Identity and Institutional Change in a Mature Field: The Re-emergence of the Swiss Watchmaking Industry, 1970-2008

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IDENTITY AND INSTITUTIONAL CHANGE IN A MATURE FIELD: THE RE-EMERGENCE OF THE SWISS WATCHMAKING INDUSTRY, 1970-2008

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I dedicate this dissertation to my wife,
Carrie,
whose support has been *timeless*.

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[1] …and I also thank McKenzie.

IDENTITY AND INSTITUTIONAL CHANGE IN A MATURE FIELD: THE RE-EMERGENCE OF THE SWISS WATCHMAKING INDUSTRY, 1970-2008

ABSTRACT

This dissertation examines the decline and re-emergence of the Swiss mechanical watch industry from 1970-2008, exploring how, when, and why market demand for legacy technologies resurrect and reshape a mature field. Extending existing research on technology emergence and death, I reveal the dynamics of technology and field *re*-emergence. I focus on the mechanisms of identity and institutional change associated with re-emergence, as well as how institutional leaders and guardians serve as agents of change who simultaneously preserve and reframe the values and product conceptions associated with a legacy technology. Additionally, I advance the notion of identity ambidexterity by examining how organizations explore and exploit multiple elements of their identity simultaneously during such periods of instability. Using qualitative and quantitative methods, I analyze a wide range of interview, archival, historical, and observational data at the levels of the industry and the organization. More broadly, I seek to demonstrate how the reclamation of legacy identities reshapes the institutional environment of a mature field, and how incumbent firms re-define their organizational identities after a technological innovation threatens to destroy their dominant market position.

Keywords: re-emergence, institutions, identity, fields, organizational ambidexterity

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CHAPTER I. INTRODUCTION

MOTIVATION

> **1983:** "Now we bid farewell to the [Swiss] master craftsmen who have brought us these wonders of the mechanical arts. Their time has come and probably gone." (Landes, 1983: 359)
>
> **2008:** "The watch industry is today, as it was yesterday, one of the brightest stars in the Swiss economic firmament. Better still, during the last five or six years, it has taken the leading position amongst the country s most successful industries." (Federation of the Swiss Watch Industry 2008 Annual Report)

Is it possible for technologies within a field or industry to *re*-emerge? Schumpeter (1942) argued that the forces of creative destruction overturn existing market structures and force the dismantling of those technologies, as well as their applications in products, process, and practices (Abernathy, 1976). Tushman and colleagues have shown how industry evolution is linked to technology cycles (Anderson & Tushman, 1990; Tushman & Rosenkopf, 1992) whereby a dominant technology is displaced by a new technology that, in turn, initiates a new cycle. The effect is a clarion call of sorts: "The (old) technology is dead! Long live the (new) technology!"

The prevailing theorization emphasizes technological displacement, assuming that old technologies disappear when newer ones arrive. And yet, as the opening quotes illustrate, this may not always be the case, as market demand for old technologies may wane only to emerge again at a later point in time. This seems to be the case for products like fountain pens, streetcars, organic winemaking, and vinyl records, which have recently rematerialized to claim significant market interest. I seek to examine a possibility that has largely been overlooked in the literature, that displaced technologies may not die away (Adner & Snow, 2010), but persist in some generative form that can permit "re-invention" (Rogers, 1995: 107): "The dying technology provides the compost, which allows its own seeds, its own variants, to grow and thrive" (Tushman & Anderson, 1997:12). I seek to understand the underlying dynamics of re-

emergence and, especially, the mechanisms whereby technologies re-emerge in mature fields. I ask, *how, when, and why does market demand for a legacy technology re-emerge?*

My research setting is the Swiss watchmaking industry from 1970 to 2008, an opportune context because it was considered to be the premier symbol of technological supremacy and innovation for several centuries (Glasmeier, 2000; Sobel, 1996). Swiss watchmakers dominated the industry and the mechanical watch movement for nearly two centuries (Donze, 2011), beginning in the mid-18th century. Their rein abruptly ended in the mid-1970s, at the onset of the "Quartz Revolution" (or "Quartz Crisis"), and with the expectation that the quartz movement would displace the mechanical. The Swiss dropped from holding 55% of the world's export market (in monetary value) to roughly 30% a decade later; in export volume, the decline was also staggering, decreasing from 45% to 10% of watches produced globally (Glasmeier, 1991: 477). By 1983, two-thirds of all watch industry jobs in Switzerland were gone (Perret, 2008a).

Quartz technology seemingly shifted watch production and caused "the Swiss to [pay] dearly for their slowness to adopt the new technology" (Landes, 1983: 353). In 1983, scholars and industry analysts predicted that mechanical watches, along with the Swiss communities of watchmakers who built them, would disappear (Donze, 2011; Landes, 1983). Quite unexpectedly, however, Swiss watchmaking, led by the production of mechanical watches, resurged and by 2008, re-emerged as the world's leading exporter of watches and reclaimed 55% of the total export value in the global watch industry. The unexpected return of market demand for a displaced technology is the motivation for this dissertation.

My research joins recent inquiries into processes of field emergence (e.g., Navis Glynn, 2010; Raffaelli & Glynn, 2013; Tripsas, 2009) and extends this line of work to reveal that field *re*-emergence is not only possible, but importantly linked to identity, institutions, and

ambidexterity. Institutional theory speaks to the persistence and durability of field level elements, such as technologies, structures, and meanings that can illuminate the dynamics of institutional legacies and their re-emergence. Organizational identity speaks to the essence and attributes of entities of multiple types, including products, firms, collectives, and fields, and how they are framed and understood. Organizational ambidexterity speaks to the ways in which organizations simultaneously aim to explore and exploit paradoxically different capabilities in the wake of technological and field-level change. As such, this dissertation serves as an in-depth case analysis (Eisenhardt, 1989; Yin, 2008) that offers theoretical and empirical evidence for the salience of re-emergence.

Below, I introduce my core research questions and offer an overview of the dissertation, including a brief summary of my three empirical studies. I then move to a description of my research methods, the empirical setting, research design, and data collection. Finally, I offer an overview of the research relevant to technology cycles, legacy technologies, and industry change; this overview is meant to serve as a theoretical bridge to the following empirical chapters, wherein I provide reviews of additional literatures that are specific to each study.

CORE RESEARCH QUESTIONS

This dissertation seeks to address the overarching research question, "*How, when, and why does market demand for a legacy technology re-emerge?"* More specifically, I consider several related questions, associated with the role that identity, institutions, and ambidexterity play in processes of field re-emergence. These include: With the re-emergence of a legacy technology in an institutional field, how do the couplings among product, community and organization identities affect formation and re-formation?; Which identities become more tightly (or loosely) coupled?; What are the mechanisms that drive these changes?; and finally, How do

organizational actors initiate, manage, and respond to changes associated with re-emergence? These questions guide the empirical studies within my dissertation.

In addition to the questions listed above, within each of my three empirical studies, I introduce a sensitizing research question that pertains to the specific goals, data, and analysis in that study. Study 1 asks, "*What factors influence the re-emergence of market demand for a legacy technology in a mature institutional field?"* Study 2 posits, *"How are mechanisms of identity change associated with the re-emergence of market demand for a legacy technology?"* And finally, Study 3 asks *"How do incumbent organizations manage change when faced with the re-emergence of market demand for a legacy technology?"* Below, I provide a broad overview of the organization of the dissertation which I used to address these research questions.

ORGANIZATION OF THE DISSERTATION

This dissertation is composed of six chapters. In Chapter II, I provide an analytical narrative of my research setting, detailing the underlying antecedents and dynamics of the Swiss watchmaking industry's emergence, decline, and eventual re-emergence. Next, I organize the dissertation into three inter-related empirical studies. Taken together, these three studies offer a comprehensive picture of field re-emergence that takes into account the macro-mechanisms affecting change and the micro-mechanisms deployed by the field and by firms in order to adapt. The studies examine: 1) technology re-emergence in an institutional field (Chapter III); 2) the dynamics of field level identity change (Chapter IV); and, 3) the strategic responses of organizations as a result of technology re-emergence and field change (Chapter V). I describe each study in more detail below.

The first study focuses on re-emergence in an institutionalized field. This inductive study seeks to establish the phenomenon of re-emergence and introduces its core theoretical

components. It focuses primarily on introducing a theory of field *re*-emergence by extending previous notions of institutional change, institutional entreprenurship, and institutional guardianship. I uncover the role of various individuals who served as institutional entrepreneurs (e.g., CEOs, Swiss watchmakers) who evoked field-level changes by introducing new product and process innovations. I also examine the guardianship role that watch collectors played in signaling to watch companies and the market that the legacy mechanical technology still held significant value (both symbolic and material) after it had been eclipsed by quartz technology. Additionally, this study also considers several macroeconomic and industry-level indicators (e.g., inflation rates, currency valuations, technology changes, consumer buying patterns, industry consolidation) that may influence re-emergence. The theoretical model advanced in this study is foundational for the two subsequent studies that investigate the field-level and organizational-level mechanisms underlying re-emergence.

The second study examines the mechanisms (Davis & Marquis, 2005) associated with how and why re-emergence occurs. The primary goal of this mixed methods deductive study is to explore how processes of coupling and decoupling among product (mechanical watch), organization (watch firms), and community (Swiss) identity facilitated the re-emergence of market demand for a legacy technology, focusing more specifically on conceptions of value and valuation within the Swiss field of watchmaking after the quartz crisis. Using data from watch advertisements and semi-structured interviews, I map identity shifts over time to show how identity change precipitated a reconceptualization of mechanical watchmaking. My findings highlight that three mechanisms – identity claims, leadership, and framing (i.e., temporal, linguistic, and value framing) – are core to explaining field re-emergence.

The third study moves beyond the *field* as the primary level of analysis and focuses on the *organization.* It examines the strategic activities, decisions, and responses of select firms. By conducting a comparative case analysis of eight exemplar firms, I explore how they managed identity preservation and change, focusing on their management of technology uncertainty, instability, embedded competencies, entrenched cultures, and routinized processes. Building on recent work by Tushman and O'Reilly (e.g., O'Reilly & Tushman, 2004; O'Reilly & Tushman, 2008; Tushman & O'Reilly, 2006) that explores ambidexterity as a dynamic capability for sustained performance, I extend this line of research to the processes of managing organizational identity change. I introduce the notion of identity ambidexterity, i.e., an organization's ability to exploit past and present identities while simultaneously integrating elements of a new organizational identity, by delving into the strategic positioning and re-positioning of firms in the face of technology and institutional change.

Finally, Chapter VI reviews the results of my dissertation, provides observations across the three empirical studies, summarizes the theoretical and managerial implications, and closes with some concluding comments and reflections.

DATA AND METHODS OVERVIEW

Empirical Setting

Swiss watchmaking provides a unique setting to examine the ways in which, if any, identity and institutional change facilitate a legacy technology's ability to re-emerge. Using a mechanisms-based approach (Davis & Marquis, 2005), I examine *how* an entire community and its constituent firms accomplished this extraordinary feat after most experts had predicted its demise (e.g., Landes, 1983).

This study spans the years 1970 to 2008. The year 1970 was selected as the starting point for three reasons. First, 1970 marked the year after the first quartz timepiece was introduced on the market, providing a baseline to examine how quartz technology impacted the field of watchmaking from its inception. Second, 1970 represents the height of the Swiss watchmaking industry's dominance over world markets (in units sold and value) prior to the introduction of quartz technology. Finally, starting in 1970 allowed me to track over a decade of performance data, events, critical decisions, and identity claims that occurred before the Swiss watchmaking industry reached its lowest performing years in the early 1980s after quartz technology became the dominant design. It was not until 1983 that Swatch introduced its first line of quartz watches and, with it, a dramatic shift in watchmaking; thus, this functions as a potentially important inflection point in the evolution of the field and affords a window on identity and institutional shifts associated with the field's re-emergence. The year 2008 was chosen as the ending point of the study because it marked the beginning of a global financial system downturn, which many watch industry experts have now dubbed a "crisis" that affected previous growth patterns. Thus, changes in industry performance trends and firm activities in response to the 2008 crisis suggest that several exogenous macroeconomic factors began to impact the industry in 2009 in ways that extend beyond the scope of this study.

Data Sources & Analyses

I collected data from multiple sources, following what Creswell (2003) termed a concurrent triangulation strategy, whereby multiple methods, data sources, and units of analysis are used to evaluate a set of theorized relationships within a single study (e.g., Navis and Glynn, 2010). I did this with two purposes: first, to construct a narrative history of the focal period to observe the trends and, second, to suggest potential markers for the variables that I used to

empirically examine my propositions. I use a variety of primary data sources (e.g., semi-structured interviews, participant observation) that are accompanied by a significant body of secondary sources (e.g., archival historical reports, macroeconomic indicators, firm history books, company advertisements, firm and industry production and performance measures). The data sources are described in Table 1, which lists each of my data sources with a description of the data, quantity, type, and a notation of the chapter where it is used.

This dissertation includes both qualitative and quantitative analyses. Qualitative analyses of interview and archival data are used to inductively expose the factors and mechanisms salient to field re-emergence over time. Quantitative analyses of archival data illustrate the changes in in industry and firm level behaviors between temporal periods. Together, these findings serve as evidence to illustrate the phenomenon of re-emergence of the Swiss mechanical watch.

To reveal how such changes occurred, I employ a mixed methods approach to examine field and organizational processes associated with re-emergence. First, I drew from previous research that has utilized content analysis of archival data to measure the variance within a field (e.g., Navis & Glynn, 2010). Second, semi-structured interviews helped clarify inflection points and changes found within my quantitative analysis. Combined, both quantitative and qualitative analyses provided multiple avenues to examine the factors and processes associated with re-emergence. Finally, in order to extend my analysis beyond the field level of analysis, I conducted a multi-case analysis on a subset of organizations (Eisenhardt, 1989: 25). This qualitative method, which aimed to expose the heterogeneous behaviors and strategies employed by a subset of various firms, is cited as "one of the best (if not the best)" methods for creating a bridge "from rich qualitative evidence to mainstream deductive research" (Eisenhardt Graebner, 2007: 25).

Table 1: Overview of Data Sources

Description of Data	Quantity	Type	Dissertation Chapter
Primary Data Sources			
Semi-Structured Interviews - CEOs, senior executives, watchmakers, retailers government officials, trade associations, horological academies, horological societies, company historians, academics, collectors, auction house executives, journalists.	122 individuals, 101 hours (ave: 1.51 hours per interview)	Qualitative	- Chapter III - Chapter IV - Chapter V
Focus Groups - La Chaux-de-Fonds watchmaking academy - NAWCC horological school, Columbia, PA. - American Watchmakers Clockmakers Institute - Vintage watch collector associations	4 focus groups (42 people total)	Qualitative	- Chapter III - Chapter IV
Participant Observation - Attended *BaselWorld*, the industry's largest field-configuring event with over 104,000 visitors, 1815 exhibitors from 45 countries, 3,300 journalists. - Toured multiple watchmaking factories in Switzerland - Attended watch and clockmaking classes at NAWCC horological school, Columbia, PA.	 8 days, 10 hours/day 4 tours 1 day	Qualitative	- Chapter III - Chapter IV
Industry Museums and Archives - Toured watch museums in Le Locle and La Chaux-de-Fonds, Switzerland. - Toured Swiss National History Museum, Zurich. - Tour of National Watch & Clock Collectors Museum, Columbia, PA. - Research in horological archives in Switzerland and United States	4 museums 3 archives	Qualitative	- Chapter III

Description of Data	Quantity	Type	Dissertation Chapter
Secondary Data Sources			
Print Advertisements - Journal of Swiss Horology (1970-2000, final issue) - Chronos (1996-2008) - International Watch (1996-2008)	845 advertisements (Hand-scanned from archives in the United States and Switzerland).	Qualitative & Quantitative	- Chapter IV
Archival Interviews - & Interviews with Swiss watch CEOs recounting the quartz crisis. Conducted by Dr. Lucien Trueb (leading Swiss watch industry journalist and scientific reporter). Published in 2008, in German. - & *TimeZone* (leading industry news website) interviews with CEOs and senior executives about industry trends and company happenings. Published between 1998 and 2012, in English.	145 CEOs 27 CEOs	Qualitative	- Chapter III - Chapter IV - Chapter V
Swiss Watch Production & Watch Companies - # Swiss watches produced (mechanical, electric), every 5 years - # Swiss employees, management in Switzerland # of watch companies, annual	1949-2011	Quantitative	- Chapter III - Chapter IV - Chapter V
Global Trade & Competition Data - Export value of Swiss watches, overall - Export value of Swiss watches, by country - Non-Swiss watch production, pieces - Non-Swiss watch production, export values - # watches produced globally (mechanical, electric)	1970-2011	Quantitative	- Chapter III - Chapter IV
Industry Certifications - # of Swiss COSC chronometers certified, annual - # certifications by each company, annual	1974-2010 (hand scanned from archives in Switzerland)	Quantitative	- Chapter III - Chapter V

Description of Data	Quantity	Type	Dissertation Chapter
"Swiss Made" Government Regulations - Government materials on "Swissness" legislation - Press releases	1971, 1995, 2007	Qualitative	- Chapter III - Chapter IV
Auction House Vintage Watch Prices & Item Descriptions - Sotheby's auction catalogue price variance figures - Antiquorum auction catalogue price variance figures	Sotheby's, Antiquorum	Quantitative Qualitative	- Chapter I - Chapter III
Macroeconomic Indicators - Consumer Price Index - Currency exchange rates - Interest rates - GDP (actual, per capita, growth rate, index) - Per capita GDP - GDP growth rates - Consumption (all, household, government) - Gross capital formation - Exports of goods & services - Imports of goods & services - Changes in inventories (all goods) - Main exports of Switzerland, by product, (1840-1999, nine periods) - Geographical distribution of Swiss trade (1990-1999, seven periods)	Annual (1970-2008) (for Switzerland and all major watch export countries)	Quantitative	- Chapter III - Chapter IV
Archival Documents (company specific) - Company specific historical books written by company historians - Company specific historical books written by outside collector groups and watch enthusiasts - Archival documents, press releases, and annual reports found in company archives collected in Switzerland, Germany, France, and United States.	67 books	Qualitative	- Chapter V

CONTRIBUTIONS

This dissertation makes several contributions to the extant literature. First, because I examine how fields can be reconstituted through technology, I complement and extend existing research on the dynamics of field birth and death. My research reveals that technology cycles may be more expansive than previously modeled, lengthening beyond birth (technology emergence) and death (technology displacement) to re-birth and re-emergence. Thus, I contribute to research on innovation and innovation cycles (Tushman & Rosenkopf, 1992), highlighting *how* legacy technologies (i.e., old technologies that endure after the rise of a dominant substitute) (Adner & Snow, 2010) embedded within institutionalized fields can, counterintuitively, survive periods of ferment and the threat of displacement to reconfigure a field, as well as its key products and actors.

Second, I highlight how the processes that underlie field-level changes are predicated not only on technology shifts, but also on mechanisms related to identity, institutionalization, and ambidexterity. My work offers explanations for how and why field changes occur, a relatively understudied – but important – arena of research. Third, I answer calls for integrative research that encompasses micro- and macro-level processes of change, innovation (Drazin, Glynn, Kazanjian, 1999) and institutionalization (Powell & Colyvas, 2008), by exploring how the reclamation of legacy identities (Walsh & Glynn, 2008) in products, organizations, and communities reshape fields.

Before turning to the three empirical studies that provide evidence for these contributions, next I provide a brief theoretical grounding of the core constructs that served as the foundation for my dissertation's research questions.

THEORETICAL GROUNDING

The focus of my dissertation is on the conditions and processes that explain how market demand for a legacy technology re-emerges within a mature or institutionalized field. My theorization examines the conditions, mechanisms, and outcomes that underlie the phenomena of re-emergence, which I see as profoundly interwoven with the re-emergence of corresponding technologies, fields, communities, and organizations. In this chapter I provide of overview of the literature related to: 1) institutional fields and 2) technology cycles. Both will serve as a backdrop for the three subsequent empirical studies. Within each of the three empirical studies I provide a more specific review of the literature on institutions, identity, and ambidexterity, respectively, as they relate to technology cycles, market change, and re-emergence.

Defining an Institutional Field[2]

The notion of the "field" is a cornerstone of institutional theory and arguably one of its most significant contributions (Dacin, Goodstein, & Scott, 2002; Davis & Marquis, 2005; DiMaggio & Powell, 1983; Scott, 2008; Scott & Meyer, 1983; Scott, Ruef, Mendel, & Caronna, 2000). Definitions of institutions abound. One of the more robust definitions was offered by Hughes (1936: 180) nearly seventy-five years ago: "The only idea common to all usages of the term 'institution' is that of some sort of establishment of relative permanence of a distinctly social sort." Institutions, according to Friedland and Alford (1991: 232), are "supraorganizational patterns of activity by which individuals and organizations produce and reproduce their material subsistence and organize time and space….[and include] symbolic systems, ways of ordering reality, thereby rendering experience of time and space meaningful." Leveraging Scott's (2001) theorization of three constitutive pillars, Greenwood and colleagues (2008:4) define an

[2] Components of this section are adapted from the working paper, Raffaelli, R; Glynn, MA, and Strandgaard Pedersen, J. "Towards a General Theory of the Institutional Field."

institution as "more-or-less taken-for-granted repetitive social behavior that is underpinned by normative systems and cognitive understandings that give meaning to social exchange and thus enable self-reproducing social order." Hirsch and Lounsbury (1997: 412) offer a touchstone for incorporating these various perspectives in arguing that "Cognitive structuring is only part of the story; purposive action fleshes out an institutional explanation." Integrating across these perspectives, I define institutions as *social structures that order human activity, imbue it with meaning, and are consensually understood within a field as typical and appropriate.*

Within neo-institutional theory, theorizing "fields" moved discourse from the level of the individual firm to that of collectives of firms or professions and revealed how forces at this collective level, arising in the "environment," shaped the cognitive, normative and regulative aspects of organizational functioning (Scott, 2008: 182; Scott, 1995). DiMaggio and Powell's classic work (1983) ignited scholarly interest in studying fields; over time, however, an array of labels and definitions have come to be associated with the construct, including "societal sectors" (Scott & Meyer, 1983), "industry systems" (Hirsch, 1985), "industry categories" or SIC classifications (Glynn & Abzug, 2002), to cite a few examples. The French social scientist Pierre Bourdieu is most often considered the father of the field concept, originally coining the term "field" (*champ*) in a series of seminars held at the *École Normale Supérieure* and *École Practique des Hautes Études* during the 1960s.

More recent conceptions argue that fields cohere via coordinating mechanisms that facilitate interaction among actors, with regard to: market exchanges (DiMaggio & Powell, 1983); collective cognition (Scott, 2008); issue interpretation (Hoffman, 1999); and geographic co-location (Marquis, Lounsbury, & Greenwood, 2011b). Taken together, these field

coordinating mechanisms provide a valuable perspective for analyzing interactions among actors during field level change and re-emergence, as described below.

Mechanisms of Market Exchange

In their seminal work, DiMaggio and Powell (1983: 143) argue that fields cohere around coordinating mechanisms associated with organizations that share "a recognized area of institutional life," defined broadly by a common industry, product, service, or technology. They focus on the various actors constituting the recognized organizational field, placing an explicit focus on the mechanism of market exchange that facilitates action among various actors within the field. A core assumption is that a field's boundary is established amongst those actors who share a common product or market category. Boundaries may also depend on whether the actor is cognitively salient to others within the field (Porac, Thomas, & Baden Fuller, 1989). The field maintains stability via actors' attempts to obtain legitimacy (i.e., "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995: 574)), and which are typically influenced by isomorphic forces (i.e., coercive, mimetic, normative) (DiMaggio and Powell, 1983).

Mechanisms of Collective Cognition

Scott (2008) suggests relational and cultural- cognitive mechanisms coordinate field-level activities and action. He states: "The notion of field connotes the existence of a community of organizations that partakes in a common meaning system and whose participants interact more *frequently and fatefully* with one another than with actors outside of the field" (Scott, 1994: 207-208, emphasis added). Scott (2008) also focuses on the activities of a "community of organizations" that interact frequently. Thus, processes of creating and enforcing "meaning

systems" are central mechanisms for field interaction and coherence. Likewise, the organizing principles of the field are rooted in common sensemaking, whereas boundary conditions are established via the structuration that occurs from the frequency of market actor interactions.

Mechanisms of Issue Interpretation and Negotiation

Institutional research has also emphasized coordinating mechanisms that emerge through the conflictive interplay between actors and power relations that underlie the institutional field. This research builds on Bourdieu's work (1992) that focused on relations, positions, and dominance. Hoffman (1999:351) suggests that fields coordinate around mechanisms of issue interpretation where actors negotiate for their "competing interests." As such, fields are structured by a composition of interests. Social movement research has utilized this construct variant of the field, examining how actors have coalesced around civil rights (Andrews, 2001; McAdam, 1983), equal employment opportunities and human resources practices (Baron, Dobbin, & Jennings, 1986), recycling (Lounsbury, 2001), microfinance (Battilana & Dorado, 2010), and open-source IT standards (O'Mahony & Bechky, 2008). Because member interaction is coordinated via mechanisms of issue interpretation and negotiation, issue-based fields typically engage a broad array of actors from multiple sectors, industries, and markets, but they also have a more singular focus on an issue.

