many organizations. Incremental innovations involving improvements to existing products and processes help sustain short-term financial performance. Yet only by developing radical innovations in the form of new businesses, services, and products are organizations able to ensure competitive advantage and growth (Christensen, 1997; Leifer et al., 2000; March, 1991). Best practice firms have more innovative portfolios with higher percentages of new-to-the-world, next-generation projects (Barczak, Griffin, & Kahn, 2009; Cooper, 2005), and radically new products are associated with greater profitability (Song & Montoya-Weiss, 1998; Sorescu & Spanjol, 2008). The development of radical innovations, however, presents significantly greater risk than incremental innovations, because radical innovations require substantial investments in new technologies or markets and bring greater uncertainty of outcomes (Danneels & Kleinschmidt, 2001; Garcia & Calantone, 2002).

Firms' innovation activities are predominantly organized around dedicated teams (Barczak et al., 2009), whose management is crucial for innovation success (Hülsheger, Anderson, & Salgado, 2009). Team innovation research has primarily adopted West's (1990, 2002) model that emphasizes team climates supporting innovation (Burningham & West, 1995; West & Anderson, 1996), but leaves important questions regarding radical innovation unanswered. Radical innovation projects are characterized by unanticipated challenges that require the concerted efforts of the entire team and that often move back and forth between the development of the product and the promotion of the project to gain

vital support. To address the motivational drivers that position teams to deal with these challenges, we develop a model that outlines how shared team *goal orientations* – motivational orientations in achievement situations that shape the goals teams prioritize as well as how they regulate their behaviour in goal pursuit – may guide a team's pursuit of more radical innovations. In contrast to earlier research, our analysis places specific emphasis on the challenges of radical innovation. This leads us to identify teams' ability to shift goal orientations as they move back and forth between challenges in idea development and idea promotion as critical to innovation success. This dynamic view points to the importance of team leadership in guiding teams through these shifts in goal orientations.

We propose that team goal orientations are a key element in radical innovation, because they influence both goal choice and behavioural strategies in goal pursuit (Chen & Kanfer, 2006; Chen, Kanfer, DeShon, Mathieu, & Kozlowski, 2009). We argue that goal orientations express themselves both in the radicalness of the ideas teams pursue and in the adaptive regulatory behaviour of members in pursuing idea development and promotion. This focus on goal orientation deviates from the implicit focus on intrinsic motivation as an underlying psychological process in team innovation (West, 1990, 2002). The consideration of the broader range of motivations captured by goal orientations (to learn, to demonstrate competence, and to avoid failure) offers a richer approach to understanding the process of radical innovation, one that maps particularly well onto the challenges that radical innovation teams face.

2.2. Goal Orientation and Radical Innovation

Innovation refers to the development and implementation of ideas within an organization (Edmondson, 2003). We limit our analysis to innovation in large organizations that typically recognize the importance of innovation, but struggle with development and commercialization of radically innovative products (Christensen, 1997; Leifer et al., 2000). Within these firms, routines, structures, and cultural norms often create obstacles for innovation (Dougherty & Hardy, 1996), rendering the question what factors govern team radical innovation pertinent.

We focus on team success in having innovations implemented as part of the organization's New Product Development (NPD) portfolio. We follow Van de Ven, Polley, Garud, and Venkataraman's (1999) view of the innovation process as development co-occurring with implementation such that innovations become increasingly integrated into existing organizational arrangements. In this view, processes that link innovations to operational units are already ongoing even before innovations are formally transferred to business units for production and commercialization. Development and implementation activities also overlap in that much reinvention occurs as the product is modified to fit product applications, the requirements of which frequently change over time (Leifer et al., 2000; Veryzer, 1998). Our model therefore concerns team success in securing the organization's commitment to product launch rather than subsequent product success in the market, and is limited to the period after initial idea generation and prior to scaled-up product commercialization.

2.2.1. Radical versus Incremental Innovation

Garcia and Calantone (2002) identify three types of innovations: incremental, really new, and radical. This typology is based on two types of discontinuities: technological and market discontinuities, and micro versus macro level discontinuities. Innovation at the micro level creates discontinuities in the firm's existing market and/or technological resources, skills, knowledge, capabilities, and strategies. At the macro level, discontinuities have the capacity to create paradigm shifts in science and technology and/or market structures. For incremental innovations, discontinuities occur at the micro level such that innovations are new to the firm or existing customers. Discontinuities in radical and really new innovations occur at the macro *and* micro levels, resulting in products or services that are new to the market, industry, or world. Radical and really new innovations differ primarily in whether they comprise both market and technological discontinuities at the macro level (radical), or only one type of macro discontinuity (really new). We therefore refer to innovations with discontinuity at the macro level as radical innovations, and distinguish these from incremental innovations. Within each type of innovation, products can differ in their innovativeness, and in that sense it is most appropriate to think of the distinction between incremental and radical innovation as a continuum with discontinuities; even when innovativeness is to some degree a continuous variable, there are qualitative differences distinguishing radical from incremental innovation, and there are challenges that are mainly associated with radical innovations. These radical innovation challenges are the focus of our analysis, even when elements of our analysis may also apply to incremental innovations.

Research on NPD (Brown & Eisenhardt, 1995; Montoya-Weiss & Calantone, 1994) largely concerns incremental innovation. The dominant Stage-Gate model (Cooper, 2001)

views the process as ordered, sequential, and relatively predictable. A cross-functional team is formed following product concept approval, and the project leader's role is to guide the team through carefully scheduled and budgeted stages. It is increasingly recognized that such highly structured approaches capture incremental but not radical innovation. Incremental innovation success is dependent on detailed technical, market, and financial analysis prior to the development of the new product, and a well-defined product concept that can be executed as planned once the project enters development (Cooper, 2001). In the initial stages of radical innovation, it may not only be impossible to carry out such activities, but also undesirable (Lynne, Marone, & Paulson, 1996; Song & Montoya-Weiss, 1998). Because the product concept is largely undetermined in the initial stages, input from customers very early in the process is of little help because customers have nothing to compare the new concept with, nor are they able to envision the potential use of a radically new product (Veryzer, 1998). Control-focused models underestimate the extent to which radical innovation requires learning and flexibility (McCarthy, Tsinopoulos, Allen, & Rose-Anderssen, 2006) and the efforts of the team as a whole to respond to unexpected challenges both in idea development and in securing organizational support to move the project forward rather than face shut-down. Radical innovation thus in part requires the very factors that are expected to lead to poor performance in conventional NPD models (cf. Cooper, 2001), and best practices in NPD can even be counterproductive for radical innovation (Leifer et al., 2000).

Teams also take a different form in radical innovation. The unpredictable nature of the process means that projects typically have a much longer and more unpredictable time line – usually ten years or more. Initial team formation is rarely a formal decision tied to a detailed project schedule, but based on volunteerism, beginning with a core group that

brings together the innovative idea and the business acumen to translate the idea to a business opportunity (Leifer et al., 2000). Their emergent nature positions such teams to access diverse information throughout the organization as input for learning, problem-solving, and creativity (Brown & Duguid, 2001), and to mobilize support for the project (Swan, Scarbrough, & Robertson, 2002). From this loose structure, a core team including the team leader emerges as the project moves towards the first funding review (O'Connor & McDermott, 2004; Sandberg, 2007). These multi-functional individuals are characterized by breadth of experience and deep knowledge and expertise (Bunderson & Sutcliffe, 2002; McDermott & O'Connor, 2002). The core team decides whether the idea is worth pursuing and submitting to initiate an official project. As the project moves closer to commercialization, it starts to resemble a conventional NPD project constrained by time schedule and budget, and a change of guard to a traditional NPD cross-functional team is likely to take place (Leifer et al., 2000). This latter stage of the process therefore falls outside the scope of our analysis.

2.2.2. The Goal Orientation Framework

Innovation is a goal-directed process (Kanter, 1988; Van de Ven, 1986; West, 2002), and thus largely motivational (Locke & Latham, 1990). Radical innovators are driven by a strong motivation that stems from intense curiosity, determination, and passion for their work (Hebda, Vojak, Griffin, & Price, 2012; Marvel, Griffin, Hebda, &Vojak, 2007). Because the acquisition of knowledge and skill mastery is necessary throughout the radical innovation process, performance is also a function of discovery and learning. Moreover, the uncertainty and high risk of failure inherent in radical innovation make it important that team members are not discouraged by failure. These considerations suggest

that goal orientation theory (Dweck, 1986) with its emphasis on orientations on learning, successful performance, and the avoidance of failure, is particularly useful to understand the motivational mechanisms that underpin the radical innovation process.

Goal orientations are goal preferences in achievement settings (Button, Mathieu, & Zajac, 1996; Payne, Youngcourt, & Beaubien, 2007). They serve as cognitive frameworks for interpreting feedback, reacting to challenges in goal attainment, and responding to performance outcomes (Farr, Hoffman, & Ringenbach, 1993; VandeWalle, Cron, & Slocum, 2001). The basic distinction is that between learning and performance orientation (Dweck, 1986). Learning orientation is a focus on task mastery, where success is understood in terms of learning. It is related to seeking out challenges and persistence in difficult situations, because these provide greater opportunity to develop mastery than more routine task situations. The risk of failure is not perceived as problematic, because failure can also invite learning. Performance orientation, in contrast, entails wanting to do well compared with others or with normative standards. It is associated with a preference for situations where one expects to do well – the risk of failure is discouraging. Performance orientation is further differentiated into prove and avoid orientations (Elliot & Harackiewicz, 1994; VandeWalle, 1997). Performance prove orientation is the desire to demonstrate competence and attain favourable judgments of ability; performance avoid orientation is the desire to avoid demonstrating incompetence and unfavourable judgments. Performance avoid more than performance prove orientation leads individuals to shy away from challenges, because performance prove orientation can also lead people to see challenges as opportunities to outperform others (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002).

Goal orientations manifest themselves as stable traits and as situationally induced

states (Button et al., 1996; Payne et al., 2007). We focus on goal orientations as states for three interrelated reasons. First, the relationship between traits and performance operates through states (Kanfer, 1990); state orientations have more proximal effects on performance than trait orientations (Payne et al., 2007). Second, state orientations have the managerial advantage that they are dynamic and malleable. Regardless of trait orientation, situational cues can induce a particular state orientation (Kozlowski & Bell, 2006). Thus, an understanding of such influences can be used to manage teams. Third, members can experience a shared state orientation when exposed to the same influence (Dragoni, 2005; Dragoni & Kuenzi, 2012). This sharedness is particularly relevant for the challenges of radical innovation that may often require the concerted efforts of the entire team. Research in team cognition shows that team efforts are more likely to be effective when they are guided by a shared understanding (Salas & Fiore, 2004), and shared goal orientations should be no exception in this respect. This research also suggests that influences resulting in such shared understanding are more conducive to successful team performance than influences directly targeting behaviour, because an understanding of the reasons underlying required actions allows people to respond more proactively and unmonitored to situational demands than behavioural instructions not supported by an underlying understanding of the reasons for these actions (van Knippenberg, van Ginkel, & Homan, 2013).

Convergence into a shared state may occur when members encounter the same cue signalling the goals and behaviours that are desired, discuss those cues, and thus build and reinforce each other's goal orientation (Bunderson & Sutcliffe, 2003; Porter, Webb, & Gogus, 2010). Team goal orientation can thus be understood as a team level construct just as other team emergent states (Chen, Mathieu, & Bliese, 2004; Morgeson & Hofmann,

1999); a conclusion underscored by Edmondson's (2003, 2012) distinction between team learning and performance frames in technology adoption. Team cognition research suggests that such shared orientations are particularly influential because they lead members to mutually reinforce these orientations (Kozlowski & Bell, 2003). Team goal orientations concern shared goal priorities for the team - not for individual members – in relation to an achievement situation; in radical innovation, goal orientations thus concern goal priorities in pursuing the development and implementation of a team's innovation.

Dragoni and Kuenzi's (2012) analysis of leadership's influence on team goal orientations suggest that convergence into shared goal orientations may be quite common. Leadership by nature conveys goal priorities (e.g., to learn, demonstrate competence, or avoid failure) in team interactions. By reinforcing the kind of behaviour they expect from members, providing feedback on whether members have met these expectations, and rewarding those who do, leaders may induce a specific goal orientation among team members. When members differ in their openness to the goals advocated by the leader, debates inspired by such differences can be conducive to creating a shared understanding of goal priorities, especially when guided by a leader who encourages team reflexivity. Team reflexivity refers to a process of collective reflection on, and adaption of the team's objectives, strategies, and processes (West, 1996). This may lead members to arrive at a shared understanding of goal priorities and goal-directed behaviour (West, 2002). The combination of leadership, reflexivity, and mutual reinforcement may result in a shared goal orientation – something we propose is highly relevant to team radical innovation. Note that this is not to say that it is necessarily always the team leader that enacts this leadership role. In teams, leadership may acquire a shared quality where different members at different times fulfil different leadership roles (Pearce & Conger, 2003).

Teams will not always have a shared goal orientation, and diversity of orientations may seem a way of combining the benefits of different goal orientations. Three considerations argue against this. First, state orientations override trait orientations and states may converge over time (Dragoni, 2005; Porter et al., 2010), effectively negating diversity in (trait) orientation. Second, even when it is possible to maintain diversity in goal orientation, such diversity is associated with disrupted team process due to lack of coordination and communication (Nederveen Pieterse, van Knippenberg, & van Ginkel, 2011). Third, limiting one orientation to a subset of members limits team access to a wider range of external contacts (e.g., some of these would only be sought out by learning-oriented members), leading to reduced performance (cf. Reagans et al., 2004). Radical innovation often demands an "all hands on deck" response, and such diversity would thus be problematic. Shared orientations thus are the more obvious focus for radical innovation.

2.3. Theory and Propositions

To develop our model, we analyse the relationships between goal orientation and four team behaviours central to the radical innovation process. The initial submission of radical innovation ideas to management and the continued submission of radical innovation ideas even after failure is encountered are necessary starting points for radical innovation. Proposition 1 captures how goal orientations influence the innovativeness of the idea pursued by teams as well as team responses to idea failure. Proposition 2 draws on Ancona and Caldwell's (1992; cf. Kanter, 1988) typology of external communication behaviours associated with two critical tasks in the innovation process: idea development

and idea promotion. Throughout the process development and refinement of ideas is needed. At the same time, teams must continuously promote their ideas to secure wavering support from management. We argue that different goal orientations are more productive for different external communication strategies related to idea development and idea promotion. These first two propositions are important in capturing the relationship between team state goal orientation and innovation, but they are also instrumental in setting the stage for the main contribution of our study, the notion of adaptive shifts in goal orientation in response to specific challenges in the radical innovation process. Proposition 3 and 4 capture how shifts in goal orientation in response to unpredictable changes in task demands and environmental conditions increase radical innovation success, and how ambidextrous leadership that adaptively shifts goal priorities is key in achieving such shifts in goal orientation.

For ease of presentation and because our analysis leads us to identify shared orientations as highly relevant to success in radical innovation, we present our analysis in terms of a comparison of different shared goal orientations. We recognize that absent the leadership and team dynamics we highlight in our analysis, orientations are less likely to be shared, and our analysis can also be understood in terms of more or less sharedness of orientations. For instance, when we argue that a shared learning orientation results in more radically innovative ideas than shared performance prove and performance avoid orientations, this can also be understood to imply that a shared learning orientation results in more radically innovative ideas than diversity in goal orientation.

Our analysis concerns radical innovation and is inspired by the challenges associated with radical innovation. Even so, the goal orientation influences we consider may also be relevant for incremental innovation. Therefore, at each step in our analysis we briefly

consider how the influences we highlight are stronger for radical than for incremental innovation.

2.3.1. Team Goal Orientation and Idea Innovativeness

Radical innovation often flows from discretionary initiatives rather than from teams being charged with an innovation project. Because team formation is likely to overlap considerably with ongoing development of the initial idea, these teams have a choice in the radicalness of the innovation they pursue. An important question therefore is what motivates teams to pursue more radical ideas. We propose that team goal orientation is a key driver here. The reason for this is twofold: radical innovation asks for learning and radical innovation carries a high risk of failure with respect to project survival. Goal orientations map directly onto these challenges.

The more radical the innovation, the less teams are able to rely on prior competencies, knowledge, and experience, because these may in part or whole be inadequate or extraneous (Song & Montoya-Weiss, 1998; Veryzer, 1998). This means that teams must invest in developing new competencies and knowledge to be able to successfully pursue radical innovation – learning and development is an integral part of the radical innovation process. Learning from failure in particular is essential. Failure to survive takes at least two forms in radical innovation. First, radical innovation requires investments in new technologies and markets with greater uncertainty than incremental innovation (Danneels & Kleinschmidt, 2001; Garcia & Calantone, 2002). As a result, management is less willing to develop radical innovation projects (Schmidt, Sarangee, & Montoya, 2009). Teams need management support for their ideas, and there thus is an incentive to show

restraint in the radicalness of the ideas proposed. Second, setbacks in idea development are more likely in radical innovation. The development process for radical innovations is often unpredictable and fraught with delays and unanticipated changes, making the possibility of failure to survive a tangible reality (Leifer et al., 2000). As a consequence, the pursuit of radical innovation may be perceived to carry substantial career and reputational risks (Janssen, van de Vliert, & West, 2004; Yuan & Woodman, 2010). If members desire to reduce the likelihood of failure, they may opt for less radical alternatives. Thus, unless teams pursuing radical innovations respond effectively to negative feedback and rejection from senior management, and view failure as an opportunity to learn, the stream of radically new innovation ideas critical for organizational growth will decline (Cooper, 2005).

A learning orientation leads teams to value experimentation and learning from mistakes, to perceive challenging tasks as opportunities for growth and development, and to set more difficult goals (cf. Payne et al., 2007). The unprecedented performance features required in radical innovation represent a distinct development challenge – more radical innovations offer more learning opportunities (Maidique & Zirger, 1985; McDermott & O'Connor, 2002). Teams with a stronger learning orientation should therefore pursue more radical innovations, because they are more willing to accept the greater risk of failure associated with the development of radical innovations. This focus on more radical innovation can evolve from team discussions of alternative options that culminate in the decision to prioritize a given idea. Such discussions are likely to be shaped by learning goal priorities (e.g., as emphasized by the team leader) and thus give rise to a process in which members discuss and mutually reinforce these goal preferences (e.g., confirming that the risk of failure to get approval should not be a dominant concern,

or pointing to learning opportunities as an attractive feature of a particular option).

For teams with a shared performance prove orientation it is important to receive public recognition (Phillips & Gully, 1997). In this respect, there is appeal in radical innovation. Because highly innovative products are more profitable than incremental product innovations, the high recognition for successful radical innovation (Leifer et al., 2000; Yuan & Woodman, 2010) will be attractive to teams with a prove orientation. At the same time, prove orientation is likely to invite restraint in the radicalness of the innovations pursued, because greater radicalness is associated with greater likelihood of failure. Prove orientation may thus motivate the pursuit of radical innovation to a certain degree, but less so than learning orientation. As with learning orientation, the influence of performance prove orientation too can be expected to flow from the influence of leadership emphasizing a prove orientation on member preferences as well as on the way the decision process evolves under the influence of such preferences. These influences will invite a process in which prove orientation-inspired positions are reinforced (e.g., confirming the risk of failure to get approval as a concern, emphasizing the recognition that may be gained if a certain idea is successfully implemented) resulting in a shared prove orientation.

Teams with a performance avoid orientation are driven by fear of failure. The challenges of radical innovation will thus discourage avoid-oriented teams. Indeed, to the extent that innovation teams with an avoid orientation would emerge, they can be expected to focus on less radical innovation for which the innovation process is more predictable and the potential outcomes more certain. Such teams would pursue less radical innovation than teams with a prove or learning orientation. This effect of team avoid orientation too will flow both from its influence on member preferences and its

influence on the team process (e.g., leading team members to emphasize the risk of failure of more radical ideas).

In responses to idea rejection goal orientation is important, because different orientations create different cognitive frameworks for the interpretation of failure (Dweck, 1986). Moreover, idea rejection is likely to invite discussion within the team – sensemaking to determine how to understand the negative outcome and how to move ahead – and goal orientations as shared states will help shape such discussions to reinforce conclusions consistent with the goal orientation.

From a learning orientation perspective, failure is not necessarily discouraging. The development of mastery has priority, and failure in performance need not reflect lack of development. Because the emphasis is on improvement, unsuccessful performance is also not necessarily seen as indicative of future unsuccessful performance. Rather, failure may be an invitation to work towards improvement, because it is a challenge suggesting opportunities for learning and development. Performance that is less successful than expected thus holds little discouragement for learning-oriented teams that prioritize team learning behaviors such as seeking feedback and openly and collectively reflecting on results, talking about errors, and discussing unexpected outcomes (Edmondson, 1999). The experience of idea failure to survive thus need not motivate more restraint in the radicalness of innovations pursued in the future.

Prove and avoid orientations put the emphasis on performance success, either in being successful or in avoiding failure. As a consequence, failure is more salient and more negative for people with a performance orientation than for people with a learning orientation (Farr et al., 1993). Because the emphasis is not on improvement but on seeking out opportunities that are expected to result in success, performance that is less

successful than expected is likely to motivate less ambitious goals in the future (VandeWalle, 2003) – a process that will be reinforced by the shared nature of team performance orientation (cf. Morgeson & Hofmann, 1999). Thus, failure of an idea to survive is likely to encourage teams with a prove or avoid orientation to aim for less radical innovations on future occasions. Teams with a shared performance prove and a performance avoid orientation will differ in how strongly they respond to failure, however. Avoid orientation inspires a tendency to withdraw from challenge by pursuing less ambitious goals to avoid negative performance evaluations. Thus, failure of an innovation idea to survive will result in decreasing innovativeness. Teams with a prove orientation will to a certain degree also lower their ambition level in terms of the radicalness of innovations they seek, but this tendency is attenuated by the payoff social recognition when the challenges of radical innovation are met. The reduction in ambition level after idea rejection is thus likely to be smaller for teams with a prove orientation than with an avoid orientation.

Proposition 1a: Innovation teams with a shared learning orientation are more likely to pursue highly innovative ideas, and are more likely to continue to do so after failure of an initial idea, than teams with a shared performance prove or avoid orientation.

Proposition 1b: Innovation teams with a shared performance prove orientation are more likely to pursue highly innovative ideas, and are less likely to reduce the innovativeness of ideas pursued after failure, than teams with a shared performance avoid orientation.

As we outlined in sketching the background to our analysis, radical innovation projects are associated with greater uncertainties and less structured processes as well as with more setbacks and a greater risk of failure than incremental innovations. They are

also associated with more agency for members in shaping their project ambitions. Through this combination of characteristics, the influence of goal orientations will be stronger for radical innovation projects than for incremental innovation projects, both because their less structured nature gives more room for goal orientations to play out and because the greater challenges they are associated with speaks more strongly to the (de-)motivating potential of goal orientations.

Proposition 1c: The associations between team goal orientations and the pursuit of highly innovative ideas are moderated by innovation type such that the relationships are stronger for radical innovations than for incremental innovations.

2.3.2. Team Goal Orientation, External Communication Strategies, and Innovation Implementation

Innovation requires more than idea generation and development. Teams and their project champions must actively promote their ideas within the organization to build support and obtain resources (Howell & Shea, 2006; Sandberg, 2007). Attracting financial support is a continuous challenge and often makes the difference between survival and shutdown (Kanter, 1988; Leifer et al., 2000). Teams also face deficiencies in knowledge and skills. Members typically look to acquire these missing resources by tapping into their informal network. As a result, radical innovation teams (not just their champions) spend extraordinary amounts of time dealing with resource and competency acquisition activities (Ancona, Bresman, & Kaeufer, 2002; Reagans et al., 2004). Ancona and Caldwell (1992) identified three strategies teams used in their external communication activities. *Technical scouting* combined task coordination (gathering information, solving technical problems with groups or individuals outside the team) with

scouting activities involving the search for information and feedback from other groups and individuals. An *ambassadorial* strategy focused on mobilizing external support and obtaining resources from others. A *comprehensive* strategy combined technical scouting and ambassadorial activities, and seemed most successful. Thus, we argue that a combination of technical scouting and ambassadorial activities is critical for radical innovation. Ambassadorial activities are crucial to obtain resources and secure organizational support. Technical scouting is essential for the learning required for the development of radical innovations.

To understand how goal orientation may inform team external communication activities, we conceptualize these activities as feedback seeking regarding ideas and solutions rather than performance in the narrow understanding of the term. Feedback in this broader sense is linked to information search, problem-solving, and evaluations of how the idea or technology could be improved. This conceptualization enables us to consider the goal orientation influences that have been identified for feedback seeking to inform our understanding of goal orientation as a predictor of external communication activities.

The perceived benefits and costs of feedback seeking are the primary consideration underlying whether individuals will seek or avoid feedback, such that the desire for useful feedback is often in conflict with the desire to protect one's ego from negative feedback (Ashford & Cummings, 1983). Feedback seeking can also serve impression management to enhance or create a favourable image (Morrison & Bies, 1991). This may for example lead to seeking feedback after a success to bring that success to others' attention. The motive for seeking feedback also influences the source from which feedback is sought, and whether feedback seeking is contingent on the anticipated valence of the feedback.