Mechanisms of Geographic Co-Location

Finally, a fourth body of recent research focuses on the mechanisms of field interaction based on actors' co-location in geographic communities. These contributions base their conceptualization on geographic location and physical proximity (Marquis & Battilana, 2009; Marquis, Davis, & Glynn, 2011a; Marquis, Glynn, & Davis, 2007; Marquis et al., 2011b). As such, geographic communities organize and set boundaries in relation to spatial proximity and

coordination occurs via community building activities. While co-location may preserve the community and serve as a stability mechanism, re-districting or (trans)migration are mechanisms of change.

This overview of the four different field coordination mechanisms highlights how institutional fields facilitate interaction among actors: market transactions, shared meaning making and frequency of interaction, issue interpretation and negotiation, and geographic co-location. They set boundary conditions that demarcate actors' interaction (i.e., which actors participate in the interactions), and the substance of their interaction (e.g., coordination, conflict, resource exchange).

All four coordinating mechanisms are evident in my research setting, the Swiss watch industry. The mechanism of market exchange highlights the role of macroeconomic factors, including worldwide currencies, product pricing, bases of watch valuation, global competition, and the definition of key players. The mechanism of collective cognition highlights how prevailing mindsets or beliefs, focused on mechanical watchmaking as a valued product, professional craft, and organizational activity, coordinate activities and persist in an active field, even after the emergence of quartz watch technology that helped to catalyze technological re-emergence. The mechanism of issue interpretation highlights how multiple actors often come together to negotiate for government regulations that serve the interests of the Swiss watch industry (e.g., policies against foreign counterfeiting, trade protection policies, branding standards for Swiss watch firms). Finally, the mechanism of geographic co-location highlights the connection to the country and regions of Switzerland, including how pockets of industry concentration, particularly in the Jura mountain region and in the city of Geneva, affected re-emergence. In this dissertation, I explore how these various components, under conditions of

field and organizational change, interact and explain processes of re-emergence. I complement these theories by examining how they are related to technology cycles, innovation, and market change.

Technology Cycles and Market Change

The relationship between technology and market change has been a dominant fixture of the economic, sociological, and organizational literatures for some time. Economists, most notably Schumpeter (1942: 82), argue that change in technologies and markets is "an evolutionary process." As a critical response to neoclassical economists, Schumpeter (1947) posited that market creation and organizational development are driven by a process of "industrial mutation… incessantly destroying the old one, incessantly creating the new one" (Schumpeter, 1942: 83). His theory of creative destruction, emphasizing the necessary destruction of old technologies in the advent of the new, has become a core concept in the management literature and has remained largely uncontested (Wiggins & Ruefli, 2005). Yet, evolutional theories of creative destruction have paid little attention to the alternative paths of displaced technologies, like the Swiss mechanical watch, that may have the capability to re-emerge and re-configure a field.

Over the last forty years, several theories of technological change and market evolution have extended Schumpeter's original theorizing. Early supporters of technology evolution theories, however, often found themselves at odds with mainstream neoclassical models of firm behavior (Dosi, 1982). For example, economists Nelson and Winter (1982:4) argued for an evolutionary theory of economics that was analogous to natural selection, posing a direct challenge to mainstream economic models based on profit maximization and market equilibrium. Similarly, Freeman (1974) explored international and government policy implications of

technology change, suggesting that neoclassical economic theories were limited in their ability to address challenges related to technology transfer and globalization. These and other economic theories emphasized what Schumpeter termed the "adaptive response" (1947: 153) of managers, highlighting the "structure-conduct-performance" paradigm (e.g., Porter, 1985) and emphasizing how firms create and sustain competitive advantage (Wiggins & Ruefli, 2005:888).

In addition to business economists, management and organization scholars have also dedicated significant attention to technology change and market evolution, concentrating on technological evolution as a cyclical process. Scholars have used several terms to describe patterns of technological evolution, including "technology trajectories" and "technology paradigms" (Dosi, 1982), "design hierarchies" (Clark, 1985), and "punctuated equilibrium" (Romanelli & Tushman, 1994). Similarly, Kuhn's (1970:viii) work on scientific paradigms is characterized by a cyclical model of revolutionary breakthroughs and then a return to incremental change (Suarez, 2004).

These processes of technology change and evolution can be defined by a *technology life cycle* (Anderson & Tushman, 1990; Tushman & Anderson, 1986; Tushman & Rosenkopf, 1992). Technology life cycles consist of four main components (Tushman & Rosenkopf, 1992): technological discontinuities, eras of ferment, dominant designs, and eras of incremental change. First, the cycle begins with a *technological discontinuity*, defined as a technology that "departs dramatically from the norm of continuous incremental innovation that characterizes product classes" and affects either processes or products (Anderson & Tushman, 1990: 606). Such discontinuities can be *competency destroying* or *competency enhancing* for firms (Tushman Anderson, 1986). Competency destroying technologies require different technological knowledge or capabilities than what the firm already possesses. For example, in the watch

industry, the electronics required to support tuning fork and quartz oscillating components were competency destroying for the mechanical watchmaking firms that had manufactured mostly hand-made alloy balance wheel oscillating components for several centuries and had little previous know-how or interest in electronic circuitry (Landes, 1983). Conversely, competency enhancing technologies build on the existing knowledge and skills already housed within the organization. Accordingly, quartz oscillating movements were a competency enhancing technology for many of the Japanese firms that utilized existing know-how in electronics to manufacture this new type of watch (Glasmeier, 1991).

Second, discontinuous technologies marshal in an *era of ferment*, marked by increased uncertainty and competition among several technological variants vying for dominance. For example, Rao (1994) highlights the role that car races played during the era of ferment when steam, electric, and combustion engines battled for technological supremacy in the inchoate automobile industry. In addition to competition between rival conceptions of the new technology, periods of ferment also force incumbent firms (or communities of firms) to defend the legacy technology against the new technical variants (Foster, 1986). Such battles prolong uncertainty about whether the new technology will replace the old (Anderson & Tushman, 1990). In the watch industry, for instance, the Swiss Observatory in Neuchatel held annual contests for over a century to determine which watch manufacturers could produce the most precise timepieces; the contests were abruptly cancelled, however, in 1968 after a quartz timepiece was able to claim the title from a mechanical watch. According to Landes (1983:345-346), "the old combat lost meaning… the very competitions that had consecrated the supremacy of the Swiss in the matter of horological precision might now serve as a vehicle for their overthrow."

Third, uncertainty will continue within the industry until a new technological order is ushered in by a *dominant design* (Abernathy & Clark, 1985; Sahal, 1981; Suárez & Utterback, 1995; Utterback & Abernathy, 1975), often indicated by one variant accounting for 50% or more of new product sales or process installations for three straight years (Anderson, 1988; Anderson & Tushman, 1990). Utterback and Abernathy (1975) claim that variation will continue until users begin to develop loyalties and preferences for one variant; firms will also begin to move towards standardization (e.g., components, marketing, distribution, maintenance, and advertising) in order to reap efficiency gains and network effect benefits (Abrahamson Rosenkopf, 1997).

Some scholars have argued, however, that technologically superior products or processes will not always become the dominant design, offering a counter-explanation to technological determinist predictions (Anderson & Tushman, 1990). For example, VHS format in VCRs, QWERTY keyboards, and the Apple II personal computer were not considered the "best" technological variants of their time, but were generally accepted by their respective industries because of sociopolitical and institutional factors (Kaplan & Tripsas, 2008; Scott, 2008; Tushman & Rosenkopf, 1992). Such examples illustrate that the selection of a dominant design is not always based solely on technological determinism, and that other non-technical factors also play an important role in shaping the historical evolution of an industry (Smith & Marx, 1994).

Fourth, once a dominant design is selected, an *era of incremental change* transpires. During this period, progress is measured in both process and product innovations related to the new technology. Communities and social structures form to "reinforce this period of incremental, order-creating, technical change;" they support puzzle-solving and technical

progress within the new technical paradigm, but can also "stunt openness to technical approaches outside the paradigm" (Tushman & Rosenkopf, 1992: 323, 318). Thus, periods of incremental change continue until the introduction of a new discontinuous technology, spurring the technology cycle once again.

Over the past several decades, management scholars have worked with great fervor to test the technology life cycle model, providing significant empirical evidence to support its validity. Quantitative and qualitative examples from multiple industries abound, including disk drives, typesetting, cameras, telecommunications, video games, VCRs, sailing ships, turbo jets, cement, glass, and microcomputers (Anderson & Tushman, 1990; Benner & Tripsas, 2012; Christensen & Bower, 1996; Constant, 1980; Cusumano, Mylonadis, & Rosenbloom, 1992; Foster, 1986; Gallagher & Park, 2002; Suárez & Utterback, 1995; Tripsas, 1997).

Legacy Technologies and the Technology Life Cycle

Generally, research on technology evolution has examined "highly path dependent processes" (Kaplan & Tripsas, 2008: 790) by which technology cycles repeat themselves. Little attention, however, has been given to legacy technologies beyond the technology life cycle. In short, we know very little about what happens to legacy technologies after their displacement by new technologies. One potential explanation for the lack of scholarly attention paid to legacy technologies might be the dominance of the Schumpeterian paradigm; with its diffusion there has been limited questioning of its core assumptions. Another can be attributed to a pro-innovation bias held by management scholars (Gopalakrishnan & Damanpour, 1997; Kimberly, 1981). Rogers (1995: 107) warns that such biases have lead researchers to underemphasize the rejection of discontinuous innovations and to overlook re-invention.

Inferred within technology life cycle research is that legacy technology orders will eventually reach a natural limit (Fleming, 2001), but will not disappear without fierce competition against the new technological variants (Anderson & Tushman, 1990). Once a new dominant design gains coherence and acceptance, the legacy technology will either disappear or move into a niche market (Adner & Snow, 2010; Porter, 1985). Broadly, long term prognostications for displaced technologies have been less than favorable. Foster's (1986: 160) popular-based account of technology displacement colorfully demonstrates this sentiment:

> Things will continue to deteriorate for the [legacy technology firm(s)]. Eventually, it will leave the market and may even go bankrupt. In most cases, though, there is some residual market for the old technology. The market served by the old technology will be small, have no growth, but may be highly profitable for the two or three producers left in. But as the industry as a whole experiences a shakeout, prices will collapse, and only a few firms will be economically strong enough to weather the storm… It is possible to put this cycle of market penetration into a time frame. It usually takes between five and fifteen years for a new technology to supplant an old one.

Nonetheless, a few studies have explored the trajectory of old technologies that do not immediately succumb to the path of displacement. For example, Henderson's (1995) research on the optical lithography industry reveals how a legacy technology was able to extend its dominance beyond its performance limits because of social and institutional factors. Ansari and Garud (2009) show how the life of 2G telephony technology was extended due to modular innovations in packet-switching technology. Snow (2008) and Harley (1971) illustrate how legacy technologies such as carburetors and sailing ships extended their lifespan by adopting components from electronic fuel injectors and steam ships, respectively. Finally, Adner and Snow (2010: 1655) offer a theoretical explanation for the life extension of old technologies, arguing that the emergence of a new technology can "reveal significant underlying heterogeneity in the old technology's broader demand environment," explicating how several old technologies have avoided extinction by exploiting "racing" strategies (i.e., extending the performance of the

old technology) or "retreat" strategies (i.e., moving into a niche within the technology's home market or relocating the old technology in to a new market application).

Cognitive Dimensions of the Technology Cycle

More recently, scholars have extended the technology life cycle model, arguing that the management technology literature has largely neglected cognitive factors that are "essential to understanding the dynamics of technology evolution" (Kaplan & Tripsas, 2008: 791). Weick (1990: 1) posits a view of technologies as *equivoque*, i.e., "something that admits of several possible or plausible interpretations and therefore can be esoteric, subject to misunderstandings, uncertain, complex, and recondite" and, thus, require sensemaking if they are to be managed. Orlikowski and Gash (1994: 199) draw on the organizational and sociological literature to introduce the concept of technological frames: "the core set of assumptions, expectations, and knowledge of technology collectively held by a group or community." They aver that individuals and organizations have to make sense of nascent technologies and that during this process of sensemaking they develop "shared cognitive structures " (Orlikowski & Gash, 1994: 199). These structures, they argue, are composed of collective taken-for-granted norms and assumptions about the technology that serve to shape subsequent actions towards it.

Kaplan and Tripsas (2008) extend the concept of technological frames and propose a multi-level model that highlights how cognitive factors influence each stage of the technology life cycle. They posit that dominant designs represent not just technical convergence, but also cognitive convergence. Benner and Tripsas (2012) illustrate this concept of cognitive convergence empirically using digital cameras. They examine the development of shared beliefs about the functionality and features incorporated in the category's dominant design, and not just what technologies became dominant. Thus, examining the cognitive factors associated with a

technology life cycle supposes that technological change not only impacts the technology itself (Kaplan, 2008), but also the frames, understandings, and community identities that attend to it.

In sum, technology cycles are initiated by the introduction of a discontinuous technology, which is accompanied by an era of ferment until the industry coalesces around a new dominant design; an era of incremental change exists until the next discontinuous technology appears. This model of technological change has remained largely unchallenged in the literature, in spite of theoretical perspectives that offer some alternative, or at least expanded, ways of thinking about the processes. It seems that scholars have placed a disproportionate amount of attention on the technical aspects of technological change (e.g., product and component design, utility, price), with less attention paid to the understandings, and cognitive framing, that accompanies such changes.

Moreover, there seems to be a pro-innovation bias within the academic community that has resulted in little attention devoted to the possibility of the endurance of legacy technologies beyond the life cycle model. Only recently have scholars begun to examine the cognitive factors that affect technological life cycles (e.g., social, political, institutional) (Kaplan & Tripsas, 2008; Tripsas, 2009:442). As a result, we know little about the micro-processes and mechanisms that undergird the communities and organizations that attempt to preserve legacy technologies, nor the cognitive factors that may potentially affect the trajectory of a legacy technology beyond the limits of its "ultimate performance" (Henderson, 1995: 631). This dissertation focuses explicitly on following the alternative path of the Swiss mechanical watch – a displaced technology that re-emerged –and the cognitive factors (e.g., identity, institutions, ambidexterity) that enabled both the preservation and transformation of the Swiss watchmaking industry.

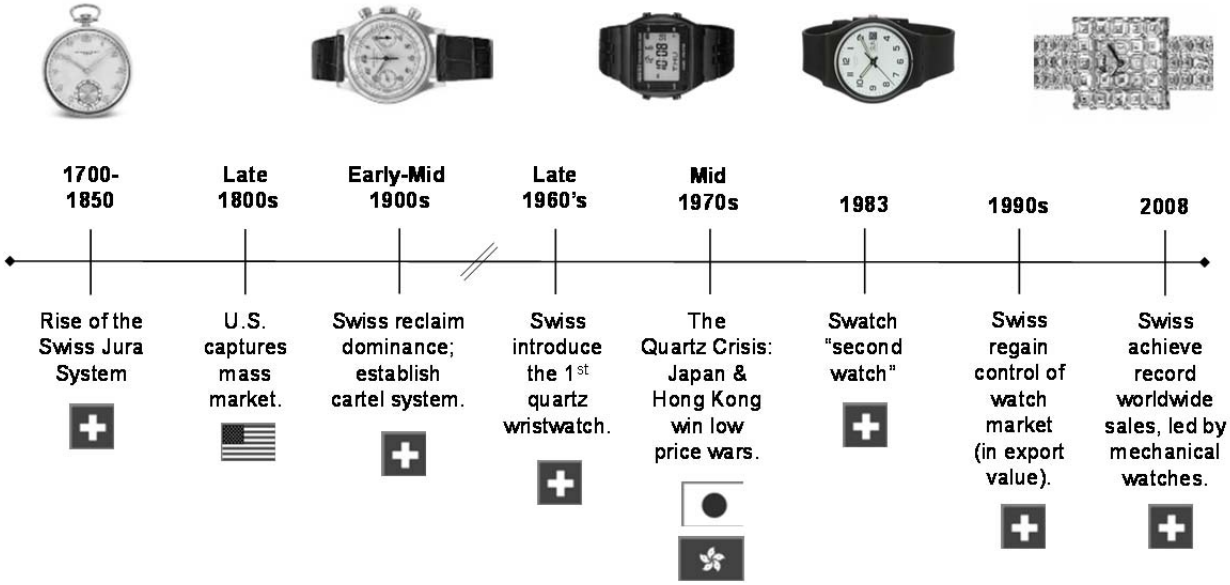
In the subsequent empirical chapters, I examine how each of these theoretical lenses informs my understanding of how market demand for legacy technologies re-emerges, and I provide evidence to support how legacy technologies re-establish themselves in a mature field.

CHAPTER II. HISTORY OF THE SWISS WATCHMAKING INDUSTRY

INTRODUCTION

This chapter offers an analytical narrative of the Swiss watchmaking industry. It is meant to serve as a sensitizing backdrop for the empirical studies that follow. The first section highlights the critical factors that contributed to the emergence of the Swiss on the global watch market in the 16th and 17th centuries and their dominance for over two centuries. It also provides an overview of the invention of the quartz watch, a technology that nearly destroyed the Swiss watchmaking industry during in the 1970s and early 1980s. The second section describes several responses various Swiss actors took from 1983 to 1989, in response to the "quartz crisis," including the mass consolidation of production systems and the introduction of the watches as fashion accessories. The third section describes the re-emergence of market demand for Swiss mechanical watches between 1990 and 2008, particularly as the Swiss turned toward establishing their products more firmly in the luxury market. Figure 1 provides a timeline that summarizes the major events within the Swiss watch industry since its inception.

Figure 1: Timeline of Critical Events in Swiss Watchmaking



NARRATIVE HISTORY

Emergence and Near Collapse: 1560-1983

Nearly 400 years ago, the quest to develop an accurate timekeeping mechanism was considered the greatest scientific challenge of the time (Sobel, 1996); for several centuries, watchmaking was the premier symbol of technological supremacy (Glasmeier, 2000: 156). Geneva was the first Swiss city to enter the watchmaking trade in the mid-16th century when John Calvin, the Protestant reformer who came from France and made Geneva his base, outlawed local goldsmiths from making crucifixes and jewelry. Instead, these tradesmen took up making jeweled watches and clocks (Trueb, 2005). A century later, the city's watch industry received an infusion of talent when King Louis XIV expelled the Huguenots living in France; his actions led many of the country's best watchmakers to resettle in Geneva, making it the new hub of the high-end watch trade. As the Swiss watch industry grew, Geneva watchmakers searched

for new sources of labor, particularly in other parts of their country; the first was the Vellee de Joux (known for its highly complicated watches), who eventually became competitors.

The Swiss rise on the world stage, however, was due largely to the emergence of watchmaking in the Jura mountain region. This snow-capped mountainous territory of Switzerland sits along a trade route between Germany, France and Italy, and was populated by peasant cow farmers who were convinced to use their idle time during the long and cold winters to build watches. Individuals living in the Jura region were introduced to the craft by Geneva industrialists and French Huguenots. Although Parisian watchmakers were always considered the leaders in watch innovation through the 19th century, they relied on the craftsmanship of watchmakers in Switzerland to produce their most intricate and complicated timepieces. Towns in the Jura, such as La Chaux-de-Fonds (now considered the capital of the Swiss watchmaking industry), were also home to iron and brass tradesmen who were well positioned to diversify into the craft of watchmaking. The region focused on precision timepieces at reasonable prices. Landes (1983: 261,263) notes, "The first [Jura] watches were not elegant – that was left to Geneva…The entrance of the [Jura] mountain Swiss was based on the production of cheaper models designed to sell to a wider market." The strategy paid off. By the late early 19th century, Swiss watchmakers had become a serious threat to their French and British rivals.

Supported by the Swiss government, the region continued to grow, sponsoring competitions to motivate watchmakers to design new innovations that would promote the development of even more accurate timepieces. Concurrently, they established institutions that created professional standards, educational settings, and standardized training centers to encourage the dissemination of watchmaking skills within the region (Glasmeier, 2000:100). As

a result of these efforts, by 1910 the "Swiss mechanical watch dominated the world watch industry (Knickerbocker, 1974 in Glasmeier, 2000: 105).

Swiss dominance continued through the 1960s, with a continued focus on building more accurate and precise mechanical watches. In 1962, the Swiss introduced a prototype for a watch that used quartz technology, which was unmatched in its ability to maintain accurate time and to use significantly fewer parts than its mechanical counterpart. Although expensive to produce at first, prices fell by a factor of 100 in the 1970s (Trueb, 2005), leading the quartz watch to become the new dominant design for the industry. Quartz watch technology, a "competency destroying" (Tushman & Anderson, 1986) innovation for the Jura mechanical watchmakers, no longer required the highly skilled mechanical craftsmanship of the Jura watchmaking community to produce. Although the Swiss invented the first quartz watch, they had little interest in re-tooling their production system to accommodate their mass production (Perret, 2008a). Additionally, the community of Swiss mechanical watchmakers did not see the quartz watch as an extension of their craft, "remaining largely skeptical… of technology designed by specialists in electronics rather than horologists" [3] (Perret, 2008a: 324).

However, due to large investments in building their consumer electronic industry post World War II, the Japanese were able to quickly adapt and produce digital and quartz watches much cheaper and faster than their Swiss competitors. Historians commented, "Swiss performance [had] been weakest precisely in the area of most rapid growth: quartz complicated" (Landes, 1983). Industry analysts coined the term "quartz crisis" to describe the Swiss market during the late 1970s and early 1980s, citing a 60% loss of watchmaking companies in the region during this period and a two-thirds loss of employees (Perret, 2008a). These issues were further exacerbated by currency fluctuations between the Swiss and their primary export country, the

[3] A "horologist" is a member of the profession of *horology*, the science of timekeeping.

United States. In comparison to the Japanese yen, Swiss watches became comparatively more expensive. While the field continued to focus on precision and accuracy, the Swiss mechanical craftsmen could no longer compete with Japanese prices or their superior quartz mass production systems.

Response & Adaptation: 1983-1989

Although quartz technology was superior in terms of accuracy, consumers found the lower priced Japanese watches to be aesthetically unpleasing. Additionally, many traditional Swiss manufacturers and watchmakers had no interest in them. A watchmaker working during this period summarizes the general sentiment: "In the early 1980s, watchmakers thought that quartz electronic watches were 'beneath them' and 'inferior.' Many times, the watchmakers would say they wouldn't work on quartz watches because they weren't true watches" [Interview: watchmaker, 2011).

Several scholars and industry analysts have argued that Nicolas Hayek, a former management consultant, saved Swiss watchmaking by purchasing and consolidating many of the industry's failing production companies and watch brands (Donze, 2011; Glasmeier, 2000). Hayek's vision was to implement a revolutionary new business strategy where production efficiencies that could be spread across multiple watch brands within one common "group" which acted like a holding company that could coordinate activities across multiple watch brands. Simultaneously, Ernst Tompke, the CEO of one of the watch production companies purchased by Hayek, had a vision to develop a new low cost quartz design: the Swatch watch. The Swatch watch treated the exterior case of the watch, once a peripheral system, as a core subsystem (Tushman & Murmann, 2002: 332). To compete with the Japanese, Hayek and Thomke agreed the Swatch could potentially shift the identity of Swiss watchmaking away from

precision and towards fashion. Launched in 1983, Swatches aimed to combine quartz technology with "fantasy" and "fashion" (Moon, 2004; Taylor, 1993). Hayek stated, "Fashion is about image. Emotional products are about a message – a strong, exciting, distinct, authentic message that tells people who you are and why you do what you do" (Taylor, 1993: 103). Thus, Swatches were infused with bright colors and modern designs inspired by popular art and culture. The new product was meant to connect on a more personal level with the consumer. They took the market by storm.

Due to the success of the Swatch brand, the entire Swiss watchmaking industry benefitted from renewed consumer demand for Swiss-made quartz watches (Taylor, 1993). The Swiss industry retooled its production and distribution systems to meet the high demand for large quantities of quartz timepieces (Pasquier, 2008). The fashion period fostered unprecedented levels of growth in the low end Swiss market and convinced other Swiss watchmakers that they could produce watches at multiple price points. By the late 1980s, the field of Swiss watchmaking had successfully shifted its identity from one of just precision craftsmanship towards a newly expanded identity that also focused on fashion; in doing so they laid groundwork for the re-emergence of the mechanical watch: "In just a few years Swiss horology switched from the production of fairly standard products to that of products closely linked to fashion and prestige" (Perret, 2008a: 305).

Re-Emergence: 1990-2008

With renewed confidence, new production and distribution systems, and increased liquidity, the Swiss watch industry began to reinvest in mechanical watchmaking. During the period between 1990 and 2008, Swiss mechanical watchmaking focused heavily on marketing its products as luxury goods (Reardon, 2008). Precision arguments "were completely abandoned,

since the use of quartz allowed for constant regularity" (Pasquier, 2008: 313). Rather, mechanical timepieces became "objects of luxury consumption and social distinction" (Pasquier, 2008: 314). For example, Patek Philippe, one of the most successful high-end watchmakers in the world, launched its "generations" ad campaign with the tagline: "You never actually own a Patek Philippe, you merely look after it for the next generation." Other high-end mechanical watchmakers like Rolex introduced campaigns with slogans such as "Class is forever." The successful shift in the broader field level identity toward luxury led the Swiss watchmaking industry to re-claim the leading position (in market value) for highest value of exports.

Nonetheless, according to a Swiss leading watch expert and historian who experienced the crisis first hand, very few individuals could have predicted how important the shift toward luxury would be for the future of the Swiss industry (Trueb, 2005: 11):

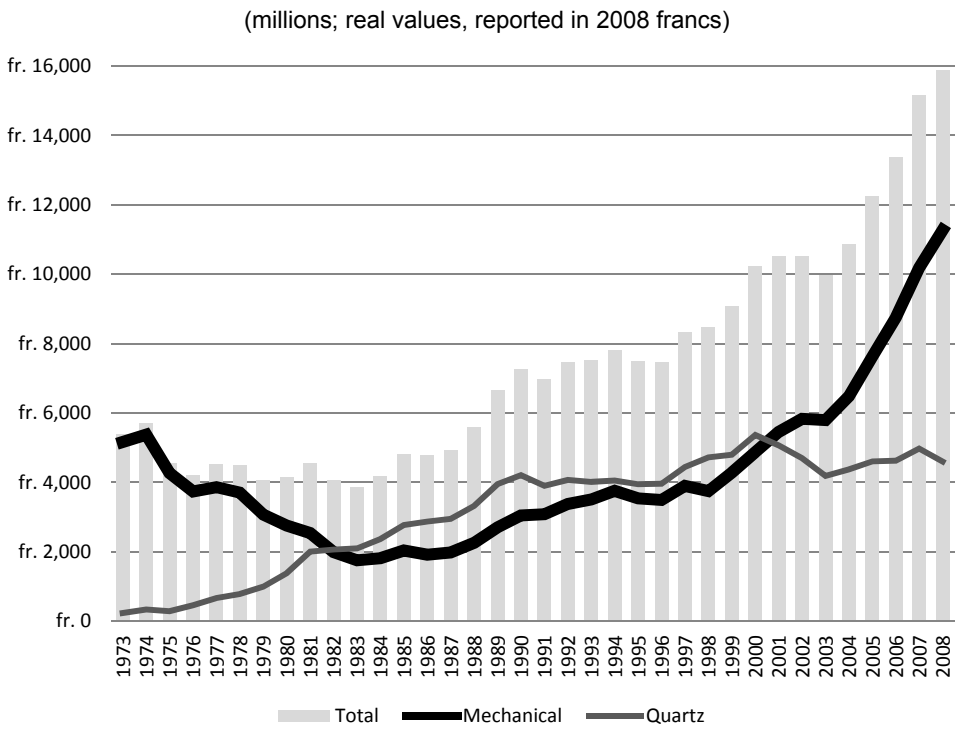
> Hardly anybody had expected what happened next: as the price of quartz movements declined by a factor of 100, beautifully crafted, exquisite mechanical movements came back in favor – and they had to be made in Switzerland. They were something rare and very special: high-tech machinery, almost artistic skills and tremendous experience were required to make, assemble and service them. Damn the wonderfully accurate but mass-produced timepieces: intricate micromechanics are something exclusive and deeply emotional, and only very limited quantities of such timepieces can be produced.

The Swiss watch industry's shift toward the luxury segment was abetted by several broader macroeconomic factors, most notably a worldwide increase in household discretionary incomes. See Figure 5. Also, scholars point to the fact that the 1990's was witness to a boom in luxury goods (Frank, 2001); the Swiss brands were eager to welcome many of the freshly minted dot.com millionaires and Wall Street bankers as new clientele for their high end watches.

Although the Swiss were never able to reclaim dominance in units sold (a title claimed by Japan and then relinquished to Hong Kong in the 1980s and 1990s, respectively), the Swiss mechanical watch industry moved further into the luxury niche market (Pasquier, 2008; Trueb,

2005) where steady increases in the average price of the mechanical watch facilitated their dramatic re-emergence (Federation of the Swiss Watch Industry, 2009). See Figure 2. Appendix I provides supplemental production figures.

Figure 2: Export Value of Swiss Watches, 1973-2008



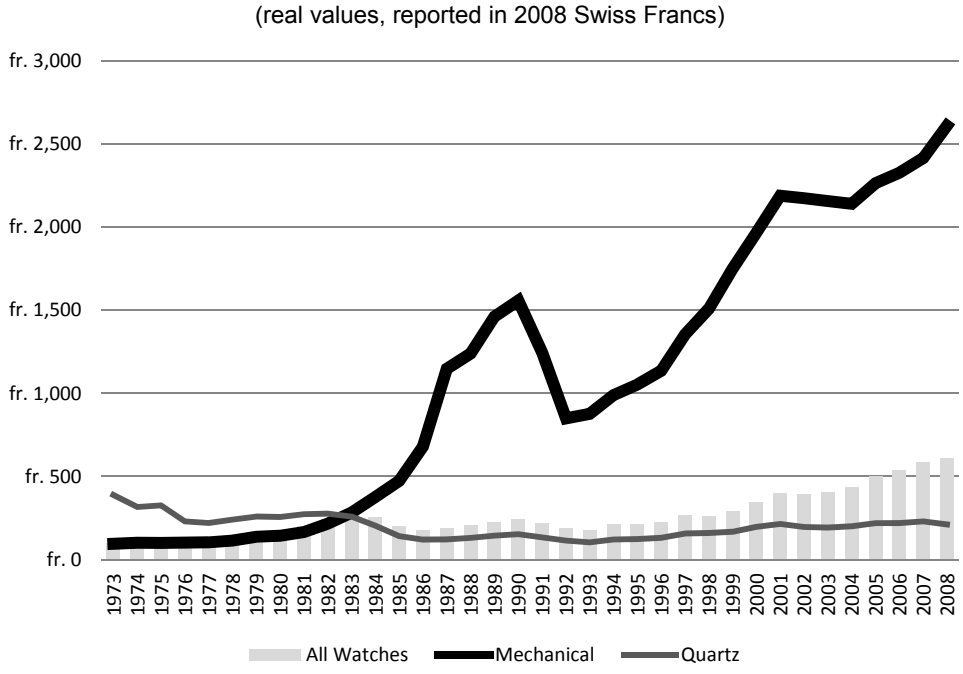
Source: Federation of the Swiss Watch Industry; World Economic Outlook data, IMF; analysis by author.

In 2008 the Swiss had firmly re-secured their place atop the world watch market (Federation of the Swiss Watch Industry, 2008). Nearly forty years after the introduction of quartz watch technology, 2008 marked the 19th consecutive quarter of growth for Swiss watch exports, of which 70% of the total value came from mechanical watches. The Swiss watch industry had reported 67% growth over the previous five years, saw numerous new watch companies open in the region, and claimed record sales of $15.8 billion Swiss Francs (its closest competitor, Hong Kong, reported 7.1 billion) (Federation of the Swiss Watch Industry, 2009). In

terms of total units produced, world watch production was estimated at around 1.2 billion timepieces in 2008.

The Swiss led the high-end segment of the market, producing 26.1 million pieces (of which, approximately 4.3 million (16.5%) were mechanical) and reporting an average export price of a Swiss watch at approximately $563 USD (the average price was $211 for quartz and $2612 for mechanical). See Figure 3 for the average Swiss price per unit value over time.[4] Comparatively, by 2008 the low-end segment, dominated almost entirely by quartz watches, was firmly anchored in Asia, where China and Hong Kong produced 550.3 million and 425.8 million watches, respectively. The average per unit price, however, was $2 in China and $11 in Hong Kong.

Figure 3: Average Per Unit Value of Swiss Watches, 1973-2008

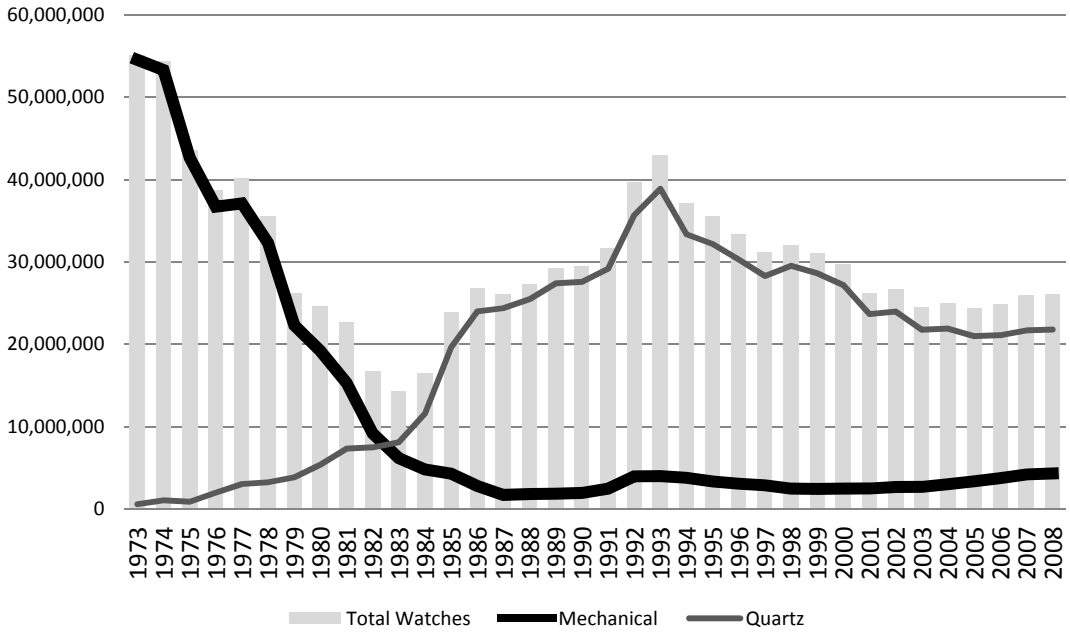


Source: Federation of the Swiss Watch Industry; World Economic Outlook data, IMF; analysis by author.

[4] Global watch production figures and exports values do not exist for the watch industry as a whole since 1995. The industry can only estimate approximate global sales and production based on intermittent reports issued by some of the main export countries. An economic official at the Federation of the Swiss Watch Industry explained: "Missing data, rough estimates from certain producing countries, changes in product mix and the list of producing countries" prevent them from reporting reliable global data (personal communication, 10/17/2011).

Although mechanical watches only accounted for 16.5% of the total number of timepieces (see Figure 4), they generated more than 70% of the total value for Swiss watchmakers (Federation of the Swiss Watch Industry, 2009).

Figure 4: Swiss Watch Production (units), 1973-2008



Source: Federation of the Swiss Watch Industry, analysis by author

Again, Trueb (2005:163-164; personal interview, 2012) colorfully describes the unanticipated re-emergence of demand for the Swiss mechanical watch:

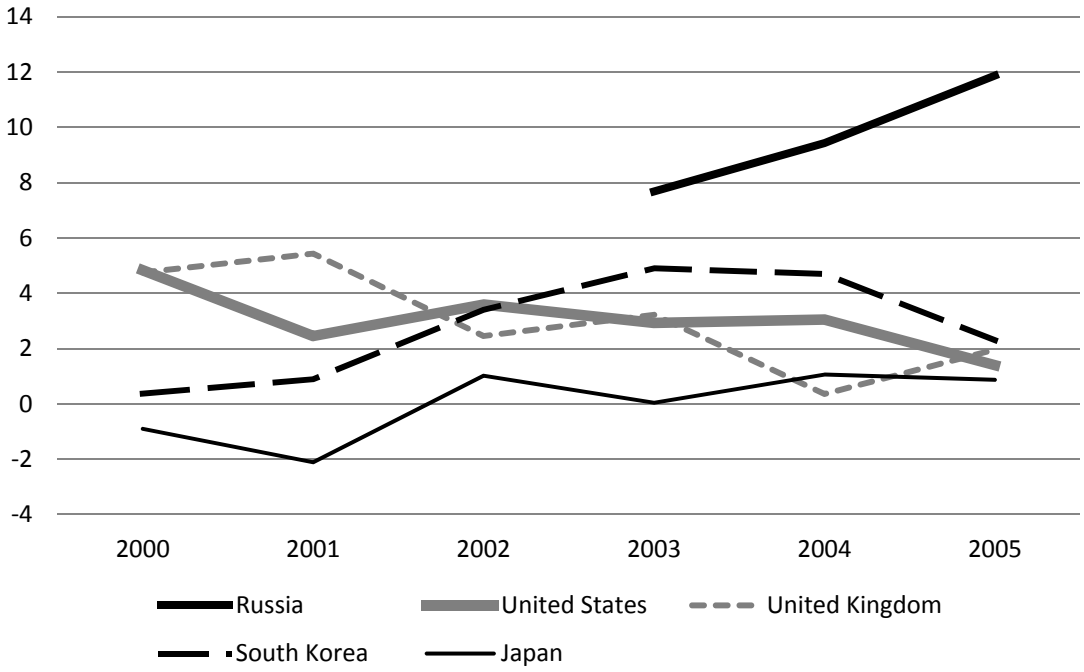
> [Nobody] had the guts to predict that the mechanical watch would find a long-term niche in the high end. Why would a sane person spend thousands of dollars for a technically obsolete product that is also expensive to maintain? Yet, this is what millions of people are doing. A choice of this kind is irrational, but we have learned that emotions govern the purchase of a luxury item: the consumer is ready to bleed and suffer for it.

As household disposable income growth rates increased in countries outside the traditional US and European export markets, so too did the global appetite for Swiss luxury watches. Such growth in worldwide demand offered increased stability to the Swiss watch

industry in the early 2000s, especially as disposable incomes in the United States and Europe had begun to stagnate (see Figure 5). By 2008, the Federation reported:

> The Asian continent absorbed more than 46% of Swiss watch exports. By comparison Europe consumed almost a third, with the Old World recording a more modest increase (+4.4%) corresponding to a value of 5.2 billion francs. Hit harder than most by the downturn, the American continent ended the year 2008 with a slightly negative result. Its value of 3.0 billion francs represented a decline of 1.9% compared to 2007. America therefore lost some market share, eventually accounting for 19.0% of Swiss export sales.

Figure 5: Household Disposable Income Annual % Change, 2000-2005



Source: ProQuest Statistical Datasets. (2013). OECD Factbook 2011-2012: Economic, Environmental and Social Statistics: Production and Income - Household Disposable Income, 1971 - 2012 [Data file]. Retrieved from https://web.lexis-nexis.com/statuniv, analysis by author.

In its annual report, the Federation (2008) summarized the success of the market, "Good results were attributable mainly to luxury [mechanical watch] products." Demand for Swiss mechanical watches was at an all-time high, painting quite a different picture for a technology that, thirty years early, had been slated for extinction.

CONCLUSION

The field of Swiss watchmaking, in the years between 1970 and 2008, provides fertile ground to explore the mechanisms that influence the re-emergence of market demand for a legacy technology. Previously, several scholars have documented the decline of the Swiss watch industry after the introduction of quartz technology (e.g., Donze, 2011; Glasmeier, 1991; Landes, 1983; Moon, 2004; Tushman & Murmann, 2002); in fact, the watch industry has almost become a *de facto* example of technological displacement and the impact of a competency destroying innovation (Glasmeier, 1991; Lecoq, Maillat, Nemeti, & Pfister, 1995; Tushman & Anderson, 1997). However, few organization and management scholars have extended this line of research to examine how the Swiss repositioned themselves in the decades that followed the quartz crisis (for one notable exception, see Tushman & Radov, 2000). This dissertation builds on previous work, but explores the conditions, actors, and mechanisms that led to this surprising revival of the Swiss watchmaking community that had been "devalued overnight by the quartz revolution" (Landes, 1983: 358).

CHAPTER III. THE RE-EMERGENCE OF AN INSTITUTIONAL FIELD

ABSTRACT

This study introduces the setting and context of my dissertation (i.e., the field of Swiss watchmaking), asking *"What factors influence the re-emergence of market demand for a legacy technology in a mature institutional field?"* It serves two purposes. First, it offers data and analysis to illustrate that re-emergence is a viable empirical phenomenon. Second, it extends previous work related to field emergence and institutions (e.g., Hargadon & Douglas, 2001; Holm, 1995; Leblebici, Salancik, Copay, & King, 1991), offering support for a theoretical model of field re-emergence. To do so, I present various institutionalization processes, inflection points, and focal constructs in the evolution and re-emergence of the field of Swiss watchmaking. I find that field re-emergence requires components that, paradoxically, facilitate both field transformation and field preservation. Although these processes appear to be at odds with one another, during a period of re-emergence they serve as necessary counterweights, encouraging the preservation of some valued elements of the old institutional order and new elements that allow for change and survival. The findings from this chapter are foundational for the two subsequent studies that analyze the mechanisms contributing to the re-emergence of the Swiss mechanical watch industry.

INTRODUCTION

"I don't know how it happened. I don't think anybody really knows. But suddenly, these mechanical things were back."

– Interview with the CEO of a Swiss watch company

A common feature across field emergence studies is a concern for describing patterns of diffusion within a focal area and explaining the adoption and spread of specific organizational forms or practice variants among organizations within a particular industry or sector (Ansari, Fiss, & Zajac, 2010). Empirical studies related to the emergence of nascent innovation-based fields have examined the role of organizational boundaries in the emergence of the computing, electronics, and telecom industries (Santos & Eisenhardt, 2005), the impact of social movements on the introduction of the wind energy sector (Sine & Lee, 2009), the sociocognitive dynamics during the launch of the minivan automobile product category (Rosa, Porac, Runser-Spanjol, Saxon, 1999), and the salience of CEO attention in the burgeoning fiber-optics market (Eggers, 2012). Work has extended into the emergence of fields associated with non-technical innovations, including TQM practice adoption in hospitals (Kennedy & Fiss, 2009), the global diffusion of ISO 9000 ISO quality certifications (Guler, Guillén, & Macpherson, 2002), the adoption of downsizing programs (Burdros, 1997), the diffusion of early 20th century American fire insurance programs (Schneiberg, 2002), and the evolution of modern personnel administration in United States (Baron et al., 1986). These and related studies highlight the relevance of legitimacy and isomorphism (DiMaggio & Powell, 1983), the role of labels in shaping early stage conceptions of new organizational forms (Grodal, Granqvist, & Woolley, Forthcoming), and the function of identity claiming and granting actions by internal (Navis Glynn, 2010) and external (Zuckerman, 1999) actors within a new field or market category.

While there has been a significant amount of work conducted on the factors that influence field emergence, the concept re-emergence has been largely unaccounted for in organization studies. Scott (2008) argues that scholars have historically privileged studies of emergence, issuing a call for work that more fully uncovers the processes of de-structuration and re-structuration. To date there is little some evidence to suggest that the conditions that influence field emergence processes will also apply to field re-emergence. It is ironic that a theory so concerned with persistence, permanence, and durability, has not fully recognized the possibility of such change, particularly as it might re-emerge from the residues of previous institutional orders. And yet, given its presence within fields, perhaps it is not surprising that it can emerge as a trigger of change, as field members rediscover the value of the past.

The efficacy of exploring re-emergence, particularly from a phenomenological perspective, is also important. Whether it be mechanical watches, sailing ships, steam locomotives, piston aircraft engines, or fountain pens, as technology life cycles evolve, the institutional field that houses the old technological order may not completely dissipate (Adner & Snow, 2010). Empirically, one could imagine, for example, that the factors inducing an emerging field to adopt a nascent technology might be quite different for a field that is re-emerging, especially if the actors in the re-emerging field still carry the residue of standards and norms that were once considered acceptable but may no longer be appropriate under a new technological order. Thus, in this chapter I ask *"What factors influence the re-emergence of market demand for a legacy technology in a mature institutional field?*

Researchers have shown that the institutional environment can play a significant role in preserving or extending the life of a legacy technology (Henderson, 1995; Kaplan & Tripsas, 2008) because technological orders can leave behind *institutional residues* (Burt, 1995; Kaghan

& Lounsbury, 2006). However, these claims have not been fully considered either theoretically or empirically in the context of a field or technology's re-emergence.

I explore the possible differences between field emergence and re-emergence, anchoring this examination in the field of Swiss watchmaking from 1970-2008. I extend previous work related to field emergence and institutions (e.g., Hargadon & Douglas, 2001; Holm, 1995; Leblebici et al., 1991), offering empirical evidence to advance a theoretical model of field *re*-emergence. The findings from this chapter are foundational for the two subsequent studies in my dissertation that analyze the mechanisms contributing to the re-emergence of the Swiss mechanical watch.

I begin with an overview of the literature related to institutional fields, field emergence and change. Next, I outline the data sources and qualitative methods I used. I then present my findings, highlighting how shifts in various institutional processes, changes in structural configurations, and the actions of important focal actors surfaced as key factors related to the re-emergence of the Swiss watchmaking industry. Finally, I move from a description of the Swiss watchmaking industry toward a discussion of a more general model of field re-emergence. I conclude with contributions, limitations, and areas for future research.

FIELD EMERGENCE, PRESERVATION, AND TRANSFORMATION

Processes of field emergence and institutionalization are critical aspects of institutional theory (Scott & Meyer, 1994; Zucker, 1977). The very definition of an institution is tied to the notion of persistence, preservation and stability (Hughes, 1936). Yet, the notion of field re-emergence infers some amount of change and transformation. The tension between preservation and transformation is a topic widely addressed by scholars of institutional change and field emergence (Dacin et al., 2002; Greenwood & Hinings, 1996; Greenwood, Suddaby, & Hinings,

2002; Leblebici et al., 1991), however, little attention has been given to understanding whether these processes hold within the context of re-emergence, and especially for a field that attempts to preserve displaced technologies. Here, I provide a brief review of the extant literature.

One of the early critiques of institutional theory was that it did not adequately address how changes at the level of the field, or the organizations within a field, emerged and unfolded over time (Davis & Marquis, 2005; Greenwood et al., 2002; Seo & Creed, 2002). As a result, researchers responded with a number of investigations into field level change. For example, Powell (1991: 197) points out that field change is "neither frequent nor routine because it is costly and difficult…it is likely to be episodic, highlighted by a brief period of crisis or critical intervention, and followed by longer periods of stability or path-dependent development." He identifies several factors enhancing field change, including: changes at the periphery of a field, such as innovations coming from marginal organizations in the network; "the ineffectiveness – or the effectiveness only in the short run – of isomorphic pressures" to shape organizational choices; and "the re-arrangement of field boundaries" due to deep political or legal upheavals, especially as fields are recomposed and either split into sub-fields or merge with other field. The notion of re-emergence – from legacy technologies, for instance – is not inconsistent with Powell's (1991) definition but it is not explicitly acknowledged, either.

Models of field change tend to depict it as occurring in two critical stages, following DiMaggio and Powell (1983): the first stage is that of field "youth," in which changes driven by economic and competitive forces are likely to be implemented, while in the second stage, field "maturity," institutional isomorphism paves the way to field stability. Zucker conceptualized this second stage of institutionalization as both a process and property variable that can be used to describe field level structuration and change. She states: "[institutionalization] is the process

by which individual actors transmit what is socially defined as real and, at the same time, at any point in the process the meaning of an act can be defined as more or less a taken-for-granted part of this social reality." Following this work, Tolbert and Zucker (1996) provide a model for how the introduction of a new innovation can change a field. First, the innovation is introduced into the environment, examined by other similar organizations, and either disappears because it is deemed unsatisfactory or becomes viable and more broadly accepted (i.e., habituated). In the next stage, objectification, the innovation garners social consensus and cognitive and normative legitimacy. During the final stage, sedimentation, the innovation spreads across the entire population and becomes ingrained in the social structure of the field.

Fields and organizations mediate the relationship between societal institutions and organizational behaviors, creating an interdependence between social structures and activities (Giddens, 1979). These dynamics have been shown to be salient in a broad range of markets and industries. Examples include the analyses of early railroad entrepreneurs and industrial policy formation in the United States, Britain, and France (Dobbin, 1997), the emergence of the wind energy sector (Sine & Lee, 2009), the growth of the early American film industry (Mezias Boyle, 2005), the impact of regulatory policy on the introduction of independent power production (Russo, 2001), and the social construction of the biotechnology (Powell, 2008) and nanotechnology fields (Wry, Greenwood, Jennings, & Lounsbury, 2010). Others have examined the rise and development of the modern corporation and corporate practices, including the spread of the multi-divisional form (Fligstein, 1985; 1991), the decline and fall of the conglomerate firm in the 1980s (Davis, Diekmann, & Tinsley, 1994), and the development of the modern state and corporation (Strandgaard Pedersen & Dobbin, 1997).

Subsequently, scholars have identified multiple factors, processes, and mechanisms associated with field level change. For example, in their study of the healthcare industry, Scott and colleagues (2000:24-25) identify processes resulting from alterations in relations among existing organizations, changes in boundaries of existing organizations, the emergence of new populations, transformations in field boundaries, and shifts in governance structures. Fligstein (1991) hypothesizes that "external shocks" – provided by macroeconomic conditions, the state, or other organizations – may provoke change in an otherwise stable field. In such cases, field dynamics among the actors and institutionalization forces following from the shocks will shape the direction of change. Others have shown that field change is often precipitated by actions from peripheral actors or innovations, ineffective isomorphic pressures, field boundary re-composition (e.g., Leblebici et al., 1991), unstable power relations or power shifts (e.g., Russo, 2001), or shifting field logics that facilitate the introduction of new political processes or the environmental selection of firms within the field (e.g., Fligstein, 1990; Thornton & Ocasio, 1999).

While researchers have devoted a great deal of effort to exploring the factors that influence the early stages of field emergence, there have been recent calls for greater attention on how fields de-institutionalize, or possibly re-institutionalize (e.g., Scott, 2008). Institutional scholars have suggested that institutional and field change models have relied too heavily on "arational mimicry and stability" and should be amended to include a "new emphases on institutional rationality and ongoing struggle and change" (Lounsbury, 2008: 349). Such models place greater weight on the micro-level activities that impact the field, focusing on identifying links between action and institution (Barley & Tolbert, 1997). For example, Johnson, Smith and Codling (2000) examine the interplay of behavioral scripts and institutional templates on

institutional change within the context of privatization. Scott argues (2008: 195-196), using Gidden's language, "institutionalists have focused attention on structuration processes, but have neglected processes leading to destructuration and restructuration." Similarly, DiMaggio and Powell (1991:30) contend that "little attention has been focused on how incumbents maintain their dominant positions or respond to threats during periods of crisis or instability."