When feedback seeking stems from a concern with a favourable image, one is likely to prefer sources with legitimate power and authority – provided that negative feedback is not anticipated, in which case feedback will be avoided (Morrison & Bies, 1991). In contrast, when feedback seeking is driven by a desire for information, sources that have the expertise to provide useful feedback are preferred, regardless of their power and regardless of the anticipated valence of the feedback.

Learning orientation leads people to emphasize the informational value of feedback (VandeWalle & Cummings, 1997). Team learning orientation will thus motivate seeking information and feedback from expert peers, irrespective of whether feedback is expected to be positive or not. Prove orientation, in contrast, is associated with feedback seeking as a tool in impression management (Tuckey, Brewer, & Williamson, 2002). This implies limiting feedback seeking to powerful sources from which positive feedback can be expected. Prove orientation thus motivates less technical scouting than learning orientation. Avoid orientation is positively related to the perceived costs, and negatively related to the perceived value, of feedback (VandeWalle & Cummings, 1997). For avoid orientation the primary concern is with the possibility of negative feedback, which is viewed as best avoided because it implies unfavourable competence judgments (Payne et al., 2007). It thus motivates less scouting than learning orientation. These goal orientation influences will flow from effects on individual action tendencies and team interactions encouraging or discouraging certain activities (e.g., enthusiastic responses to new insights brought from outside of the team inspired by learning orientation, displeasure concerning the fact that the team's struggle with problems was shared outside the team at the risk of making the team look incompetent inspired by avoid orientation).

Ambassadorial activities are partly concerned with "selling" the idea. Impression

management is a key element to convince managers of the quality and viability of the project. Strategically highlighting accomplishments and conveying a positive image of the project is an integral part of this. Ambassadorial activities can be seen as revolving around gaining the approval that prove orientation drives people to seek. Teams with a stronger prove orientation can therefore be expected to engage in ambassadorial activities more. Because success in ambassadorial activities is never guaranteed, and avoid orientation is a concern with avoiding looking bad more than with trying to look good, avoid orientation will not motivate ambassadorial activities. Learning orientation too does little to encourage such activities. Prove orientation can thus be proposed to lead to more ambassadorial activities than avoid and learning orientations. These influences will derive from effects on action tendencies as well as team interaction encouraging or discouraging ambassadorial activities (e.g., discussing ways to sell the idea to management inspired by prove orientation, counselling restraint in taking the idea to management inspired by avoid orientation).

Of course, all this is not to say that idea development will necessarily completely stop or is irrelevant when there is a need for idea promotion, or conversely that it does not make sense to promote ideas when there is a need to address development challenges. Rather, the issue is that radical innovation is frequently associated with urgent challenges requiring that the one focus is prioritized at the expense of the other. In meeting such "all hands on deck" challenges that are critical to innovation success, it is therefore more effective to prioritize one goal orientation.

Proposition 2a: Teams with a learning orientation are more likely to engage in technical scouting activities than teams with a performance prove or avoid orientation.

Proposition 2b: Teams with a performance prove orientation are more likely to

engage in ambassadorial activities than teams with a learning or performance avoid orientation.

Following from the differences between radical and incremental innovation projects described in the previous, we can see that radical innovations require more intense and less anticipated technical scouting activities and ambassadorial activities that call more strongly on the teams as a whole to meet challenges in "all hands on deck" situations. Accordingly, we propose that the influence of team goal orientations is stronger for radical innovations.

Proposition 2c: The associations between team goal orientations and technical scouting and ambassadorial activities is moderated by innovation type such that the relationships are stronger for radical innovations than for incremental innovations.

2.3.3. Adaptive Shifts in Team Goal Orientation to Meet Changing Challenges

Technical scouting for idea development and ambassadorial activities for idea promotion represent conflicting demands, because there is a trade-off between investment in developing ideas and in promoting ideas. Our analysis thus suggests that in innovation, there is no "best" goal orientation: the orientation that is most conducive to the one activity may detract attention away from the other. Moreover, these activities are not partitioned into distinct phases in the innovation process; teams are likely to go back and forth between different demands. Leifer et al. (2000) observed that radical innovations are defined not only by technical and market uncertainties, but also by organizational and resource uncertainties (e.g., how to deal with changes in management support, how to acquire resources and competencies). These uncertainties fluctuate over the life of the project and create unanticipated challenges. Each type of uncertainty is also associated

with critical events that if ignored are likely to shut down the project, such as a major setback in technological development or changes in the firm's strategic priorities. The team has to address these uncertainties. Depending on the specific challenge, this may require activities that benefit from a learning orientation, such as external scouting for information and responding to setbacks, or ambassadorial activities to ensure support from management that benefit from a performance prove orientation. Ideally, teams in pursuit of radical innovation would thus combine these two goal orientations.

Because only one goal orientation can take priority as a state, it is not feasible to meet these challenges by simultaneously adopting learning and performance prove orientations. This would also not be realistic; it is virtually impossible to pay attention to all four types of uncertainty simultaneously, and typically some uncertainties are temporarily ignored in favour of others at different times in the project (McDermott & O'Connor, 2002). Discontinuities and crises require rapid responses and teams must deal with these quickly and successfully or risk losing the support of the organization (Leifer et al., 2000). Thus, although subsets of members may focus on technical scouting while others focus on ambassadorial activities during more regular working periods, when the project is faced with an unexpected crisis teams need to adopt an "all hands on deck" approach to respond effectively (Leifer et al., 2000). We therefore propose that the more promising approach to balance the conflicting demands of radical innovation is to switch team goal orientations in response to the demands of the situation.

Proposition 3a: Teams are more likely to be successful in innovation when they switch between learning and performance prove orientations to match changing demands in idea development (learning orientation) and idea promotion (performance prove orientation).

The proposition should hold more strongly for radical than for incremental innovation,

because radical innovations are associated with bigger and more unpredictable challenges.

Proposition 3b: The relationship between adaptive shifts in team goal orientations and innovation success is stronger for radical than for incremental innovation.

2.3.4. Collective Shifts in Team Goal Orientation States: A Process Model

Dragoni (2005) highlights two issues that speak to the feasibility of adaptive shifts in team goal orientation. First, as an emergent state (a shared psychological state that both influences and is influenced by team processes; Marks, Mathieu, & Zaccaro, 2001), team goal orientation is malleable and influenced by salient cues in the team context. Second, team goal orientation may emerge from members' shared perceptions of the leader's goal priorities. Thus, team leaders may strategically adapt their communications about goal priorities to meet changing project demands. The challenges of radical innovation lend themselves well to such adaptive switches. Teams are faced with discontinuities, crises, and setbacks that need to be dealt with swiftly or risk project termination. Such events allow teams to stop and think about their work progress (Okhuysen, 2001). Viewed as windows of opportunity for team adaptation, such pauses provide moments for team reflection and shifting priorities. We propose that it is a key function of team leadership to use such windows of opportunity to engender switches in team goal orientation.

The functional leadership perspective holds that in dynamic environments a key function of leadership is sensemaking and sensegiving: identifying challenges facing the team, and creating a shared understanding of these challenges and of the ways to address them (Morgeson, 2005; Morgeson, DeRue, & Karam, 2010). Leaders need to be attuned to developments outside the team because many of the problems teams face originate in the environment (Ancona & Caldwell, 1992). Confronted with challenges, leaders should

build shared understanding of these challenges and of how to meet them. To the extent that this requires a change in priorities from idea development to idea promotion or vice versa, leaders should thus engender a shift in team goal orientation. Here, leaders can essentially rely on the processes discussed earlier. They can build shared understanding by communicating their own understanding and encouraging reflection on these challenges (Morgeson, 2005; van Ginkel & van Knippenberg, 2012). When this includes an emphasis on goal priorities, leadership represents a clear situational cue to influence members' goal orientations (Dragoni, 2005). For instance, when leaders explain that the aim is to develop and refine an idea, and that in order to achieve this they should focus on enhancing their level of knowledge and skills related to the idea and master the underlying technical know-how required to implement the idea, members are more likely to adopt a learning orientation. In contrast, when leaders instruct members that the aim is to promote an idea, and that to achieve this they need to show that the idea is valuable and demonstrate that they are able to implement it, members will more likely adopt a performance prove orientation.

In principle, any member may act as a catalyst for shifts in goal orientation by identifying and creating awareness of environmental challenges (cf. Pearce & Conger, 2003). However, given the strong leadership presence of the project champion in radical innovation teams (McDermott & O'Connor, 2002), we argue that shifting goal orientation relies primarily on the team leader. The leadership we propose as effective in engendering dynamics shifts in goal orientation is leadership that adapts the goal priorities communicated. This conceptualization of leadership deviates from the dominant perspectives that sees leadership as a specific style that relies on consistency (Kozlowski, Watola, Jensen, Kim, & Botero, 2009). It is well-aligned, however, with the more recent

view of *ambidextrous leadership* (Rosing, Rosenbusch, & Frese, 2010; Vera & Crossan, 2004). Ambidextrous leadership balances opposing demands by alternating between behaviours that are conducive to one of the demands (Raisch & Birkinshaw, 2008l; Rosing, Frese, & Bausch, 2011). Here, we link the principle of ambidextrous leadership to sensemaking and sensegiving to engender shifts in team goal orientation. The core of ambidextrous leadership for team goal orientation lies in the leader's flexibility to adapt the dominant team approach to goal achievement by changing the emphasis the leader puts on learning or performance prove goal priorities.

Proposition 4a: Ambidextrous leadership shifting the emphasis in goal priorities and fostering a shared understanding of such priorities in the team in response to changing task demands induces shifts in team goal orientation.

Proposition 4b: Teams with ambidextrous leaders dynamically switching between learning orientation during idea development and performance prove orientation during idea promotion are more likely to succeed in radical innovation than teams with leaders prioritizing fixed team goal orientation throughout the innovation process.

These processes will play out primarily for radical innovations, because these more than incremental innovations are associated with challenges that require the whole team to respond.

Proposition 4c: The relationship between ambidextrous leadership switching between learning orientation for idea development and performance prove orientation for idea promotion, and innovation success is stronger for radical than for incremental innovation.

In summary, our analysis shows how ambidextrous leadership switching goal priorities can respond to challenges in the innovation process by inducing shifts in team goal orientation. Challenges in idea development require learning goals; challenges in

idea promotion require performance prove goals. These goal orientations in turn invite goal-directed behaviour for idea development (learning orientation) or idea promotion (performance prove orientation). These responses may invite new challenges, which may be challenges within the same domain (development or promotion) or in the other domain. Adaptive responses to challenges lead to more success in innovation development and implementation. Because teams that pursue radical innovation ideas are more likely to do so when they have been encouraged to focus on learning rather than performance goals, we propose that a learning goal orientation may be seen as the preferential state for radical innovation teams. Thus, during periods when there is no immediate threat to the innovation's survival, or once an idea promotion challenge is resolved, innovation teams are likely to resume their regular development activities and return to this preferential learning goal orientation. The same process that leaders use to engender a shift to a performance prove orientation can also be used to "call off" that orientation when the challenge is met and return to a learning orientation is desirable.

2.4. Implications And Conclusions

Radical innovation is a complex process characterized by conflicting task demands that require adaptive performance strategies. Teams must act as dynamic systems that respond to shifting demands. We propose that team goal orientations play a key role in this process, and thus advance the understanding of team radical innovation by integrating insights from research in goal orientation and radical innovation. We extend theory by introducing the notion of adaptive shifts in goal orientation and ambidextrous leadership in bringing about such shifts.

2.4.1. Theoretical Implications

Whereas the concept of shared goal orientation is not new, the notion of collective shifts in state goal orientation to facilitate adaptive team behaviour is. Our model thus extends the study of team goal orientation to a more dynamic perspective on how adaptive shifts in goal orientation states can occur across time. Moreover, there is virtually no research analysing team cognition, behaviour, or interaction processes in relation to the unique challenges associated with radical innovation. By integrating these two literatures, we encourage greater theoretical and empirical exploration of the links between team-level constructs and innovation. In addition, research shows that a learning orientation is generally associated with positive performance outcomes and a performance avoid goal orientation with negative performance outcomes, whereas the effect of performance prove orientation is less conclusive (Payne et al., 2007). Our model demonstrates how both learning and performance prove orientations can be advantageous for team innovation, albeit at different points in the process. Adaptive shifts in goal orientation present one way to facilitate team performance. Future analyses could suggest alternative forms of combining the best of both learning and performance prove goal orientations at the team level.

2.4.2. Research Implications

Innovation is a process that is best studied in longitudinal designs (Van de Ven, 1986). To test our model, research would need to capture shifts in goal orientation as teams encounter the challenges involved in developing and implementing their ideas. This requires real time data collection of team goal orientation across adequate time intervals.

To achieve this, a combination of participant observation to document events in real time and follow-up with semi-structured interviews to understand the significance of events and team members' responses to the events is well-suited (cf. Mintzberg, 1973). Another useful tool is the diary method (Bolger, Davis, & Rafaeli, 2003), especially in its sophisticated form of experience sampling, which requires respondents to provide systematic self-reports in response to an electronic pager that signals at random times during working hours (Hektner, Schmidt, & Csikszentmihalyi, 2007).

The leadership and team processes we have discussed explain how and why switching team goal orientations may increase innovation success, but we have not identified factors that influence more or less effective switching of goal orientations. We note two areas of theoretical and applied interest here. First, our model requires that leaders are able to recognize when switching goal orientations is optimal. Boundary spanning may explain why some leaders are better at timely adapting team goal orientations than others (cf. Fleishman et al., 1991; Hackman & Walton, 1986). Leaders who take on boundary spanning roles are able to link their teams to the broader environment by keeping abreast of external developments that may impact team progress and by making sense of what these changes mean for the team. Similarly, leaders who are attuned to internal team processes are also more likely to facilitate timely switching of team goal orientations. For example, switching may be more effective during transition phases when teams are focused on evaluation or planning to guide goal accomplishment than during action phases when teams are actively engaged in activities directly leading to goal accomplishment and there is less time to reflect (cf. Marks et al., 2001).

Second, research on leadership shaping team understanding of the challenges facing the team is scarce (van Ginkel & van Knippenberg, 2012). We proposed ambidextrous

leadership to induce shifts in goal orientation, but did this in relatively broad strokes. More fine-grained analysis may determine how and when such leadership can be most effective. Leader characteristics or the relationship between leader and team may for instance give leaders credibility in advocating changing priorities rather than conveying a picture of inconsistency (e.g., the leader's track record in radical innovation). Such research may also develop our understanding of the effectiveness of formal versus shared leadership in taking in this regard.

2.4.3. Practical Implications

Goal orientation serves as a framework for effective adaptation of team goal-striving to meet the changing requirements of innovation development and implementation. This approach holds team leaders responsible for recognizing when achievement priorities need to be switched and which priority is most relevant for a specific task, as well as for communicating the need for such shifts to team members. This approach is consistent with the functional perspective on leadership, which emphasizes the role of leaders in linking teams to the organizational environment and to be attuned to external developments that could impede goal achievement (Fleishman et al., 1991; Hackman & Walton, 1986). Leadership development programs aimed at developing capabilities for adaptive switching of achievement priorities, and for effectively communicating changing goal priorities, would be important here.

2.4.4. Limitations

Earlier in the paper we explained the contextual boundaries of our model as being limited to large mature firms that are committed to radical innovation but struggle with

the development and implementation process. In this section we wish to expound on the theoretical limitations of our model. First, the temporal aspects of our model assume that teams have time to respond to innovation challenges since team goal orientation shifts entail reflexive processes that require elaborate team discussion. Our model may therefore be less applicable to innovation teams operating in high velocity environments where innovation speed is critical (cf. Eisenhardt, 1989). Second, at the team level, a team's ability to dynamically shift goal orientation states is dependent on members' ability to coordinate through communication. Teams in which members are geographically distributed experience more difficulties with communication and conflict than teams in which all members are collocated and communicate face-to-face (Hinds & Bailey, 2003). Collocated innovation teams are therefore more likely to benefit from dynamic goal orientation shifts than geographically distributed innovation teams.

2.4.5. Conclusions

Considering the importance of radical innovation to organizational viability and the key role teams play in this process, understanding team radical innovation is of great theoretical and practical importance. Our study contributes to this understanding through the analysis of team goal orientations in radical innovation. For innovation success, we see this role as adaptive to meet the changing demands of the radical innovation process. Likewise, we see a key role for team leadership in guiding teams through these adaptive shifts in team goal orientation. With a rich research tradition in goal orientation to build on, this analysis should provide fertile ground for further development of our understanding of the dynamics of team radical innovation.

Chapter 3

Innovation Ownership Struggles: Psychological Ownership and Control in the Innovation Process

ABSTRACT

Scholars frequently adopt a rational approach to studying innovation, yet it is well-known that the innovation process is fraught with irrational decision-making, relational power dynamics, and other human aberrations (Brown & Eisenhardt, 1995). Embracing the latter approach, we blend theoretical perspectives on psychological ownership (Pierce, Kostova, & Dirks, 2001; 2003), territoriality (Brown, Lawrence & Robinson, 2005) and workplace resistance (Mumby, 2005) to propose a new theoretical model explaining the inherent ownership tensions between managers and innovators in the innovation process. The model is grounded in observations, interviews, informal conversations, and archival data gathered during an ethnographic study of three R&D teams in a large, multinational organization. Specifically, we explain how *innovation ownership struggles* – discursive disputes between managers and innovators as they negotiate control over the innovation – emerge and unfold over time and examine its complex outcomes for the innovation process. We discuss the implications of our model for ownership and control structures in the innovation process.

3.1. Introduction

People are known to generate strong bonds to the objects they create or develop (Dirks, Cummings, & Pierce, 1996). Research suggests that creating an object is one of the most powerful means of generating psychological ownership—a state wherein people feel as though an object, or part of it, is theirs (Pierce, Kostova, & Dirks, 2001, 2003; Pierce, O'Driscoll, & Coghlan, 2004; Van Dyne & Pierce, 2004). Feelings of ownership may extend to material objects, but also to intangibles such as knowledge, decisions, solutions, and ideas. The process of innovation, in its broadest terms, involves the generation, development, and implementation of new ideas that are intentionally designed to bring about benefits for the organization, either as a whole or parts thereof (West, 2002). The links between psychological ownership and the innovation process seem self-evident; yet the relationship remains largely unexplored (see Baer & Brown, 2012, for an exception).

In an ethnographic study of three R&D teams in a large, multi-national consumer goods organization, we explore ownership as a key "contested terrain" (Edwards, 1979) in the innovation process. We begin by describing in rich detail the way in which contestations for ownership unfold in each of these teams over time. We introduce a novel theory of innovation ownership struggles – the ongoing struggle for control between managers who are officially responsible for the innovation process by virtue of their organizational authority, and innovators who feel a strong sense of psychological ownership and an intrinsic responsibility for their innovations.

We argue that the tensions between managers as formal owners on the one hand, and innovators as psychological owners on the other, are an inherent yet neglected aspect of the innovation process. Due to the indeterminate nature of what constitutes legitimate

ownership, managers and innovators engage in interpretive struggles that serve to either resist, accommodate, reinforce, or transform dominant meanings of ownership (Mumford, 2005; Putnam, Grant, Michelson, & Cutcher, 2005). We examine these discursive practices in order to understand how and why innovation ownership struggles unfold. In doing so, we consider both the generative and unproductive implications of ownership struggles for the innovation process.

Based on our empirical findings, we discuss how, by considering formal authority and role structures in concert with interpretive frameworks of ownership, managers can leverage innovators' strong sense of psychological ownership to increase collaborative behaviors and advance the innovation process.

3.2. Innovation, Psychological Ownership and Control

The development and implementation of any type of innovation can quickly bring the heterogeneous interests of different groups into conflict (Kanter, 1988). Frost and Egri (1991) argue that innovation is inherently a political process replete with self-interested disputes and diverse perspectives one in which goals are continuously contested and modified along the way. However, rather than viewing these tensions as either good or bad, they argue that politics is both necessary and elementary to the innovation process. Overcoming resistance to innovation is one of the most common forms of internal political struggles faced by large organizations that strive to be more innovative (Christensen, 1997). Innovation scholars agree that the successful implementation of new ideas is less likely when organizational support for innovation is lacking (Kanter, 1988; West, 2002). Senior management support, in particular, is instrumental in overcoming

organizational inertia. According to Van de Ven (1986), attracting top management attention and support for new ideas, needs, and opportunities, and triggering them into taking action, is a central issue in innovation management.

At the same time, management support entails a level of involvement and control over individual innovation projects in order to guide project teams in the right strategic direction, to encourage the effective use of resources, and to ensure that the organization's long-term strategic objectives are achieved (Poskela & Martinsuo, 2009). Too much of the wrong type of control, however, may constrain team autonomy and creative flexibility, and ultimately jeopardize team innovation success (Rijsdijk & van den Ende, 2011). Bonner, Walker, and Ruekert (2002) show that management interventions – directly adjusting project goals or processes in midstream – is negatively associated with project performance; on the other hand, participative decision-making between team members and management on strategic and operational goals, particularly during the early stages of the project, was positively related to project performance. The implication is that management's involvement in a facilitative role enhances innovation performance since it achieves clarity and specificity of goals, and results in a shared understanding of project and organizational objectives.

Yet it is unclear how such shared understanding is achieved or how disagreements between innovators and senior managers are resolved in the process. Since powerful decision makers and relatively less powerful employees are not necessarily aligned in their goals and objectives, the question of whether struggles will ensue becomes less pertinent than understanding *why* certain struggles occur and *how* they unfold over time.

3.2.1. Psychological Ownership

Psychological ownership is defined as a state in which people feel as though an object, or a part of it, belongs to them (Pierce, Kostova, & Dirks, 2001). At the core of this state is a sense of possessiveness toward a target object, which can exist in the absence of any formal or legal claim of ownership. Psychological ownership is composed of a cognitive and affective core (Pierce, Kostova, & Dirks, 2003). The cognitive component is reflected in an individual's awareness, thoughts, and beliefs regarding the target of ownership. Coupled with this cognitive state is an emotional component that is reflected in an individual's feelings of attachment and sense of personal ownership toward a target object. The state of psychological ownership therefore describes a "living" relationship between an individual and an object (material or intangible) in which the object is experienced as being closely connected to, and an extension of, the self. Thus, unlike legal forms of ownership, psychological ownership is primarily recognized by the individual who experiences this state.

According to Pierce, et al. (2001; 2003), individuals (or groups in the case of collective psychological ownership, cf. Pierce & Jussila, 2010) develop a sense of possessiveness and attachment toward a target object through three major pathways. First, exercising control over an object gives rise to a state of psychological ownership. Through the exercise of control objects come to be regarded as part of the self and individuals are more likely to perceive those objects over which they have most control as theirs. Second, people are likely to become psychologically tied to an object by virtue of their association and familiarity with it. As a result of their active participation and association with it, the object becomes known, and in the process the self becomes attached to the object. Thus, the more the object becomes known, the greater and more

intimate the connection between the individual and the target object. Third, individuals come to develop feelings of ownership towards objects in which they invest their time and energy. Some of the most powerful means by which an individual invests himself or herself into an object is to create, develop, or produce it. Through investment of the self, individuals perceive the object they created or shaped as deriving its form from their own efforts, such that the object becomes theirs.

Theory suggests that the three routes to psychological ownership are not only distinct and complementary, they are also additive in nature (Pierce, et al., 2001; 2003). Thus, ownership may emerge as the result of any single route, but a stronger and more intense sense of ownership is likely to emerge when an individual arrives at this state through multiple routes. Furthermore, although an individual can experience each route independently of the others, it is also possible that experiencing one route leads to experiencing the others. For example, control over a particular object may well result in coming to know the properties of that object and developing a deeper understanding of it.

Applying these assertions to the context of innovation, we can conclude that those who are most closely involved in creating, developing, and shaping the innovation, namely innovators, are more likely to experience all three routes and, hence, a stronger sense of psychological ownership, than those who may be less closely involved, namely managers. This is not to say that managers will not develop any sense of attachment towards the innovation. On the contrary, managers may come to experience psychological ownership as a result of their formal control over the innovation. However, compared to innovators, managers' psychological ownership is likely to be less intense.

3.2.2. Territoriality and Resistance

Central to the notion of psychological ownership, is the perceived right to influence what happens to a target of ownership. Specifically, feelings of ownership are associated with the right to information about the target, as well as the right to have a voice in decisions that impact the target (Pierce, Rubenfeld, & Morgan, 1991). Psychological ownership may therefore promote a deep sense of responsibility towards the ownership target. This felt responsibility includes the responsibility to invest time and energy in advancing the target – to protect it, to care and make sacrifices for it, and to nurture and develop it. Thus, the stronger the sense of psychological ownership, the deeper the sense of felt responsibility (Pierce, et al., 2003). Intense feelings of responsibility may lead to other positive organizational attitudes and behaviors including stewardship (Hernandez, 2012), commitment and devotion to the ownership target, as well as personal sacrifice and the assumption of risk on behalf of the target (Pierce, et al., 2001, 2003). Stewardship is a particularly noteworthy outcome of psychological ownership in terms of how it relates to innovation. Defined as "the extent to which an individual willingly subjugates his or her personal interests to act in protection of others' long-term welfare" (Hernandez, 2012, p. 174), stewardship reflects a sense of duty or obligation to uphold a covenantal relationship with the organization. Similarly, innovators with a strong sense of psychological ownership are likely to perceive themselves as stewards of the innovation. As a result, they tend to believe that they are morally obligated to act in the best interests of the innovation and are internally motivated to nurture and protect the innovation.

Yet, psychological ownership also has a dark side. Individuals may become overly possessive of the ownership target, be unwilling to share it with others, or may feel the need to retain exclusive control over it (Pierce, et al., 2001, 2003). Psychological

ownership is therefore equally likely to give rise to territoriality – actions or behaviors aimed at "constructing, communicating, maintaining, and restoring territories around those objects in the organization toward which one feels proprietary attachment" (Brown, Lawrence & Robinson, 2005, p. 578). Territorial behaviors, in turn, are not only likely to impede creative collaboration (Baer and Brown, 2012), but may also lead to workplace deviance (Avey, Avolio, & Crossley, 2009). Workplace deviance is defined as voluntary behaviors that violate group or organizational norms and threaten the well-being of its members, ranging from minor deleterious acts such as spreading rumors and undermining coworkers to more serious acts such as theft and sabotage (Robinson & Bennet, 1995). In this paper, we concentrate on a specific yet more complex form of deviant behavior referred to as "routine resistance" (Scott, 1985).

Prasad and Prasad (2000) broadly describe workplace resistance as "any workplace action that either symbolically or substantively contains oppositional or deviant elements" that is not only informal and unorganized (as compared to collective protests and strike actions), but is also less visible, less dramatic, and therefore harder to uncover. This covert nature of workplace resistance, couched as it is in the mundane and ordinary actions of organizational actors, is what makes it so pervasive and routine (Prasad & Prasad, 2000; Scott, 1985). Resistance in the workplace is typically triggered by organizational control mechanisms that involve either direct coercion of employees or more subtle forms dominance. According to Brown et al., (2005), territoriality is concerned with the control of valued organizational objects over which members make proprietary claims. Consequently, any deviant behavior that results from a sense of psychological ownership and territoriality is aimed at constructing, communicating, maintaining, and restoring proprietary control. Routine resistance could therefore be

viewed as a form of workplace deviance that challenges dominant organizational control structures as a means to obtain or maintain control over the innovation.

Similar to constructive and destructive forms of deviance (Vadera, Pratt, & Mishra, 2013), routine resistance has both productive and counterproductive elements (Courpasson, Dany, & Clegg, 2012). Despite their similarities, however, it is important to note the added complexities that are central to practices of routine resistance. Unlike workplace deviant behaviors, with routine resistance it may be difficult to distinguish the harmful from the beneficial. Thus, a single act of resistance may at once be both productive and counterproductive (Prasad & Prasad, 2000). Combining its covert nature with its ambiguous implications, the intentionality behind resistant acts also becomes harder to detect. Scott (1985) argues that it is precisely because of its subtle, insidious nature that routine resistance often proves more effective than overt confrontation. Routine resistance is therefore both a specific form of deviance, but also a more ambiguous and complex one.

Maintaining this complexity is crucial for the study of routine resistance in order to avoid extremes of pitting managers as all-powerful actors seeking to exercise control at any given opportunity, against subordinates as cunning actors engaged in calculated oppositional moves (Fleming & Spicer, 2008; Prasad & Prasad, 2001). Thus, ownership – both psychological and material – represents a source of power that can be used to either support or oppose management decisions that appear controlling, but may not have been decided with the intention to control. Likewise, managers may exercise their power of control in response to actions that are perceived as resistant but could easily be interpreted as banal and mundane. Instead, we are urged to conceptualize routine resistance as jointly constructed by managers and subordinates through a series of complex discursive moves

and countermoves that are inherently intertwined (Fleming & Spicer, 2008; Mumby, 2005; Prasad & Prasad, 2001). We heed this call and adopt a discursive approach to our analysis of psychological ownership and routine resistance in the innovation process.

3.2.3. Ownership Ambiguity and "Struggles"

According to Brown, et al. (2005), psychological ownership leads to territorial behavior only if an individual feels a proprietary attachment to a target object. Thus, territoriality is not simply about expressing a sense of attachment to an object (e.g. I *love* my office!), but is primarily concerned with establishing, communicating, and maintaining one's relationship to an object relative to others in a social environment (e.g. This is *my* office and not yours!). In other words, territories are best understood as discursive constructions that only exist to the extent that they are negotiated and reproduced through social interaction amongst relevant actors (Putnam, et al., 2005). Territories therefore come into being as a result of talk and actions intended to convey social meaning regarding an individual claiming and protecting an object as his or her own.

Brown and his colleagues (2005) identified identity- and control-oriented marking as two types of territorial behaviors aimed at constructing and communicating an individual's proprietary attachment to an object. While identity-oriented marking involves marking an organizational object with symbols that reflect one's identity and serves to designate an object as a personal territory, control-oriented marking involves communicating the boundaries of a territory and clarifying to whom it belongs. Control-oriented marking is used to signal to others that a territory has been claimed and to

control access, usage, and infringement by others. It is this latter type of territorial behavior that is of primary concern in our study.

While both types of territorial behaviors emanate from a strong sense of psychological ownership towards an object, the likelihood of control-oriented territorial behaviors is further increased as the degree of ambiguity regarding ownership of a target object increases (Brown et al., 2005). When high levels of ownership ambiguity exist, organizational members are increasingly likely to begin to compete for the right to claim and control targets of ownership. Ownership ambiguity in organizations may stem from an absence of pre-existing frameworks for ownership, or from organizational changes that disrupt established ownership structures. We propose a third source of ownership ambiguity unique to the innovation process which originates from the tensions between managers who are officially responsible for and have the authority to control the innovation process, and innovators with a strong sense of psychological ownership who feel intrinsically responsible for the innovation. To this extent, ownership ambiguity between managers and innovators is an inherent aspect of the innovation process.

We argue that, due to the indeterminate nature of their relative control over an innovation, innovators and managers engage in a series of resistance and control-oriented territorial behaviors as they negotiate the boundaries and meaning of innovation ownership. By focusing on these discursive struggles (Fleming & Spicer, 2008), our aim is not to engage in an interpretive study of the meaning of ownership for different organizational actors. Instead, we are primarily occupied with exploring how managers and innovators – through competing efforts, ongoing tensions, and contradictions – attempt to shape and fix the meaning of ownership in ways that serve to resist, maintain, and transform control dynamics in the innovation process (Putnam, et al., 2005). In this

paper, we develop the theory of *innovation ownership struggles* by examining the nature and underlying mechanisms of ownership struggles between managers and innovators, and by expounding on its implications, both generative and unproductive, for the innovation process.

3.3 Methodology

3.3.1 Data Collection

Our analysis is based on an ethnographic study of three R&D project teams in a large, multi-national consumer goods organization. Projects Sphere, Leaf, and CoCell formed part of a single R&D program focused on discovering novel nutrition-based technologies that would deliver consumer health benefits. The researcher spent five days per week from September 2010 to May 2011 in the field. Before entering the field, she conducted initial interviews with each project leader in order to understand how the teams were structured, what their primary innovation activities were, and how the innovation process worked. Initially, all of the innovators in this study also held project leadership roles. Once in the field, she systematically observed various meetings in which each of the three project teams were involved. She met with each project leader every two to three weeks to identify any upcoming meetings, particularly key decision meetings and meetings with senior managers. These informal interviews with project leaders were also used to follow up on any significant events that had taken place or were still ongoing and to discuss her interpretation of those events. In addition, she also joined quarterly program review meetings with the Vice President of the R&D site. Finally, she attended monthly

scheduled project meetings for the duration of her time in the field. Mid-way through the data collection process, she conducted formal interviews with the core members of each project team, and at least two members that were responsible for operational tasks but were not involved in strategic decision making. She was also able to frequently engage in informal conversations with project members as she occupied a desk in the open-plan office shared by all three teams and frequently joined for lunch breaks in the staff cafeteria.

In total, the data corpus incorporated observations of 80 meetings (with durations of at least one hour), 46 of which were audio recorded and transcribed, and detailed notes taken in the remainder; 55 semi-structured interviews were conducted with approximately 35 project members (some were interviewed multiple times); close to 100 documents including meeting minutes some dating back to early 2010 (i.e. before entering the field), emails, presentations, reports, and organizational press releases and media items. This primary data set was backed by a set of field notes in the form of monthly field summaries. Six months after data collection was completed, the researcher returned to the field to discuss the preliminary research findings with innovators and project leaders.

3.3.2 Data Analysis

A common approach in qualitative data analysis is to begin by identifying key themes in the data, and then to extract only the most meaningful data units in order to analyze the linkages between key themes. The end result is a set of data segments that, although conceptually related, are nevertheless detached from the data set as a contextual whole. However, when the goal of analysis is to create an ethnographic account of how theoretically relevant events unfold over time, keeping the stream of actors' decisions,

actions and interpretations connected as whole becomes essential (Van de Ven, Polley, Garud, & Venkataraman, 1999; Vaughn, 2004). This becomes increasingly difficult as related data segments are dispersed across a variety of data sources. We therefore employed a 3-stage analytical process designed to maintain contextual and temporal continuity in our analysis of innovation ownership struggles (see Table 1).

Table 1. Three-Phased Analytical Process

Phase	Process	Output
1. Chronological ordering of innovation processes	Identify critical events and changes in innovation process Use of sensitizing categories	Event history database (Van de Ven & Poole, 1990)
2. Event-oriented data integration process (Vatne & Fagermoen, 2008)	Identify instances of disputes over influence and control Track sequence of related incidents Juxtapose different accounts of incidents Compile related incidents and accounts as raw data set for a particular ownership struggle	Discursive event database Narrative accounts of 3 ownership struggles (Hardy & Thomas, 2014)
3. Event sequence analysis (Griffin, 1993)	Code narratives using theoretically guided analytical framework Analyze associations between actions and events using ETHNO Identify sub-sequences or "episodes" for comparative Boolean analysis	ETHNO diagrams of causal connections between actions and events for 3 ownership struggles (Heise, 1989)

In the first stage of our analysis, we constructed a detailed *event history database* chronologically ordering events in order to capture what happened in the innovation process (Van de Ven & Poole, 1990). We used four "sensitizing categories" to identify critical events within each of the projects as well as in the wider organizational context by noting changes in the following domains: (1) Organizational support (changes in resources and endorsement from senior management, degree of interest in the technologies from business units or product divisions, and cooperation from other groups, functions, and departments in the organization); (2) Innovation strategy (changes to innovation strategies including innovation goals, ideas, and processes; (3) Organizational structure (changes in leadership, R&D programs, and team structures); (4) Outcomes (changes in innovation and project outcomes including successes and failures). We used this chronological database as the basis of our data corpus.

The second stage of our analysis focused on events that were theoretically relevant to our research question. In this study, innovation ownership struggles represent the focal unit of our theoretical analysis. Each ownership struggle involves a sequence of related incidents and events and our initial chronological analysis enabled us to track those events as they unfolded over time. We defined theoretically relevant events as disputes over who should be in control of, and/or who had the right to influence decision-making in the innovation process. This is in line with theoretical conceptualizations of psychological ownership as being associated with rights and responsibilities to control and influence a particular target of ownership (Pierce et al., 2001; 2003). We employed the Event-Oriented Data Integration process, which involves "structuring data from different sources where the total data set for one event is brought together in a systematic manner" (Vatne & Fagermoen, 2008, p. 47). This analytical process involves three steps. First,

each instance of a dispute or disagreement related to influence and control was coded; instances related to the same dispute were labeled with the same code. Next, all data excerpts related to the same dispute across different data sources (i.e. interview quotes, observations, emails, etc.) were extracted and gathered together. The resultant "data threads" related to each dispute collectively formed the raw data set associated with a particular ownership struggle. Thus, each case of innovation ownership struggles consisted of a set of related but distinct disputes. We then juxtaposed accounts from different sources to construct a *discursive event database* that depicted "who did and said what, and when" (Hardy & Thomas, 2014; Maguire & Hardy, 2013). This database was used to prepare narrative accounts of three innovation ownership struggles identified in the data.

In the third and final stage, we used the narratives produced in stage two to analyze each of the three innovation ownership struggles. A narrative is defined as the chronological, sequential ordering of events that form a single coherent story (Griffin, 1993). Narratives describe in chronological order what happened, why it happened, and how it happened. Because events are allowed to follow multiple paths to their outcome, the order and sequence of these paths logically determine the outcome of the narrative (Abbott, 1995). Through these events the researcher can observe the relationship between social action and social structure as it unfolds (Stevenson & Greenberg, 2000). We developed a theoretically guided analytical framework in order to code events and actions in each of the three narratives (Pajunen, 2000). First, we grouped events and actions related to (i) initial trigger events, (ii) discursive practices used to negotiate control between managers and innovators, and (iii) outcomes of disputes. Then, we used a

combination of inductive and theoretically derived codes to categorize each set of events and actions.

Once the narratives were coded, we used Heise's (1989) event-structure analysis (ESA) methodology to analyze causal connections among sequences of events. The narratives served as input into a computer algorithm (ETHNO) that the researcher used to generate an analytical diagram of the causal relationships and temporal dependencies between events (Griffin, 1993). We used ETHNO to analyze each of the three ownership struggles, entering the coded events and actions from each narrative into ETHNO in chronological order (see Appendices A, C, and E). For each event, ETHNO asks the researcher a series of yes/no questions about whether a temporal antecedent is required for the occurrence of a subsequent event. Once all the events are entered, and all possible temporal linkages between sequences exhausted, ETHNO produces a diagram that represents the causal connections among the sequences of events (see Appendices, B, D, and F).

ETHNO does not, however, "discover" or produce the causal connections that make up the resultant diagram. Instead, it probes the researcher for deductions about the relationships between events and to consider the sequence of events causally rather than chronologically. It is the researcher's deep knowledge and decisions about the causal linkages between events that produces the ETHNO event structure diagram. In this way, ETHNO makes it possible to distinguish temporal relationships from causal inference (Griffin, 1993). To improve the reliability of causal connections produced with ETHNO, the first author analyzed each of the three narratives and discussed the diagrams with the respondents to make more accurate decisions about causality.

Our purpose with using a narrative approach was not so much to deduce stages or phases of innovation ownership struggles as it was to capture the complex dynamics of control and resistance between innovators and managers. Because resistance and control are so closely interconnected and difficult to tease apart, we wanted to explore patterns in different combinations of managers' and innovators' practices of resistance and control. Thus, in order to compare managers' and innovators' actions within and across innovation ownership struggles, we subdivided each ownership struggle into causally connected subsequences. These were defined as sequences that had their own beginning and end point and could be separated from the other sequences of events and actions in the ETHNO diagram (Stevenson & Greenberg, 2000). We refer to these subsequences as episodes of resistance and control. The innovation ownership struggle in the Sphere project consisted of 15 episodes (see Appendix A). Innovation ownership struggles in the CoCell and Leaf projects consisted of 8 and 9 episodes, respectively (see Appendices C and E). Using our coding framework, we could then analyze similarities and differences between sub-sequences within and across innovation ownership struggles (Pajunen, 2000). In this way we were able to examine different combinations of managers' and innovators' practices of resistance and control that either reinforced dominant managerial control, dominant innovator control, or shared control over the innovation.

Finally, we compared episodes within and across all three struggles in order to understand how control over the innovation shifts between innovators and managers. We conducted qualitative comparative analysis (Ragin, 1987) to determine causal relationships between different combinations of resistance and control practices and innovation control outcomes. Using the assigned codes, we produced logical statements that summarized innovators' and managers' actions in each episode for each innovation

ownership struggle. These Boolean equations were then simplified to their reduced form in order to eliminate redundancies and identify causal mechanisms.

3.4 Findings

In the following section, we examine both the substantive and discursive aspects of ownership struggles in innovation. First, we identify and explain the properties of innovation ownership struggles. Then, we examine the underlying drivers and dynamics of innovation ownership struggles. Finally, we explore the consequences of ownership struggles for the innovation process.

3.4.1 Properties of Innovation Ownership Struggles

Our analysis of ownership disputes between innovators and managers revealed five properties of innovation ownership struggles: (i) Psychological ownership and expectations of control; (ii) Interpretive struggle for ownership and control; (iii) Acts of resistance and control; (iv) Conflict as a means to an end; and (iv) Positive and negative outcomes. Below we describe each of these properties and provide illustrative case examples (see Table 2).

Psychological Ownership & Expectations of Control. Innovation ownership struggles occur between innovators with strong sense of psychological ownership towards a target innovation and managers with formal control over the innovation but less intense feelings of psychological ownership toward the innovation. Innovators may also experience different degrees of psychological attachment to target innovations. The stronger their attachment, the more likely they are to feel a sense of possessiveness over the innovation

as though it is “theirs”. The feeling of ownership toward a target innovation therefore emerges and is strengthened as if through a living relationship between the innovator and a particular innovation. In each of the three cases of ownership struggles, the innovators either expressed, or were described by others as having, strong feelings of attachment and psychological ownership over the innovation in question. These innovators developed feelings of ownership toward target innovations by virtue of their long-term association with it and by developing deep knowledge about it. Innovations that are completely new to the organization often require huge investments of innovators’ time, effort, and commitment. The greater the investment of themselves, the stronger an innovator’s psychological ownership for that innovation will be. In the case of the Sphere project, the two innovators had worked for nearly six years “under the radar”, bootstrapping resources and time wherever they could, before the innovation was adopted as part of a dedicated R&D program. As one of the research managers explained: *“They haven’t taken their eye off this ball. I mean, it's their baby and they will stay involved with this baby.”*

Central to the state of psychological ownership is the perceived right to exercise influence and control over the target of ownership (Pierce, Kostova, & Dirks, 2000). Specifically, feelings of ownership are associated with the right to information about the target and the right to have a voice in decisions that impact the target. Individuals may have no or limited formal authority, but through a state of psychological ownership, nevertheless perceive the right to exert control over that which they experience as theirs (Pierce, Rubenfeld, & Morgan, 1991). Thus, innovators with a strong sense of psychological ownership would not only expect participation or involvement in decision making, but are also likely to expect to have substantial influence and control over what happens to the innovation, regardless of their organizational level of authority and

Table 2. Properties of Innovation Ownership Struggles

Property	Illustrative talk or actions	Interpretation of talk or actions
Psychological Ownership		
	I must say, I much more rather work on this [CoCell technology], where I feel like I'm passionate about it but I also feel like I own this area, this is the area where I own. In the [new Asia R&D Program] I feel like I'm contributing but I don't know what area I own. I'm supposed to play a certain role, but it's not that I feel authorized to own a certain area." {Interview with CoCell innovator, 23 Mar 2011}	Investment of self Proprietary attachment Expectation of control
	The Sphere innovator again expresses his concern over the entrepreneur's role and motivations: "we are teaching him all kinds of things, as well as other people who we have shaky contracts with, and if we don't have a patent we could lose all [the organization's] knowledge and ideas to others who benefit from it." The patent attorney then explains that the licensing out joint venture was not their decision, and that the decision was taken by the CTO. […] The Sphere innovator leaves the meeting early. The NBD manager says: "you can come back later." The innovator responds sarcastically: "yes thanks for the permission" and walks out the door. {Field notes, Sphere patent strategy meeting, 1 Oct 2010}	Stewardship Proprietary attachment Expectation of control
	Because it's more that, for example the Program Manager wants [to develop a technology] and for him it doesn't matter whether it comes	Emotional connection

Property	Illustrative talk or actions	Interpretation of talk or actions
	from his own project or whether it comes from the Chem team to take that example again. So it feels like he doesn't have connection to certain expertise…because we such a specialized expertise, if Leaf 3 doesn't exist anymore this is our best bet. And he saying oh we come up with a better idea we come up with a better idea. Yah that's really coming from a different, he's more coming from Design or so, that you have alternatives. But with these set of expertise, I have a certain maybe emotional connection with the expertise. So I also have to judge ok we have to, so we have to go from A to B but I really think on how the best way to get there. And he is not necessarily thinking the best way, he's thinking a way, and that if this is not working we take route B or take route C, but it doesn't mean that it is with the same people." {Interview with Leaf innovator, 06 Jun, 2011}	Stewardship Expectation of control
Interpretive Struggle		
	"But I think where we can improve is, where I feel where we could still be more clear about who is in the lead is between the more operational part, so the really project management part and who is actually in charge of giving the scientific input. And I think that is where I feel like it's not really clear to me you know how to optimally interact and that I think is something where we could still improve to make that really clear who has a certain responsibility for delivering something more from a managerial from an operational point of view but also more from a maybe strategic scientific input point of view." {CoCell innovator, Asia R&D Program meeting, 16 Dec 2010}	Ownership ambiguity Scientific expert versus managerial basis for control

Property	Illustrative talk or actions	Interpretation of talk or actions
	"Well, [the entrepreneur] I don't how it's going to end up, the problem with him is that… well the way we are organising is that he is not expert in foods, in functional foods, and so he's hardly bringing anything on the table, which is a big showstopper. We really need to educate him, he's not professional in our thinking, like having a child let's say next to us at the table, which is… I don't think it's supposed to work like this. So I don't know how it's going to end up, because they don't have a business model. […] Actually all the people which were involved they don't understand actually how it works, so they still require people like with our expertise. And the way they've done it because they haven't done it let's say properly, as you can imagine, your motivation for helping them is not the best. […] You have a let's say project leader or a work stream leader and then basically you appoint somebody from the outside, which has never been involved, without asking, without discussing. So again you're not creating the best environment to succeed in this situation." {Interview with Sphere innovator, 16 Nov 2010}	Scientific expert versus managerial basis for control Rejecting entrepreneur's claim to control Rejecting project manager's claim to control
	"So I think we have gained already that they consult us all the time, but we don't have any control or influence. They just listen, and further the way as their superiors tell them to do. But I think the first thing is if I think we have consensus on the design with the Chem team, and they are being challenged on a local level, they don't involve us to come back they just oh yeah yeah yeah yeah, then come back to us, listen here and listen, and then they prepare an answer for the stakeholders. So it feels I think it's really a mental issue that feels that you contribute a lot	Ownership ambiguity Scientific expert versus managerial basis for control Rejecting managers' claims to control Rejecting partner team's claims to control

Property	Illustrative talk or actions	Interpretation of talk or actions
	and you all work, they take the decision, they take credits for it in the meetings with the regional stakeholders. Uh if the resources are divided at the beginning of the year, they put all the resource in their own project, but they ask us to do the work. They put the resource there but that's not necessarily the real experts. So those people are promising things maybe as an expert, but uhm, need backup from here. {Interview with Leaf innovator, 06 Jun 2011}	
Resistance and Control tactics		
	The Leaf team members are reluctant to participate in a communication workshop with two product managers. The managers convinced them of the importance of their physical attendance stating that it "should be like an activity type of meeting so there's no way we can do it by phone anyway" and that it "would be good just to kind of make sure we're all in the same room bouncing ideas off one another" in order to develop a comprehensive communication plan. The innovator then explained that the team's reluctance was not due the fact that "we weren't available" but that they felt that having all four of them present at the workshop for the whole day would be "a bit too much" and that it would result in an "overlap of expertise": "So resources is one thing but also indeed what you say we should mix the expertise a bit to come to the best output I would say." The manager explains that they want the meeting to be a participative activity and that it was "about making sure that we all agree and we are aligned about the objectives" and for those reasons it would be "good if everybody all agrees with this and we are all in the	Opposition to task assigned by managers Mutually determined resistance and control

Property	Illustrative talk or actions	Interpretation of talk or actions
	room." The manager then tries to check everyone's electronic agenda for their availability: "I checked but the January schedule was not available." The innovator responded that she still has to update her online agenda for January. The manager then proposed a date and all Leaf team members agreed to participate. {Field notes, Leaf team meeting with product division managers, 12 Dec 2010}	
	The CoCell innovator discussed the lack of clarity regarding her new role as scientific advisor in the Asia R&D Program with her line manager and asked that she be allocated a more challenging role in another project. The program manager perceived her actions as resistant: "Yes, so I think what people come up with, just as last time, is they will come up with the tip of the iceberg. So they'll talk about roles and responsibility but you won't get to what's underneath […] So, I think, you know, yes, of course, we're not clear on roles and responsibility. We were not clear either in the old [program], […] but it starts with affiliation. You know? If you're strongly affiliated to the program, you want to make it work. If you're like [the CoCell innovator] you're in and out. You see that the roles and responsibility are not clear. You don't go very easy. You get out. You're not part of it. You get out. But she said it at the last core team meeting. It was, basically, I'm not in it, which I think was very, very brave from her to say that in that context." {Interview with Program Manager, 18 May 2011}	Opposition to new role assigned by program manager Mutually determined resistance and control
	"…[The innovator] and I made quite a good business case, which I still	Opposition to innovator's involvement in