This study attempts to address these calls by considering the factors that lead institutional fields to *re*-emerge by exploring the trajectory of a displaced technology (i.e., the Swiss mechanical watch), which I conceptualize as part of the residue lingering from earlier phases of field evolution. One critical aspect that I examine is that of agency and leadership (DiMaggio, 1988), a factor that institutionalists have associated with field-level change.

Institutional Leadership & Guardianship

The link connecting leaders to field level change has been supported by a number of different researchers working in different fields (e.g., Glynn & Navis, 2010; Kraatz & Zajac, 1996; Oliver, 1991; Weaver, Trevino, & Cochran, 1999; Zajac & Westphal, 2004). As institutional theory has matured (Scott, 2008), scholars have exhibited a renewed interest in leadership (e.g.,Kraatz, 2009; Washington, Boal, & Davis, 2008), reclaiming the work of early institutionalists and particularly that of Selznick. Selznick (1957: 27) theorized that the leader is critical to processes of institutionalization, as "an agent…offering a guiding hand to a process that would otherwise occur more haphazardly." He viewed leadership, organizations, and institutions so intertwined that "a theory of leadership is dependent on a theory of social organization" (Selznick, 1957: 23). Selznick's view of leadership addressed an important role that leaders play in shaping an organization's values during periods of institutional change and emergence.

More recently, scholars have extended Selznick's work and examined how leaders influence institutional change within an organization or across an industry. Building on DiMaggio's (1988) early work, Battilana, Leca, and Boxenbaum (2009: 66) explicate that such leaders become *institutional entrepreneurs*, i.e., "actors who initiate changes that contribute to transforming existing, or creating new, institutions." Similarly, Washington, Boal, and Davis (2008) theorize that leaders play many roles in the institutionalization process, including: orchestrating the internal consistency of the organization, developing supporting mechanisms that legitimate the organization, and engaging in actions to overcome external enemies. Such characterizations of leaders focus on the important role they play in shaping new processes or managing change within organizations or groups of organizations (Fligstein, 1997).

Guardianship. Conceptions of leadership, however, need not be associated only with radical field-level change. Leaders also actively promote stability and maintenance in organizations and shape the social order that constitutes and contextualizes broader institutions (Fligstein, 1997). While attention to institutional leadership has burgeoned over the past decade (Glynn & Raffaelli, 2010), few studies have explored how actors preserve (or guard) an established institutional field (for exceptions see DeJordy, 2010; Walsh & Bartunek, 2011; Walsh & Glynn, 2008). Scott (2008: 129) claims that scholars have devoted "little attention to the issue of institutional persistence." A leadership role as institutional guardian (DeJordy, 2010; Fligstein, 1997) or legacy custodian (Walsh & Glynn, 2008) seems critical if legacy technologies, and the associated organizational values and character, are to re-emerge.

In this vein, DeJordy (2010: 6) posits that "some embedded actors may believe change to the institutional arrangements is undesirable and, when perceiving potential change, may actively work to inhibit or prevent such change." In a study of Securities Exchange Commission in 1934,

he offers a definition of institutional guardianship, i.e., an action "intentionally and consciously engaging the institutional environment in an effort to preserve it in the face of perceived potential change." As important as this work is, however, it stops short of detailing the role of organizational leaders in field-level change.

In this study, I seek to explore the role of agentic leadership in field re-emergence because it presents a theoretical puzzle, pitting the work of institutional entreprenurship (concerned with changing the institutional order) against that of institutional guardianship (protecting and preserving the legacy institutional order). I explore the tension between the leadership roles of institutional entrepreneur and guardian, as actors attempting to simultaneously change and preserve technological and institutional orders, whereby enabling field re-emergence. I examine how both types of actors serve as important social actors in organizations and communities, involved in meaning-making (Pfeffer, 1977: 110) and the social construction of organizational reality (Meindl, Ehrlich, & Dukerich, 1985:78) that serve as the basis for establishing, maintaining, and perhaps re-establishing legacy values and organizational attributes in a re-emerging field.

In summary, institutional theory has been an important construct for examining the nature, conditions, and mechanisms related to field-level emergence and change. Moreover, it hints at the implications of field-level change for organizations and their leadership by explicating the role of context; such context becomes particularly important when the past is reclaimed and legacy technologies re-emerge to redefine a field.

METHODS

The field of Swiss watchmaking from 1970 to 2008 provides fertile ground to explore the phenomenon and theoretical underpinnings of field re-emergence. This study aims for

"theoretical extension," a term used to describe qualitative studies focused on "broadening the relevance of a particular concept or theoretical system to a range of empirical contexts other than those in which they were first developed or intended to be used" (Snow, Morrill, & Anderson, 2003: 187). Given that there is little scholarly empirical research on the theoretical tenets associated with field re-emergence (Scott, 2008), I conducted a qualitative case study of a specific community of actors within an industry (Yin, 2008), a method proven to be well suited for elaborating on existing theories of field, institutional, and technology change (e.g., Greenwood & Suddaby, 2006; Khaire & Wadhwani, 2010; Navis & Glynn, 2010; Tripsas & Gavetti, 2000). Although constraining my focus to one community within a global industry (i.e., Swiss watchmaking) limited the generalizability of my findings, it allowed me to develop much richer insights into the market conditions, processes, structural components, and actors within my empirical setting. My primary goal is not replicability, but to demonstrate the *plausibility* of field re-emergence and its related constructs.

Data

The primary data source for this study was 122 semi-structured interviews conducted with Swiss watch executives and industry experts from 2011 to 2013. The purpose of these interviews was to gather information from actors in different positions about the perceived field evolution. Given that this study is a historical review of a field over time, my goal was to sample respondents based on their involvement in the industry at different stages of its evolution. My interview protocol focused on what they perceived was occurring in the field of Swiss watchmaking from their vantage point (see Appendix II).

I developed my sample of interviewees by relying on a theoretical sampling technique, continually narrowing my sample of various actors in the field based on the theoretical trends

that I saw emerging from my data. I began by visiting the *National Association of Watch and Clock Collectors* (NAWCC), one of the largest horological archives in the world, and contacting the *Federation of the Swiss Watch Industry* to ask for a list of influential people and companies during the 38-year timeframe of my study. The Federation, dating back to 1876, is a private, professional, and non-profit association, with over 500 members representing more than 90% of all Swiss watch manufacturers. Representatives from the NAWCC and the Federation provided me with lists of the companies and individuals whom they believed were most salient to my research questions.

In general, privacy and secrecy shrouds the Swiss watch industry. As one senior executive commented: "It is a small and *very* private community." [Interview: Swiss watch company senior executive, 2011]. To overcome such access challenges, I followed a snowball approach, asking respondents to suggest other individuals or company representatives I should speak to whom they believed were influential. I found individuals were more willing to participate in my study if they knew that others had also agreed to do so, thereby making the snowball approach the most appropriate way to gain access to this closed community. My final sample included interviews with representatives of companies representing approximately three-fourths of all Swiss watch export sales from 1970 to 2008.

In addition to watch company executives, I interviewed industry representatives, watchmakers, union representatives, company historians, retailers, archivists, museum curators, fashion and luxury brand executives, auction house representatives, heads of vintage collector associations, and Swiss government officials who experienced the "quartz crisis" and the years that followed. To validate some of the general trends that emerged in my interviews, I also gained access to archival interviews conducted by other sources, including a series of 27 printed

interviews with Swiss watch CEOs conducted by *TimeZone*, a leading industry news source, as well as 145 interview transcripts of CEOs who experienced the quartz crisis, conducted by the industry's leading watch reporter.

Finally, I relied on archival data to triangulate (Creswell, 2003) and to search for commonalities and differences in my findings across sources. These included Swiss watch production and employment figures, government regulatory documents on "Swissness" trademark protection policies, industry certification standards issued each year, auction house vintage watch prices, and influential historical accounts of the Swiss watchmaking industry (e.g., Donze, 2011; Glasmeier, 2000; Landes, 1983; Pasquier, 2008; Trueb, 2005). To account for some of the key exogenous factors that several respondents thought may have influenced the Swiss watch industry's historical evolution, I obtained macroeconomic data on currency valuations, global household discretionary spending patterns, as well as several other important economic indicators. Each data source was used to examine how the Swiss responded in the years immediately following the near demise of mechanical watches (Donze, 2011) after the introduction of quartz technology (Landes, 1983; Tushman & O'Reilly, 2006).[5]

Analysis

The analytic approach I used can be described as analytic abduction (Peirce, 1955), which iterates between empirical data and preexisting theoretical constructs (Weber, Heinze, DeSoucey, 2008: 537) with the purpose of facilitating "dialogue across fields and methods…to connote the dynamic processes by which theories emerge, change, and grow" (Snow et al., 2003: 185). The process I followed to analyze data consisted of two separate steps. First, I began by familiarizing myself with the constructs and mechanisms most commonly associated with theories of field emergence and institutionalization. My pilot codebook included several

[5] See Table 1 in Chapter I for a more detailed description of my data sources.

components that Scott (2008: , 121-147) identified in his seminal overview of the literature on field structuration and the processes and mechanisms related to institutionalization and deinstitutionalization. These included, but were not limited to, structuration processes that involve the interchange of top-down and bottom-up processes (Scott, 2008: 191), such as:

> constitutive activities, diffusion, translation, socialization, imposition, authorization, inducement, and imprinting (Scott, 1987) – allow high level (more encompassing) structures to shape, both constrain and empower, the structure and actions of lower level actors. Simultaneously, counter processes are at work by which lower level actors and structures shape – reproduce and change—the contexts within which they operate. These bottom-up processes include, variously: selective attention, interpretation and sensemaking, identity construction, error, invention, conformity, and reproduction of patterns, compromise, avoidance, defiance, and manipulation (see Oliver, 1991).

Second, in addition to identifying these pre-established codes, I searched for other constructs that emerged from the data that I believed would inform a theory of field re-emergence. Using a content analysis software package (NVivo 10) to organize and examine my archival data and field interview transcripts, I analyzed data in an iterative process of going back and forth between conducting interviews in the field, analyzing data, and searching for emerging themes (Locke, 2001; Miles & Huberman, 1994; Strauss & Corbin). The goal of the data analysis process was to create a "chain of evidence" that linked descriptive codes found within the data with more abstract and theoretical constructs. This process is described in detail below.

To begin, I used a constant comparative method to create codes and compare data (Locke, 2001). During the first review, I assigned first-order descriptive codes to help sort the data that did not appear to fall into one of the preexisting codes in my codebook. I then assigned inferential codes to identify my interpretations of the data.

Next, I organized my provisional first order codes into broader emerging themes. During this step I evaluated which categories came together to form theoretical categories. By developing theoretical categories, I identified and refined the variables of interest. I revisited the

data to see whether the categories fit or not (Becker, 1970; Glaser & Strauss; Locke, 2001) in a process best described as moving from open to axial coding (Locke, 2001). In tandem with this process, I compared my descriptive evidence with the pre-determined conceptual categories previously identified in the literature by Scott (2008: 190) related to field emergence and institutionalization processes. At the end of this stage, I re-evaluated my preliminary codebook that had helped me keep track of the possible potential associations that had begun to emerge as potential theoretical constructs. See Table 2 for my pilot codebook with initial sensitizing codes. I also designed several preliminary conceptual frameworks to help identify potential relationships and began to explore more specific boundary conditions for the study. These conceptual frameworks served as a useful tool to help evaluate "what variables [were] the most important, and which relationships [were] likely to be most meaningful" (Miles & Huberman, 1994:18).

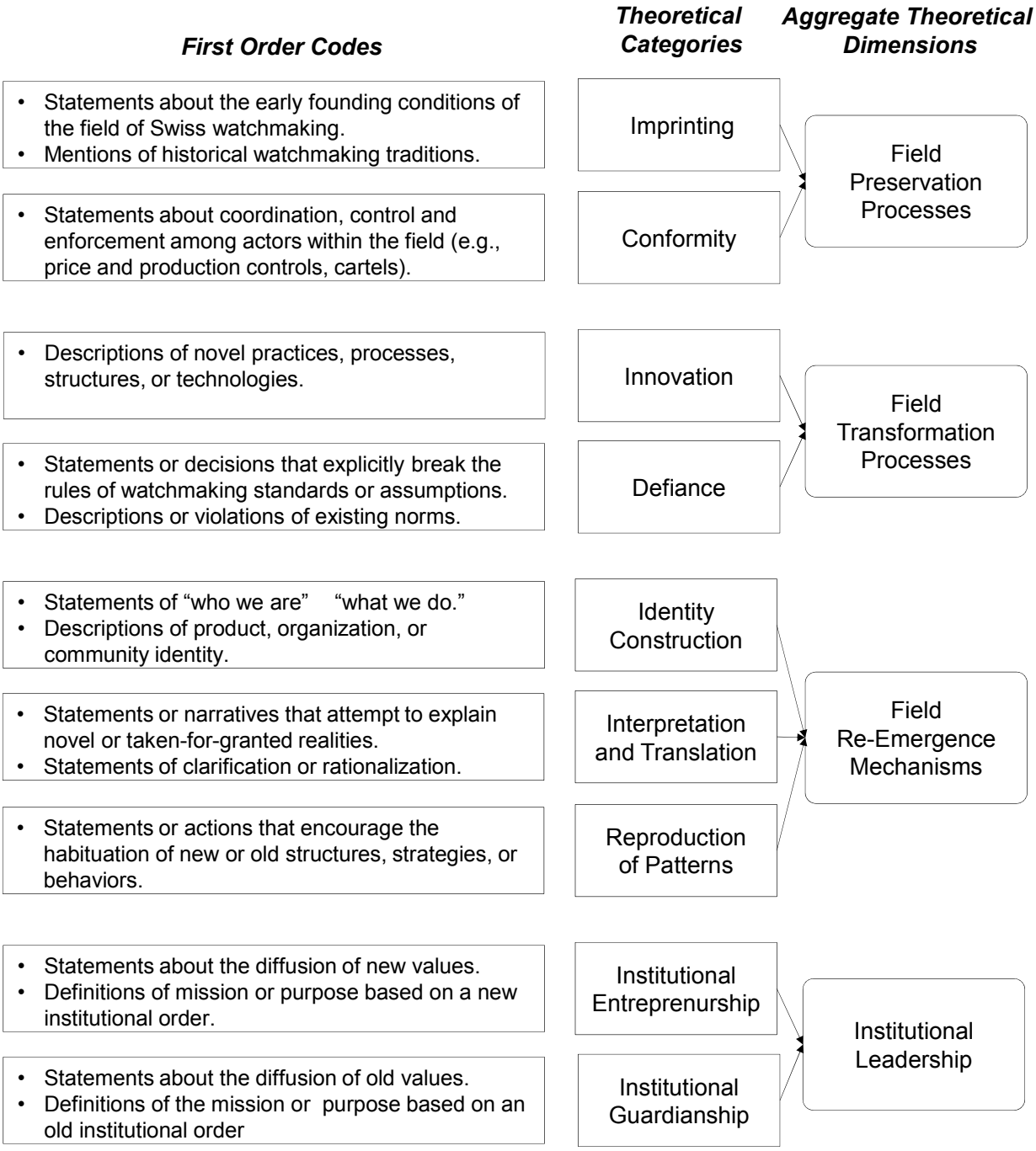
Finally, I moved from analyzing specific data to developing more abstract and theoretical concepts. The goal of this step was to settle on the theoretical concepts, variables, and relationships that advanced a model of field re-emergence. In this stage, I decided on which themes related to each other and were most germane to my conceptual framework. I finalized which codes were used and reexamined the data's fit with my codebook and emerging theoretical framework. Figure 6 summarizes the process that I followed, which shows my first-order codes, theoretical categories, and aggregate theoretical dimensions.

Table 2: Pilot Codebook with Preliminary Sensitizing Codes

Article	Code	Theoretical Explanation	Description
Identifier	*ID*	*Explanation*	*Coding Guidelines*
Field Emergence Processes	- Compromise - Defiance - Diffusion - Identity construction - Conformity - Reproduction of patterns - Imprinting - Innovation - Interpretation and sensemaking - Socialization - Translation	Field emergence and change processes allow high level (more encompassing) structures to shape, constrain and empower the structure and actions of lower level actors. Counter processes allow lower level actors and structures to shape, reproduce and change, the contexts within which they operate. (Oliver, 1991; Scott, 2008)	0= does not make reference to the specified process 1= makes reference to the specified process
Changes in Institutional Processes	- Functional Processes - Political Processes - Social Processes	Institutional change will induce changes in: regulatory systems, norms, obligatory expectations, cultural beliefs. It encourages increased questioning of what is taken for granted. (Scott, 2008)	0= does not make reference to specified process 1=Functional: Changes in in performance levels associated with institutionalized practices; Changing consumer preferences 2= Political: Shifts in interests; Shifts in underlying power distributions 3= Social: Differentiation of groups; increased fragmentation of normative consensus; diverging beliefs or practices; presence of multiple competing and overlapping institutional frameworks undermines the stability of each; outright abandonment of an institutionalized practice
Agency	- Institutional Leadership	Leaders who define purpose, values, and enduring meanings. "To infuse with value beyond the technical requirements of the task at hand." (Selznick, 1957)	0= does not make reference to institutional leadership tasks 1= makes reference to institutional leadership tasks: the definition of institutional mission and role; the institutional embodiment of purpose; the sense of institutional integrity; the ordering of conflict (Selznick, 1957: 62)

Note: this codebook is meant to serve as an illustration of the preliminary sensitizing codes that I used to begin my initial analysis. Over time, as I iterated between theory and data, several more codes emerged.

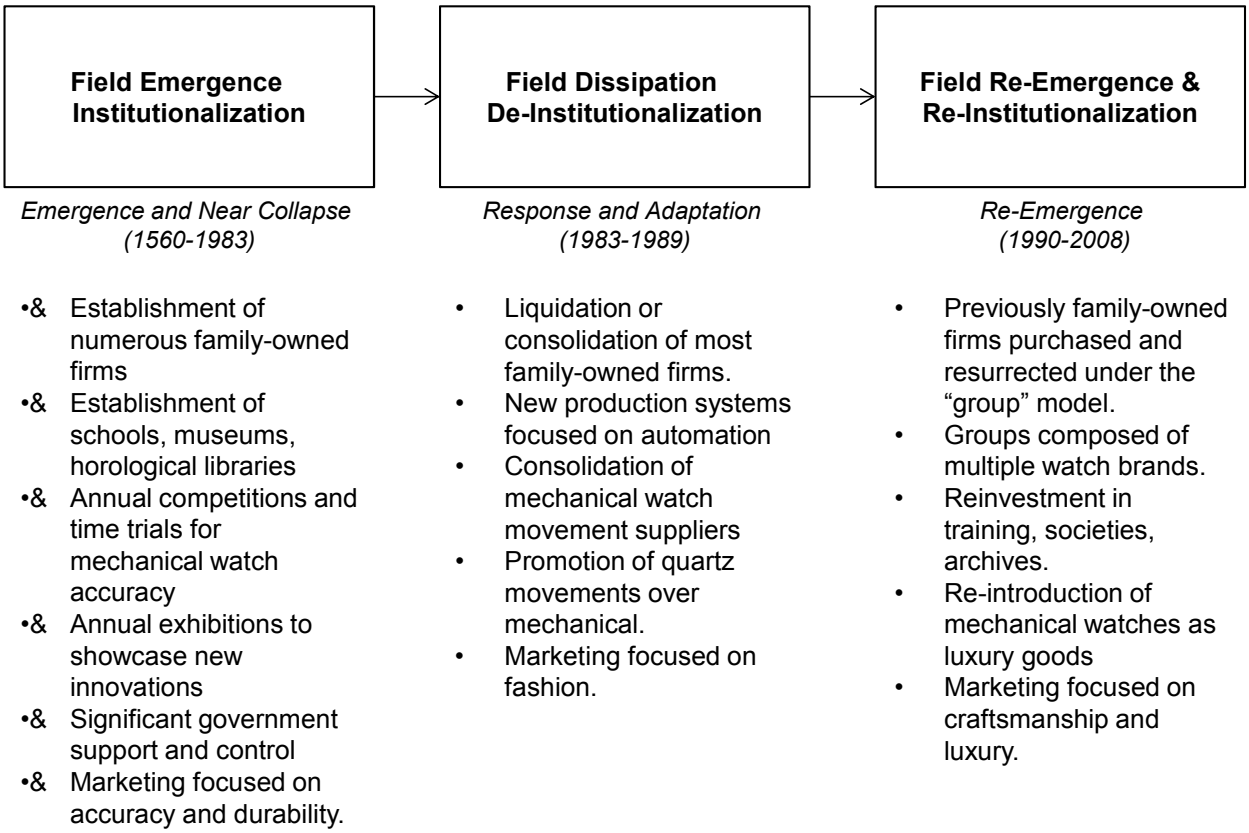
Figure 6: Overview of Data Structure



FINDINGS

My study revealed several factors influencing the re-emergence of the Swiss watchmaking industry. By definition, field re-emergence is proceeded by a period of field emergence (i.e., institutionalization) and a period of dissipation (i.e., de-institutionalization). Here, these initial periods can be described as 1) the emergence and near collapse of the Swiss mechanical watchmaking industry (1560-1983) and, 2) the dissipation and replacement of its taken-for-granted mechanical watchmaking traditions (1983-1989). However, within each of the first two periods, I identify specific elements that did not fully dissipate and later influenced 3) the re-emergence (i.e., re-institutionalization) of Swiss mechanical watchmaking (1990-2008). In each of the following subsections, I offer a detailed account of the field's emergence, dissipation, and re-emergence; more specifically, I identify and analyze the institutional processes, structural patterns, and the role of agency germane to each period. Figure 7 outlines each period.

Figure 7: Overview of Field-Level Changes in Swiss Watchmaking Industry



Emergence and Near Collapse: 1560-1983

Focal Institutionalization Processes - Imprinting and Conformity

Watchmaking first became popular in 16th century Geneva, but Switzerland did not become a global leader in watch production until a century later. Daniel JeanRichard, the son of a Swiss farmer and a self-taught watchmaker, was the first to introduce the craft to other peasant farmers in the Jura mountain region looking to fill their idle hands with a secondary source of income during the cold winters. Given their location along important trading routes, a lack of adherence to the inefficient production guidelines maintained by the exclusive watch guilds in other countries, and having access to expert training from the expelled French Huguenots who had migrated to the area, the Swiss Jura workforce proved to be well positioned. They posed a

serious threat to the dominant watchmaking regimes in Britain and France, eventually claiming the largest share of global mechanical watch production in the 18th century, a title they held for nearly two hundred years.

During this period of emergence, the Swiss engaged in several activities to formally institutionalize the craft of mechanical watchmaking in the region. They established horological libraries, museums, scientific societies, standardized tests, annual exhibitions, and their own watchmaking schools. Each year the societies hosted competitions and offered rewards for new designs, innovative new functions, and most importantly, for greater accuracy (c.f., Rao, 1994). "Beginning in 1907 Swiss watches took 1st prize in the pocket watch category every year. [The Swiss producers] were rich enough and ready to pay for the finest talent and the latest and best in testing equipment, quick to turn each prize into an advertisement" (Landes, 1983: 299). The community that emerged was tied together by an intricate system of small family-owned businesses that all benefitted from participation in the Swiss schools and society events that reinforced and perpetuated a distinct culture of Swiss watch production and innovation.

Early institutionalization of the Swiss watch industry was reinforced by a strong sense of organizational imprinting. Several core principles, norms, and watchmaking techniques that still exist in the 21st century Swiss watch community can be traced back to these early years when the industry was founded. For example, in an interview with a prominent Swiss watch CEO, the salience of imprinting is illustrated:

> You have two separate entries into the market; first you have the originals. If we take our company, we've been doing business since the 1800s. You can add the big brother's, like Patek. We all represent the originals. Being an 'original' means you have been in this business since the beginning, the origins. And then you have the 'newcomers.' [Interview: Swiss watch CEO: March, 2012].

This CEO's quote draws a clear distinction between those firms that he believes were part of the early days of the Swiss watchmaking tradition: the "originals" and the "newcomers." Additionally, his use of the term "big brother" alludes to the difference between his company, a Jura-based company founded in 1832, and the Geneva-based Patek Philippe, founded in 1851. While his company is older, he calls Patek "big brother," tipping his hat to the tradition of Geneva-based watchmaking (and the continued importance of Patek Philippe in today's market), and acknowledging the centuries-old tradition that first took hold outside the Jura mountain region. While the distinction is subtle, the gap between them is far less than the one that exists between the 'originals' and 'newcomers.' The newcomers did not become salient until the next period (1983-1989), when fashion oriented brands such a *Gucci* and *Hermes* actively started promoting watches under a very different set of core principles than the "originals" (e.g., a primary focus on brand marketing over mechanical watchmaking competence). Thus, founding date, a critical component of organizational imprinting (Stinchcombe, 1965), became an important way for companies to legitimize and preserve their link to a certain standard of watchmaking rooted in a centuries-old tradition.