Property	Illustrative talk or actions	Interpretation of talk or actions
	think is a good business case for the whole thing, with clear first steps, and we went back to [the R&D VP, the NBD Manager, and the R&D Program Manager] with that. […]There was two things: first of all, I wanted this to be either very much alive, or killed, and not something in between. And what you see from all the decisions is I didn't… nobody is really killing it, or nobody was really embracing it, and I needed either of the two […] So first of all I just found it too interesting to start the work together with [another team member] on this business case and I had the resources anyhow. […] So I simply wanted this business case because I wanted to see how this would happen. I still think we should be doing it, but it was also one of my tools to get to understand [the innovator], because this was the thing that he, as I said, I just had to ask him a question and I would have a complete answer on everything I needed within an hour on this topic […] and at the end the decision for the stakeholders was not so much on which one of these proposals to follow, because I had my ideas; [the innovator] has completely different ideas about this. What helped me a lot is using this as a vehicle also to expose his behaviour to people like the Program Manager, that we had a good presentation about the business case and the manager started questioning him and really cornering him and that discussion made it very clear to the manager what role the innovator plays, and that he doesn't do the science bit which is good, but that he starts doing the business bit which he doesn't understand, and which is not well articulated in his plans. So it helped me to expose the innovator and his role in the team, and how he does things." {Final follow-up interview, Sphere project manager, 09 Nov 2011}	business strategy Mutually determined resistance and control

Property	Illustrative talk or actions	Interpretation of talk or actions
Conflict		
	"One thing that is important with CoCell is that it is not really a stand-alone benefit. It wouldn't make sense to put a product with only CoCell on the market because in the healthy fats area, a product with only CoCell in it will not have a lot of support from the scientific community. This is where I need to hold on with [the program manager] and make sure that he understands this. He is very keen to use this case to revive the healthy fats field, especially since this study has strengthened the IP that was initially filed for CoCell. […] But I need to manage his expectations. […] He is keen on exploring both routes to market through [product division] and NBD. But he is aware of [the CRDO's] and [the CTO's] perceptions of the product division and he is afraid that they won't want to take up CoCell because it is related to healthy fats [which has been deprioritized in the new innovation strategy]. To me it doesn't matter which route we go. But if the product division wants it, and they provide the money to develop it further, then they will get it no question." {Interview with CoCell innovator explaining conflicting interests with manager wanting to outsource CoCell technology via NBD, 23 Mar 2011}	Competing interests innovator versus manager
	After the meeting the project manager and I stayed behind and talked: "what you saw there is an example of no team commitment". The innovator does not want to share any of the information with the team. The problem is that "They took his baby away from him two years ago and he is still traumatized. And now they are not nurturing it like they	Innovator's control over information generates conflict Manager resolves conflict and regains control

Property	Illustrative talk or actions	Interpretation of talk or actions
	should be." He explains that the innovator is the type of scientist who is extremely creative and always wants to work on the next new thing. He is not the kind of scientist to test hypotheses and build on that. The innovator knows that Sphere does not always work. "The other project manager and I have challenged him to find out why and under which conditions. But it's been two years now and he still hasn't done it. I would recommend to the next person who takes over this project that he be removed from the project completely. I have spoken to the program manager about it for the resource review and I recommended it. I also spoke to the innovator's line manager and she says he is more motivated by working on new things, so it is at that level that we will request that he be removed." {Field notes, Sphere project team meeting, 17 Nov 2010}	
	"…because [the Chem team] is requesting so much things. (Are you obliged to fulfill all requests?) More or less yes because the Program Manager was also very strict "oh you should push that away", and I said we are doing that with so many people, but in a way you need to please them as well, because you know if you don't please them for Leaf 2 there will be no Leaf 3. So in a way, if you remove Leaf 3, it will be easier for the people to say with Leaf 2 this is the line. Because if Leaf 3 is dependent on the success of Leaf 2, and if you see this input is required for the success of Leaf 2, you do it otherwise Leaf 3, as it is highly dependent on that, will not continue anyway. But if we decide we're don't continue with Leaf 3, then the success of Leaf 2 is not in the influence of this team anymore, it's not our roadmap anymore."	Competing interests innovator and her team versus, Chem team and managers Chem team's control generates conflict Innovator resolves conflict to maintain control

Property	Illustrative talk or actions	Interpretation of talk or actions
	{Interview Leaf Innovator, 06 Jun 2011}	
Complex Outcomes		
	"Yes, and this technology was actually survived, and the only reason why it survived was because we had this patent, and by now we have six patents. […] I mean, we were lucky enough to get approval do this study that supports this one patent finding. This, the money for this and the resources are coming actually from the product division. So it's a little bit weird, because CoCell sits still in the Asia R&D Program; there's no clarity whether it will remain in the program or whether it will be handed over to the product division. I mean, in a way, at the moment CoCell is on the books of the product division and it's on the books of the Asia R&D Program. So at the moment, you know, the product division has all the patents in their patent portfolio and they're very happy because it's patents… they can say, oh, yes, you know, it's useful technology for us. So at the moment it's a little bit on both books, which is, in a way, good, but, ultimately, when we have resources, clarity on resources, it should also become clear: is it now fully in the product and are they driving it forward or… […] Up to now, the product division hasn't paid anything. It came all up to now it's all coming from the Asia R&D Program. Now, the next study - that is on the product division's budget." {Final follow-up interview CoCell innovator, 30 Nov 2011}	Patents (+) Product division funds technology development (+) Technology in limbo (-)
	Yes, I think it was a combination of a lot of things, because we did have	Leaf 3 study cancelled (-)

Property	Illustrative talk or actions	Interpretation of talk or actions
	new R&D Director for Leaf products coming in. There was also an issue with Leaf 3 study. It was split between the Asia R&D Program, the product division project, and the Chem team's project, so there was not a clear ownership and clear commitment. So all this taken together, nobody wanted to take stake into the study, and on the other hand, when you look at [risk assessment] and the expectations of what this could deliver for [the organization], I think the incremental turnover they calculated was just not high enough to really balance against all the investments we wanted to do. So there was a lot of doubt and discussion amongst the scientists, discussion amongst the stakeholders, and it didn't bring us anywhere. What we said is, okay, we'll take a loss here, and maybe it's a good thing that this stopped. Let's take one step back and let's revise the programme and try to come to one concise agreed approach. So, we're starting a bit from scratch here. One of the things we did in our organisation now is that it is no longer part of the Asia R&D Program. Also no longer part of the Chem team. It's all moved now to the product division, so if they really want something to happen, they shouldn't rely anymore on the R&D projects. If they show true commitment, they also have to pay for it and drive it, which is a good thing. So this Leaf 3 study didn't continue. We organised a meeting where all the pillars come together to really see, okay, what do we know and is the tea fraction study as proposed really the way to go forward or can we have a smarter choice, or is there another way? So, how should the next clinical look, to make the best chances? We had a good session so we have now four pillars. One is chemistry. One is molecular analysis. One is physiology and one is in vitro work. Everything came	Leaf project team disassembled (-) Leaf innovation strategy revisited (+) Leaf project organization restructured (+)

Property	Illustrative talk or actions	Interpretation of talk or actions
	on the table. I mean, we know more than even the R&D Directors knew we know. So, I think it's a good starting point, but now we should really make the next step." {Final follow-up interview with Leaf innovator, 30 January 2012}	
	We got everything approved. Yes, and the thing that made it tip, I guess, for a person like Neal was to emphasise: no, Neal, we're doing this to strengthen IP. That's the reason why we're doing it. We want to understand the foams and if we understand the foams better and we know what's critical about the foams, we can target our patent research and create patents around those critical things of the foam. So, both studies will then be finished before the end of the year. I had set a target at the beginning of the year for six patents minimum and overachievement would have eight. Looking at that now... I think we've now filed four patents, but if you have a target like eight that means probably you want to be on the schedule of two per quarter. Now, we just actually after the first half of the year, we filed the first three. So, I already knew that we were struggling there. Now, could we catch up with five additional ones in the second half? It was clear that that would never happen; not because there are not enough ideas, but simply there is no time to work on this. I mean, the point was that it was too little for all the activities and... well, it started with two things. One was, it was too little and it was [the innovator], and both were highlighted. So, it was not only not the right person, but the whole programme was low. Then, one decision well, we are going to hire. You can have that person when he gets in. That person withdrew and the	Lack of expertise limits development process (-) NBD funds technology development (+) Patents (+)

Property	Illustrative talk or actions	Interpretation of talk or actions
	conclusion was... we dropped that activity. It still wasn't enough because there was only one activity that I could drop. There was still the issue around [the innovator] and someone with a similar knowledge was too low and that - as you say - was then constantly highlighted to the R&D manager and VP at every meeting again, saying, we have to limit here and constantly showing why we constantly throughout the year then again skipping activities. Towards the end of the year you can do that, so every time we said, okay, but then let's limit it to this, but I still don't have enough. Let's limit it to this, but I still don't have enough… so then nothing was resolved." {Final follow-up interview Sphere project manager, 09 Nov 2011}	

control. When this expectation of control is not met, innovators may resist sharing control with others and may engage in destructive acts to prevent others from gaining control over the innovation (VandeWalle, Van Dyne, & Kostova, 1995). These effects are due to the perceived threat of others taking control over what innovators consider to be theirs. In this study, innovators in all three cases of ownership struggles lost formal control over innovations they had developed. They expressed frustration with managers problematizing, denying, or ignoring their expectations to continue to exert influence over the innovation, despite their lack of formal control. As the Leaf innovator explained:

"I was no longer responsible for…so my official role for the product division also was lost, and I think in the political games that are being played with [the two R&D labs], that didn't help too much. So because if you don't have an official voice, they [R&D managers] don't listen to you."

Interpretive struggle for ownership and control. Ownership struggles are essentially exercises in meaning-making and is as much a struggle for actual control as it is about actors attempting to shape the very meaning of innovation ownership – understandings of who should have control over an innovation and what resultant control structures should look like. Innovation is an inherently ambiguous process (Van de Ven, 1986) and notions of ownership in the innovation process are not exempt from this ambiguity. Although organizations legally own the innovations developed within their bounds, ideas about whether the innovator, team, or project manager is responsible for and controls the innovation may be less clear. Even in situations where control structures are clear, different actors involved in the innovation may not necessarily agree with existing systems of control. Mumby (2005) argues that when there is ambiguity around who is responsible for making decisions and who has the right to influence the decision-making

process, it opens up a space for an interpretive struggle to unfold. Within this struggle, organizational actors use a variety of discursive practices to "fix" meanings in ways that either reinforces dominant meaning frameworks and systems of control, or attempts to resist and redefine existing structures.

Innovation ownership struggles are characterized by managers and innovators invoking different belief structures and interpretive frameworks to establish themselves as legitimate owners of a target innovation while simultaneously negating the other's claims to ownership. We found that both innovators and managers employed two broad discursive practices, based on beliefs about expertise and stewardship, in order to validate their claims to ownership and to construct themselves as legitimate owners of a target innovation.

Innovators and managers tended to distinguish themselves along the basis of scientific and business management expertise, respectively. For innovators, possessing knowledge about the science behind an innovation or technical expertise in designing clinical studies to test innovations was viewed as a legitimate basis for control. Innovators tended to portray managers as either having little scientific expertise or as pseudo-experts that relied heavily on the innovators' knowledge; managers were therefore construed as being less qualified than innovators to make informed decisions about the innovation. *"The problem we have is that he is not yet acting as a project leader. And it's not clear what is the role of the project leader versus the two science leaders. He partly also controls the science, and it will be very difficult, and it's not becoming clear that he is more a project manager, so making sure that all the deadlines are clear and being met, but that the scientific content is being left to [the other science leader] and me"*, the CoCell innovator explained. For managers on the other hand, business-related expertise was considered a

legitimate basis for control over an innovation. Managers portrayed innovators' lack of business knowledge and strategic insight as problematic for controlling innovation decisions.

Both innovators and managers considered themselves as innovation stewards – individuals responsible for ensuring the success of an innovation and therefore legitimately in control of the innovation. However, the basis for stewardship differed between the two groups. Innovators were portrayed, by themselves and others, as being somewhat over protective towards the target innovation, wanting to preserve its technological quality and integrity at all costs. A strong sense of psychological ownership on behalf of innovators leads to their desire to protect, care and nurture for a target innovation (Pierce, et al., 2003). As a result, they are inclined to feel responsible for an innovation and feel impelled to ensure that decisions taken were in the best interests of the innovation itself, even if it meant opposing management's interests.

Managers viewed themselves as equally responsible for an innovation in terms of ensuring its strategic and operational success. While innovators were portrayed as being too close to the innovation itself, managers' distance from the innovation enabled them to make objective and thus more strategic decisions than innovators. As the Sphere project manager explained about the Sphere innovator: *"He feels he doesn't have any enough influence on what is happening. So he wants to be involved quite soon in project planning and stuff like that, which is difficult because, it's also depending on what stakeholders want […] so that's not something that I can quickly involve him in. And he should be involved in project planning now that we have the details, but top line I think it's the stakeholders who decide what or where we should focus on and we could give them something. But that's a big frustration for him."*

These taken-for-granted assumptions regarding the legitimate basis for ownership over an innovation makes consensus over who should be in control difficult to achieve.

Acts of Resistance and Control. Apart from differences in their interpretive frameworks, innovators and managers also engaged in specific discursive acts and behaviors in order to reinforce their control over the innovation and to oppose the control of others. The complex interplay of resistance and control behaviors that innovators and managers engage in is a core characteristic of innovation ownership struggles. When innovators with a strong sense of psychological ownership experience a lack of control they may engage in deleterious acts in opposition to letting others control the innovation, or they may exert influence by controlling knowledge and information. Similarly, managers may respond with actions that reinforce their own control over the innovation, for example through micromanaging and controlling resources, or oppose innovators' attempts to exert control by, for example, excluding them from decision making processes related to the innovation.

Because resistance and control are so closely interconnected and difficult to tease apart, it is important to note that control can be used to overcome resistance in much the same way that resistance can be used to gain control (Fleming & Spicer, 2008). Innovation ownership struggles are therefore not simply a case of managers enforcing control and innovators resisting control, but rather involves an ongoing, dynamic and mutually determined interplay between innovators and managers as they attempt to define and redefine who is in control of the innovation. In this way, control of the innovation may shift between innovators and managers as ownership struggles unfold over time.

Acts of resistance and control may either be openly confrontational or covert and subtle in nature (Prasad & Prasad, 1998, 2000). Overt acts of resistance and control in

innovation ownership struggles serve to alert the actors involved that not all parties agree with existing control structures designed to manage the innovation. Disputes of this nature may therefore lead to open, participative discussions that could result in transforming existing structures so that they reflect a greater degree of shared control and ownership between innovators and managers. On the other hand, engaging in open acts of resistance and control runs the risk of casting oneself as an individual who is unwilling to cooperate and incapable of mutual compromise. The end result may be that such open acts are viewed as an illegitimate means of expressing dissent and hence not taken seriously (Fleming & Sewell, 2002). The Sphere project manager describes one such open discussion with the innovator: "*I also had a meeting with him to discuss our way of working. I was asking him open questions about how do you think it's going and then he doesn't want to answer. But in the end I did tell him how I feel. He's influencing the team and that he's too powerful too strong sometimes. He doesn't, he shouldn't challenge the expertise of others and stuff like that. But in the end he did mention some things he said needed improvement. He's in the core team, but not always copied on email with final documents. So I discussed that also at the core team meeting last Thursday. So we now agreed, and that was already the plan, that we will set up a project page on our intranet, and that's where we also make our documents so the core team members can all see the last versions of the documents. So he is also aware of last protocol versions and stuff like that, which is ok. But uh, he wants to be more closely involved. Although I do think that he doesn't need to know always everything about the clinical part because that's not where his expertise is.*"

Covert behaviors of resistance and control are typically inconspicuous and clandestine. For these reasons, they are usually more effective than overt acts of

resistance and control (Scott, 1985). Covert behaviors vary from disengagement, such as withholding participation or effort bargaining, to more subversive acts such as feigned carelessness and symbolic or calculated compliance (Prasad & Prasad, 1998). The intentionality of these acts is not easily traced since they are usually expressed under the guise of more legitimate behaviors.

For example, after losing her project leader role the CoCell innovator was assigned as a scientific advisor to another project in the R&D program. She was not satisfied with this role and expressed her disappointment, but was nevertheless expected to contribute to the project. However, once the clinical study showed that CoCell worked, she dedicated more of her time to developing the technology than to her new role. As she explained: *"I'm not really satisfied with that role but I mean I also have to say it's not my only role. Because CoCell has gotten its home in [another project in the same program] and now I have to… I mean okay, I'm doing a lot of work at the moment on CoCell, and there, of course, I have a very clear role to play because I have to be, I mean I'm not only acting as a science leader, I also have to think about what are the next steps or I have to also do the managerial work on CoCell. […] If I have time, I go to the [project] meetings, but if I have to set priorities then I'm not going to the meetings, yes. So I would say, I mean, if possible, I go to the meetings to stay up to date, and I have contributed to the discussion on the screening strategy… But I'm not really, let's say, on taking on real tasks."* The program manager, however, perceived her actions as resistant: *"She says she wants to help [the project] but, really, she is into Healthy Fats, and now there's CoCell coming up. So fantastic, don't need to change. So she is, I would say she is accommodating but she is not really driving."*

In innovation ownership struggles, both managers and innovators engage in overt and covert acts of resistance and control, bringing the struggle to light at certain times, and downplaying or concealing it at other times. These cat-and-mouse games are an inherent characteristic of the struggle for ownership and control.

Conflict as a means to an end. Conflict is inherent to innovation ownership struggles. While innovation ownership struggles are never conflict-free, the two phenomena are nevertheless conceptually distinct. For one, innovation ownership struggles are only partially explained by conflict. Whereas differences in personal preferences, values, information, cognitive perspectives and status may lead to organizational conflict, these individual or group differences are not the substance of innovation ownership struggles. Instead, the disputes we observed were distinctly political in character, motivated by the competing interests of interdependent actors to control the innovation process (Frost & Egri, 1991). Furthermore, innovators and managers often used conflict in instrumental ways in order to conceal and advance their own interests for control. For example, a project manager for Sphere reported that although the innovator often gave input in discussions on designing clinical studies, his comments were frequently challenging but not necessarily pertinent. She suspected that he deliberately challenged others in the team as a means to exert influence and control over decisions and that his actions were not in the interest of the task at hand.

Because innovators and managers are constantly negotiating ownership and control structures, their actions are equal part conflict resolving and conflict generating. As innovators and managers struggle to define the boundaries of control over the innovation, territorial behaviors may emerge in response to conflict over control, and may even increase conflict in the short-term (Brown, et al., 2005). However, conflict may also

reduce over time as innovators and managers are able to establish and maintain more participative and shared structures of control. This is a unique feature of innovation ownership struggles.

To take another example from the Sphere case, the project manager explained how he and the innovator had agreed to work together on a business proposal even though they had different ideas. While they were able to resolve the conflict by working together, in doing so they were simultaneously able to advance their own interest for control: *"I think his idea [for a new business] on the one hand is appealing and could be quite unique, however, I thinks its too complex. It's too broad and not concrete enough. Personally I won't pitch his proposal, but I will help him prepare the presentation. And that's simply because I am not convinced by the idea myself. But I know his agenda. He wants this project to fail. He wants his "golden nugget" to come back to him. And actually his ultimate goal is that his idea also fails within the organization, he wants to be the owner of that business. So his agenda is, he couldn't care less if this project is successful yes or no, that's his whole attitude. Now of course I am interacting more with him to ask for input, and just looking at how he comes back and of course I keep track of that. And now it's time also for me to sit back and say to the program manager, ok what are we going to do here."*

The analysis of innovation ownership struggles therefore requires a broader understanding of disagreements between interdependent actors that moves beyond typologies of organizational conflict, conflict handling styles, and conflict resolution strategies. The resistance and control tactics we identify in this study encompasses such a broad understanding in that innovators and managers use such tactics to simultaneously resolve disputes over control and advance their own claims for control.

It is therefore important to note that, although there are some overlaps in terminology, resistance and control tactics should not be confused with conflict resolution strategies or styles. For instance, the term "accommodation" in negotiation and conflict literature refers to yielding or obliging the interests of the other party. In workplace resistance literature, the use of the term accommodation is much more complex. This form of resistance involves the appearance of cooperation and consent as a means to conceal expressions of resistance (Prasad & Prasad, 2000). Oppositional practices therefore become indistinguishable from employee efforts to accommodate themselves to the prevailing system of control. Thus, in contrast to yielding, accommodation to dominant control structures actually becomes the basis for employee resistance.

Positive and Negative Effects. The adverse effects of innovation ownership struggles are self-evident. The ongoing struggle for control and its inherent conflict is likely to have a negative impact on the innovation process as well as on the motivation levels of actors directly involved in or indirectly affected by the struggle. The dark sides of psychological ownership itself are well known (Pierce, et al., 2003). Under certain conditions, individuals who experience a strong attachment towards a target object can become overly possessive and territorial (Brown, et al., 2005). Innovators with a strong sense of ownership are less likely to be open to others' ideas related to the innovation they have developed (Baer & Brown, 2012). On the other hand, psychological ownership can also be a powerful intrinsic motivator. Innovations can take years to develop and a strong sense of ownership is likely to result in a high level of commitment and dedication. Making personal sacrifices and assuming risks often comes with the territory and are likely to be promoted by feelings of ownership towards the innovation. These positive implications extend to innovation ownership struggles as a whole.

Given that management support for innovations are rarely fixed or guaranteed across the innovation process, innovators with a strong sense of ownership are likely to persevere in order to ensure the survival of innovations during turbulent times. While such actions may undermine or oppose managerial control, they help safeguard potentially successful ideas that would otherwise be discarded (Mainemelis, 2010). Similarly, management control over innovation projects entail guiding innovators and project teams in the right strategic direction, to encourage the effective use of resources, and to ensure that the organization's strategic innovation objectives are achieved (Poskela & Marinsuo, 2009). Too much of the wrong type of control, however, may constrain team autonomy and creative flexibility, and ultimately jeopardize team innovation success (Bonner, Walker, and Ruekert 2002; Rijsdijk & van den Ende, 2011). Innovation ownership struggles can therefore expose imbalances in innovation control structures and provide a means for innovators and actors to negotiate and redefine the relationship of control between innovators and managers. These aspects are explored further in the section on the complex effects of innovation ownership struggles below.

3.4.2 Drivers and Dynamics of Innovation Ownership Struggles

Our analysis of managers' and innovators' actions during innovation ownership struggles revealed twelve behaviors that could be grouped into six types of resistance and control tactics (see Table 3). For managers, *assimilative* tactics involved actions aimed to assimilate innovators into existing managerial control structures in order to limit innovator resistance through cooptation or knowledge appropriation; *authoritative* tactics involved the use of positional power and authority in order to increase innovator cooperation by making unilateral decisions or enforcing hierarchical rules; and *dismissive*

tactics were used to limit innovator influence by either deliberately excluding or symbolically including innovators in decision making. For innovators, *accommodative* tactics involved conforming to managerial objectives and systems of control as a basis for influencing decision making processes via upward appeals or contested collaboration; *adversarial* tactics refers to actions that directly oppose or obstruct managerial decisions and control; and *subversive* tactics involve acts of subterfuge and sabotage designed to subvert managerial authority either through undermining actions or annexing part of the project.

Using event structure analysis and ETHNO, we were able to identify subsequences or "episodes" in each innovation ownership struggle (see Table 4). The outcomes of each episode with regards to the dominant form of control were also coded. Managers or innovators were said to be in control when either one asserted dominant control over a decision or course of action such that they exercise their power to restrict or grant the other influence over the decision or action. Shared control occurred when both parties exercise their authority to influence decisions or actions. We conducted comparative analysis (Ragin, 1987) to determine causal relationships between different combinations of tactics and control outcomes. The results of this comparative analysis are presented in Table 5.