Structure: A System of Family-Owned Enterprises

The structure of the Swiss watch industry from 1934 to 1971 can be defined by two distinct characteristics. First, prior to World War I, the industry was made up of hundreds of family-owned enterprises, each independently engaged in one aspect of production. While this model, based on Adam Smith's division of labor theory, served them well in the 18th century (Blanchard, 2008), it had made them increasingly vulnerable to the American watch industry a century later. The Americans were able to capture significant market share from the Swiss because of their early adoption of manufacturing practices rooted in industrialization. However,

while the rest of the globe, including the United States, turned its focus to fighting World War I, the Swiss used this period to retool and invest in larger production facilities, effectively responding to the U.S. manufacturing challenge (Glasmeier, 2000) and recapturing the global market.

The Great Depression that followed led to a 48 % decrease in demand for watches, which facilitated unprecedented price wars and opportunism among the Swiss system of family-owned manufacturers. "Now that the industry was awfully subdivided, there were hundreds of little companies that were fighting toe and nail against each other and bringing down prices to the point where everybody was broke" [Interview: industry journalist and technical historian, 2012]. In response, the Swiss watch industry in the early 20th century introduced a government cartel. The cartel was established to preserve the intricate system of small and medium sized family-owned firms (Pasquier, 2008), and given the watch industry's substantial share of national GDP, the government stepped in and forced greater coordination of one of its most profitable industries. The government bought a majority share of all the major producers of Swiss watch movements and their component parts, instituting a statute that supported a watch cartel carrying the authority of law. The cartel forced prices be set by industry-wide agreement, all exports required official permits, and "no changes in the composition operations without prior approval of a federal commission composed largely of other watchmakers" (Landes, 1983: 328).

Conformity was another critical factor that promoted the preservation of the field during this period of emergence. For several decades, the cartel, composed of nearly 400 companies, was considered one of the strongest and most efficient in modern economic history (Glasmeier, 2000; Landes, 1983; Trueb, 2005). Its structure required strict conformity to cartel policies, making it impossible for new companies to enter the Swiss market. As the CEO of a watch

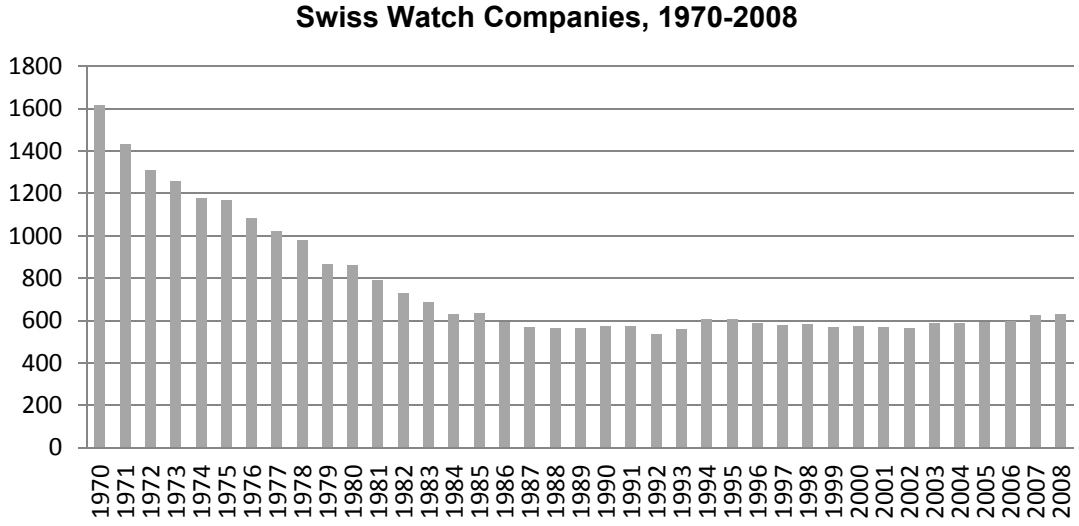
company recalled, "The government had absorbed all the manufacturers in order to maintain the industry. It would not have survived. However, my father had to buy a very small company which had a license just so he could gain access to the market." [Interview: Swiss watch CEO, 2012]. While the system established by the government was highly successful at re-establishing the Swiss as global leaders in watch production, it stifled innovation; all Swiss watchmaking companies had to gain permission to introduce new products. Nonetheless, the years that followed World War II were some of the most successful and profitable for the Swiss, especially as many companies turned their attention to fulfilling an unprecedented global demand for lower priced watches (Donze, 2011).

Technological change and near collapse (1962-1982). The system of control and conformity that made the cartel so effective and profitable had later left its members extremely vulnerable to outside competition. The late 1960s and 1970s ushered in a discontinuous technology that fundamentally changed the global watch industry: the quartz timepiece (Tushman & Anderson, 1997). Ironically, the Swiss were the first to introduce the new technology. With some support from the cartel system, a centralized R D center, the CEH (*Centre Electronique Horloger*) was formed in 1962 to encourage the development of electronic timekeeping devices for the industry (although several companies such as Omega, Heuer, Longines, and Girard-Perregaux also began to explore possibilities for the new technology independently). In 1968, the Swiss introduced their first quartz timepiece, a watch that was nearly twenty times more accurate than the most sophisticated mechanical chronometer movement. The problem, however, was that the early quartz watches "cost as much as a compact car" [Interview: Swiss industry expert, 2012] and more importantly, the Swiss craftsmen "were not interested" (Landes, 1983: 346) in pursuing an electronic device that they

believed had little to do with their centuries-long tradition of precision watchmaking and craftsmanship. The Swiss also failed to foresee that the Japanese, capitalizing on a burgeoning knowledge in electronics, would be able to cut the average cost of a quartz timepiece by a factor of 100 (Trueb, 2005), thereby making the quartz watch both cheaper and far more precise than the mechanical watch. These issues were further exasperated by a weakening of the US dollar compared to the Swiss Franc during the 1970s. Since the value of the Japanese yen closely followed the US dollar, Swiss watches were comparatively even more expensive in the United States, the Swiss' largest export market.

The Swiss' inability to compete with lower-cost Japanese quartz timepieces was so disastrous that the period is still referred to as the "watch crisis" (*crise horlogere*) or "quartz crisis" in Switzerland (Donze, 2011).[6] Nearly 60,000 jobs were lost in a decade, accounting for almost one-half of those employed by the sector; two-thirds of all Swiss watch companies disappeared. See Figure 8 and Figure 9.

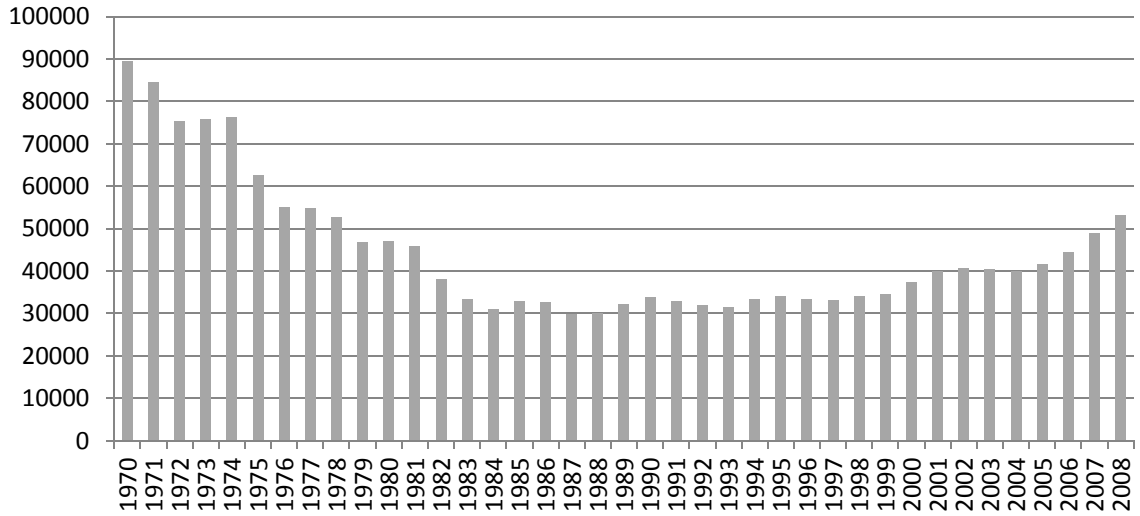
Figure 8: Number of Swiss Watch Companies, 1970-2008



Source: La Convention patronale de l'industrie horlogère Suisse

[6] The managerial factors that contributed to the "Quartz Crisis" within the Swiss watch industry has been well documented. See Donze, 2011; Glasmeier, 2000; Trueb, 2005; Tushman and Anderson, 1997.

Figure 9: Employees in Swiss Watch Industry, 1970-2008



Source: La Convention patronale de l'industrie horlogère Suisse

A senior executive who worked in several leading Swiss watch companies and served as a foreign trade liaison for the industry during this period explained the impact:

> We saw ourselves on a pedestal for so long. When you said watches, everyone knew you meant Swiss, nothing else. No other country had *really* challenged us. Basically, watches meant Switzerland. The crisis was really difficult. We didn't see it coming and we were so shocked by what happened. The fact that we had to lay off thousands of people, we were 90,000 and then we were 33,000, it was enormous. There was no future. [Interview: Swiss watch senior executive, 2012].

The institutionalized practices, routines, values, and taken-for-granted assumptions that had held for over two centuries had become a serious threat and potential vulnerability for the Swiss. The low cost and highly accurate Japanese quartz technology had disproved a fundamental assumption about traditional mechanical watchmaking: increased accuracy = higher cost. In short, "Swiss companies had failed to understand that the rules of the game had changed" (Brieding, 2013: 43). The old institutional order associated with traditional mechanical watchmaking would have to be dismantled if the field was going to survive.

In sum, I found two institutionalization processes were salient during this period of field emergence: imprinting (based on founding date) and conformity (based on a field structure that imposed highly coordinated production and distribution systems). The conditions associated with the founding of the Swiss industry, both in Geneva and the Jura, impacted several cultural and normative expectations watchmakers held about their profession nearly 200 years later. Additionally, after years of cartel management, the role of conformity revealed itself as an important structural characteristic of the field during this period. Both factors served as institutionalization processes that promoted field preservation and stasis.

Response and Adaptation: 1983-1989

Focal De-Institutionalization Processes - Innovation and Defiance

The period between 1983 and 1989 marked an unprecedented break from the traditions and methods previously employed by the Swiss watch industry. During this period, the field's norms, values, and taken-for-granted assumptions about watchmaking were reassessed and altered, resulting in a period of de-institutionalization (Dacin & Dacin, 2008; Davis et al., 1994). Two important processes emerged from my data that appear to have catalyzed these changes. First, several product and process *innovations* were introduced during this period. Second, underlying these changes was an element of institutional change Scott (2008) labels as *defiance*. The emergent role of both innovation and defiance effectively brought an end to the old mechanical watchmaking institutional order and paved the way for a set of new norms and practices, described below.

By the early 1980's, the quartz crisis in Switzerland had reached its pinnacle. Nicolas G. Hayek, a Lebanese-born CEO of a management consultancy in Zurich, was hired by a several Swiss bankers to examine several failing watch companies that had become insolvent; at the

time, the market for mechanical watches had become so dire that many companies were requesting more bank loans to pay their employee salaries and annual bonuses. Hayek issued a report with a recommendation for massive industry consolidation, restructuring, and new senior leadership. He suggested merging two of the industry's largest watchmaking holding companies, ASUAG and SSIH, which owned several well-known Swiss brands (e.g., Omega, Tissot, Longines, RADO) and accounted for approximately one-half of all Swiss watch employment. After having funded nearly a decade of bailout loans to watch companies, the banks had no interest in overseeing a lengthy restructuring effort. They wanted out. However, Hayek recognized the industry's growth potential and sensed the banks were ripe to cut a deal.

Defying the advice of most financial analysts at the time, Hayek entered into several negotiations with the banks to purchase the dying holding companies himself (Breiding, 2013). After orchestrating negotiations with over different 30 banks, the parties all agreed to sell Hayek a majority share of ASUAG and SSIH, forgoing some of their owed debt in exchange for shares in the new company. Hayek invested much of his own personal capital in the deal (approximately SFr20m, USD$11m) and proved to be adept at raising additional funds from outside investors. He formed a new board of directors, composed of individuals whom he knew trusted his vision, and named the new holding company *Société de Microélectronique et d'Horlogerie* (SMH, which he later renamed "The Swatch Group" in 1998). Hayek appointed Dr. Ernst Thomke the first CEO of SMH, a well-known executive in the industry who had previously served as chief executive for two of the watch movement manufacturing companies (ETA and Ebauches SA) that were part of the ASUAG and SSIH purchase. Between 1983 and 1989, Hayek and Thomke led a massive restructuring effort that introduced several product and

process innovations to the field of Swiss watchmaking, as well as implementing many painful cost-cutting measures, which I discuss next.

Structure: Consolidation of Production Systems

Under Hayek's vision for the Swiss watch industry, the production facilities, operations, and management of ASUAG and SSIH were merged under SMH to achieve greater economies of scale. He also made significant capital investments to update badly needed production systems that he hoped would eventually produce quartz watches on 24 hour cycles. The new production lines would eventually be able to develop watch movements that other companies could buy from SMH and then assemble under their own brand names, providing yet another source of revenue. The changes Hayek had proposed were intended to impact the entire industry, not just SMH, and thus he worked to gain support from many of the struggling brands. One prominent industry representative noted how Hayek attempted to convince the other CEOs of his vision: "Mr. Hayek at some point brought together many of the watch makers in a series of meetings where he said, 'Look we have to band together and change some of the rules if we're going to survive.'" [Interview: Swiss watch industry representative: 2011]

In addition to the consolidation processes, Hayek and Thomke believed SMH and the Swiss watch industry needed a new strategy to reclaim a portion of the mid and low end segments of the market that the Swiss had forfeited to the Japanese. The changes Hayek was proposing would transform the nature of Swiss watchmaking by making it possible to effectively produce quartz watches for the low to mid segment while still preserving brands targeted at the high-end consumer. He was adamant that the strategy could prove successful; regardless of numerous naysayers (inside and outside Switzerland) who disagreed with his goal to produce watches at multiple price points. Shortly after Hayek formed SMH, he recalled a meeting: "One

day the president of a Japanese watch company in America said to me: 'You cannot manufacture watches. Switzerland can make cheese but not watches. Why don't you sell us Omega for 400 million francs?' I told him 'Only after I'm dead!'" (Clerizo, 2010). Other higher-end brands that had traditionally been associated with status (e.g., Rolex and Patek Philippe) held firm in their belief that they could survive by producing mechanical watches. As one reporter noted, "A number of factors kept the upper end of the mechanical market alive. One was stubbornness" (Passell, 1995).

Nonetheless, in order to preserve some of the near bankrupt brands in SMH such as Omega, Hayek and Thomke were convinced the Swiss had to rebuild the "base" of the industry, making low price Swiss watches available to the masses. As one CEO explained, "If you don't have a base, you cannot have a top. A pyramid has a base. The larger its base, the higher you can build the top." [Interview: Swiss watch CEO, 2012]. An answer to this dilemma eventually came in the form of the Swatch watch.

The Swatch Revolution. The Swatch required several innovations that ultimately transformed the entire Swiss watch industry. First, several new technologies that deviated from the norms of traditional mechanical watchmaking had to be developed. In the late 1970s, Thomke had overseen the development of a watch called the "Delirium," which was aimed at fulfilling market demand for thinner quartz watches. While the Delirium was plagued with design challenges (e.g., its metal body was so thin it often bent when strapped on a wrist), the basic architecture laid the groundwork for the Swatch. Thomke appointed two young engineers, Jacque Muller and Elmar Mock to develop something similar, but encased in an innovative plastic body that would be sturdier and offer more design options to compete with the ascetically

unpleasing Japanese quartz models. Swatch production costs were 80% less and used 55% fewer parts than the typical mechanical watch.

Beyond the technology, the second form of innovation was introduced through the artistic design and marketing of the Swatch. Swiss watch historian, Donze (2011: 133) posits:

> [SMH] had the opportunity to carry out an innovative industrial policy which largely contributed to the rebirth of the Swiss watch industry. The principle of the new policy was the primacy of marketing over production: as the quartz revolution made it possible for anyone to manufacture watches, the issue was no longer how to make them, but how to sell them.

A novel marketing strategy to sell the Swatch to consumers would be critical. Thomke enlisted the assistance of independent Swiss designer Jean Robert, who had previously transformed the woman's underwear manufacturer *Fogal* into a designer of "elegant and sexy lingerie…whose pantyhose came in a mind-boggling array of designs and colors and sold at massive margins because women were willing to pay high prices to look like the stylish mannequins appearing in show windows" (Breiding, 2013: 66). Jean Robert brought the same design and retail marketing sensibilities to the Swatch watch. He and Thomke determined that the Swatch would be sold in higher-end retail boutiques, like Bloomingdales, and the styles should change every season.

After several years of prototyping new designs and methods, the first Swatches were sold in a Texas department store in 1982 and then formally rolled out across Europe and the United States in 1983. Driven by quartz technology, Swatches sold at prices low enough so that consumers were encouraged to treat them as fashion accessories. Swatch was first advertised to convey the idea that consumers could buy a watch for every outfit or activity: "Swatch = second watch." The colorful Swatch plastic case designs shifted the focus of the Swiss watchmaking industry away from accuracy and towards fashion. SMH invested approximately 25% of its budget on marketing the Swatch, a percentage unheard of in the watch industry prior to that

point. The distribution network and market positioning were quite different than those employed by the Japanese, who continued to market their quartz watches as affordable timepieces that kept extremely accurate time and sold in drug stores and discount department stores.

By 1988, 50 million Swatches had been produced and sold. The product provided evidence that Swiss watchmakers could still compete on the global market; Swatch's popularity had injected significant liquidity, and more importantly, confidence (e.g., Kanter, 2006) back into the Swiss watch industry. Other brands quickly followed Swatch's lead, releasing other fashion-oriented products such as Tissot's "Rock Watch." One senior executive recalled the atmosphere in Switzerland late 1980s: "These watches were cheap, they were fun, and they were precise. There was a lot of dust on the Swiss watch industry. The Swatch 'revolution' shook all that dust away." [Interview: former watch executive, 2012]. In 2013, Hayek's son, who replaced his father as CEO of Swatch Group, recounted the strategy in a press conference celebrating the 30th anniversary of Swatch:

> And then came Swatch. It was an incredible strategy to regain the lower market share. To attack there. [It allowed us] to be able to maintain the creativity and innovation of the upper market segment. To give the possibility to all these other wonderful [Swiss] brands, that you see are full of innovation, that to continue to develop and be successful. This is what Swatch has done. So thanks to Swatch, all these brands exist. [Press Conference: Swiss watch CEO: 2013].

In her book, Glasmeier (2000: 25) highlights the importance of Swatch to the re-emergence of the Swiss watchmaking industry: "Swatch was a Swiss savior in terms of the Swiss industry's return to the low-priced end of the industry and in terms of industry image and morale. Its importance was as much in saving face as in saving the industry itself." Hayek's defiance of industry norms and traditions had been scoffed at by other watchmaking executives, but it seemed to be paying off.

Although the success of Swatch provided renewed hope to the Swiss watch industry, it also exposed vulnerabilities that were embedded in the region's traditional mechanical watch production methods. The inefficient methods of mass producing mechanical watches by hand through a complex system of multiple family-owned businesses was no longer a viable business model and had to be disbanded. In fact, the Swatch had proven successful because it could be produced by a single company on an automated factory line, without the need for any human assembly. Thus, this period brought an end to many of the traditional mechanical watchmaking practices and structures that had defined the Swiss watch industry for nearly 200 years: the old cartel system had been dismantled, banks had sold off most of their remaining interests in the industry, and many of the family-owned mechanical watchmaking businesses had either collapsed, had been acquired by outsiders, or were still struggling to adapt to quartz technology.

However, entrepreneurs such as Hayek and Thomke were willing to defy centuries of institutionalized norms so they could introduce several innovative structural, cultural, technological, and organizational changes to the field of Swiss watchmaking. The quartz crisis eventually prompted an industry-wide restructuring, led by Hayek and SMH, that de-institutionalized many of the old mechanical watchmaking production systems and norms. Ironically, these actions laid the groundwork for the next period (Donze, 2011): an unexpected re-emergence of Swiss *mechanical* watch industry.

Re-emergence: 1990-2008

Focal Re-Institutionalization Processes - Identity Construction, Interpretation and Translation, and the Reproduction of Patterns

By 1990, the Swiss watch industry was beginning to reclaim low-end market share and the industry was exuding a newfound confidence for the first time since the early 1970s. One industry expert noted: "Things started to look up in Switzerland. It was absolutely amazing. The

Swatch did an enormous amount of good for the rest of Swiss watch industry, putting it back on the map." [Interview with former industry representative, 2012]. In the early 1990s, Swiss producers also noticed that mechanical watches were beginning to attract attention, particularly from collectors and high-end consumers looking to purchase these watches again. Here I focus on three elements that emerged from my interviews and data that were salient to this period of re-emergence: identity construction, interpretation and translation, and the reproduction of patterns.

The introduction of the Swatch watch as a fashion accessory convinced the Swiss that they no longer needed to compete with the Japanese solely on dimensions related to precision and accuracy. The Swatch had proved to be effective because it was marketed as an "emotional" product (i.e., an extension of the consumer's unique personality); in short, Swiss quartz watches could also be identity markers (Pratt & Rafaeli, 1997). But a question remained: could the same strategy apply to more expensive watches, particularly the mechanical watch? Several factors signaled that the future of mechanical watch technology would be tied to reconstructing the identity of the Swiss watch industry and translating this message to the consumer.

An early sign that mechanical watches still held value came from an unexpected source: the watch collector community. In the late-1980s a small group of collectors of mechanical watches started purchasing timepieces at auction because they were concerned the technology would vanish in the wake of quartz technology. According to one auction house executive, these collectors were a referred to as, "the 'purebreds.' They're in it because they can take apart a movement and to them it's a heaven on earth. It s as good as it gets." [Interview: auction house executive, 2013]. For them, the identity of the watch was far more than a precise timekeeper, but a symbol of craftsmanship.

Starting in the late 1980s and early 1990s, a new type of collector was enticed to enter the vintage market. An Italian entrepreneur by the name of the Osvaldo Patrizzi started auctioning mechanical watches and antique clocks to a growing base of people interested in mechanical watch technology. His auction house, *Antiquorum*, published full-color catalogues with in-depth technical descriptions, historical backgrounds, and documented provenances similar to those found in the high-end art market. Auction prices for their vintage pieces continued to rise,[7] sending a signal to the Swiss watch producers that there might still be value associated with the dying technology. And many brands began to take notice. A notable collector recalled the unexpected rise of value of a vintage mechanical Patek Philippe he had bought as frugal young man and later sold at auction:

> You cannot collect quartz watches. The heartbeat of a mechanical watch is the heartbeat of human culture. I bought my first [mechanical] Patek in the early 1980s with one paycheck, but I sold it in 1989 for $430,000. Managers in every watch company noticed this trend and couldn't believe people still wanted mechanical watches. [Interview: Watch Industry Historian, Author, and Collector, 2012]

When asked what made the vintage marketplace grow so quickly, one auction executive stated:

> The vintage market depends to a large extent on the power of persuasion of the auctioneer and the one who writes the descriptions.[8] The persuasions can be done in three ways: 1) to expose to the fullest the rarity and rare features of the watch; 2) privately assure a high-end client that the watch is a 'sleeper' and/or worth an investment; and 3) to use high flying adjectives. But one feature had become universal, however you word it, it comes down to one thing. It's got to be expensive. [Personal Correspondence: Senior executive at a watch auction house, 2013]

Heading into the 1990s and 2000s, the vintage market continued to attract new buyers, and many brands such as Patek, Rolex, Breguet, and Omega partnered with Antiquorum,

[7] For example, Patek Philippe wristwatch Ref. 2499, No. 868747, chronograph with perpetual calendar sold three times between 1992 and 2006. Current version is Ref. 5270: 1) Antiquorum Hong Kong 5/25/1992 lot 208 sold for HK$420,000; 2) Antiquorum Geneva 11/16/2002 lot 362 sold for 641,500CHF; 3) Christie's Geneva 11/13/2006 lot 45, sold for 832,000CHF.

[8] Example of an auction catalogue description: "To so many long time aficionados of vintage and contemporary wristwatches, it is the legendary reference 2499 by Patek Philippe which displays the most perfect combination of mechanical complexity, dial design and case proportions. And the one and only ever released example in platinum is the holy grail per se to a large community of collectors." Source: Christie's November 12, 2012 note to lot 151.

Sotheby's, and Christie's to sponsor special auctions for their pieces. Several brands also began re-issuing versions of the vintage pieces sold at auction; in fact, the high prices of the vintage pieces often justified the increased prices they could charge for the re-issued models. In contrast to the "purebread" collector-buyers described above, another auctioneer described the influx of new buyers as "'Armani suit' people. Not only did they have an interest in the watches, but they had the money to buy them." [Interview: auction house executive, 2013]. For this group of collectors, the identity of the watch was a symbol of status, prestige, and exclusivity. (It was also an identity that the brands were simultaneously attempting to spread beyond the vintage market to the retail market, discussed below).

The role of the collector continued to expand. Companies invited expert collectors to sit in on focus groups, asking for advice about whether they thought their new designs adhered to the brand's historical heritage. Beginning in the late 1990s, many companies hired notable collectors to write historical biographies on the history of their brands, hoping these individuals might be able to recover some of the information that was lost when many companies had thrown out their archival records during the quartz crisis. In short, the collectors served as guardians of mechanical watchmaking because their interest helped bring attention back to the technology.