Innovator Control. We identified six episodes that resulted in innovator control; three in the Sphere project, two in the CoCell project, and one in the Leaf project. Boolean analysis showed that subversive tactics are a necessary causal condition for control to shift to innovators in ownership struggles. When innovators used subversive strategies it resulted in innovator control over the innovation, regardless of whether managers used dismissive or authoritative tactics. In one episode of the Sphere ownership struggle, for

Table 3. Resistance and control tactics in innovation ownership struggles

Actor	General Level Codes	Tactic	Description	Code
Managers	*Assimilative* (ASSIM)	Cooptation	Innovator is offered a stake in existing control structure in exchange for not obstructing managers' plans	COOP
		Appropriate	Attempts to 'absorb' innovators' ideas and knowledge into managers' plans	APPROP
	Authoritative (AUTH)	Unilateral Decision Making	Strategic decisions are taken without involving innovator (but not with purpose of deliberate exclusion)	UDM
		Chain of Command	The use of hierarchical authority to get innovators to cooperate	COC
	Dismissive (DISM)	Symbolic Inclusion	Include innovators in decision-making but for symbolic reasons	SYMIN
		Marginalize	Deliberately exclude innovators from decision-making in order to limit their influence	MARG
Innovators	*Accommodative* (ACCOM)	Upward appeal	Innovator requests managers' support in order to influence a particular decision or outcome	UPWAPP
		Contested collaboration	Cooperation with managers but only insofar as it enables innovators to further their own interests	CONCOL
	Adversarial (ADVER)	Obstruct	Deliberately obstructing the transfer of knowledge to managers	OBSTRUC
		Oppose	Open opposition of managerial decisions and actions	OPPOSE
	Subversive (SUBVER)	Annex	"Fencing off" a certain part of the project to limit managerial influence	ANNEX
		Undermine	Deliberately undermining managerial authority	UNDERM

Table 4. Sequence analysis of innovation ownership struggles

Episode #	Manager Tactics	Innovator Tactics	Control Outcomes
Sphere			
1	ASSIM	ACCOM	SHRD
2	ASSIM	ADVER	MGR
3	AUTH	ADVER	MGR
4	AUTH	ACCOM	MGR
5	DISM	ADVER	MGR
6	DISM	ACCOM	MGR
7	AUTH	ACCOM	MGR
8	AUTH	SUBV	INV
9	DISM	ADVER	MGR
10	DISM	SUBV	INV
11	DISM	ADVER	MGR
12	ASSIM	ACCOM	SHRD
13	DISM	SUBV	INV
14	DISM	ACCOM	MGR
15	DISM	ACCOM	MGR
CoCell			
1	ASSIM	ADVER	MGR
2	DISM	ACCOM	MGR
3	AUTH	ACCOM	MGR
4	ASSIM	ADVER	MGR
5	AUTH	SUBV	INV
6	AUTH	SUBV	INV
7	ASSIM	ACCOM	SHRD
8	ASSIM	ACCOM	SHRD
Leaf			
1	ASSIM	ACCOM	SHRD
2	ASSIM	ACCOM	SHRD
3	AUTH	ACCOM	MGR
4	AUTH	ACCOM	MGR
5	AUTH	SUBV	INV
6	AUTH	ACCOM	MGR
7	DISM	ACCOM	MGR
8	DISM	ACCOM	MGR
9	AUTH	ACCOM	MGR

Table 5. Results of Boolean Comparison

Outcome	Sequences of Actions			Causal Mechanisms
Innovator Control	Sphere8:		AUTH * SUBV	**SUBV**
	CoCell5	+	AUTH * SUBV	
	CoCell6:	+	AUTH * SUBV	
	Leaf5:	+	AUTH * SUBV	
	Sphere10:	+	DISM * SUBV	
	Sphere13:	+	DISM * SUBV	
Shared Control	Sphere1:		ASSIM * ACCOM	**ASSIM * ACCOM**
	Sphere12:	+	ASSIM * ACCOM	
	CoCell7:	+	ASSIM * ACCOM	
	CoCell8:	+	ASSIM * ACCOM	
	Leaf1:	+	ASSIM * ACCOM	
	Leaf2:	+	ASSIM * ACCOM	
Manager Control	Sphere2:		ASSIM * ADVER	**ADVER + ACCOM * (assim)** †
	CoCell1:	+	ASSIM * ADVER	
	CoCell4:	+	ASSIM * ADVER	
	Sphere3:	+	AUTH * ADVER	
	Sphere4:	+	AUTH * ACCOM	
	Sphere7:	+	AUTH * ACCOM	
	CoCell3:	+	AUTH * ACCOM	
	Leaf3:	+	AUTH * ACCOM	
	Leaf4:	+	AUTH * ACCOM	
	Leaf6:	+	AUTH * ACCOM	
	Leaf9	+	AUTH * ACCOM	
	Sphere5:	+	DISM * ADVER	
	Sphere9:	+	DISM * ADVER	
	Sphere11:	+	DISM * ADVER	

† Upper case codes indicate presence of a tactic, and lower case codes indicate absence of a tactic (i.e. “and not” in Boolean logic)

example, managers' dismissive tactics co-occurred with the innovator's subversive tactics (see Sphere Episode10 in Table 4 and Appendix A). The episode occurred during the organization's quarterly resource reviews of R&D programs. The project manager was responsible for submitting a resource proposal to senior management outlining the project's activities and its concomitant resource needs. Typically, project managers would discuss project plans and requisite resources with the innovators and other scientists in the team before submitting a proposal to management. In this case, however, the project manager had decided to request that the innovator be removed from the project and be replaced by another scientist with similar expertise, and for this reason, deliberately excluded the innovator from the discussion. The use of such dismissive tactics backfired when the innovator effectively undermined the project manager's authority by seizing control of and manipulating the resource allocation process.

It so happened at the time that demand for scientists from the innovator's research group was high across the organization. This meant that R&D projects with the highest priority would receive first option for this specific expertise. The Sphere project was not amongst those with high priority status. Consequently, rather than being removed from the project, the innovator's research manager placed him in charge of reviewing the resource proposal submitted by the Sphere project leader. The innovator then not only allocated merely half of the resources that was actually requested, but assigned himself as the lead scientist in the project. In addition, the amount of time the innovator allocated for himself to the project was less than one day per week; the other scientists assigned to the project were mostly technical staff who could run lab experiments and produce test products, but did not have the requisite expertise to devise a strategic technology

development plan. As a result, the project leader was forced to drop certain development activities in the project plan under the advice of the innovator.

It could be argued that overall resources pressures in R&D and the project's low priority status ultimately explain its lack of resources, but this would be a partial explanation. Later, in an interview, the innovator admitted to deliberately sabotaging the resource allocation process stating that his reasons for doing so was to force the Sphere project to involve him in decision making processes. Furthermore, the innovator used the situation not only as an opportunity to undermine the project manager's authority and take control of the project, but to simultaneously legitimize his actions making it difficult to identify his behavior as subversive. The project manager realized this when he decided to discuss the issue with the innovator's line manager with the expectation that the research manager would accept his authority, as project manager, over decisions related to project activities and resource needs. However, this was not the case, as the project manager explained:

"I realized at some stage that the game that was being played was [the innovator] influencing [the research manager] with a different message than I was doing. […] But I thought in the beginning that, well, that's an easy one to solve, because look, I'm the project leader here, so I'm the one who decides on what needs to be done, and I decide on how much resources, together with [the innovator], of course, but hey, we have a difference of opinion here, [the innovator] thinks we shouldn't be doing this, and I think we should be doing it, and therefore I think we should be doing it and I'm the project leader here. So at the end, if you have two different opinions, to whom do you listen? In that case I would assume in a normal process, in a normal way, you listen to the project leader in that case in his role in that project, and not to your team member, the scientist.

[…] And that's also the discussion I had upfront in this first discussion with [the research manager] […] that was for me one of the key things that I thought, okay, that's the reason why I'm not getting results, because…that's the first time I realized you're getting a different story from someone else, and you're listening to that story, you're taking it for the truth, and you're not taking my story for the truth."

Although we did not observe any episode in which innovators' subversive tactics co-occurred with managers' assimilative tactics, we suspect that this is due to the nature of the tactics involved rather than an artifact of the data. Assimilative tactics involve compromise and relinquishing of (some) managerial control. Subversive tactics involve effectively seizing control from managers. Innovators are therefore less likely to use subversive tactics when managers are already willing to concede some control. Instead, innovators are more likely to negotiate the terms of their control either by openly opposing and making counter demands, or by accommodating the proposed control structure so as to enhance their influence.

Shared Control. We identified six sequences that resulted in shared control; two in the Sphere project, two in Leaf, and two in CoCell. Boolean analysis showed that all episodes resulting in shared control involved the co-occurrence of assimilative and accommodative tactics. If one considers that this combination of tactics represents the willingness of both parties to partially relinquish but also retain some control, then it makes sense that their co-occurrence would lead to shared control. To illustrate how these tactics lead to shared control we describe an episode from the Leaf innovation ownership struggle (see Leaf Episode 2 in Table 4 and Appendix E). The episode takes place during a conference call between the Leaf team, the Chem team in the R&D Lab in Asia, and R&D and product division managers. All R&D projects related to Leaf technology had just been merged

under a single broad project and they were discussing the product division's strategic plan for marketing the technology. The Leaf innovator was concerned about how tasks would be divided between the two teams in the new project. In the past the Leaf team was responsible for devising a "roadmap" of clinical studies needed to demonstrate technological and product efficacy as well as managing those studies, while the Chem team focused on the technical aspects of developing test products. In response to her question, the former project leader of the Chem team (who would later be formally instated as the manager of the new merged project) suggested that the technology development plans of the two teams be merged as well.

The proposal raised some eyebrows amongst the Leaf team members, literally and figuratively. After the conference call had ended, the Leaf innovator explained that when the technology was first adopted by the Asian product division, the R&D team in Asia simply replicated the technology development roadmap originally designed by the Leaf team. The manager's proposal of officially merging the two roadmaps was therefore seen as an attempt to appropriate knowledge developed by the Leaf innovator and her team. The innovator then raised additional questions about the Chem team's roadmap and appealed to the R&D Director by explaining the importance of maintaining the existing project structure in which clinical studies and technical product development was divided between the two teams. The Director agreed to follow up on the issue and ensure that the division was maintained. At this point, the Pulse innovator turned to the rest of the team members and gave them a triumphant "thumbs up". It became clear that separating clinical studies from technical activities had less to do with the efficient division of labor and more to do with ensuring shared control over the project between the two teams. The innovator later explained that the former Chem team project leader was still "steering" the

group even though officially he had changed roles and moved to another R&D site in Asia. *"But he is really a stakeholder as well for the Chem team, everybody knows him he's like a god for them, even sitting in [another lab] he's still, they always will find him when needed. He is really seen as senior and very important person for the lab. So it's also a bit the hierarchy aspect playing there."* She feared that as a result of his authority that he would have undue influence and control over the Leaf technology.

Manager Control. The majority of sequences (20 out of 32 in total) resulted in managerial control. This is to be expected given that managers typically had formal authority over innovation projects in the organization. Accordingly, the comparative analysis shows that managerial control was less determined by manager tactics than by innovator tactics. Specifically, episodes in which innovators used adversarial or accommodative tactics were likely to result in manager control, except when assimilative and accommodative tactics co-occurred. The results suggest that deliberate opposition to managerial actions or decisions may lead managers to reinforce their authority over the project perhaps as a way of dealing with such open resistance, whereas being too accommodative may fail to signal concerns over imbalances in control resulting in the routine of "business as usual".

Noticeably missing from this analysis is the co-occurrence of authoritative and adversarial tactics. This combination occurred only once in the Sphere project (see Sphere Episode 3 in Table 4 and Appendix A). One could even expect that adversarial tactics are more likely to co-occur with authoritative tactics than with any other manager tactic; but this was not the case. We believe that, again, this finding is related to the authority of managers over innovation projects in the organization. It is possible that when managers used authoritative tactics they were perceived as acting within the bounds of their formal

authority. Thus, it is both difficult and risky for innovators to deliberately and openly oppose managers' legitimate actions. Even in the instance of the Sphere project, the innovators did not openly and overtly oppose managers but attempted instead to obstruct the innovation process in a covert manner. To use a different example from the CoCell project (see Episode 3 in Table 4 and Appendix C), the program manager had decided that the CoCell technology was better being developed into a product for the Asian market or its patent licensed out via the New Business Division. This strategy was in line with the rest of the technologies being developed under his program. Although the innovator did not agree with this strategy, she did not say so outright. Instead, she tried to carefully dissuade him while simultaneously conceding that it was important to follow a "dual selling strategy" of promoting the technology to NBU as well as to an existing product category:

"It wouldn't make sense to put a product with only CoCell technology on the market because […] it will not have a lot of support from the scientific community. This is where I need to hold on with [the program manager] and make sure that he understands this. But what is a bit worrisome is that he is talking to [the Directors of NBU], and they haven't seen the results, so I made him aware of how the CoCell technology should be used and that it cannot be used as a stand-alone product technology. But he wants to talk to them anyway about taking CoCell external. […] To me it doesn't matter which route we go. But if [the product category] want the technology, and they provide the money to develop it further, then they will get it no question. Because I have the feeling [he] still wants to control it. But at the end of the day he would have to be happy if it is being taken up by the category. I personally think it doesn't fit anywhere in the [Asia R&D Program].

[...] But he sees it as "it's part of my [program]", which is fine. But if it's being considered for Asia, then it's not a good stand-alone product technology."

When I enquired about the underlying reason for their difference in opinion regarding strategy the innovator acceded that the program manager was simply doing his job in promoting the technology through various channels: *"[He] is is keeping every options open […]* I *would say he kept every balls in the air, yes, whereas I was maybe much more realistic, saying, this seems to be the only vital option."*

Struggle tipping point. Apart from identifying determinants of individual control outcomes, we also analyzed underlying causal mechanisms at a broader level by examining overall patterns of shifts in control outcomes. What we found is that all three cases of innovation ownership struggles evolved differently over time. In the case of the Sphere project, managers were mostly in control for the first half of the struggle, but patterns of control became much more varied in the second half. In contrast, managers were in control for most of the innovation ownership struggle that occurred in the Leaf project. For the CoCell project, control moved from managers to innovators to shared control, respectively.

We did, however, observe one notable pattern related to the first shift towards innovator control (see Sphere Episode 8, CoCell Episode 6, and Leaf Episode 5 in Table 4). There are striking similarities in how and when this shift in control occurs across all three cases of innovation ownership struggles. Firstly, the very first instance of innovator control occurs at roughly the midpoint of each innovation ownership struggle. Secondly, the same combination of authoritative and subversive tactics leads to innovator control. Thirdly, this specific episode is the only one in which innovators subverted managerial control by annexing a part of the project over which they had dominant control in order to

limit managerial influence. We refer to this episode as the tipping point of an innovation ownership struggle as it explains why some struggles intensify and others do not.

Although annexing occurred in different ways across the three cases, it served a common purpose in innovation ownership struggles – that of leverage. In the Sphere project annexing took the form of a business proposal outlining a new commercial channel developed by the innovator who wanted to lead the activity as the idea was originally his. At the same time, the project manager needed to find ways to expand the Sphere project and develop the technology further; the innovator's new business idea was an attractive proposal. In the Leaf project, the innovator took control of a major clinical study when the study was transferred from the books of the product division back to R&D and subsequently prevented product development managers from influencing the study design. The study was a critical first step for developing a patent that would provide the product division with competitive advantage in the market. It was also a central element in the Leaf team's technology development plans and key to the project's survival. For the CoCell project, the innovator curtailed the R&D program manager's plan to develop the technology into a new product via the organization's New Business Division by pushing for the technology to be transferred to an existing product division and thus out of the R&D program. At the time, the R&D program was under tremendous pressure and lacked considerable resources; transferring the CoCell technology to the product division would result in further diminishing the size of the program.

Having some form of leverage meant that innovators could renegotiate any imbalances in control in the project. Thus, it is at this point that concerns about imbalances in control, and more importantly the consequences for ignoring or diminishing such concerns, are made manifest. Once this occurs, managers and

innovators must find a way to transform existing control structures in order to enhance collaboration. Innovation ownership struggles could therefore intensify until an acceptable agreement is reached. However, if the innovator's perceived leverage turns out to be insufficient or ineffective, then innovation ownership struggles are likely to become latent again until the next potential tipping point.

Each of the three cases of innovation ownership struggles unfolded in different ways before and after the tipping point. The struggle intensified in the case of the Sphere project, whereas in the case of the Leaf project control dynamics remained relatively stable. In contrast, control dynamics shifted increasingly towards the innovator in the CoCell project. In the final section of our analysis, we compare dynamics before and after the tipping point and examine its effects on cooperation between innovators and managers as well as on the innovation process and its outcomes.

3.5 Complex Effects of Innovation Ownership Struggles

The effects of innovation ownership struggles are complex and have implications for multiple processes associated with innovation simultaneously, including team dynamics, knowledge management, and technical aspects of the innovation process. Although we use the tipping point as a reference for analyzing the effects of such struggles, this does not mean that a singular pattern of effects emerged across all three cases. Instead, each case of innovation ownership struggles in this study evolved in a different manner. One could therefore expect the effects of those struggles to differ accordingly. In this section we illustrate the complexity of those effects and highlight any patterned similarities and differences between the individual cases.

3.5.1 Project Sphere Outcomes

Tensions between managers and innovators in the Sphere project began when the R&D program manager and the Director of the New Business Division (NBD) decided to license out the technology's patent to an external entrepreneur. The Sphere innovators were not involved in this decision or in discussions on the terms of the licensing agreement with respect to the responsibilities of and benefits for each party. In fact, the Sphere innovators were prevented from even accessing a copy of the licensing agreement. It did not help that the person assigned to manage the commercial part of the project was completely unfamiliar with the Sphere technology. These events had both positive and negative consequences. Once the entrepreneur was on board, the project's development plan was adapted to prioritize product tests needed for the launch over substantive research activities that were critical for strengthening the existing patent filing. This resulted in a major clinical study being delayed for two months in order to allocate resources for product testing.

The role of the entrepreneur was also not clear. Apart from being financially and operationally responsible for commercializing a new product, the entrepreneur was purportedly selected for his expertise in developing new product devices. The innovators expected that product design and defining an innovative marketing strategy would form a large part of the entrepreneur's responsibilities as this had important implications for strengthening patent protection. However, it became clear that this was not the case when the entrepreneur simply decided to reduce the size of the existing product prototype and sell the new product via telesales. Furthermore, the product launch ran into extensive delays due to problems with the supply chain. The entrepreneur had also agreed to fund

future clinical studies, but after the organization financed the product tests for the initial launch the entrepreneur was not interested in any further technology development.

The innovator did however concede that taking the technology external via NBD created greater interest and awareness for Sphere in the organization. Prior to that point, the innovators had struggled to convince an existing product division to adopt Sphere and incorporate it into their existing product range, despite the technology's demonstrable effects. The R&D program manager agreed that had the technology not been taken up by NBD it would have been shelved since the product division's sales were increasingly in decline. The project would essentially have been terminated without any further development or testing. In fact, when the project's resources were drastically reduced as a result of major strategic changes and lack of support from the Chief R&D Officer, the Director of NBD provided additional resources, which enabled the team to develop a new product application.

The Sphere innovators were expected to collaborate fully with the entrepreneur. Yet, they became increasingly frustrated with what seemed to them like a one-sided deal. At this point they began to try and find ways to obstruct any new knowledge development that would benefit the entrepreneur's commercial project. A significant consequence of their actions was that the same clinical study that was initially delayed would be further delayed for an additional six months. First the study was delayed due to issues with the reproducibility of test products that subsequently needed to be solved. According to the commercial project manager, the innovators had always been aware of these issues and were reluctant to share information on the nature of the problems or the source of the inconsistences. The second delay occurred when the study had already started and was terminated early as a result of a high participant dropout rate due to taste issues with the

test product. The innovators had developed a new formulation of the technology and although they notified the team of a "bland taste" they recommended that it was good enough for testing purposes. The team therefore did not conduct any taste test prior to the study. As the project manager explained:

"The relationship with the [innovators] have, I guess, somewhat affected also the… maybe the delivery of the studies. I don't know if we would have done it differently if it would have had a different outcome, but maybe it could have sped up the delivery."

In project meetings tensions ran high. The innovators constantly expressed their disagreement with proposed project plans and questioned why the technology was licensed out to begin with. The technical project manager reported that the innovators frequently challenged her and that they did not accept her leadership. When the innovators were told to work with the project managers on the new business plan, they simply refused. It was at this point that the one of the innovators decided to leave the project for a position in another division. Despite the challenges she experienced, the project manager perceived this event as a critical loss for the team and described the innovator as the "glue" of the Sphere project.

Up until this point managers had dominant control in the Sphere project. Things changed when the innovator announced during a project meeting that he would be pursuing his proposal for a new business channel on his own. The project manager told him that he would need to discuss his ideas with the CTO and Director of New Business Development since he was the senior decision maker. The patent attorney also present in the meeting did not agree with the innovator's decision to pursue this on his own outside of the existing project structure. He questioned how the innovator's proposal would benefit the organization and where he would get the resources to finance his idea. The

innovator insisted: *"if you believe in something then you will find a way"*. After the meeting, when everyone else had left, the commercial project manager explained how difficult it was to work with the innovator. He planned to recommend to the innovator's line manager that the innovator be removed from the project at the next R&D resources review and be replaced by someone with similar expertise. His actions had unanticipated consequences.

First, the innovator was not removed from the project but instead was allocated for only a minimal amount of time. Second, the only other team member with expertise in Sphere technology voluntarily left the project. In an interview he explained that although he enjoyed the work there was too much politics in the project. He often felt excluded from the team's decision making. He believed that his team members did not trust in his expertise and were trying to learn as much as they could so that they would not need to rely on his expertise. *"So now they have learned enough easy explanations to talk to others about it, but they talk as if it was their idea to begin with"*, he explained. He decided to move to a different project where there was greater clarity on what was expected of him. Third, the new hire that would replace him on the project unexpectedly withdrew his application. Together, these events meant that the project lacked critical expertise needed to develop the technology further; more and more development activities were put on hold until the project was eventually terminated.

Importantly, the project manager had, through his actions, underestimated the innovator's level of influence and control over the project. The project manager was surprised when, after he had recommended the innovator be removed, the innovator requested a meeting to review the manager's resource proposal for the project. The innovator, and not the project manager, therefore had the final say over the project's

development plan and the requisite expertise needed to complete those activities. Later the innovator admitted that he used his position to gain control over the project and to force the project managers to include him in decision-making. His tactics worked in his favor. Although the project manager tried to regain control by attempting to expose the innovator's subversive behavior, he was eventually forced to engage in an open discussion with the innovator in order to find a way to work together. The discussion led to an agreement to combine their efforts in pursuing the development of the innovator's new business proposal. The innovator realized that he needed the project manager in order to gain access to senior decision makers. The project manager, in turn, needed the innovator's expertise and cooperation.

Thereafter, despite the lack of expertise, the project proceeded more smoothly and the team succeeded in filing four patents, conducting 3 major clinical studies, and developing a new product application for the Sphere technology within one year. In fact, the project manager explained that it was precisely because there were no dedicated Sphere experts in the team that the project progressed in the way that it did:

"Because something else happened as well which is very important to this, is that [one of the two innovators] left that team, but it was a bit of a blessing for me, because it helped me to get more control over that power house of the knowledge in the team. So now it's only [the one innovator], only for a small part. He can't do it all, and he understands that. So the good thing is I can really work with the limited amount that [he] has on those things that he still also believes in and is passionate about. So I have on the areas where [he] contributes, I have a highly-motivated [innovator], and in the latest meetings you could also see that, and on the areas where I wanted to do things but he doesn't agree to it, and more often he doesn't have to do it because it's not in his trust, I

can pretty much do it myself. And I can try to work around and work with other people who may… who can deliver the same science input."

The project manager could therefore involve the innovator and at the same time minimize his influence in the project. The innovator for his part continued to "interfere with and obstruct" the development process and was, for example, not in favor of developing the new product application. Although they continued to cooperate on the new business proposal, they had each developed and presented different business models. The proposal, if approved, would significantly expand the project, and depending on which version was approved, either the existing project manager or the innovator would be assigned to lead the bigger project. In the end, the proposal was shelved and neither party was given the chance to present their ideas to the NBD Director.

The shared form of control that emerged between the innovator and project manager therefore served to temporarily resolve and simultaneously suspend the broader innovation ownership struggle. By the time the project was terminated, the struggle was still ongoing. As the project manager later explained in a follow-up interview:

"But one of the feedback that I will give this year at the end to [the research manager], I will say look, this is how I saw it happening. This is what happened and this is what has caused me a problem, and again, because this behaviour of [the innovator], I still think he shouldn't be on the team. That's got to change. But I made a full circle there this year, and so I was aware that yes, to put it like that, he was not only a problem for not delivering, actually he was a mole in the system. […] The main thing that drives him [the innovator] is, I think, he still wants to be involved, or at least find things, make discoveries to build his own company […] and he sees Sphere still as one of the opportunities for him to play a role, and that's why he wants to be the leader of this, and

doesn't accept me as a leader, but he wants to have the influence. And that's the reason why he is also delaying things and not prepared to do… taking things slowly, because he understands that if there's no information, new generated, flowing into the opportunity, the opportunity will fail, and therefore [the organization] is not going to continue it. [The entrepreneur] will tamper with it, his company will fail, and it will be his again. Now, maybe that's a bit black and white, maybe it's conscious or unconscious; I'm not going to comment on that, but I think it's very serious if that is true."

3.5.2 Project CoCell Outcomes

The CoCell innovator had been working on discovering new technologies with healthy fat properties since she first joined the company more than ten years ago. The innovator and her team developed and tested several technologies but none were successful, until they discovered CoCell. The potential health benefits of the CoCell technology were detected when it was included in a clinical study testing for a different set of health benefits. An initial patent application was filed and the innovator had just nine months to conduct a second clinical study to provide confirmatory evidence and finalize the patent application. In the midst of designing the study, the organization's R&D Executive Board announced major strategic changes that directly affected the innovator and her research team.

As a result of the organization's new innovation strategy, the Healthy Fats product division – a critical stakeholder in the development of new products using technologies discovered by the innovator and her team – was deprioritized and the development of innovative products was strictly proscribed. In the words of R&D executive managers, the division was to concentrate on "renovation" and not innovation. Consequently, the CoCell

team was given some time to finish up the study before the team would be officially dismantled. Despite these changes, the innovator was informed that research on healthy fats would continue under the new R&D Asia program, albeit at a slower rate, and that the product division was nonetheless interested in developing new products. The program manager encouraged her to meet with the product division managers to discuss the future of healthy fats research. Although the R&D Director for the product division was less enthusiastic about the CoCell technology, he agreed to provide funding for follow-up research if the study was successful. At the same time, the innovator and her team faced several crises that threatened to delay the study but were able to resolve everything speedily to ensure that the study commenced as planned.