While the vintage mechanical watch market may have been an initial indicator that mechanical watches still held value, the vast majority of work that led to the re-emergence of the mechanical watch was done by the brands themselves. Several watch manufacturers, such as Omega and Tag Heuer, believed that they could reposition the identity of the watch as a luxury good. To do so, extensive marketing efforts were launched to re-interpret and translate the value of owning a Swiss mechanical watch for the consumer. Several brands turned to marketing

strategies used in the early days of Geneva watchmaking, when watches were seen primarily as status symbols, jewelry, and luxury goods for the elites who could afford them. By essentially ignoring the fact that the mechanical watches were not as accurate as quartz timepieces, the brands aimed to shift the identity of Swiss watchmaking toward luxury, beauty, and craftsmanship.

Several "dormant" watch brands (i.e., old watch brands that had gone bankrupt during the quartz crisis) were re-launched during this period. One notable example was Blancpain. Its CEO, Jean Claude-Biver, was a former Omega executive who bought the rights to the Blancpain name for SFr16,000 (USD$9000) in the 1980s (Breiding, 2013). The project was based primarily on changing the identity of the watch, and linking it to the craft of watchmaking. Biver re-launched the brand, stating that it was Switzerland's oldest watch company and offered an ironic advertising slogan that captured the zeitgeist of the period: "Since 1735 there has never been a Blancpain quartz watch, and never will be." The reproduction of the old watchmaking patterns was meant to be celebrated rather than disregarded. In interviews, Biver explained the importance of identity construction, translation, and interpretation that he employed to reintroduce the mechanical watch to the consumer:

> We re-invented the culture of a watch, the art of a watch, the soul of a watch. Your watch lives with you and so don't look for accuracy. You look for the soul, the beauty, the art. You look to the watch as a communicating instrument of your personality. Your watch is part of you. The watch belongs to you. The watch is you. [Interview: CEO of Swiss watch company, 2012]
>
> This is why we may consider Blancpain today as the 'guardian,' the curator of the most marvelous culture, a true Swiss patrimony: the Art of traditional watchmaking. We want to give life to the fabulous heritage of the art of traditional watchmaking, to enlarge it thanks to the possibility of today and of tomorrow. [Archival interview: CEO of Swiss watch company, 1999] (Friedberg, 1999)

Both were strong statements of identity, alluding that the watch could serve as extension of a buyer's personality (c.f., Belk, 1987). The strategy worked. In 2000, Biver sold Blancpain to Hayek and the Swatch group for SFr50million (USD$30m).

Structure: The Introduction of the "Group"

The success of the Swatch watch in the mid to late 1980s provided the liquidity Hayek needed to carry out his broader vision. During the 1990s, he used the revenues from Swatch sales to acquire several more Swiss brands, bringing them under the roof of one single "Group" (i.e., SMH/Swatch Group). Under the "Group" model, each brand would represent a specific price point to vertically segment the market. Brand CEOs reported directly to Hayek, who served as Chairman and CEO of the Group and coordinated the production figures, budgets, and revenue targets for all the brands. Seeing the success of this strategy, the 1990s and 2000s led to creation of several more groups across the industry (Donze, 2011). For instance, several foreign investment groups in the luxury industry capitalized on the shift toward luxury and began to acquire Swiss watch brands. They believed they were well positioned to use their marketing expertise to reposition the brands for the high-end consumer (e.g., LVMH, the French multinational luxury goods conglomerate known for its Louis Vuitton handbags and several other prestigious brands, purchased the Tag Heuer and Zenith watch brands).

The introduction of groups into the Swiss watch industry also brought different expectations about profit margins. One former CEO stated that after his company was purchased by a luxury group, they quickly raised prices and re-invested a significant amount of cash into marketing. Their goal, he said "was getting the company out of the mass market margins and into luxury market margins" [Interview: former CEO of Swiss watch company, 2012].

The shifting structure of the industry was also influenced by the supply of watch movements, which are the mechanical or quartz components inside a watch responsible for keeping time. Since the largest independent movement manufactures had been dissolved or acquired by SMH in the 1980s, its movement factory (known as *ETA*) supplied 80% to 85% of all watch movements to other brands during this period. Companies would purchase the movement from ETA, add new features (i.e., 'complications' such as annual calendar functions, chronograph timing functions), assemble the watches, and sell them independently. Finally, a remaining subset of companies continued to make their own movements, most notably Rolex and Patek Philippe. A prominent collector, author, and watch brand historian explained the shift in industry structure that occurred in the late 1990s and 2000s, particularly as many of the traditional mechanical brands no longer made the mechanical movements that were back in demand:

> From that time, the scenery divided. You had companies on the one hand who developed their own movements, and on the other hand you had companies that used ETA movements and building complications on the ETA movements. [Interview: Watch historian and author, 2012].

Thus, the advantage of the "group" structure was that several watch brands could benefit from several aspects of group membership, including: stronger negotiating power with suppliers and distributors; capital investments that came from overall group profits; diffusion of new technical and business methods from other brands in the same group that facilitated organizational learning; and, revenues from other products in the group (e.g., liquors, clothing, handbags) could sustain the watch brands if demand decreased or currency shifts effected Swiss watchmaking. Since most groups owed more than one watch brand, a core principle of the group structure was to avoid encroaching on the price segment of their other brands. The CEO of a mid-range brand situated within a group quipped about the importance of selling watches at a

specific price point: “I always want to stay in my league. Never forget. I try to preach this message the whole damn day to my executives – stay in your [expletive] league!” [Interview: CEO Swiss watch company, 2012]. The purpose of the group was to coordinate how the brands would translate the unique values of their watches to a diverse market of consumers at multiple price points. In addition, the groups facilitated a reproduction of patterns, practices, and institutional norms by centralizing many decisions related to production and distribution.

By 2008, the Swiss watch industry had recorded 19 quarters of consecutive growth, achieving 67% growth over the previous five years. The export value of Swiss watches was approximately US$15.8 billion, estimated to comprise 55% to 60% of the global watch industry. The group model appeared to be a successful means of rescuing numerous almost defunct brands, including the 18 brands that sat under Hayek’s Swatch Group and made up 40% of all the Swiss watch export value. When Hayek had produced his initial recommendations for banks in the early 1980s, he estimated the SMH/Swatch Group was valued at SFr328 million (USD$180m) – thirty years later his group reported revenues of SFr6.44 billion (USD$6.22), 70 times the original investment (Breiding, 2013: 43).

However, by 2008 the Swiss watch industry was now one primarily anchored in the luxury segment of the global watch market. Enthusiasm for the Swatch watch had subsided in the 1990s, and Swiss production numbers for quartz technology never came near the 1 trillion quartz watches produced annually in Hong Kong and China. The Swiss could no longer compete on overall production units (Glasmeier, 2000); in 2008, they produced 26.1 million watches, of which only 4.3 million were mechanical. The average price of the Swiss watch was US$563, compared to the average price of a Chinese quartz watch at US$2 (Federation of the Swiss Watch Industry, 2009). Nonetheless, a re-emergence of the Swiss field of watchmaking had

been achieved: the industry was seeing unprecedented growth rates, mechanical watchmaking schools in Switzerland were again flourishing, and many old brands were being re-launched every year. Refer again to Figure 8 and Figure 9. As a company historian employed by a Swiss watch company iterated: "We have to communicate that [Swiss watchmaking] is not about precision anymore, it's about a dream, it's about heritage, it's about the past. In fact, it is not rational at all, this re-emergence." [Interview: Swiss watch company historian, 2012].

The re-emergence of the field Swiss watch industry suggests a complementary, but somewhat nuanced, perspective on the role of legitimacy during periods of market re-formation. During this period of re-emergence (1990-2008), Swiss watch companies had to cross multiple legitimacy thresholds (Navis & Glynn, 2010) simultaneously. The first was associated with re-legitimating themselves as traditional Swiss watchmakers with roots in early days of mechanical watch craftsmanship; as a result, numerous companies hired full-time company historians with PhDs in history to search for archives, patents, and other sources that could validate the companies' claims to the past. Alternatively, during this period many brands also joined "groups" which enforced many of the strict guidelines related to budgeting, operations, and profitability that had initially been introduced into the field during the prior period (1983-1989); as a result, these companies were now held accountable to outside financial analysts who legitimized their claims for profitability to the broader investor community. In this case, the two legitimacy hurdles were associated with practices and patterns that had been instituted in the past, but were also important for their future.

To summarize, I find that identity construction, interpretation and translation, and the production of patterns characterized this period of re-institutionalization. As the industry moved toward selling mechanical watches as luxury goods, these factors shifted market demand and

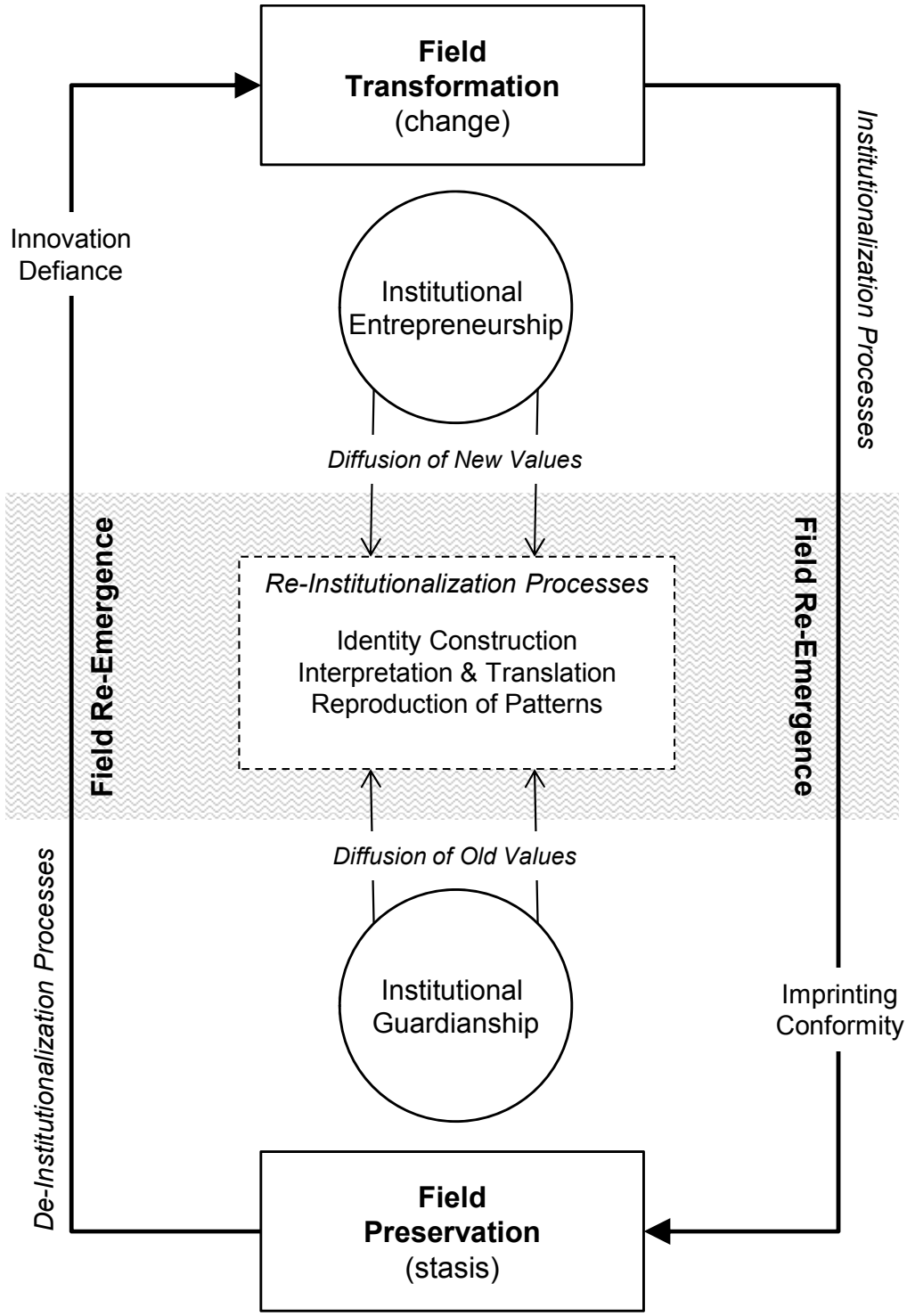
consumer buying patterns. Concurrently, the period also gave rise to the institutional guardian: actors who served to preserve the old technology, signaling market demand for the old technology still existed, and also acting as historians and "truth-tellers" (Stinchcombe, 2002) for the field. In the following section, I discuss how each of the salient factors that emerged across the three periods contributed to a general model of field re-emergence.

TOWARDS A MODEL OF FIELD RE-EMERGENCE

In this section, I advance a model of field re-emergence that summarizes and generalizes my findings. Figure 10 illustrates how institutional processes of field transformation and preservation serve as complementary forces that enable field re-emergence. The Figure also highlights how actors representing change (i.e., institutional entrepreneurs) and stability (i.e., institutional guardians) counterbalance each other during periods of re-emergence. Together, these processes and actors create a unique set of conditions that simultaneously facilitate transformation and preservation.

The arrows on the left and right sides of the Figure illustrate how re-emergence occurs through a complex balance of field transformation and field preservation, represented by the top and bottom boxes. The middle box represents the mechanisms that facilitate this balance (e.g., identity construction, interpretation and translation, and the preproduction of patterns); and, as illustrated, re-emergence consists of elements associated with both field transformation and change. This process is managed through the actions and behaviors of institutional entrepreneurs and guardians, represented by the two opposing circles, who employ the mechanisms of re-emergence to infuse both the old and the new values into the institutional field. Next, I describe each of the constructs in the Figure in more detail.

Figure 10: Towards a Model of Field Re-emergence



Institutionalization Processes

Elements associated with a field's emergence (i.e., institutionalization: pre-1983) and dissipation (i.e., de-institutionalization: 1983-1989) do not completely dissipate, and consequently remain salient during periods of field re-emergence (e.g., 1990-2008). As Kaghan and Lounsbury (2006) show in their study of technology transfer, "institutional residue" from an old technological order is often left behind and can manifest itself later in artifacts, professional norms, standards, and communities of practice. Likewise, the mechanical watchmaking schools, industry associations, accuracy competitions, certification boards, and the mechanical watchmaking machinery and tools all became forms of institutional residue that were left behind in the late 1970s, but they eventually became important again in the 1990s.

For instance, during the 1990s and 2000s most Swiss companies were focused on validating to the consumer that they were founded during the early days of watchmaking, which they believed would help legitimize their claim to the origins of Swiss mechanical watchmaking. Additionally, during the re-emergence period several CEOs reported that their companies agreed to industry-wide standards set by the Swatch Group largely because they had been successful under highly coordinated supply systems before, a mentality that harkened back to the days when the industry production was coordinated by a cartel. Thus, processes of imprinting and conformity – which served to solidify field-level norms, habitual patterns, and values during the field's emergence – laid dormant for several years, but later came back during the period of the re-emergence.

Conversely, elements that forced field level change can also linger and influence actors during a subsequent period of re-emergence. For instance, many of the process and product innovations that were introduced during a period of transformation (1983-1989) (e.g., the Swatch

watch, automated production systems, fashion marketing) defied the accepted practices, norms, and logics associated with the early days of Swiss mechanical watchmaking. One could argue that this period introduced a market logic (i.e., focused on the accumulation and commodification of wealth) to a field that that traditionally been one based primarily on a family logic (i.e., focused on reciprocity and unconditional loyalty) (Friedland & Alford, 1991; Thornton, Ocasio, & Lounsbury, 2012). Yet, during the same period, when firms were re-embracing the old mechanical watch technology (1990-2007), they continued to employ strategies that led to stricter and more disciplined business practices (e.g., tighter financial controls, automated production systems, and greater accountability measures) that were introduced during the 1990s. I found that the innovations grounded in a market logic that Hayek and others introduced in the 1980s were also reconstituted and became a form of institutional residue that provided the seeds for change that subsequently occurred during the years marked by re-emergence.

Finally, the Figure depicts how re-institutionalization and re-emergence is facilitated via mechanisms (Davis & Marquis, 2005) of identity construction, interpretation and translation, and the reproduction of patterns. For instance, during the re-emergence period, many of the CEOs I interviewed argued that they actively attempted to redefine their company's identities, the identity of the watch, and more broadly, the identity of the community of Swiss watchmaking (i.e., "who we are" and "what we do" (Navis & Glynn, 2011)). To do so, patterns associated with the previous two periods were reproduced (e.g., elements of handmade mechanical watchmaking were combined with automated production systems). Such norms and practices were re-institutionalized via the group structure, the re-establishment of schools, festivals and

fairs devoted exclusively to Swiss luxury watches, and chronometer certifications (see Appendix III) that measured accuracy differently for mechanical watches than quartz timepieces.

Institutional Entrepreneurship and Guardianship

Processes of re-emergence are enacted by two types of leadership: institutional entrepreneurs and institutional guardians.[9] Selznick (1957) explicitly defined institutional leaders as carriers of values who could infuse those values in organizations so as to develop the organization's character and identity, transforming them from a tool of efficiency to a value proposition. As he (1957: 17) famously intoned: "To institutionalize is to infuse with value beyond the technical requirements of the task at hand." By value, Selznick (1957: 57) did not refer to "any object of interest" but rather, the denotation of "something which in the given organization is taken as an end in itself." Because they reflect the beliefs of the collective about what is right and appropriate, he argued that values create social order, govern competing or political interests by offering a transcendent ideology or mission, and thus serve as a form of social integration. Moreover, social values can fix and codify meanings associated with the institution and enable its endurance over time. Thus, the values infused by leadership can establish "relative permanence of a distinctly social sort" that is the hallmark of an institution (Hughes, 1936:180).

Figure 10 illustrates how, during periods of re-emergence, institutional entrepreneurs (Battilana et al., 2009; DiMaggio, 1988) diffuse values that aim to transform the field, while institutional guardians (DeJordy, 2010; Fligstein, 1997) diffuse values that aim to preserve elements of the field associated with the old institutional order. Yet, I find both are necessary for re-emergence. If the institutional entrepreneur pushes the field too far askance by introducing

[9] I do not limit the notions of institutional entreprenurship or guardianship strictly to individuals, but also suggest that organizations, professional associations, events, or individual actions can promote the infusion of values.

innovations that defy all acceptable norms, guardians will react and argue the practices are no longer legitimate. Alternatively, if institutional guardians refuse to adapt to any changes proposed by the institutional entrepreneur, the entrepreneur will highlight that some level of change is necessary in order for the field to survive. Thus, the inherent tension between these two types of actors shapes the conditions for re-emergence.

For example, after the quartz crisis in the Swiss watch industry, many experts credited Hayek with introducing the consolidation strategy that influenced sweeping changes in the watch production systems across the region, transforming the Swiss watch industry by making it more competitive with other nations (Donze, 2011). Simultaneously, during this same period when the Swiss struggled to define themselves in the years following the quartz crisis, Hayek and other CEOs were surprised to find that collectors were purchasing vintage mechanical watches at auction for record prices, publishing books about mechanical watches and the Swiss companies that produced them, and forming local and online communities devoted to the preservation of the craft of fine mechanical watchmaking. In a sense, these collectors were acting as guardians of the tradition of Swiss mechanical watchmaking. Quickly, CEOs such as Hayek realized that the collectors were influential actors in the industry, and played an important role in signaling consumer demand for handmade watch components that could only be manufactured by expert craftsmen and women in the old tradition. The example suggests that institutional entrepreneurs were able to introduce new innovations that facilitated necessary field level change, while guardians actively protected the organization and institution's historical heritage (Walsh Glynn, 2008), particularly when under threat of change (DeJordy, 2010). In re-emergence, the collectors played an important role by making visible the value of mechanical watches, providing an impetus for a return of mechanical watchmaking.

Overall, I find that processes of re-emergence draw on the institutional residues of the past, but also connect them to the present. Just as the old technology is not fully displaced by the new, the then-new technology (e.g., quartz) is not fully displaced by the return of the old technology (e.g., mechanical). Thus, the elements of old and new technological orders exist and sit side by side, providing richness and complexity to the field.

DISCUSSION

This study demonstrates several key factors that contribute to, and influence, the re-emergence of market demand for a legacy technology in a mature institutional field, answering calls by organization scholars for further research related to field-level persistence (Scott, 2008) and change (Davis & Marquis, 2005). I advance a model of field re-emergence, which combines multiple processes associated with institutionalization and de-institutionalization. By examining the field of Swiss mechanical watchmaking, I find that field re-emergence requires the recombination of elements left behind from a prior technological order, but also requires novel elements to be introduced. Thus, field re-emergence requires components that facilitate field transformation and, likewise, also elements that facilitate field preservation. And while these dual-processes appear to be at odds with one another, during a period of re-emergence they serve as necessary counterweights, encouraging the preservation of some elements associated with the old institution field, while also allowing new elements to enter the field that allow it to change and survive. Finally, I expose how these dual processes are supported by actors serving as institutional entrepreneurs (promoting change and transformation) and institutional guardians (promoting stasis and preservation).

This study has several theoretical implications. First, it offers new insights relevant to research on fields, and institutional and technology change. For example, institutional scholars

have long been interested in the role of legitimacy during these the early stages of field and market category creation. Navis and Glynn (2010: 462) show that the emergence of satellite radio was predicated on achieving a *legitimacy threshold*, "marking the onset of institutionalization and the taken-for-grantedness of the new market category." Dacin, Goodstein, and Scott (2002: 47) posit that legitimacy is an important force in institutionalization, as "The creation, transformation, and diffusion of institutions require legitimacy, a condition whereby other alternatives are seen as less appropriate, desirable, or viable." I find that during periods of re-emergence, the field requires legitimation of its past practices and traditions, but also needs legitimation of its current practices under the new institutional order. This balance was often achieved through the actions of individuals who served as "carriers" of values, ideas, routines, and artifacts over time (Scott, 2003), especially institutional entrepreneurs and guardians.

Second, I expose an unlikely relationship between the institutional leader and guardian. Where prior studies have largely focused on the role of the institutional entrepreneur as an agent for field level change (Garud, Jain, & Kumaraswamy, 2002; Hardy & Maguire, 2008; Maguire, Hardy, & Lawrence, 2004; Rao & Giorgi, 2006), I find equal importance for the institutional guardian (DeJordy, 2010; DiMaggio, 1988; Fligstein, 1997). In the case of the Swiss watch industry, both serve as counterbalances to the other; institutional entrepreneurs (e.g., Hayek) introduced innovations that ultimately drove field-level changes necessary for survival, but alternatively, institutional guardians (e.g., collectors) ensured that companies preserved the norms and values associated with mechanical watchmaking. Thus, this study may provide new applications for Selznick's view of institutional leadership: the notion of "value infusion" appears to be just as important for entrepreneurs as it is for guardians. Interestingly, during a

period of re-emergence, both sets of actors infuse values that push and pull the field until it achieves a hybrid-like value system that provides equilibrium. Unpacking this relationship more fully holds promise for future researchers.

Finally, I identify several mechanisms that are critical processes for field re-emergence, including the role of identity construction, interpretation and translation, and the reproduction of patterns. While institutionalists have devoted significant energy to exposing the cognitive factors that impact field level change, (Greenwood & Hinings, 1996; Scott, 2008), such factors remain relatively unexplored in the literature on technology change (Kaplan & Tripsas, 2008). Not only do these cognitive factors appear to be important for understanding changes in the technology of the watch, they may also lend greater insight into the identity changes that the organizations underwent, as well as the broader community of Swiss watchmaking. Further exploration on *how* these mechanisms effect field-level change would be a welcome extension of this study.

To conclude, I find that re-emergence is not only a "real" phenomenon, but one that serves as an important extension of research previously conducted on field emergence and institutionalization. As is the nature of any inductive study, however, it is not without its limitations. A single case does not make a theory, but does provide promise for future research that explores the mechanisms underlying field level change, and in this case, re-emergence.

CHAPTER IV. MECHANISMS OF TECHNOLOGY RE-EMERGENCE AND IDENTITY CHANGE IN A MATURE FIELD

ABSTRACT

I examine the processes and mechanisms whereby market demand for a "dying" technology re-emerges at a later date. In 1983, fourteen years after the introduction of the first quartz watch, mechanical watches, along with the Swiss Jura community of watchmakers who built them, were thought to be "dead" (Landes, 1983). Unexpectedly, however, by 2008 the Swiss mechanical watchmaking industry had re-emerged as the world's leading exporter (in monetary value) of watches. Using qualitative and quantitative analysis, this deductive study offers support for hypotheses that test how re-emergence is associated with: 1) product identity redefinition ; 2) historical organizational identity reclamation ; 3) changes in community identity that reshape systems of meaning ; and 4) mechanisms related to temporal framing, linguistic framing, and symbolic framing. Thus, although new or discontinuous technologies tend to displace older ones, legacy technologies that are seemingly "dead" can re-emerge, thrive, and even co-exist with newer technologies. Building on these results, I draw out theoretical and empirical implications that focus on the interface between technological shifts and identity change at multiple levels.

INTRODUCTION

This study focuses on the mechanisms (Davis & Marquis, 2005; Hedstrom & Swedberg, 1998) associated with field level identity change and re-emergence. I examine a period of re-emergence in the field of Swiss mechanical watchmaking, and how technology precipitated changes not only in Swiss watchmaking, but also in the product identity of the watch, the organizational identity of the watchmaking firms, and the community identity of those craftsmen who designed and valued them. I show how the product identity of the watch moved through phases that emphasized different identity attributes: from precision craftsmanship, to fashion accessory, and finally to luxury good. Concurrently, I examine how the identity of the Swiss watchmaking community also experienced significant change, as master craftsmen were forced to evaluate their centuries-old profession in light of the electronic quartz watches that had claimed a significant portion of their industry.