Tensions between the innovator and the program manager arose when she was told that research on healthy fats would be discontinued and that she would be allocated a new role in the R&D Asia program as a lead scientist. The innovator was *"not prepared to take on a less challenging role"* and requested her HR manager find a more suitable position for her in R&D. When no alternative position materialized, she was compelled to work on a new project in the R&D Asia program as the project team's "scientific advisor". Although she was cooperative and helped the project team develop a research strategy, the innovator admitted that she was not fully committed to her new role:

"I was rather disappointed to see that I wasn't really given an adequate role. I mean obviously I had a project leader role and I was a science leader. Now I lost the project leader's role; I'm a science leader in an area that is a no or low priority area but all the discussion on saying okay, I'm open and interested in then taking a responsible role in another area hasn't really sort of led to anything. Now I would say I've now reached a stage where I would say okay, fine, I accept it and… but it also has led to the fact that I

would say okay, I'm doing my job here but I'm also working on my work/life balance and… so I mean the level of motivation is probably not as high anymore as it used to be where there was a much more clearer role."

Shortly after, the CoCell clinical study was completed. The results were positive and the technology was shown to be highly effective. The innovator then increasingly withdrew from her role as lead scientist and persuaded the HR manager to re-allocate her time dedicated for the R&D Asia program to her role in the product division providing research support and developing the CoCell technology. As the program manager explained:

"One that hasn't adjusted is [the innovator] because, well, A, to personality and history. She's a Healthy Fats person. She's into roles and responsibility and she is territorial. So she is not... So she'll struggle anyway. The second bit is we have still CoCell happening and it's very difficult to divorce from your wife when you still live with your wife. You know? And she would never do the whole journey until CoCell was stopped or continued, and then what happens is CoCell continues. So, I mean, for me, [she] is not in the, well, she is in the Asia program but, really, she isn't."

Nevertheless, because the innovator concentrated most of her efforts on the CoCell project, she and her team were able to map out a development strategy that delineated each step in the development process to launch a new product, including an analysis of return on investment. Rather than wait until their development plan was officially approved, the innovator had her team conduct various product application tests and research several new ideas to strengthen the CoCell patent, through bootstrapping whatever resources they could find. In this way, the innovator and her team would be

ready so that *"as soon as someone says yes CoCell is a go we have a plan to move forward"*.

However, tensions between the innovator and program manager intensified when they wanted to pursue different product development strategies for CoCell. The program manager was convinced that licensing out the CoCell patent via the New Business Division was the best route to launching a new product. He explained that it would be faster than working with the Healthy Fats product division that was not only faced with an innovation moratorium, but was also considering several competing technologies for improving existing products. He then enforced the decision that the CoCell technology be made part of a project under the Asia program and presented as such to the R&D VP in a review meeting rather than as a separate technology. The innovator, however, believed that developing a new product with the Healthy Fats division was the logical option, especially since CoCell needed to be combined with other healthy fat technologies that were already incorporated in the division's existing products. It was at this point that she persuaded the R&D VP that the technology should be transferred to the products division rather than developed via NBD. The R&D VP agreed that the product division was the best route to launching a new CoCell product and instructed the program manager to exhaust this option first.

While the innovator conceded the importance of considering all product development options, she was not convinced that those were the program manager's only reasons for wanting to pursue a different route:

"I have the feeling [he] still wants to control it. But at the end of the day he would have to be happy if it is being taken up by the product division. I personally think it doesn't fit anywhere in the Asia program. But he sees it as "it's part of my program",

which is fine. But if it's being considered for Asia, then it's not a good stand-alone product technology. Then more will need to be done."

The program manager later explained why he included technologies into his program that did not necessarily fit its overall purpose. He emphasized the strategic importance of creating "critical mass" for securing limited R&D resources:

"No, well, we're in [a company] where, basically, you know, you're competing for resource, as always, and you're in a big company. So we're not in [a company] where, you know, you see the chairman, you may, somebody at my level may see the chairman every three months or so and have direct interaction. And so you're not, so you need to massify. So that was my point. But here, so that's for me the big advantage is, if you want to get visibility, if you want to be able to compete you need mass but that mass needs to make sense."

In the end, the Healthy Fats product division provided resources for follow-up research on CoCell, and the technology was listed in the product development portfolios of both the product division and the R&D Asia program. However, one year after the successful CoCell study, there was still no commitment to developing and launching a new product.

3.5.3 Project Leaf outcomes.

Project Leaf consisted of a product development project (Leaf 2) and a technology development project (Leaf 3). Although the technology was originally discovered by the Leaf innovator and her team, they had been collaborating with the Chem team in the organization's Asian R&D subsidiary since the product division decided to launch a new product in Asia using Leaf technology. Each team had a distinct role. The Leaf team was

primarily responsible for designing and managing clinical studies, whereas the Chem team was responsible for the development of prototypes and test products. Initially, the innovator managed all Leaf activities.

The Leaf team assisted the Chem team in setting up the Leaf 2 clinical study to test the technology using a local beverage product with Asian participants. Since all clinical studies on Leaf technology required expertise in specific measurement and analysis techniques, and no suitable contract research organization (CRO) was found in Asia, the Leaf team identified a CRO that trained researchers in these techniques. The Chem team needed to identify a local CRO that could be trained to conduct the study.

The Leaf 3 project was also progressing. The project was designed to patent the Leaf technology and required more advanced research than its predecessor. The first milestone in the project was a clinical study designed to test the effects of the isolated active ingredient in Leaf technology. The Chem team successfully designed a production process that isolated the active ingredient. The Leaf team, in turn, designed the clinical study. The Leaf 3 study would start once the design was approved and the test products developed.

However, tensions started brewing between the innovator and managers when organizational restructuring led to major changes in the product division. The division's new R&D Director decided to incorporate all research activities related to the development of healthy beverage products– including Leaf product development activities – into a single "Healthy Beverages" research program. While the Leaf 3 project was transferred from the product division to R&D and therefore officially under the control of the innovator, control of the Leaf 2 project was less clear. Shortly after, the organization's new innovation strategy was unveiled, which led to restructuring of the

R&D division. The Leaf team's R&D resources were cut drastically and the team was reduced in size from ten to four full-time employees. At the same time, the Leaf 2 project hit its first crisis. The training CRO withdrew their services due to unforeseen financial challenges and the study was delayed.

The situation intensified when, despite the Leaf team's limited resources, product division managers expected the team to be involved in developing a marketing strategy, going so far as checking team members' electronic agendas to ensure that they complied. It was at this point that the innovator prevented the product division manager from influencing the Leaf 3 project, defining it as a separate R&D activity over which the product division had no official control. When asked to attend a meeting to discuss the Leaf 3 project with product division managers, the innovator refused to do so explaining that there was nothing to discuss since her team was in charge and therefore had already finalized the study design and obtained approval. She did, however, agree to share the study proposal with the manager and answer any questions. The manager had no choice but to concede. When the meeting ended the innovator and a Leaf team member voiced their opinions:

Innovator: "It's one mess huh. [The product division manager] was not aware that the two projects were being merged. […] But in the end they want to have a say about this study [Leaf 3] while they say it's not a high priority for us."

Team member: "yeah but on the other hand if you don't pay for something don't…"

Innovator: "…expect to be the key stakeholder."

Yet, the shift in control did not last very long. The innovator decided to request that the team's resources be increased given all the tasks that the product division expected them to fulfill. However, despite numerous appeals to managers, no additional resources

were provided. Instead, the team's existing resources were simply re-distributed such that the majority of resources initially allocated to the Leaf 3 patent development project were re-allocated to Leaf 2 activities.

As a result of managers' actions, the Leaf team members became increasingly reluctant to assist the Chem team with the Leaf 2 study. The Leaf innovator, however, was convinced that the team needed to maintain their control over Leaf 2 activities, especially since the Leaf 3 project was dependent on the success of the Leaf 2 study. She persuaded Leaf team members of the importance of their continued involvement in the Leaf 2 project:

Innovator: "There are indeed several solutions to think of but that's something the anchor person [responsible Leaf team member] should make a structural overview of all the possibilities [for a replacement CRO]. So that's indeed the first thing that we should have on the rails, or we try, before we can actually start the study. What I expect is that if the study will be part of the Healthy Beverages Project, so in the product division, that we are responsible for the clinical study and sitting together with the Chem team."

Researcher (to Leaf team member): "You don't look happy."

Innovator (to Leaf team member): "Yah but you should have someone really managing the study like [a Chem team member] that you really coach this person and have regular meetings."

Leaf team member (sarcastically): "Yippee."

Shortly thereafter members of the Leaf and Chem teams met with a new CRO that could provide the necessary training. Thus, despite the apparent dominance of managerial control, the innovator's belief that the Leaf team would eventually regain control helped ensure that the two teams continued to collaborate and that the Leaf crisis was swiftly

resolved. However, when a former leader of the Chem team was appointed the new Director of the Healthy Beverages research program, it became clear that she was no longer in control. She explained that the new Director frequently excluded her from discussions with senior managers:

"Last year I also had an official role within Beverages because I was project leader for [a product division] project. And since this year, the [product division] project is merged with the Leaf project. And the combined project is now on beverages and health, which Leaf is part of it. So there is no, yah so I lost my official Beverages role. But [the new Director of Healthy Beverages program] is more now the strategic person who should steer the team. And also having the stakeholder meetings and doesn't want me to be involved in that either. […] He said, "I'm the representative of the project". […] Because recently a lot of questions came up for the Leaf 2 study, and it is [a Chem team member] who joined him in the meeting with [R&D Directors]. But from the questions they asked also to us, you realize they are not the experts. The expertise is here. But that's not really how they see it. It's really it's a local execution so you take local people."

Consequently, both project progress and relations between the two teams began to deteriorate. Although the innovator and her team were included in decision making, their recommendations were not necessarily taken into consideration. Thus, when they were asked for their input concerning a suitable CRO in Asia that could be trained to conduct the study, the Chem team ignored their advice. The CRO that the Chem team selected withdrew at the last moment and the study was once again delayed. Since the training had already been paid, two Leaf team members attended it instead. The innovator suspected that the Chem team had complied with whatever their managers decided rather than

recommend what was best. This caused much frustration in the Leaf team as one team member explained:

"The problem is that decisions are made more on strategic reasons, and not on knowledge, so they say, well, we can do a study like this, and we can do studies like that, and we find the CRO, and we can do this and that. But they do not know that, for example, finding a CRO for a study, which is kind of a crucial point…if you tell them, for example, that it's very difficult to find. But they do not want help, and then they find, eventually, a CRO, who's withdrawing then just before the study, or that kind of stuff. That makes it very difficult. […] But anyway, they want to build their own expertise in Asia, and in [this R&D lab] we, there's more or less a base for the different cardiovascular measurements. We've got by far the most knowledge in cardiovascular, also about measurements. So most sites know that, but in Asia, apparently not. Well, they know it, maybe, but they're acting like they don't know. So… I think that they need help, but they don't want help. They want to do it themselves. They more or less say "No, it's okay. We know it. We know how to do it." But that… I mean, that's also what you see with other experiments. And they say, well, we can do it, and then you see the results, and then you think, oh my God this is a complete waste of time. And if the research head over there, of course, they maybe see that report, and they think: "Hmm, that's interesting title; Vascular blah, blah, blah; good output for the club." That's how these guys are thinking as well, of course. For example, [a Leaf team member], most of her time is just lost because of all these strategic bullshit nonsense activities, complete waste of time."

When finally a suitable Asian CRO was identified, and their researchers trained, test analyses showed that measurement variation was too high for the researchers to conduct reliable measurement and analysis. The study was therefore delayed for a third time.

Eventually, the Leaf team proposed that researchers from the CRO providing the training be flown to Asia to conduct the study themselves. Overall, it had taken almost two years and much more resources, after managers decided to launch a new product in Asia, before the Leaf 2 study actually commenced.

In the end, the Healthy Beverages program was completely restructured and both the Leaf and Chem teams were disassembled. The Leaf 3 project was cancelled and a new development program for the Leaf technology was devised. Despite these changes, the innovation ownership struggle lingered and remained unresolved. As the innovator explained in a follow-up interview conducted six months after exiting the field:

"We didn't necessarily want the competition, but it happened because there's always some friction with [the Chem team] wanting to have…to lead [Leaf activities]. And there was a clear distinction between technology, so the [prototype and test product] production, the chemistry and the in vitro work, versus the physiology – the benefit. But they saw, okay, we want everything, because with human studies we have more power, or something. Also, it hit us by surprise a bit. So, maybe we had to be more aware of that. (So there was actually some tussling for who gets to be in charge of the study?) And still is."

3.6 Discussion and Conclusion

If we consider the innovation process as a series of strategic decisions made by different groups with heterogeneous interests, then it is easy to see why innovation rarely proceeds in a rational and orderly goal-directed fashion (Brown & Eisenhardt, 1995; Kanter, 1988; Van de Ven, 1986). Frost and Egri (1991) argue that innovation is

inherently a political process replete with self-interested disputes and diverse perspectives, where goals are continuously contested and modified along the way. However, rather than viewing these disputes and tensions as either good or bad, they argue that politics serves both a necessary and natural role in human interaction.

Fleming and Spicer (2008) use the concept of "struggle" to describe the complex and contradictory dynamics of control and resistance in organizational politics. The innovation process provides a unique arena for examining such struggles. On the one hand, top-down strategic priorities are put in place in order to guide individual innovation projects in the right strategic direction, to ensure that each one contributes to the organization's long-term strategic objectives, and to control the strategic distribution of limited resources (Poskela & Marinsuo, 2009). On the other hand, innovators must often spend a great deal of time promoting their innovation ideas to senior decision makers and fighting internal resistance in order to obtain the necessary support, resources, and legitimacy required for innovations to survive dynamic or turbulent organizational environments (Leifer et al., 2000). Since managers and innovators are not necessarily aligned in their goals and objectives, the question of whether struggles will ensue becomes less pertinent than understanding why certain struggles occur and how they unfold over time.

In this paper, we extended these views to develop a new theory of *innovation ownership struggles*, which we defined as discursive disputes between managers and innovators as they negotiate control over the innovation. We identified five properties of innovation ownership struggles. First, struggles occur between innovators with a strong sense of psychological ownership associated with the perceived right to influence and control the innovation, and managers with formal authority to control the innovation

process but less intense feelings of attachment to the innovation. While it is certainly possible for two innovators who are both strongly attached to the innovation to engage in disputes over control, we argue that ownership struggles are more likely to occur between innovators and managers, particularly in large organizations, given their different bases for claiming ownership and control (i.e. investment of the self versus formal authority). Second, disputes involve a material and an interpretive struggle for control. Not only are innovators and managers vying for actual control of the innovation, they are also engaged in an interpretive struggle to shape and determine the meaning of ownership and control for the innovation process. Innovation ownership struggles are therefore as much a struggle to obtain or maintain control as it is to negotiate boundaries of who should be in control and to what extent. Third, the dynamic interplay of resistance and control tactics is a core characteristic of innovation ownership struggles. Both managers and innovators engage in overt and covert acts to establish control as well as to oppose the other from taking control. In this way, control over the innovation shifts dynamically as innovator and manager continue to define and redefine who is in control. Fourth, conflict is an inherent part of innovation ownership struggles. The kind of conflict that occurs in innovation ownership struggles is unique in that the behaviors involved are simultaneously conflict generating and conflict resolving. Finally, innovation ownership struggles have both generative and deleterious outcomes that are complexly intertwined and difficult to unravel. Struggles for ownership may involve deviant acts including sabotage and withholding information that can delay if not derail the innovation process. At the same time, psychological ownership is a powerful intrinsic motivator and individuals who are committed and highly dedicated are central figures in successful innovations. Moreover, innovation ownership struggles as a whole can serve to expose

imbalances of control in the innovation process and allow for the development of more participative structures.

Our study of innovation ownership struggles indicates that innovators and managers used six types of resistance and control tactics, and that different combinations of tactics led to different control outcomes. Managers relied on assimilative, authoritative, and dismissive tactics, whereas innovators used accommodative, adversarial, and subversive tactics. For the most part, managers had dominant control over the innovations, regardless of the type of tactics they used. This "de facto" managerial control is to be expected in large organizations where managers are typically assigned to lead innovation projects and programs. However, managerial control shifted towards innovator control only when innovators used subversive tactics, regardless of managerial tactics. These tactics involved highly covert behaviors that leveraged legitimate structures as a basis for claiming control. This simultaneously makes it difficult for managers to oppose innovators' claims to ownership and control, but also difficult for innovators as the use of subversive tactics requires the right opportunity for claiming control (i.e. an opportunity that enables innovators to leverage legitimate structures). Not surprisingly, shared control only occurred when both innovators and managers were willing to partially relinquish control whilst attempting to maintain some control. Specifically, managers' use of assimilative tactics combined with innovators' use of accommodative tactics led to shared control.

Because this is an exploratory study of a limited number of instances, and because it was conducted in real time, we did not observe all possible combinations of tactics. However, it is also possible that under certain conditions, specific combinations of tactics are less likely to occur (e.g. authoritative and adversarial tactics in this study).

Nevertheless, two findings specifically related to the process of innovation ownership struggles are worth highlighting. Firstly, the shift from managerial to innovator control occurred for the first time at roughly the same point across cases. We refer to this as the turning point because it is only after this point that a shared form of control between innovators and managers emerged. This suggests that turning points in innovation ownership struggles not only serve to shift control from managers to innovators control but also to expose and draw attention to imbalances in control that could then be addressed in a participative fashion. In other words, the turning point impelled both innovators and managers to consider each other's positions as co-owners of the innovation process. Although this did not occur in the Leaf project, we suspect it was because formal control structures were not clear yet at the time when control first shifted from manager to innovator. The manager involved in the specific turning point episode was, in fact, not the same manager that was instated to lead the project shortly after this point. Notably, prior to the turning point the innovator had expressed her preferences for the former manager to lead the project.

Secondly, none of the struggles were "resolved", even after more than a year had passed since the researcher first entered the field and many subsequent organizational changes had occurred. The Sphere project was dismantled and the technology officially transferred from the R&D Asia Program to the New Business Division, although both the innovator and R&D program manager continued to be involved. The CoCell project was ultimately located in the innovation portfolios of both the R&D Asia Program and the product division, making it unclear what the product development strategy for the technology would be (i.e. incorporating in existing product as innovator recommended, or developing new product for Asian market as program manager preferred). Although the

Leaf project was transferred to a broader research program in the product division, the struggle between the Leaf innovator and the program manager did not desist. These findings suggest that the development of participative decision making and control structures between innovators and managers is an ongoing process of negotiating and re-negotiating boundaries of control over the innovation as well as the meaning of ownership in the innovation process. This ongoing process appears to occur in concert with other dynamic aspects of the innovation process including changes in the innovation project itself (e.g. transitioning from one stage of development to another) as well as in the surrounding environment (e.g. changes in organizational structure, strategy, and resources). This calls into question the assumption that facilitative factors of the innovation process such as shared goals and participative climates should be treated as something static or consistent. In contrast, as things change in the project and its surrounding environment, ownership and control structures may need to change accordingly; fixed control structures may even be detrimental to the innovation process. We therefore argue that control structures and related interpretive frameworks in the innovation process exist in a perpetual state of negotiation between innovators and managers and that this is ultimately beneficial for the innovation process.

3.6.1 Theoretical Implications and Future Research

This research contributes to our understanding of ownership and control dynamics in the innovation process in three ways. First, it moves beyond simply positing participative decision-making and commitment to shared goals as facilitating factors of innovation (Hülsheger, Anderson, & Salgado, 2009; West, 2002) to understanding how innovators and managers produce and give meaning to participative control structures. The process is

one of ongoing negotiation in which the boundaries of ownership and control over the innovation are continuously defined and redefined. This process of negotiation gives rise to the development of participative decision-making and control structures between innovators and managers. Once established, these structures may remain stable for a period of time, but are likely to be re-negotiated as a result of developmental changes in the project itself or turbulence in the surrounding environment. This research demonstrates that how control structures are negotiated has important implications for the extent to which those structures involve shared, participative decision-making between innovators and managers. While this study represents a first step, much more research is required to understand how control and decision-making structures emerge in the innovation process. For example, future studies could examine differences in the development and negotiation of innovation ownership and control in the presence versus absence of innovators with a strong sense of psychological ownership towards the innovation. Researchers could also consider how such structures emerge in highly innovative versus less innovative projects, or between projects with low versus high organizational strategic relatedness (Kelly & Lee, 2010).

Second, rather than depict control structures between managers and innovators as the opposition of "constraint" versus "agency", our study of innovation ownership struggles builds on a tradition of organizational research that emphasizes the interdependence of structural frameworks (i.e. prescriptions of positions, roles, and authority) and social interaction (i.e. how actors realize their work through emergent patterns of interaction) as mutually constitutive (March & Olson, 1976; Weick, 1979). Thus, control structures are continually produced and reproduced in interaction and simultaneously shapes that interaction (Weick, 1993). Organizational members bring their values and preferences in

the form of interpretive schemes to social interactions such that they tend to give meaning to and shape structural frameworks in ways that confirm those values and preferences (Frost & Egri, 1990). However, the interpretive schemes that members use to shape organizational structures are as often sources of cleavage as of consensus, bringing members into conflict. It is therefore important to examine, alongside micro patterns of social interactions, relations of power that enable certain organizational members to shape organizational structures according to their own interpretive schemas, and to exclude the schemas of others.

In this study, we attempt to unravel the complex dynamics involved in shaping control structures in the innovation process and demonstrate how innovators and managers bring to bear their interpretive schemas, and concomitant actions, in order to influence decision-making and simultaneously oppose the others' claims of control over the innovation. We argue that although innovation ownership struggles may have negative consequences in the short-term, they nevertheless serve to expose imbalances in control that may be harmful to the innovation process in the long run. While the nature of our study prevents us from drawing conclusive causal inferences, evidence in the innovation literature provides initial support for our assertions and suggests the importance of combining control structures that both delegates decision making power to those performing the tasks and enables those individuals to determine appropriate structures for decision-making processes (Bonner, Walker, and Ruekert, 2002; Rijsdijk & van den Ende, 2011). Furthermore, a recent study shows that psychological ownership – based on the right to exert influence rather than legal forms of ownership – is a strong predictor of entrepreneurial behavior in firms, but only when managerial monitoring is low (Sieger, Zellweger, & Aquino, 2013). Future research could more carefully consider the effects of

innovation ownership struggles on the innovation process by comparing innovation projects that are, for example, characterized by more or less intense negotiation of ownership boundaries.

Third, research on politics in the innovation process tends to, firstly, be relatively scarce, and secondly, focus primarily on the role of the champion as the central and most adept influencing figure in the innovation process (Day, 1994; Howell & Higgins, 1990). As a result of their boundary-spanning roles, champions are well-positioned to promote the innovation to senior decision-makers and secure organizational legitimacy, support, and resources in turn (Howell & Shea, 2006). These studies, however, tend to pit powerful controlling managers against relatively less powerful, but highly skilled champions and take for granted control structures that depict managers as the ultimate decision-makers. We seek to broaden the analysis of innovation politics as primarily involving upward influencing dynamics by considering how managers and innovators co-construct and negotiate decision-making and control structures to begin with. Our starting point is therefore questioning the assumption that managers are naturally in control of the innovation process and investigating how boundaries of control are negotiated instead. In doing so, we are able to contribute a more complex and dynamic understanding of innovation control and decision-making structures and its implications for the innovation process. Future research should consider a broader range of internal political struggles that may impact the innovation process such as those involved in accessing, sharing and withholding critical information and resources, and the pursuit of individual career prospects.

3.6.2 Practical Implications

Our study showed (i) that innovators and managers are not necessarily aligned in their goals and interests, (ii) that differences in claims to control based on formal versus psychological ownership create a point of tension between innovators and managers, and (iii) that decision-making and control structures in the innovation process are mutually defined and shaped through innovation ownership struggles. We also argue that this joint production and reproduction of structures is an inherent and ongoing dynamic in the innovation process and that participation and control structures rarely remain fixed over time. The question that remains is, if ownership struggles are inherent to the innovation process and are ultimately beneficial, what then can be done to facilitate that process. We offer three suggestions.

First, we urge managers to become more cognizant of the importance of psychological ownership in the innovation process. Psychological ownership is associated with a deep sense of responsibility that leads to high levels of dedication and commitment to the success of the innovation and a willingness to make personal sacrifices and take risks (Pierce et al., 2001; 2003). Ignoring such feelings of attachment on behalf of innovators is tantamount to ignoring a strong source of intrinsic motivation, which is crucial for dealing with the many challenges integral to the innovation process. Second, because psychological ownership can lead to territorial behaviors, it is important to respond to such behaviors in ways that address the underlying fears related to loss of control. Increasing control through monitoring or micromanaging may, counterproductively, lead to a further increase in territorial behaviors. Likewise, piecemeal approaches to participative decision-making processes such as including innovators in decisions but restricting their influence may seem appealing but could end up exacerbating the situation.

Instead, territorial behaviors should serve as a signal for the need to discuss existing decision-making and control structures in an open fashion. Finally, innovators with a strong sense of psychological attachment are encouraged to be mindful of their own level of psychological investment so as to avoid creative myopia and isolation. Innovation is a collaborative effort. Those who are better able to take full advantage of the benefits of collaboration are most likely to succeed.

3.6.3 Conclusion

As organizations seek to be more innovative, and encourage their employees to not only come up with new ideas but to take ownership of developing and implementing those ideas, it is perhaps time to revisit the classic question of agency and control in the innovation process. Participative decision making structures are critical for innovation success. However, understanding how such structures emerge, transform and evolve is a necessary first step. Only then can we begin to consider how best to manage and facilitate greater participation in the innovation process.

APPENDIX A

Chronological Events of the Sphere Innovation Ownership Struggle

Episode	ETHNO Code	Description of Event or Action	Resistance & Control Tactics
Antecedents and Initial Triggers	1-PT	Initial *Patent* for Sphere filed	
	2-PDTR	*Product division rejects Sphere technology* and is not interested in developing it	
	3-CRD_SFFRP	*CRD merges Sphere* program with *FFRP*	
	4-RM_INBDD	*FFRP Research Manager influences NBD Director* to adopt Sphere technology	
	5-NBTA	*NBD adopts Sphere technology*	
	6-NB_TLXEN	*NBU license technology to external entrepreneur*	
Episode 1	7-RM_CHSPS	*Research Manager changes Sphere project structure*; separates R&D technology development from NBD prod dev activities	
	8-RM_CHPL	*Research Manager changes Sphere project leadership*	
	9-IVNLR_SP	*Innovator no longer* has *leadership role* of entire Sphere project	
	10-RM_PL1_NBPD	*Research Manager* assigns *new project leader* to Sphere *NBD prod dev* activities	
	11-RM_IVCHLR	*Research Manager changes leadership role of innovator* to leader of Nutrition Project (which Sphere tech dev is a part of) in FFRP	
	12-IV_OCHLR	*Innovator opposes change in leadership role* to Nutrition project leader	
	13-RM_PL2_TD	*Research Manager* assigns *new project leader* Nutrition project; new leader also manages Sphere *tech dev activities*	

	14-RM_IVCHLS	*Manager changes innovator's role to lead scientist* of Sphere tech dev activities	MGR_COOPT
	15-IV_ALSR	Innovator accepts lead scientist role	INV_CONCOL
	16-IVPL1_NBPD	Innovator agrees to work with new project leader for Sphere NBD prod dev activities	SHRD_CTRL
Episode 2	17-RM_IIVPDI	*Research Manager implements innovator's* original *prod dev ideas* in NBD prod dev strategy	MGR_APPROP
	18-IV_DNTF	*Innovator develops new technology formulation* different from product dev formulation	
	19-IV_NTF_TDS	*Innovator* decides to use *new tech formulation* and not prod dev formulation in *tech dev studies*	INV_OBSTRUC
	20-RM_PDF_TDS	*Research manager* decides *prod dev formulation* must be used in *tech dev studies* as "comparator"	MGR_CTRL
Episode 3	21-RM_PRIOPDS	*Research Manager* assigns greater *priority to prod dev studies*; postpones tech dev study 1	MGR_UDM
	22-TDS1_DLY	Sphere *tech dev study 1 delayed*	
	23-PDS1S	Sphere *prod dev study 1 started*	
	24-PDS1_RP	Sphere *prod dev study 1 results positive*	
	25-IV_PRIOTDS1	*Innovator* advises to *prioritize tech dev study 1* before prod dev studies 3 and 4	
	26-IV_PPNTF	*Innovator reports problems producing new tech formulation;* project leaders argue reproducibility is a known problem that innovator refuses to solve	INV_OBSTRUC
	27-TDS1_DLY2	Sphere *tech dev study 1 delayed second time* as a result of formulation problems	
	28-PDS3_DLY	Sphere *prod dev study 3 delayed* due to contractual issues	

	29-IV_CNPDS3	*Innovator decides to cancel planned prod dev study 3*	INV_OBSTRUC
	30-RM_CTPDS3	*Research Manager decides to continue prod dev study 3*; results needed for entrep product launch	MGR_CTRL
	31-NIS	FFRP Research Manager announces organization's *new innovation strategy*	
Episode 4	32-IV_VPSBP	*Innovators seeks Research Manager's support for new business plan* proposal	INV_UPWAPP
	33-RMS_PLI	*Research Manager supports idea*, but only if *project leaders are involved*	MGR_COC
	34-IV_APLI	*Innovator avoids project leaders' involvement*	
	35-RM_IBP	*Research manager includes new business plan* in Sphere project activities	MGR_CTRL
	36-IV_QRP	Innovator quits and leaves Research Program	
Episode 5	37-PM_LPTS	*Patent manager leads patent development strategy*	
	38-IVNLR_PTS	*Innovator does not have leading role in patent development strategy*	
	39-IV_OPTS	*Innovator opposes patent development strategy*	INV_OPPOS
	40-PM_DIV	*Patent Manager dismisses innovator's* objections and limits his influence	MGR_SYMINC
	41-PM_IPTS	*Managers implements patent strategy* and decide to develop 4 out of 6 ideas	MGR_CTRL
	42-PDS2S	Sphere *prod dev study 2 started*	
Episode 6	43-PL_LBP	*Project leaders lead* development of new *business plan*	
	44-IVNLR_BP	*Innovator does not have leading role in new business plan* development	

	45-PL_IVDBP	*Project leaders* want to *discuss new business plan with innovator*	MGR_SYMINC
	46-IV_ADBP	*Innovator is resistant; agrees to discussion* but requests access to information about licensing contract	INV_CONCOL
	47-BM_NALC	*Business managers* offer *no access to licensing contract*	MGR_CTRL
	48-TDS1S	Sphere *tech dev study 1 started*	
	49-TDS1_TE	Sphere *tech dev study 1 terminated early*; participants dropping out due to test product taste	
	50-TDS1_DLY3	Sphere *tech dev study 1 delayed third time*	
	51-RM_CHRPS	*Research Manager changes research program structure* from FFRP to new Asia Research Program (ARP)	
	52-SIP_ARP	*Sphere structured as independent project in ARP*	
	53-CRDPR	*Chief of R&D gives positive review* of new ARP	
	54-ARP_DWNSZ	*ARP is downsized* from 40 to 25 full-time employees (FTEs)	
	55-SP_DWNSZ	Sphere project downsized from 10 to 4 FTEs	
	56-NBD_RDS_NPA	*NBD Director seeks R&D Exec's support for new Sphere product application*	
	57-CRDS_NPA	*Chief of R&D supports NPA,* but does not support further investment in Sphere prod dev activities	
	58-TDS1_RD	Team *re-design tech dev study 1* and solve test product issues	
Episode 7	59-PL_IVSHD	Project leaders request innovator share data of tech dev reproducibility tests	MGR_COC

	60-IV_RSTSHD	*Innovator resists sharing data*; agrees but data needs to be compiled and he doesn't have the time	INV_CONCOL
	61-SC_ASHD	Sphere *scientist agrees to share some data*	
	62-PL_IVRMV	*Project leader* will recommend to have *innovator removed* from project	MGR_CTRL
Episode 8	63-IV_BPI	*Innovator* will develop *business plan* on his own, *independently* from project leaders	INV_ANNEX
	64-PL_IVBDS	*Project leader advises innovator that business plan must have NB Director's support*	
	65-PA_IVCPL	*Patent Manager tells innovator he needs to cooperate with project leaders*; he cannot do it on his own	MGR_COC
	66-IV_IBPI	*Innovator implements* steps to develop *business plan independently*	INV_CTRL
Episode 9	67-PL2IV_DDM	*Project leader 2 and innovator discuss* concerns about *decision making* in Sphere project	
	68-IV_OPL	*Innovator opposes project leadership* and wants greater involvement and influence in dec making	INV_OPPOS
	69-PL_IVIDM	*Project leader* shares docs for *innovator input in decisions*, but doesn't think innovator needs to be involved in all decisions	MGR_SYMINCL
	70-PL_OIVRMV	*Project leaders officially* request to *have innovator removed* from project	MGR_CTRL
	71-PDS2_RP	*Prod dev study 2 results positive*	
	72-NBD_IS_NPA	*NBD Director increases Sphere project size* by 3FTEs to cover development of *new product application*	

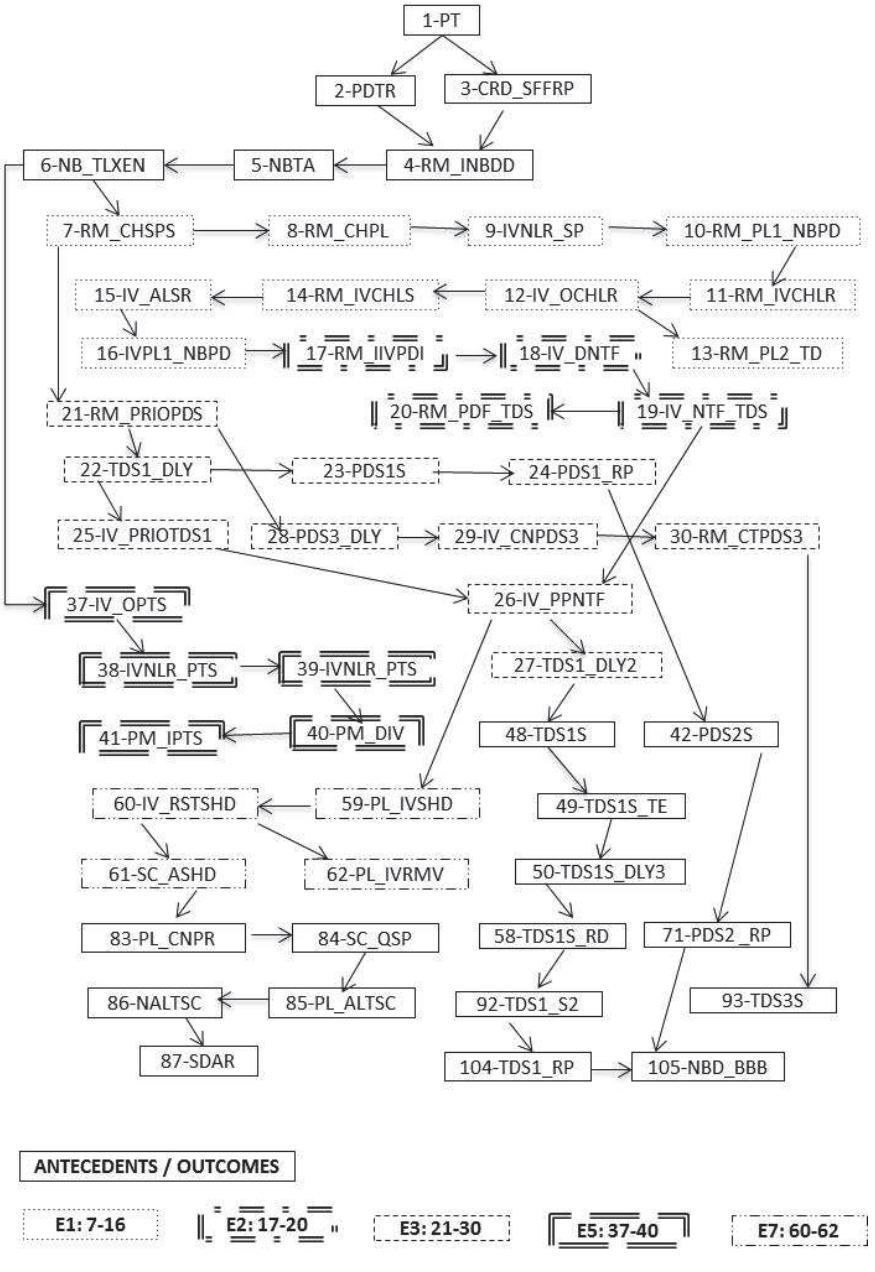
	73-RM_PL1_LSP	*Research Manager assigns prod dev project leader to lead new Sphere project* in ARP	
Episode 10	74-PL_XIVDM	*Project leaders decide on tech dev strategy and excludes innovator from dec making*	MGR_MARG
	75-PL_RGMRR	*Project leaders submit resource proposal to RGM for resource review*	
	76-IV_ICRR	RGM puts *innovator in charge of resource review*	
	78-IV_AMR	*Innovator allocates minimal resources* to project	
	79-IV_ALS	*Innovator allocates himself as lead scientist* to project for minimal time	INV_UNDERM
	80-PL2_RGMS	*Project manager asks RGM's support* with resources and innovator uncooperativeness	
	81-RGM_NS	*RGM does not support* project leader with more resources or innovator uncooperativeness	
	82-IV_MRR	Project manager realizes *innovator has manipulated resource review*	INV_CTRL
	83-PL_SCNPR	*Project leaders* give Sphere *scientist negative performance review*	
	84-SC_QSP	Sphere *scientist quits and leaves Sphere project*	
	85-PL_ALTSC	*Project leader* requests RGM to assign *alternative scientist to project*	
	86-NALTSC	*No alternative scientist is available*	
	87-SDAR	Number of planned *Sphere dev activities reduced*	
Episode 11	88-PLIV_DDM	New Sphere *project leader and innovator discuss* concerns about *decision making* in Sphere project	

	89-IV_OPL	*Innovator opposes project leadership* and wants greater involvement and influence in dec making	INV_OPPOS
	90-PL_RMS_XIV	*Project leader asks Research Manager's support in excluding innovator* from activities	MGR_MARG
	91-RMS_IXV	*Research manager supports project leader excluding innovator*	MGR_CTRL
	92-TDS1_S2	*Sphere tech dev study 1 started for the second time*	
	93-TDS3S	Sphere *prod dev study 3 started*	
Episode 12	94-PLIV_DBP	Project leader and innovator discuss how to work together to develop new business plan	MGR_COOPT
	95-IV_RSTDBP	Innovator is resistant, but agrees to work together if he can present his own separate plan	INV_CONCOL
	96-PLIV_DBP	Project leader and innovator agree to work together, separately	SHRD_CTRL
Episode 13	97-PL_TDSTM	*Project leader holds tech dev strategy meeting*	
	98-PL_XPIV	*Project leader* uses team tech dev strategy meeting to *expose innovator's* uncooperativeness	MGR_SYMINCL
	99-IV_CPL	*Innovator is critical of project leader's* tech dev strategy and questions scientific authority	INV_UNDERM
	100-PT_DNCIV	*Project team members do not contest innovator's* decisions as science leader	INV_CTRL
Episode 14	101-IV_RSTNPA	*Innovator is resistant to developing new product application*; does not support dev NPA but joins discussions and gives input	INV_CONCOL
	102-PL_XIV_NPA	*Project leader excludes innovator from influencing decisions on new product application* and ignores his input	MGR_MARG

	103-PL_LXIV	*Project leader* uses innovators minimal time as *legitimate reason to exclude him*	MGR_CTRL
Episode 15	104-TDS1_RP	Sphere *tech dev study 1 results positive*	
	105-NBD_BBB	*NBD Director decides to buy back business* from entrepreneur	
	106-VP_BPH	*VP recommends to put development of new business plan on hold*	
	107-PLIV_DBP	*Innovator and project leader continue to develop two business plans*	
	108-IV_RSTTDS	*Innovator is resistant to Sphere tech dev strategy*; he is highly cooperative in developing bus plan, but not in other Sphere activities	INV_CONCOL
	109-PLIV_BPRMS	*Innovator and project leader present business plans to Research Manager for support*	
	110-PL_XPIV	*Project leader uses meeting with Research Manger to expose innovator's uncooperativeness*	MGR_SYMINCL
	111-BPNS	*New business plan receives no further support*	
	112-PL_RMS_IVRMV	*Project leader asks Research Manager to support innovator's removal from project*	
	113-RMS_IVRMV	*Research Manager supports innovator's removal from project*	MGR_CTRL
	114-SP_TRFNBD	*Sphere project* reduced to 1.5 FTEs and *transferred to NBD*;	
	115-IV_ISP	*Innovator still involved in Sphere project*	
	116-PL_QRP	*PL quits and leaves Research Program*	

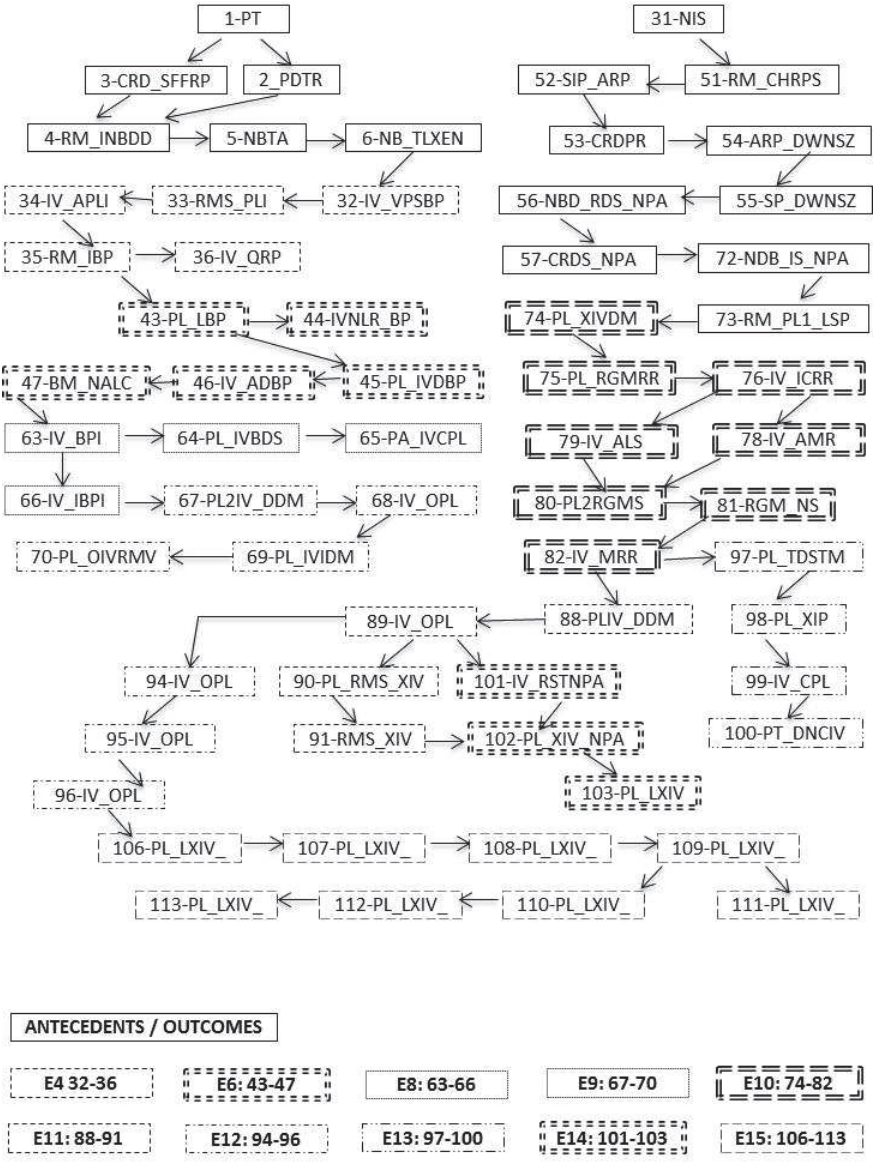
APPENDIX B

Causal Event Structure of the Sphere Innovation Ownership Struggle (E1, 2, 3, 5, 7)



APPENDIX B

Causal Event Structure of the Sphere Innovation Ownership Struggle (E4, 6, 8 – 15)



APPENDIX C

Chronological Events of the CoCell Innovation Ownership Struggle

Episode	ETHNO Code	Description of Event or Action	Resistance Control Tactics
Antecedents and Initial Triggers	1-PT	Initial *Patent* for CoCell filed	
	2-S1S	*Study 1 started* to test technology effects	
	3-NIS	FFRP Research Manager announces organization's *new innovation strategy*	
	4-PDDEP	*Product Division is deprioritized* in new innovation strategy	
	5-RFDEP	Healthy fats *research field deprioritized* in new innovation strategy	
	6-RM_VPS	FFRP *Research Manager asks VP* of Product Division to *support* continuation of healthy fats research	
	7-VPNS	*VP* of Product Division *does not support* FFRP Research Manager	
	8-RM_CHRPS	*Research Manager changes research program structure* from FFRP to Asia Research Program (ARP)	
	9-RPDA	Healthy Fats project disassembled	
	10CRDPR	*Chief of R&D gives positive review* of new ARP	
	11-RM_CHPL	*Research Manager changes project leaders* in new ARP	
Episode 1	12-IVNLR	*Innovator no* longer has *leadership role* of Healthy Fats project	
	13-RM_IVCHLR	*Research Manager changes leadership role of innovator* to "science leader" in ARP	MGR_COOPT
	14-IV_OCHLR	*Innovator opposes change in leadership role* to science leader	INV_OPPOSE

	15-IV_HRMS	*Innovator* discusses alternative role with *HR manager* and *asks for support*	
	16-HRMNS	*HR Manager* is *not* able to *support* with suitable alternative role	
	17-IV_ACHLR	*Innovator* reluctantly *accepts changes in leadership role*	MGR_CTRL
Episode 2	19-IV_DNLR	Innovator feels demotivated in new leadership role	
	20-IV_RSTNLR	Innovator resists new leadership role and does not fully cooperate	INV_CONCOL
	21-PLX_IV	Project leader excludes innovator from decision making	MGR_MARG
	22-IV_NDA	Innovator has no decision authority in new project	MGR_CTRL
Episode 3	23-IV_PDPA	Innovator wants Product Division to develop CoCell product application	
	24-RM_NBPA	Research manager decides its better if New Business Division develops CoCell product application	MGR_UDM
	25-IV_RSTNBPA	Innovator resists NB Division developing product application; agrees but only if combined with other technologies	INV_CONCOL
	26-RM_INBPA	Research manager implements decision to have NBD develop CoCell product application	MGR_CTRL
Episode 4	27-S1P	Study 1 results positive	
	28-RM_TDARP	Research manager wants to incorporate CoCell technology development into ARP	MGR_APPROP
	29-IV_OTDARP	Innovator opposes CoCell technology development as part of ARP; should be separated from rest of ARP	INV_OPPOSE
	30-RM_ITDARP	Research Manager implements CoCell technology development into ARP b/c "it has to sit somewhere in ARP structure"	MGR_CTRL

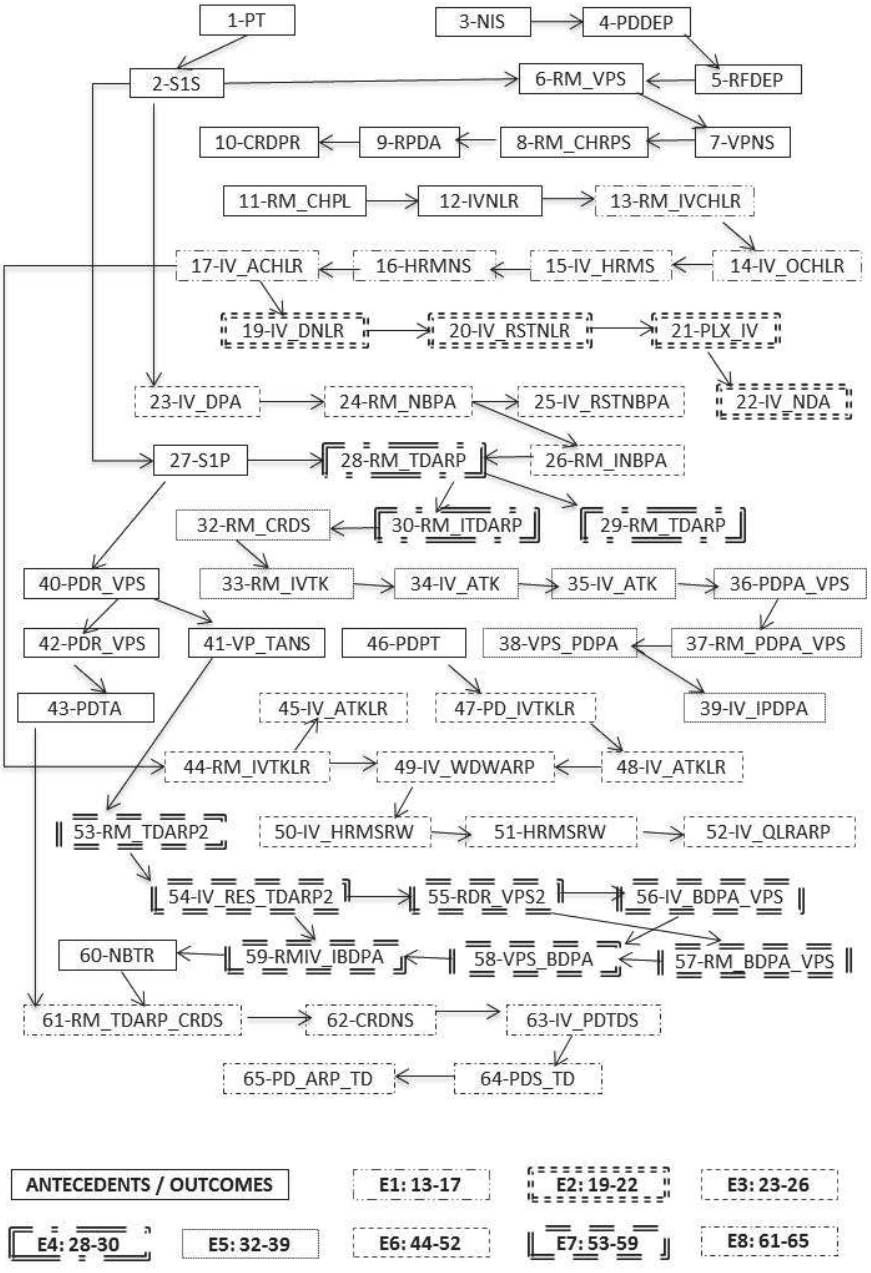
Episode 5	32-RM_CRDS	Research manager wants to get Chief of R&D's support for CoCell technology development in ARP	
	33-RM_IVTK	Research manager gives innovator task to develop business case for CRD to support tech dev via ARP	MGR_COC
	34-IV_ATK	Innovator agrees to do task of preparing business case for CRD, even she disagrees with tech dev in ARP strategy	
	35-RDR_VPS	Innovator and research manager presents tech dev strategy at R&D review meeting to get VP's support	
	36-IV_PDPA_VPS	Innovator opposes research manager and asks VP's support for PD to develop CoCell product application	INV_ANNEX
	37-RM_NBPA_VPS	Research manager asks VP's support for NB Division to develop CoCell product application	
	38-VPS_PDPA	VP supports Product Division developing CoCell product application	
	39-IV_IPDPA	VP endorses innovator to implement strategy for PD to develop CoCell product application	INV_CTRL
	40-PDR_VPS	Innovator and research manager presents tech dev strategy at Product Division review meeting to get VP's support	
	41-VP_TANS	Product division VP does not support technology adoption and is not fully committed to development CoCell	
	42-IV_PDPFS	Innovator presents tech dev strategy at Product Division portfolio strategy meeting	