Like Tripsas (2009: 442), I observe that "technology change has implications beyond the technology itself." The overall effect of the Quartz Revolution was to loosen the identity coupling – between product (mechanical watch), organization (watchmaking companies), and community (Swiss) – paving the way for a plethora of innovative watches that were produced by new and different communities of watchmakers, including the Japanese and Chinese. That technological shifts ushered in identity and field-level change is perhaps not a surprise (Barley, 1986); what is a surprise, however, was the potent re-emergence of the "dying technology" of mechanical watch movements along with the re-coupling of watch and (Swiss) community.

This paper is poised to make several contributions. First, because I examine how fields can be reconstituted through technology, I complement and extend existing research on the dynamics of field birth and death. My research reveals that technology cycles may be more

expansive than previously modeled, lengthening beyond birth (technology emergence) and death (technology displacement) to re-emerge. Thus, I contribute to research on innovation and innovation cycles (Tushman & Rosenkopf, 1992), highlighting *how* legacy technologies (i.e., old technologies that endure after the rise of a dominant substitute (Adner & Snow, 2010)) embedded within mature fields can, counterintuitively, survive periods of ferment and the threat of displacement to reconfigure the field, as well as its key products and actors.

Second, I highlight *how* the processes that underlie field-level changes are predicated not only on technology shifts, but also upon mechanisms related to identity. My archival analyses reveal that such mechanisms use temporal references, metaphorical language, and symbolic claims in public and marketing communications to re-define legacy identities. I show how industries and fields can be reconstituted such that technologies – and associated product, organization, and community identities – can re-emerge as influential and powerful collectives.

Third, I answer calls for integrative research that encompasses micro- and macro-level processes of change, innovation (Drazin et al., 1999) and institutionalization (Powell & Colyvas, 2008), by exploring how the reclamation of legacy identities (Walsh & Glynn, 2008) in products, organizations, and communities reshapes fields.

I begin with an overview of the relevant literature theorizing product, organizational, and community identities within the context of technological re-emergence. Next, I present research that uses archival analysis and field interviews to reveal the mechanisms of technological re-emergence of Swiss watchmaking during the period of 1970-2008. Finally, I extract theoretical and managerial implications, and suggest potential directions for future research.

TECHNOLOGICAL RE-EMERGENCE AND FIELD LEVEL IDENTITY CHANGE

Scholars have modeled technological evolution as a cyclical process, i.e., a *technology life cycle*, that is initiated by the introduction of a new and discontinuous technology, ushering in an era of ferment that persists until the industry coalesces around a new technology (Tushman Rosenkopf, 1992). The cycle repeats itself over time as a "highly path dependent process" (Kaplan & Tripsas, 2008: 790). The apparent pro-innovation bias (Rogers, 1995) seems to have deterred attention to the possibility that legacy technologies may endure beyond the life cycle model. The underlying assumption is that technologies eventually reach a natural limit (Fleming, 2001), leading to their demise (Klepper, 1996). Foster argues (1986: 160), "The market served by the old technology will be small, have no growth… and only a few firms will be economically strong enough to weather the storm."

Nonetheless, there is some evidence to challenge the assumption that old technologies inevitably die when they are displaced by newer ones. Adner and Snow (2010: 1655) theorize that old technologies may avoid extinction by exploiting "racing" strategies (i.e., extending their performance) or "retreat" strategies (i.e., moving into a niche or relocating into a new market application). Henderson's (1995) research on the optical lithography industry reveals how a legacy technology was able to extend its dominance beyond its performance limits because of social and institutional factors. Ansari and Garud (2009) show how the life of 2G telephony technology was extended due to modular innovations in packet-switching technology. Snow (2008) and Harley (1971) illustrate how legacy technologies such as carburetors and sailing ships extended their lifespan by adopting components from electronic fuel injectors and steam ships, respectively. Finally, Adner and Snow (2010: 1655) offer a theoretical explanation for the life

extension of old technologies, arguing that the emergence of a new technology can "reveal significant underlying heterogeneity in the old technology's broader demand environment." However, we know little about the micro-processes and mechanisms that undergird the communities and organizations that attempt to preserve legacy technologies, nor has significant attention been given to cognitive factors (Kaplan & Tripsas, 2008) that may potentially affect the trajectory and market demand for a legacy technology beyond the limits of the its "ultimate performance" (Henderson, 1995: 631).

To address these gaps in the technology literature, I turn to the identity literature, which scholars (e.g., Tripsas, 2009) suggest holds promise for unpacking some of the cognitive elements associated with technology change. Identity focuses on the attributes of entities of multiple types, including products, firms, communities, and fields, and how they are framed and understood. I discuss how such factors inform our understanding of how legacy technologies re-emerge and re-establish themselves in a mature field.

Identity Change in Products, Organizations and Communities within a Field

Identities, at the levels of the organization or field, consist of elements that collectively define "who we are" and "what we do" (Navis & Glynn, 2011: 479). In the process of technology emergence, these identities, as well as those of marketplace products, are intertwined and mutually constituted. Over time, however, the initial coupling between them tends to loosen, with technical elements defining "what we do" potentially separating from institutionalized meanings of "who we are." As Scott (1987: 499) explains: "Institutional elements of environments begin to be defined in contrast to technical elements, and this definition becomes more explicit and pronounced over time." Thus, it is the "common meaning system" that Scott (1994) attributes to fields that gives them their collective character, beyond their mere technical

features. Meanings, which are socially constructed (Berger & Luckmann, 1967; Kennedy, 2008; Rosa et al., 1999), shape the collective identity of the field. They serve as a touchstone that firms use to claim field membership and that audiences use to understand, categorize, and legitimate the field (Navis & Glynn, 2010; Weber et al., 2008; Zuckerman, 1999). Below I describe how the identity of product, organization, and community change with regard to technology re-emergence.

Product Identity

Product identity is defined as the unique attributes of a product's architecture, design, and function (Ulrich, 1995). Features of product identity are based on the arrangement of the product's functional elements, the link between its functional elements and physical components, and, finally, the interfaces among its interacting physical components (Urlich 1995: 420). Bayazit (2004: 16) argues that product identity is "concerned with the physical embodiment of man-made things, how these things perform their jobs, and how they work."

Recently, scholars have begun to investigate product design (for a review, see Ravasi Stigliani, 2012) and organizational identity (e.g., Ravasi & Schultz, 2006; Tripsas, 2009). Although advocates claim that "design-inspired" products are more enduring and profitable, the concept of design and its integration with organization identity has received little scholarly attention (Utterback et al., 2010: 3). Ravasi and Canato (2010) posit that the technological features of a product become cognitive anchors that provide meaning and reinforce individual and organizational identities; thus, product identities are the physical manifestation of that which is core, distinctive, and enduring (Albert & Whetten, 1985) to an organization or a wider collective. As the case of Polaroid described by Tripsas and Gavetti illustrates (2000), the

entrenchment of a product identity within an organization may inhibit the organization's ability to envision a new identity devoid the core product (Ravasi & Canato, 2010).

In addition to design specifications, product identity serves as a filter on how external audiences, such as consumers and industry observers, perceive and evaluate a specific type of product class, technology, or innovation (Benner, 2010; Zuckerman, 1999). Clark (1985: 245) posits that new product innovations require manufacturers to define the product identity using broad categorizations, and that consumer adoption decisions require a "conceptual evolution" as consumers become experienced with the product. For example, the "horseless carriage" gradually became known as an "automobile" as consumers developed more experience and were able to define the car's unique identity. Benner and Tripsas (2012) show that the prior history of firms entering an emerging field influences their initial framing of product identity (e.g. a digital camera ranged from an analog camera substitute for photography firms, to a video system component for consumer electronics firms, to a PC peripheral for computing firms). Eventually, they find the entire field converged on a common product identity.

Product identity is also shaped by audience expectations of the product class. Scholars have shown how industry analysts and investors often struggle to define new and existing product identities because they do not know how to categorize the product's attributes within the context of institutional norms (Benner, 2010; Zuckerman, 2000) or by analogy, to other products' attributes (Navis & Glynn, 2010). For example, Hargadon and Douglas (2001) examine how Thomas Edison attempted to define the attributes of electric lighting by exploiting prior representations of lighting established by the gas industry.

Product identities, defined by attributes such as architecture, function, and form, are all affected and can change the boundaries around existing product classes or draw boundaries

around new ones. While product identities are tied to functional aspects of the technology, they also serve as material and symbolic elements of identity for the organizations and individuals who produce and purchase them (Dittmar, 1992). As such, the re-emergence of market demand for a legacy technology may be possible if it continues to hold value or significance as an identity marker (Pratt & Rafaeli, 1997) to actors in the field. Following this line of thought, I hypothesize that:

> *Hypothesis 1: Product identity redefinition is associated with the re-emergence of market demand for a legacy technology.*

Organization Identity

Organizational identity is anchored to the categorical question of "What kind of organization is this?" (Albert & Whetten, 1985) and claims to what is *core*, *distinctive*, and *enduring* about the organization. Over the past twenty years, a common thread of debate among scholars has centered on where organizational identity resides (Ravasi & Canato, 2010). Whetten and Mackey (2002: 395) suggest that scholars have developed two fundamentally different conceptions of organizational identity: 'identity *in* organizations' and 'identity *of* organizations.' They claim, "At the heart of these competing conceptions of organizational identity is the distinction between identity-as-shared perceptions among members versus identity-as-institutionalized claims available to members."

These conceptions of organizational identity are apportioned by a focus on identity as 'attribute-based' versus 'identity as a strategic resource' (see Glynn, 2008: 416-417 for an overview). The first conceptualization assumes certain attributes are essential to the organization and ask how they evolve over time (e.g., Gioia, Schultz, & Corley, 2000; Meyer, Bartunek, Lacey, 2002; Ravasi & Schultz, 2006). Several studies reveal the inherent tension organizations

face in maintaining a distinctive identity while also attempting to position themselves in larger classification schemes (Albert & Whetten, 1985; Navis & Glynn, 2010); for example, Deephouse (1999: 147) argues that organizations should be "as different as legitimately possible." Alternatively, organizational identity can also serve as a strategic resource, "being deployed to competitive advantage and functioning as a guide to firm-decision making and strategic choice" (Glynn, 2008: 416).

Organizational identity becomes particularly salient during periods of instability and change (Gioia et al., 2000) and is a product of social construction (Corley et al., 2006). It has been shown to present itself in the face of conflict (Dutton & Dukerich, 1991), within shared interpretive schemes that provide meaning to individuals (Fiol, 1991; Gioia, 1998), amongst networks or relationships (Mehra, Kilduff, & Brass, 1998), in a set of institutional claims (Whetten & Mackey, 2002), within professional groups (Pratt & Foreman, 2000), across functional differentiations (Glynn, 2000), embedded in structures or symbols (Glynn & Abzug, 2002), and through rhetoric and language (Fiol, 2002). As such, questions related to organizational identity become even more salient, for instance, when an organization faces an exogenous shock from the arrival of a discontinuous technology. One could suppose that changes in market demand will lead organizations to incorporate identity elements from the broader community that will allow for their survival. Simultaneously, such changes might be facilitated by organizations reclaiming elements of their historical identity anchored within a specific temporal frame (Schultz & Hernes, 2012; Walsh & Glynn, 2008) and tied to a legacy technological order. Thus, I hypothesize that:

> *Hypothesis 2: Historical organizational identity reclamation is associated with the re-emergence of market demand for a legacy technology.*

Community Identity

Community identity[10] refers to the collective identity (Snow, 2001) that characterizes the field as a whole, and is claimed by field members in an effort to align with others' expectations (Mervis & Rosch, 1981; Navis & Glynn, 2010). Cornelissen, Haslam, Balmerw (2007) argue that collective identities are distinct and fluid, organized around a common purpose and shared action, and serve as the basis for material outcomes and products. Hoffman and Ocasio (2001: 416) posit that collective identities within the same industry are defined by "the common rules, values, and systems of meaning by which industry participants establish rules of inclusion, competition, and social comparison among industry members; create distinctions within and between industries; and delimit industry boundaries."

Communities are largely defined by structural and cultural components that create the meanings of social systems and are exhibited as standard practices (e.g., Baron et al., 1986) and as the collective identity of the community (Wry, Lounsbury, & Glynn, 2011). In their study of Scottish knitwear manufacturers, for example, Porac, Thomas, and Baden-Fuller (1989) show how actors who share a collective identity develop "cognitive communities" that help them determine the competitive boundaries of who sits within their competitive environment. More recently, scholars have explored how community identity plays a critical role in category emergence and classification. Navis and Glynn (2010) highlight the role of collective identity as a source of legitimacy in their study of the emergence of the satellite radio market category;

[10] For the purpose of this paper, I use the terms 'collective' and 'community' identity interchangeably, suggesting that both refer to the shared sense of "we-ness" (Snow, 2001) inferred by both terms. While collective identity has been shown to exist among individuals within an individual organization (e.g., Fiol & Romanelli, 2012), I draw on work that explicates the relationship between collective identity and fields (e.g., Glynn, 2008). I use the term to describe a shared collective identity between actors who interact more "frequently and fatefully with one another than with actors outside of the field" (Scott 1994:207).

alternatively, Benner (2010) and Zuckerman (2000) find that firms that fall outside the definition of the community identity will suffer in terms of external evaluations.

Collective and community identities also characterize fields and institutions, which themselves are made up of regulative, normative, and cognitive structures and activities that provide stability and meaning (Marquis et al., 2007). Regulative processes establish rules, ensure conformity, and define sanctions; established norms become an obligatory dimension of social life; and cultural-cognitive understandings constitute the nature of reality and the frames through which meaning is made (Scott, 2008: 33).

Reinforcing cultural-cognitive systems are structural systems of relationships, networks, coalitions, and coordination mechanisms. DiMaggio and Powell (1983) show how members of a community are defined by mutual awareness that they are involved in a common enterprise. Goffman (1974: 21) argued that communities form similar cultural frames that allow individuals to "locate, perceive, identify, and label" events and other stimuli as a way of establishing a sense of shared meaning (Scott: 2008: 187). Greenwood and Hinings (1988: 293) posit that organizations and communities "operate with structural designs which are given meaning and coherence by underlying interpretive schemes." And Fligstein (1990) suggests that organizational communities are defined by shared relationships with similar organizations or by a common relationship with a particular institution. Although relational and cultural-cognitive systems can define and stabilize identity, they can also be challenged by technological change that redefines fields. In this regard, several scholars have explored how communities react to a discontinuous technology (e.g., Kaplan, 2008; Tripsas & Gavetti, 2000; Tushman & Anderson, 1986). Thus, the role of collective identity in the process of technology re-emergence appears particularly salient, especially since the collective identity associated with a legacy technology

may not completely go away (Walsh & Glynn, 2008). One could imagine that the activation of a dormant collective identity associated with a latent technological order might be associated with the re-emergence of market demand for a legacy technology. Consequently, I hypothesize that:

> *Hypothesis 3: Changes in community identity that reshape systems of meaning are associated with the re-emergence of market demand for a legacy technology.*

Mechanisms of Field Level Identity Change

Davis and Marquis (2005) suggest that the utility of a mechanism-based approach is that it describes a set of interacting parts that produce an effect not inherent in any one of them. Ironically, they (2005: 336) offer an analogy well suited to this study: "If a regression tells us about a relation between two variables—for instance, if you wind a watch it will keep running—mechanisms pry the back off the watch and show how." My analysis explores three unique mechanisms that underlie *how* product, organization, and community identities interact during periods of field evolution and technological re-emergence.

First, research has highlighted the importance of temporal frames, especially ones that help actors re-interpret the past in light of the future, during periods of category development, evolution, or expansion (Navis & Glynn, 2010). One could suppose that temporal frames might serve as an important mechanism of technology re-emergence, especially if notions of the past must be reestablished in order to create a bridge to the future.

Second, metaphors have been shown to serve as a mechanism that helps actors create new labels and meanings during periods of change and evolution (e.g., Clark, 1985; Gioia et al., 2000; Powell & Colyvas, 2008). As Cameron (1986: 540-541) points out, "the usefulness of metaphors lies in their possession of some degree of falsehood so that new images and associations emerge." One could therefore imagine that metaphors would be an especially

relevant mechanism to facilitate new conceptions of product, organization and community identities during a period of market and technological ferment associated with re-emergence.

Third, research has found that symbolic identity claims help organizations gain or maintain membership in specific communities (Albert & Whetten, 1985), particularly when managing strategic change (Fiss & Zajac, 2006). For example, Albert and Whetten (1985: 270) posit that symbolic identity value claims require the organization's "choice and modification of symbols, such as logos and sales slogans, product packaging, and the location and appearance of the corporate headquarters." One could suppose, therefore, that symbolic and material value claims by organizations and communities during a period of technological re-emergence would be especially important for redefining how consumers and other actors assess the value of their products. Thus, I investigate the following hypotheses:

> *Hypotheses 4a-c: Identity change associated with the re-emergence of market demand for a legacy technology is facilitated by mechanisms of: a) temporal framing to anchor practices and activities in the past, present or future; b) linguistic framing to shape preferred meanings through metaphors; and, c) symbolic framing to reshape how value-claims are interpreted and evaluated by actors in the field.*

METHODS

Empirical Setting

The field of Swiss watchmaking, in the years between 1970 and 2008, provides fertile ground to explore the mechanisms of technology re-emergence. The year 1970 was selected as the starting point of this study for three reasons. First, 1970 marked the year after the first quartz timepiece was introduced on the market, providing a baseline to examine how quartz technology impacted the field of watchmaking from its inception. Second, 1970 represents the height of the Swiss watchmaking industry's dominance over world markets (in units sold and value) prior to the introduction of quartz technology. Finally, starting in 1970 will allow me to track over a decade of performance data, events, critical decisions, and identity claims that occurred before

the Swiss watchmaking industry reached its lowest performing years in the early 1980s after the introduction of quartz technology. It is not until 1983 that Swatch introduced its first line of quartz watches and, with it, a dramatic shift in watchmaking; thus, this functions as a potentially important inflection point in the evolution of the field and affords a window on identity shifts that led to its re-emergence.

The year 2008 was chosen as the ending point of the study because it marked the beginning of a global financial system downturn, which many watch industry experts have now dubbed a "crisis" that affected previous growth patterns. Thus, changes in industry performance trends and firm activities in response to the 2008 crisis suggest that several exogenous macroeconomic factors began to impact the industry in 2009 in ways that extend beyond the scope of this study.

Between 1970 and 2008, I focus on the three distinct periods defined by different dominant attributes associated with the product, organizational, and community identities associated with the field of Swiss watchmaking. These periods can be described in terms of the extent to which identities were focused on: 1) watches as *Precision Craftsmanship* (pre-1983); 2) watches as *Fashion* accessories (1983-89); and 3) watches as *Luxury* items (1990-2008). The three time periods correspond to the analytical narrative outlined in Chapter II: prior to 1983, Swiss watchmaking focused primarily on the development of well-crafted and extremely accurate timepieces; from 1983 to 1989 watches were re-envisioned as fashion accessories (e.g., Swatch); and from 1990 to 2008 the Swiss repositioned their watches as luxury goods. I developed labels and timelines for each of the three periods (i.e., precision craftsmanship, fashion, luxury) based on extensive interviews and archival research. Although there are no formal agreed upon labels or dates to demarcate each of the periods within the industry, I relied

on critical events, regional sales and employment data, and industry reports to help create the labels and their associated dates. My interviews with watch executives and industry experts provided verification and affirmation of these period labels and timeframes.

Data Sources

I collected data from multiple sources, following what Creswell (2003) termed a concurrent triangulation strategy, whereby multiple methods, data sources, and units of analysis are used to evaluate a set of theorized relationships within a single study (e.g., Navis and Glynn, 2010). I did this for two reasons: first, to construct a narrative history of the focal period to observe the trends and, second, to suggest potential markers for the variables that I use to empirically examine my hypotheses. Below, I describe each of my data sources.

My primary data source consists of advertisements from the three most prominent watch industry trade journals between 1970 and 2008. My original sample consisted of 845 advertisements, which I collected from horological archives and libraries located in the United States and Switzerland. I found that 700 were for Swiss watch companies, which make up my final sample for this paper. I examine product, organization, and community identity claims that the companies made before, during, and after the introduction of the quartz watch. See Appendix IV for illustrative examples of advertisements. The main data source for the advertisements is the *Journal Suisse D'Horlogerie* (JSH), published in Switzerland for both French and English speaking audiences, in both languages. From its inception in 1876, JSH had been the foremost authority for reporting industry trends, field configuring events (Lampel & Meyer, 2008) and new innovations related to the watchmaking industry. The journal's readership consisted of all members of the watchmaking industry, including: watchmakers, watch and jewelry dealers, parts

suppliers, consumers, and watch enthusiasts. I also used the journal to examine industry announcements, trends, and innovations. The journal suspended publication in 2000.

Since no one journal ran the entire length during the period of my study, I relied on two additional leading watch journals, *Chronos* and *International Watch (iW)* for the remaining years of analysis. *Chronos* was first published in 1993 and *iW* began in 1989. I chose these two journals after interviewing numerous industry experts, historians, and company CEOs about which journals played a similar role in the watch industry as JSH after its end of publication. Also, to ensure the composition of advertisements in my sample remained consistent across all three journals, I began my analysis of *Chronos* and *iW* in 1996 so that I could verify that no significant differences existed among the three journals during the four years they overlapped in publication.

I also collected archival data from online annual reports issued by the Federation of the Swiss Watch Industry which provided information regarding sales and broad demographic trends for the watch industry. The Federation, dating back to 1876, is a private, professional, and non-profit association, with over 500 members representing more than 90% of all Swiss watch manufacturers. Additionally, I relied on press releases, annual reports, and Swiss Parliamentary testimony from the Swiss Federal Institute of Intellectual Property, the federal agency for matters concerning intellectual property in Switzerland. Founded in 1888, the Institute is responsible for the "Swissness Project," aimed at sustaining the identity of all Swiss products, but especially watches. Finally, I reviewed 27 archival interviews with Swiss watch CEOs from *TimeZone*, a leading industry news source, and was given access to 145 interview transcripts of CEOs who experienced the quartz crisis, conducted by the industry's leading watch reporter.

To supplement my archival data, I collected a significant amount of primary data to serve as a check on the validity of my archival evidence and to provide additional context for understanding the emerging trends in my data. I conducted 115 informational interviews with watch senior executives, distributors, retailers, industry analysts, vintage collectors, historians, auction house representatives, and museum curators associated with the watch industry. I led 4 focus groups with watchmakers and watch collectors in both Switzerland and the United States (n=50 people), visited multiple watch factories, and attended BaselWorld 2012, the industry's largest annual field-configuring event with over 104,000 visitors, 1,815 exhibitors from 45 countries, and 3,300 journalists. I also observed a course in watchmaking at the *National Association of Watch and Clock Collectors' School of Horology* in order to converse more fluently with watchmakers in Switzerland.

Together, these multiple sources allowed me to iterate back and forth between theory and data, while continually updating my codebook codes and interview protocol questions (see Table 3 for Codebook). The variety of data sources also allowed me to examine how field level identity change was influenced, if at all, by processes of coupling and decoupling between product, organizational, and community identity during a period of technological change and upheaval in the Swiss watch industry.

Table 3: Codebook

Article	Code	Description	Examples
Identifier	*ID*	*Individual identifier for each advertisement in the sample.*	*Examples from Advertisements*
Product Identity	Watch Technology	0= Indistinguishable 1= Mechanical 2= Quartz	*Mechanical:* "Kelek and the professionals. Automatic mechanical diving watch intended for professionals." *Quartz:* "The spell of a new concept Hublot, the perfection of Swiss technology with an exclusive natural rubber strap. Quartz movement, waterproof 5 ATM. 18 K gold."
Organizational Identity	Company Heritage	0= no mention of company founding 1= mention of company founding	*Founding Year:* "Perrelett 1777. Inventor of the Automatic Watch."
Community Identity	"Swissness" Identity Claims	0= Does not make explicit reference to Swiss nature of the watch or product. 1= Makes explicit reference to the Swiss brand, either in the text or by prominently displaying "Swiss made" in the ad photo or graphic. May include references to the collective identity of the Swiss watchmaking community, highlighting what makes them distinctive or unique from other global watchmakers.	*Swissness:* "Elegant masterpieces of contemporary art. Designed and hand-crafted to perfection by traditional Swiss goldsmiths and expert Swiss watchmakers."
Mechanisms	Temporal Framing	0= None 1= Attempts to bridge the past (e.g., history, traditions) and the future (e.g., what lies ahead, upcoming, forward thinking).	*Past: "*Timeless fascination. Collection 1856. From the year of its birth, Eterna has followed a simple, unchanging rule: making the finest watches imaginable." *Future:* "This is a movement that helps write today a page of tomorrow's horological history." *Bridges Past Future:* "The past inspiring the future."
	Linguistic Framing	0= Does not use a metaphor to describe the watch. 1= Uses a metaphor to describe the watch.	*Metaphor:* "Chris Evert-Lloyd and her Lady-Datejust. They may be very, very tough, but both of them are every inch a lady."
	Symbolic Framing -utility/function -fashionable -status/eliteness	0= Does not make specific value claim 1= Makes value claim. - Utility: functionality or use value - Fashionable: makes a fashion statement or is associated with a fad. - Status: incorporates an element of 'scarcity' (e.g., high price, entrance into elite social group)	*Utility/Function: "*Ultra-tough. Ultra-Waterproof." *Fashionable:* "Can a Timepiece be a Fashion Piece? Yes" *Status/Eliteness: "*Men who guide the destinies of the world wear Rolex watches."