	43-PDTA	Product division adopts CoCell technology and adds to long term product portfolio	
Episode 6	44-RM_IVTKLR	Research manager tasks innovator with leadership role in ARP screening strategy	MGR_COC
	45-IV_ATKLR	Innovator agrees to task and leads screening strategy discussion in ARP	
	46-PDPT	Healthy fat product division product under threat from competitors	
	47-PD_IVTKLR	PD tasks innovator to take leading role in product defense strategy	
	48-IV_ATKLRPD	Innovator agrees and takes lead in PD defense strategy	
	49-IV_WDWARP	Innovator increasingly withdraws her involvement in ARP	
	50-IV_HRMSRW	Innovator asks HR Manager's support in officially reducing her workload in ARP	INV_UNDERM
	51-HRMSRW	HR manager supports innovator's request and reduces workload for ARP	
	52-IV_QLRARP	Innovator quits leading activities in ARP and only leads CoCell tech dev activities	INV_CTRL
Episode 7	53-RM_TDARP2	Research manager wants to incorporate CoCell technology development into ARP	MGR_APPROP
	54-IV_RESIST_TDARP	Innovator resists CoCell technology development as part of ARP; agrees but only if combined with other technologies	INV_CONCOL
	55-RDR_VPS2	Innovator and research manager presents tech dev strategy at R&D review meeting to get VP's support	

	56-IV_BDPA_VPS	Innovator proposes NB to develop CoCell product application	
	57-RM_BDPA_VPS	Research Manager proposes NBU to develop CoCell product application	
	58-VPS_BDPA	VP supports the need to pursue both PD and NB product application strategies	
	59-RMIV_IBPDA	Innovator and Research manager implement NB product application strategy and meet with NBU Director	SHRD_CTRL
Episode 8	60-NBTR	NBU rejects CoCell technology and is not interested in developing it	
	61-RM_TDARP_CRDS	Research manager seeks Chief of R&D's support for CoCell tech dev in ARP	MGR_APPROP
	62-CRDNS	Chief of R&D does not support further technology development in ARP	
	63-IV_PDTDS	Innovator seeks Product Division support to provide funds for further CoCell tech dev	INV_UPWAPP
	64-PDS_TD	PD supports and provides funds for follow-up tech dev study to strengthen CoCell patent	
	65-PD_ARP_TD	PD and ARP jointly responsible for tech dev since CoCell is "located" in innovation portfolios of both	SHRD_CTRL

APPENDIX D

Causal Event Structure of the CoCell Innovation Ownership Struggle



APPENDIX E

Chronological Events of the Leaf Innovation Ownership Struggle

Episode	ETHNO Code	Description of Event or Action	Resistance Control Tactics
Antecedents and Initial Triggers	1-IV_PLPDP	Innovator project leader in Leaf product division project	
	2-IV_PLLRDT	Innovator project leader Leaf R&D team in FFRP	
	3-LS1S	Leaf study 1 started	
	4-LS1_RP	Leaf study 1 results positive	
	5-CT_ALT	Chem team adopt Leaf technology for new product development in Asia	
	6-IVLT_ACT_L2S	Innovator and Leaf team assist Chem team with Leaf 2 Study (prod dev)	
	7-IVLT_DL3S	Innovator and Leaf team design Leaf 3 study to test new technology (tech dev)	
	8-LTM_L2STCRO	Leaf team member finds Leaf 2 study measurement training CRO	
	9-PD_NFL3S	Product division does not fund Leaf 3 study	
	10-L3S_TFFRP	Leaf 3 study transferred to FFRP	
	11-CT_PPL3T	Chem team develops production process for Leaf 3 technology	
	12-NIS	FFRP Research Manager announces organization's new innovation strategy	
	13-PDDEP	Product Division is deprioritized in new innovation strategy	
	14-PDRS	Product division re-structured	
	15-NRDD	Former Chem Program Manager instated as new R&D Director in product division	
Episode 1	16-RDD_HBP	New R&D Director merges all Leaf activities in R&D and product division into single Healthy Beverages program	

	17-IVNLR	Innovator no longer has leadership role of Leaf product division project	
	18-RM_IVLRU	Research Manager suggests innovator continue her leadership role "unofficially" in new program	MGR_COOPT
	19-IV_RJULR	Innovator rejects unofficial leadership role; still involved in planning Leaf development strategy	INV_CONCOL
	20-PDTD_SBT	Product dev and tech dev studies still split between Chem and Leaf teams	SHRD_CTRL
	21-RM_CHRPS	*Research Manager changes research program structure* from FFRP to new Asia Research Program (ARP)	
	22-CRDPR	*Chief of R&D gives positive review* of new ARP	
	23-ARP_DWNSZ	*ARP is downsized* from 40 to 25 full-time employees (FTEs)	
	24-SP_DWNSZ	Leaf project downsized from 10 to 4 FTEs	
	25-FTE_NE	*Leaf FTEs not enough* to cover both Leaf 2 product dev activities and Leaf 3 tech dev activities	
Episode 2	26-RM_MCRM	*Research manager (former Chem team leader) suggests innovator merge* Leaf team's tech dev *clinical studies roadmap* with Chem team's	MGR_APPROP
	27-IV_DS_SBT	Innovator asks Director's support to maintain split of dev activities between two teams	INV_UPWAPP
	28-DS_SBT	Director supports maintaining the split between teams	SHRD_CTRL
	29-L2CRO_BC	*Leaf 2 study* measurement training *CRO has business crisis*	
	30-L2MT_DLY	*Leaf 2 study measurement training delayed*	

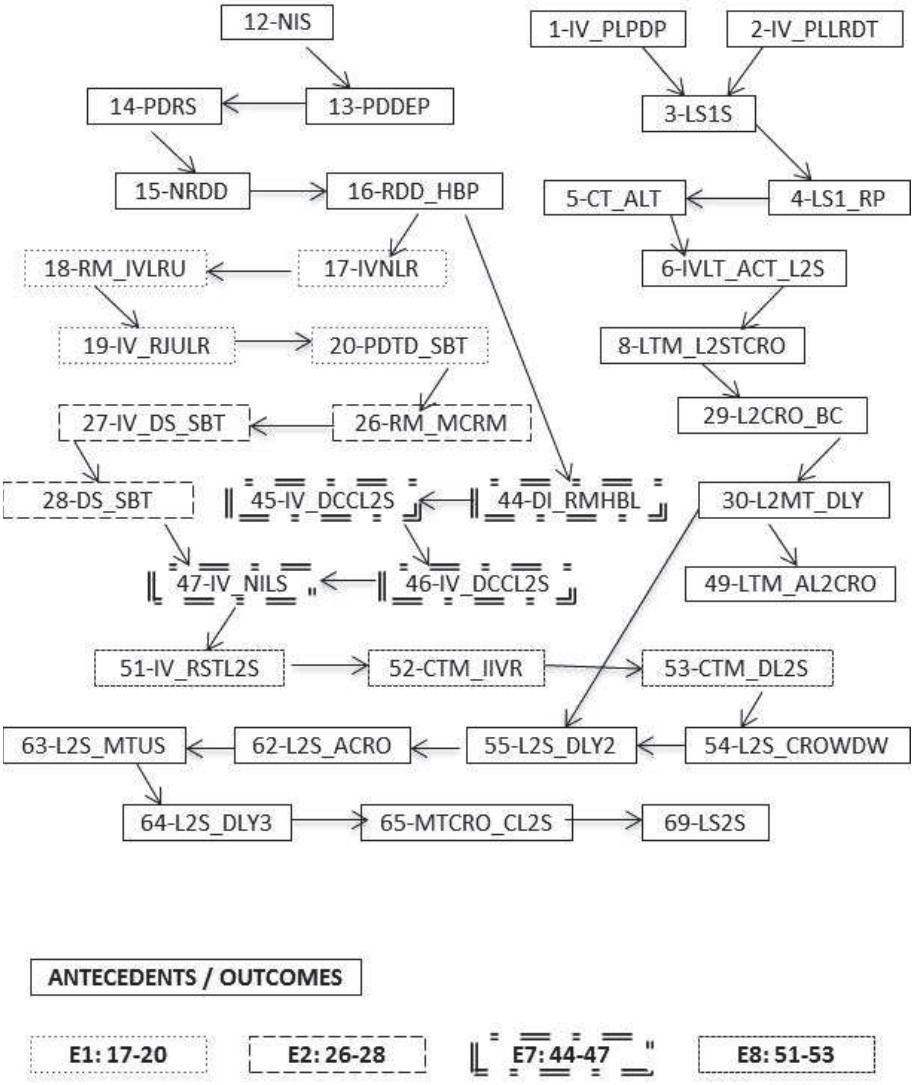
	31-CT_PTPD	*Chem team report problems* with Leaf 3 study *test product development*	
Episode 3	32-PM_IVT_BD	Product manager expects innovator's team to work on brand development activities	MGR_COC
	33-IV_RMR	*Innovator requests more resources* to prevent manager from using team's tech dev resources	INV_UPWAPP
	34-PM_RDR	*Product manager simply re-distributes team's resources* for tech dev to brand development activities	MGR_CTRL
Episode 4	35-PM_IVT_BD	*Product Manager expects innovator's team* to attend *workshop on brand development activities*	MGR_COC
	35-IV_RSTBD	I*nnovator resists working on BD activities*; agrees to be involved, but not necessary for whole team to be present	INV_CONCOL
	36-PM_IIVTP	*Product Manager insists all team members must be present*; checks team's online agendas and schedules date	MGR_CTRL
Episode 5	37-PM_IVRL3	*Product Manager expects innovator to report on Leaf 3 study* design at product division meeting	MGR_COC
	38-IVT_RL3S	*Innovator says her team is responsible for Leaf 3 study* and no longer needs to report to manager since study was transferred to R&D	INV_ANNEX
	39-IV_SHDSD	I*nnovator offers to share decisions taken about study design* with product manager; manager accepts	INV_CTRL
Episode 6	40-RM_IVT_AL2S	Research Managers expect innovator's team to assist Chem team with Leaf 2 study	MGR_COC
	41-IVT_RSTA	Innovator's team is resistant to assist due to limited resources	

	42-IV_CTC	Innovator convinces team to comply in order to influence and control Leaf 2 study	INV_CONCOL
	43-TC_AL2S	Team comply with research manager's expectations to assist with Leaf 2 study	MGR_CTRL
Episode 7	44-DI_RMHBL	Director instates Research Manager (former Chem team leader) as new overall Healthy Beverages program leader	
	45-IV_DCCL2S	Innovator persuades Director for control over Leaf 2 study	INV_UPWAPP
	46-PL_XIV_DL2S	New program leader excludes innovator from decisions about Leaf 2 study	MGR_MARG
	47-IV_NILS	Innovator is no longer involved in Leaf strategy;	MGR_CTRL
	48-CT_SPTPD	Chem team solve problems with Leaf 3 study test product development	
	49-LTM_AL2CRO	Leaf team member finds alternative Leaf 2 study measurement training CRO	
	50-CRD_NSL3S	Chief of R&D not supportive of funding Leaf 3 study, but VP Product Division is	
Episode 8	51-IV_RSTL2S	Innovator resistant to assist but consults on Leaf 2 study design and CRO selection; Leaf 2 success important for Leaf 3 study	INV_CONCOL
	52-CTM_IIVR	Chem team manager ignores innovator's recommendations	MGR_SYMINC
	53-CTM_DL2S	Chem team manager decides on Leaf 2 study design and CRO selection	MGR_CTRL
	54-L2S_CROWDW	Leaf 2 study execution CRO withdraws services	
	55-L2S_DLY2	Leaf 2 study delayed for the second time	
Episode 9	56-IV_VP_FL3TPD	Innovator persuades VP to provide funding to finalize Leaf 3 test product development	INV_UPWAPP

57-VP_FL3TPD	VP provides funding to finalize Leaf 3 test product development	
58-IV_AL3SC	Innovator assumes Leaf 3 study will continue given that test products are being developed	
59-VPRM_CNL3S	VP and Research Managers take decision to cancel Leaf 3 study; innovator not involved in decision	MGR_UDM
60-L3S_CN	Leaf 3 study is officially cancelled	MGR_CTRL
61-LTM_AL2ST	*Leaf team members attend Leaf 2 study measurement training*	
62-L2S_ACRO	*Leaf 2 study alternative CRO identified* and researchers trained in measurement	
63-L2S_MTUS	*Leaf 2 study measurement training unsuccessful*	
64-L2S_DLY3	*Leaf 2 study delayed for the third time*	
65-MTCRO_CL2S	*Measurement training CRO flies to Asia to conduct Leaf 2 study*	
66-HBP_RS	*Healthy Beverages program restructured*	
67-LTCT_DA	*Leaf and Chem teams are disassembled*	
68-IV_IHBP	*Innovator still involved in Healthy Beverages program*	
69-LS2S	*Leaf 2 study started*	

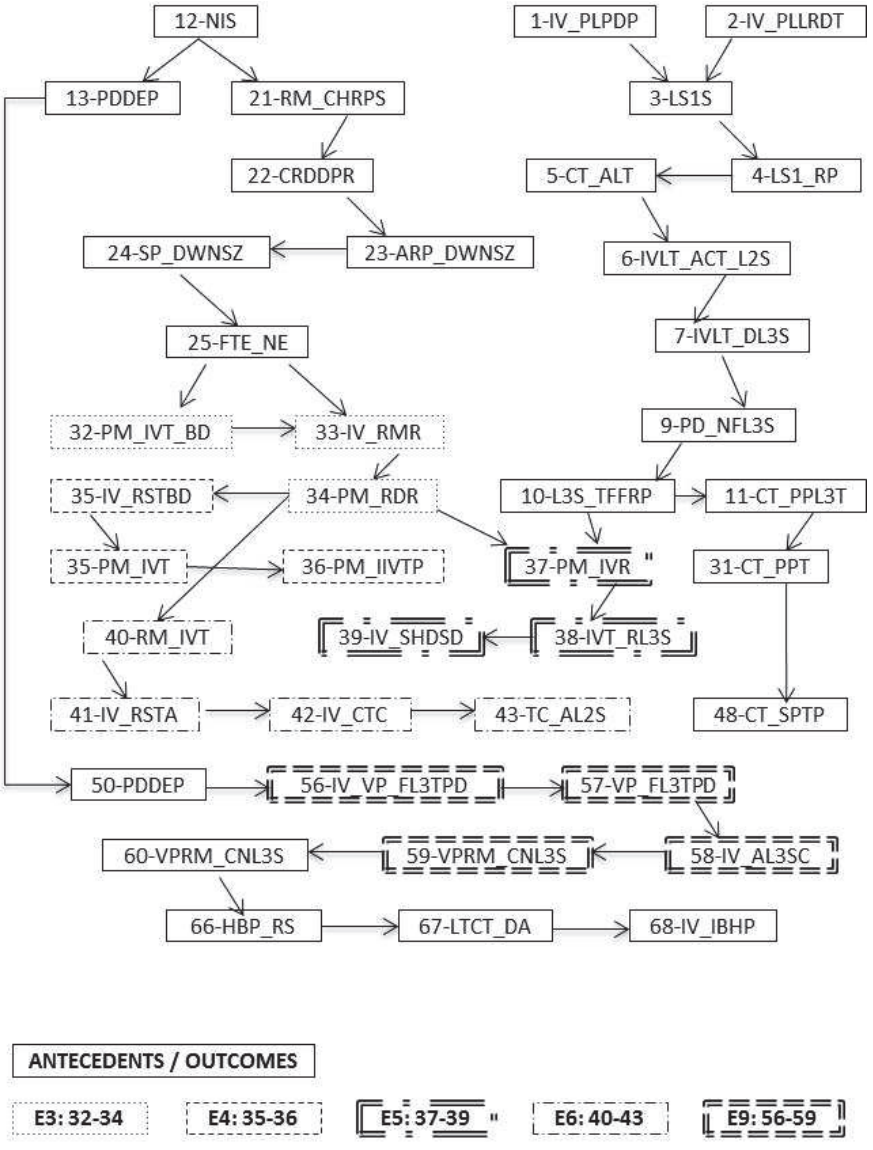
APPENDIX F

Causal Event Structure of the Leaf Innovation Ownership Struggle (E1, 2, 7, 8)



APPENDIX F

Causal Event Structure of the Leaf Innovation Ownership Struggle (E3, 4, 5, 6, 9)



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Summary

Innovation is often considered the Holy Grail of competitive advantage and growth in modern organizations. Organizing for innovation can therefore be seen as the cornerstone of organizational success. In this dissertation, I aimed to advance a more complex and dynamic understanding of innovation that places people – what they do and how they do it – at the center of the process. Specifically, my dissertation employs a process perspective to the study of innovation and does so in several ways. First, I adopt a view of innovation as a complex, dynamic process that is susceptible to unpredictable events. Second, I move beyond causal explanations that justify why innovation success is achieved to consider how different processes unfold that contribute to innovation success. Third, I employ a longitudinal approach to the study of innovation in order to take into account temporality, adaption, and evolving changes.

The two studies in this dissertation both advance novel theoretical concepts and models of the innovation process. In the first study I conduct a theoretical analysis of the literature on team goal orientation – a collective motivational state based on group goal preferences in an achievement context – to explain how teams can succeed in getting their radical innovation ideas implemented. I propose a novel approach for managing motivational states of innovation teams that involves dynamically adapting group goal preferences at key points in the innovation process. I argue that these dynamic shifts in goal preferences, when facilitated by an ambidextrous leader and achieved in a timely fashion in line with changes in the innovation process, predict team innovation implementation success.

In the second study I conducted ethnographic field research of three R&D projects in a large, multinational organization. I draw on organizational psychological theories of psychological ownership and territoriality, as well as sociological theory on workplace resistance, to analyze political disputes about control between innovators and managers during the innovation process. I develop and propose a novel theoretical concept referred to as "innovation ownership struggles, which I define as disputes for control between innovators with a strong sense of psychological ownership towards the innovation and managers with formal control over the innovation. I trace the evolution of innovation ownership struggles over time and explore how meanings of innovation ownership and control are mutually determined and emerge through the interactions of innovators and managers as they compete for control. Furthermore, I show how the presence of a tipping point in innovation ownership struggles serves to expose imbalances in control between innovators and managers during the innovation process. As a result, innovators and managers can begin to consider more shared and participative control structures that are critical for successful innovation.

Samenvatting

Innovatie wordt vaak beschouwd als de heilige graal voor concurrentievoordeel en groei in moderne organisaties. De organisatie van innovatie kan daarom worden gezien als de hoeksteen van het succes van een organisatie. In dit proefschrift heb ik geprobeerd om een meer complex en dynamisch begrip te krijgen van innovaties, waarbij mensen – wat zij doen en hoe zij het doen- een centrale plaats in het proces hebben. Meer specifiek, mijn proefschrift gebruikt een proces perspectief om innovatie te bestuderen en doet dit op verschillende manieren. Ten eerste, pas ik het beeld van innovatie aan naar een complex en dynamisch proces dat onderhevig is aan onvoorspelbare gebeurtenissen. Ten tweede, ga ik verder dan causale verklaringen die verantwoorden waarom innovatiesucces wordt bereikt om na te gaan hoe de verschillende processen, die bijdragen aan innovatie succes, ontplooien. Ten derde, gebruik ik een longitudinale benadering om innovatie te bestuderen, om rekening te houden met tijdelijkheid, aanpassingen, en veranderingen. De twee studies in dit proefschrift ontwikkelen nieuwe theoretische concepten en modellen van het innovatieproces.

In de eerste studie voer ik een theoretische analyse uit van de literatuur over doelgerichtheid van teams - een collectieve motivatie status op basis van de voorkeursdoelen van het team in een prestatie context – om uit te leggen hoe teams kunnen slagen om hun radicale innovatie ideeën geïmplementeerd te krijgen. Ik stel een nieuwe benadering voor betreffende het managen van de motivatie van innovatieteams, dit betreft dynamische aanpassingen van de voorkeursdoelen van de groep op belangrijke punten in het innovatieproces. Ik laat zien dat deze dynamische veranderingen in de voorkeursdoelen, wanneer gefaciliteerd door een ambidextrous leider en bereikt in een

tijd in lijn met de veranderingen in het innovatieproces, team innovatie implementatie succes voorspellen.

In de tweede studie heb ik een etnografisch veldonderzoek uitgevoerd binnen drie R&D projecten in een grote, multinationale organisatie. Ik gebruik organisatorische psychologische theorieën over psychologisch eigenaarschap en territorialiteit, evenals sociologische theorieën over weerstand op de werkplek, om politieke geschillen over controle tussen vernieuwers ("innovators") en managers tijdens het innovatieproces te analyseren. Ik ontwikkel en stel een nieuw theoretisch concept voor aangeduid als "worstelingen rondom innovatie eigendom", die ik definieer als geschillen over controle tussen vernieuwers met een sterk gevoel van psychologisch eigenaarschap voor de innovatie en managers met formele controle over de innovatie. Ik ga de evolutie van worstelingen rondom innovatie eigendom over tijd na en verken hoe betekenissen van innovatie eigendom en controle onderling zijn vastgesteld en ontstaan door de interacties tussen vernieuwers en managers als ze strijden om controle. Verder laat ik zien hoe de aanwezigheid van een omslagpunt in de strijd om innovatie eigendom dient om onevenwichtigheden in controle tussen vernieuwers en managers bloot te leggen tijdens het innovatieproces. Als gevolg daarvan kunnen vernieuwers en managers beginnen om meer gedeelde en participatieve controle structuren te overwegen die essentieel zijn voor een succesvolle innovatie.

About the Author

Lameez received a Master's degree in Research Psychology and a Bachelor degree in Psychological Studies from the University of Cape Town, South Africa. She was a visiting scholar at the University of Newcastle, Australia since 2007 and started her PhD at the Rotterdam School of Management in 2008. Her research interests lie at the intersection of psychology and sociology. Lameez has presented her work at several international conferences including the Academy of Management and Organization Studies summer conference. Currently Lameez is a postdoctoral fellow at the Rotterdam School of Management.

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PEOPLE, POLITICS, AND INNOVATION

A PROCESS PERSPECTIVE

In this dissertation, I aimed to advance a more complex and dynamic understanding of innovation that places people – what they do and how they do it – at the centre of the process. The two studies in this dissertation both advance novel theoretical concepts and models of the innovation process. In the first study I propose a novel approach for managing motivational states of innovation teams that involves dynamically adapting group goal preferences at key points in the innovation process in order to achieve team innovation implementation success.

In the second study I conducted ethnographic field research to analyze political disputes about control between innovators and managers during the innovation process. I develop and propose a novel theoretical concept referred to as "innovation ownership struggles", which I define as disputes for control between innovators with a strong sense of psychological ownership towards the innovation and managers with formal control over the innovation. I show how innovation ownership struggles serve to expose imbalances in control between innovators and managers so that they can begin to consider more shared and participative control structures that are critical for successful innovation.

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