Analysis

I analyzed the watch advertisements in the journals over time and categorized them into the three identity periods: precision craftsmanship (1970-1982), fashion (1983-1989), and luxury (1990-2008). I manually pulled and hand-scanned every other watch advertisement for every even year between 1970 and 2008. Next, I developed codes to analyze product identity, organization identity, and community identity, along with several mechanisms of change. To test H1, on product identity, I coded each watch advertisement by the technology of the featured watch (0= indistinguishable, 1= explicit mention of mechanical, 2= explicit mention of quartz). To test H2, on organizational identity, I coded each advertisement for company name and whether it mentioned company founding, as a measure of the importance it placed on its legacy heritage (0=no mention of founding, 1=mention of founding). To test H3, on community identity, I analyzed each ad for references to "Swissness" identity claims. For example, I coded ads that made reference to the brand being Swiss either in the text or by prominently displaying "Swiss Made" in the ad photo or graphic (0=no reference to Swiss, 1= reference to Swiss).

Finally, to test H4a-c, I developed codes to examine the mechanisms of identity change, i.e., temporal, linguistic, and symbolic framing. First, to examine the use of temporal framing (H4a), I coded each ad for references that attempted to link the past with the future (0= none, 1= attempts to bridge the past with the future). Second, to examine the use of linguistic framing (H4b), I coded for the frequency and type of metaphors that described the watch. Third, to evaluate instances of symbolic framing (H4c), I coded for value claims that the ads made about the watch (0=no, 1=yes), including: utility or functionality, status or eliteness, and fashionable. For example, "utility" claims mentioned or displayed the some from functionality or use value associated with the watch, "fashionable" claims mentioned the watch made a fashion statement

or was associated with a fad, and "status" claims incorporated an element of 'scarcity' (e.g., high price, entrance into elite social group).

To conduct the analyses, I developed a database that included all the written text of each ad. I initially collaborated with a management professor familiar with the research project and a trained research assistant to conduct a series of pilot coding sessions. We used 100 ads not included in the final sample to assess the validity of the codes and reliability of the codebook. We independently assigned codes to approximately 30 ads at a time and then met to compare scores, resolve discrepancies, and come to consensus; we repeated this process two more times until we achieved roughly 95% consistency, with the remaining 5% due to human error such as mistyping the intended code in the spreadsheet. I then coded the entire sample and hired a trained RA to independently code 10% to verify continued consistency. During the coding process, both the RA and I had access to a copy of the printed ads and the database with the written text from the ad. I used STATA 12 to conduct analyses of variance (ANOVAs) for each advertisement feature over the three periods (Precision Craftsmanship: 1970-1982; Fashion: 1983-1988; Luxury: 1990-2008). For those models that reported significant results, I conducted Tukey HSD post hoc analyses to find a posteriori differences among the sample means.

FINDINGS

Tests of Hypotheses

To determine if there was statistical support for the observed patterns found in my historical analysis of the re-emergence of the Swiss mechanical watch industry, I formally tested the four hypotheses advanced earlier.

Product Identity (H1)

Overall, my findings support hypothesis 1, proposing that product identity redefinition is associated with the re-emergence of market demand for a legacy technology. The frequency of the appearance of mechanical watches in the journal ads followed a U-shaped curve over the three historical periods, and a re-emergence during the luxury period. An analysis of variance test (ANOVA) confirmed a significant difference in mechanical watch mentions across the three time periods [$F(2, 697) = 33.76$, $p<0.001$]; post hoc analyses using the Tukey HSD test indicated that the means were significant among all the pair-wise comparisons. See Table 4 for results, thus indicating that each period was distinctive from the others.

During the period dominated by precision craftsmanship (pre-1983), Swiss companies explicitly mentioned mechanical (44%) and quartz (43%) technologies in their ads at roughly comparable levels between 1970 and 1982. The year 1982 represented the peak of the quartz crisis for Swiss watchmakers, suggesting that the Swiss were advertising both types of technologies as they attempted to respond to the threat from Japanese quartz watches. However, in 1984, a year after the launch of Swatch and the beginning of the fashion period, the Swiss almost completely abandoned advertising the mechanical watch; only 8% of all Swiss advertisements in the journal were quoted as mechanical compared to 75% quoted as quartz.

Following this, there seemed to be a re-emergence in ads that explicitly mentioned mechanical technology during the 1990s. The surge paralleled the identity shift toward luxury; by 1996 mechanical watches made up 63% of all watch advertisements and by 2006 this increased to 78%. Conversely, during the luxury period, the appearance of quartz watch ads fell substantially (averaging only 7% between 1990-2008); in 2006 and 2008 I did not find a single Swiss watch advertised as quartz. For a depiction of these trends, see Figure 11.

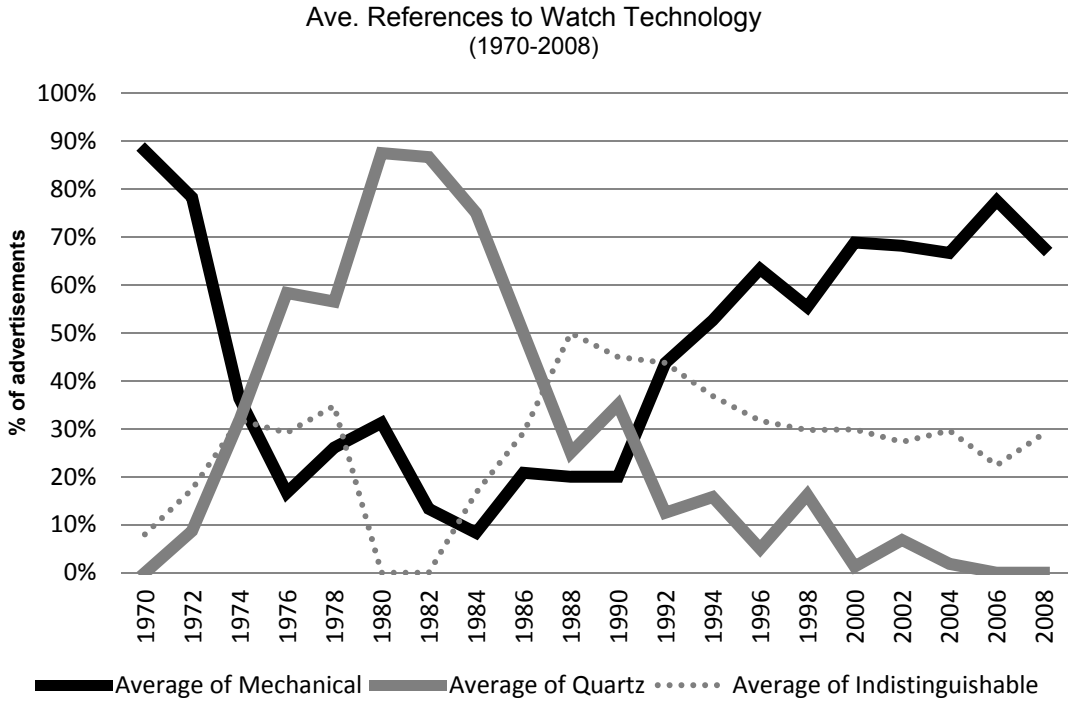
Table 4: Results of analysis of variance of advertisement features across time periods

H:	Construct		Time Period				F-test	Post Hoc Analyses		
	Advertisement Feature		*T1: Precision Craft ship (1970-1982) n=148*	*T2: Fashion (1984-1988) n=68*	*T3: Luxury (1990-2008) n=484*	*All Time Periods n=700*		*T1 vs. T2*	*T1 vs. T3*	*T2 vs. T3*
	Product Identity:		*(% of advertisements depicting feature)*							
1	Mechanical	Mean	0.44	0.16	0.63	0.55	33.76***	6.58*	4.58*	11.15*
		S.D	0.50	0.37	0.48	0.50				
	Quartz	Mean	0.43	0.52	0.07	0.19	95.69***	2.91	11.76*	14.67*
		S.D	0.50	0.50	0.25	0.39				
	Organizational Identity:									
2	Year Company Founded	Mean	0.05	0.21	0.28	0.23	17.82***	4.19*	6.31*	2.13
		S.D	0.23	0.41	0.45	0.42				
	Community Identity:									
3	Swissness	Mean	0.27	0.22	0.48	0.41	16.50***	1.16	4.90*	6.07*
		S.D	0.45	0.42	0.50	0.49				
	Mechanisms:									
4a	Temporal Frames:	Mean	0.09	0.16	0.31	0.25	15.67***	1.79	5.64*	3.84*
	Past & Future	S.D	0.29	0.37	0.46	0.43				
4b	Linguistic Frames: Metaphors	Mean	0.24	0.49	0.50	0.44	15.56***	5.61*	5.86*	0.25
	Metaphors	S.D	0.43	0.50	0.50	0.50				
4c	Symbolic Frames:	Mean	0.71	0.59	0.64	0.65	1.78	2.87	1.59	1.29
	Utility Value Claims	S.D	0.46	0.50	0.48	0.48				
4c	Symbolic Frames:	Mean	0.18	0.29	0.57	0.46	43.51***	2.84	9.37*	6.52*
	Status & Exclusivity Value Claims	S.D	0.38	0.46	0.50	0.50				
4c	Symbolic Value Claims:	Mean	0.18	0.49	0.24	0.25	12.65***	8.19*	1.75	6.43*
	Fashionable Value Claims	S.D	0.38	0.50	0.43	0.43				

* p < .05; ** p < .01; ***p < .001.

Comparisons of mean instances of codes in ads across periods. Analyses based on one-way analysis of variance. Post hoc analyses based on Tukey HSD tests.

Figure 11: Product Identity- Watch Technology Claims



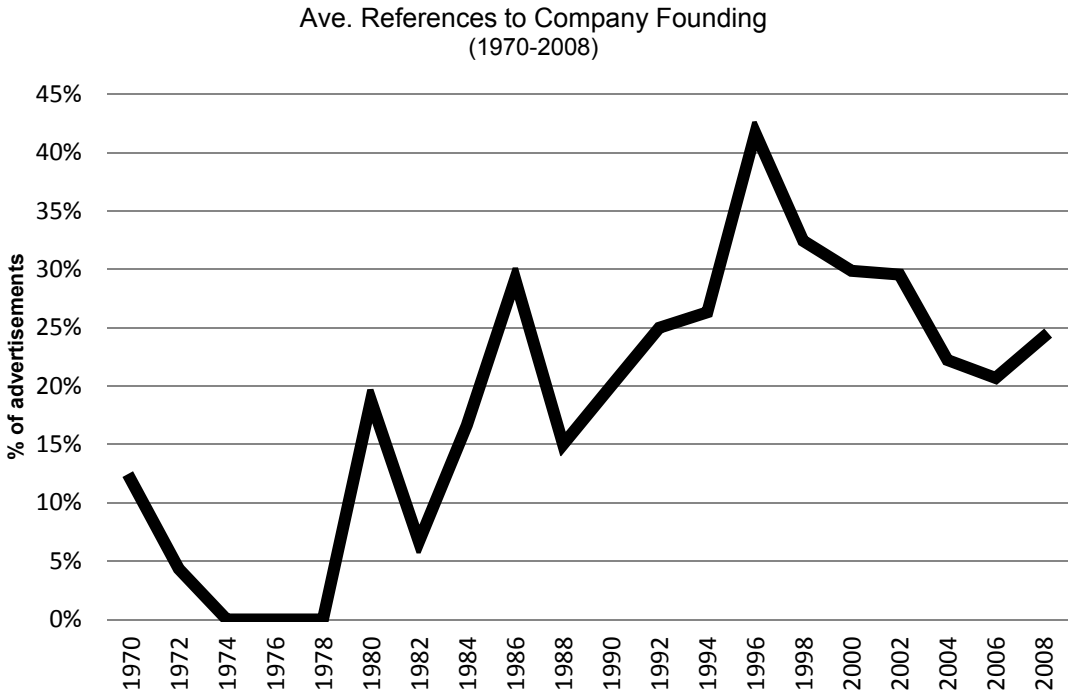
Organizational Identity (H2)

I found support for hypothesis 2, proposing that historical organizational identity reclamation is associated with the re-emergence of market demand for a legacy technology. Analysis of variance tests were significant [$F(2, 697) = 17.82$, $p<0.001$]. Post hoc analyses showed significant differences between time periods 1 and 3 and 2 and 3, highlighting the role of heritage as an identity attribute claimed by organizations during the re-emergence of the mechanical watch, but not important during the earlier fashion period. These findings allude to the salience of company heritage in re-claiming organizational identity during re-emergence.

Legacy organizational identity claims were rare during the precision craftsmanship period, averaging 5% pre-1983. Between 1974 and 1978, not a single ad mentioned company founding, suggesting that companies had little interest in making claims to their past identity or historical heritage while quartz technology was on the rise. During the fashion period, mentions

of founding dates fluctuated between 6% (1982), 29% (1986), and 15% (1988), hinting at the uncertainty that watch companies confronted in claiming their identity and a potential return to their historical roots during technological upheaval. In the luxury period, Swiss companies mentioned their heritage more often; over one-fourth of all ads (28%) mentioned company founding in the ads across the period. See Figure 12 for a graphical depiction of these trends.

Figure 12: Organizational Identity – Claims of Legacy Heritage



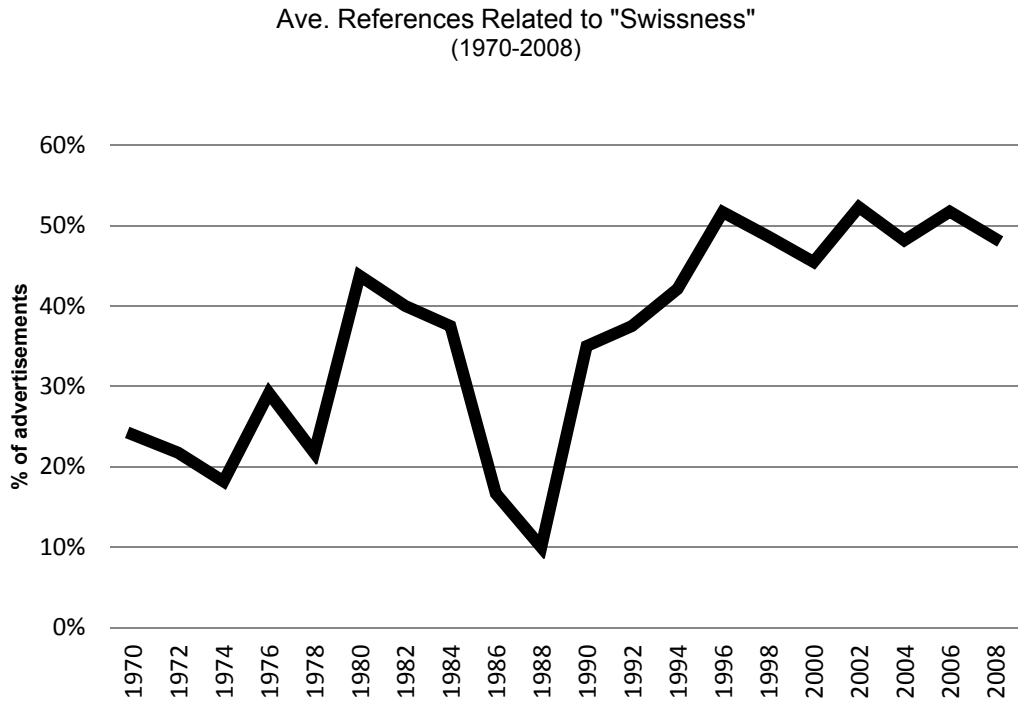
Community Identity (H3)

Hypothesis 3, positing that changes in community identity that reshape systems of meaning are associated with the re-emergence of market demand for a legacy technology, was also supported. Analysis of variance tests were significant [$F(2, 697) = 16.50$, $p<0.001$]. Post hoc analyses showed significant differences between time periods 1 and 3 and 2 and 3, signifying that Swiss national and community identity played an important role in redefining the mechanical watch during the luxury period.

Identity claims for "Swissness" during the initial precision craftsmanship period (pre-1983) fluctuated significantly: in 1974, only 18% mentioned any connection to Switzerland, but by 1982, 40% made mention. The Swiss were at their most vulnerable in the mid-1970s, prior to the introduction of Swatch, with its shift toward fashion. During the fashion period, "Swissness" claims oscillated between 10% and 37%, possibly suggesting that mechanical watchmakers struggled to determine whether they should associate with a Swiss identity. However, starting in 1990, as the field shifted toward luxury, identity claims for Swiss climbed year-by-year, reaching a peak of 52% in 2006 and averaging 48% over the period.

These findings suggest that the watchmaking community in Switzerland only made claims for "Swissness" when they were able to align themselves with the broader field level identity. For example, when quartz technology was at its peak during the fashion period, the watchmaking community de-coupled product and community claims to a Swiss identity. However, as the field shifted toward luxury, watchmakers re-coupled their community identity with "Swissness" identity claims. Figure 13 depicts these shifts over time.

Figure 13: Community Identity – "Swissness" Claims



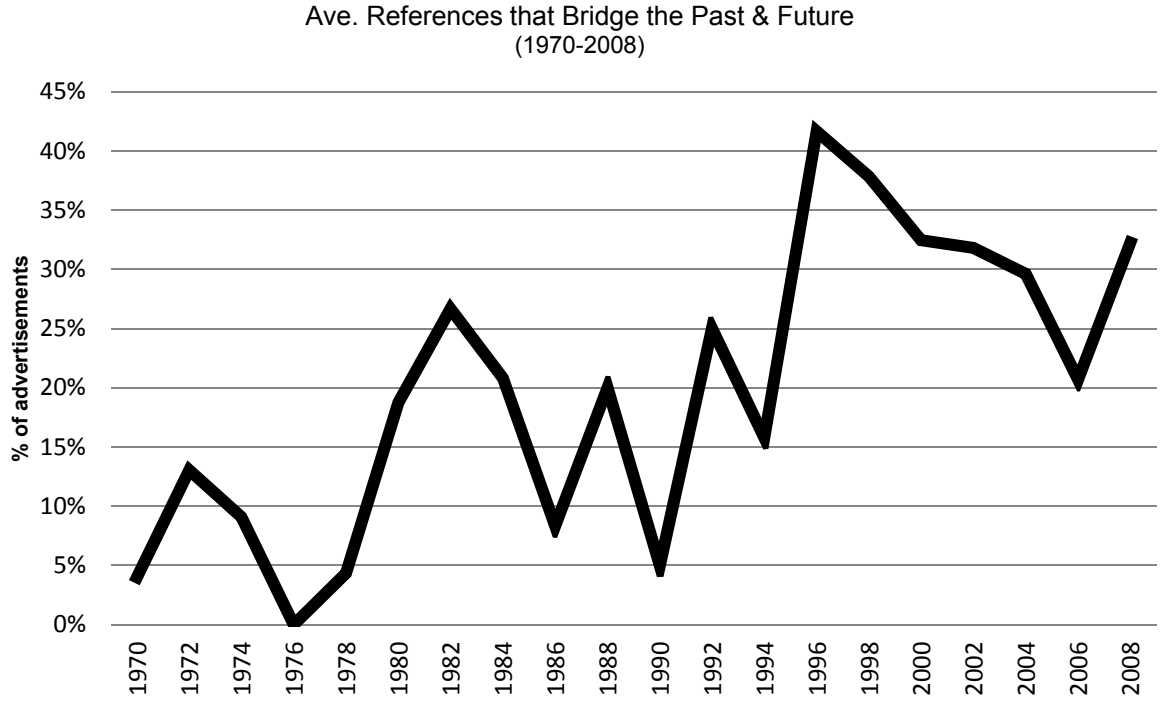
Mechanisms of Field Identity Change (H4a-c)

Overall, I found evidence that changes in product, organizational, and community identities were associated with the re-emergence of a legacy technology in Swiss watchmaking, as predicted in hypotheses 1, 2, and 3. Next, I tried to uncover the specific mechanisms by which such changes occurred, as proposed in hypotheses 4a (temporal references), 4b (linguistic frames and metaphors), and 4c (symbolic claims).

Temporal Framing: Bridging the Past and Future (H4a). I found support for hypothesis 4a, predicting that the re-emergence of market demand for a legacy technology involves using temporal frames to anchor the past and future; [$F(2, 697) = 15.67$, $p<0.001$]. Post hoc analyses showed significant differences between time periods 1 and 3 and 2 and 3, highlighting the salience of temporal framing in period 3 (luxury) during the re-emergence of the mechanical watch.

The watch ads made scant reference to bridging the past with the future in the period prior to 1983 (9%); in 1976, at the peak of the quartz crisis, not a single ad made a temporal reference to the past. Such few mentions suggest that the ads mirrored industry concerns regarding the future of mechanical watch technology (e.g., Landes, 1983). During the fashion period, mechanical watch ads increased in their temporal bridging, fluctuating between 8% and 26%; this highlighted the extent to which watch companies felt continued uncertainty about the viability of the mechanical watch market. However, as the luxury period emerged, companies increased their bridging references, averaging almost one-third of all ads (31%) and even escalating to 42% in 1996. My findings suggest that as the mechanical watch re-emerged within the context of a new field identity; the industry was able to reclaim its past and more clearly articulate how it bridged to the future. See Figure 14 for a diagram of these patterns.

Figure 14: Temporal Framing Mechanisms – References that Bridge Past & Future



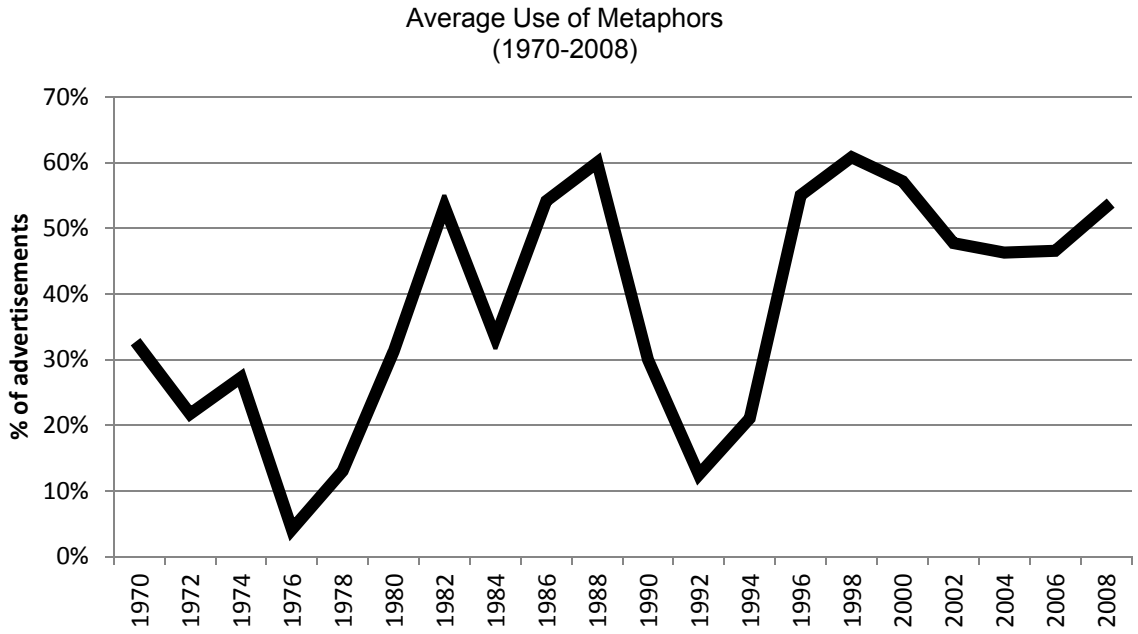
Linguistic Framing: Metaphors & Labels (H4b). My findings suggest that the use of metaphors was an important mechanism for field level identity change, allowing the mechanical watch's identity to be re-shaped within the context of the broader identity change of the field. I find support for hypothesis 4b, that product, organizational, and community identity change involves using metaphors to create desired meanings. Analysis of variance tests were significant [$F(2, 697) = 15.56$, $p<0.001$]. Post hoc analyses showed significant differences between time periods 1 and 2 and 1 and 3, highlighting the importance of metaphors during the initial introduction of quartz technology in period 1, and again during the re-introduction of the mechanical watch during the luxury period.

During the precision period (pre-1983), the use of metaphors in Swiss watch ads averaged 24%. Mechanical (29%) and quartz (20%) watch ads used metaphors to nearly the same extent in 1976, suggesting that both technologies were attempting to re-define the category. During the fashion period, metaphor use averaged 49%. However, by 1980, mechanical watch manufacturers made no use of metaphors, harkening to Powell and Colyvas' (2008: 294) "reefs of dead metaphors" that result when metaphors no longer help actors interpret that which was "novel."

Finally, when the field identity shifted towards luxury, there was a re-emergence of metaphors (50%, 1990-2008). Metaphors were especially associated with mechanical watches; between 1996 and 2000, no less than 57%, of all the mechanical watch ads used metaphors, suggesting the potency of this linguistic mechanism in facilitating the mechanical watch's re-emergence. For example, Frank Muller, a Geneva company, released a series of ads in the 1990s with the slogan "Master of Complications," making reference to their sophisticated mechanical watch functions while also alluding to the type of person who might purchase their watch.

Conversely, the use of metaphors for quartz watch ads was high in 1984 (75%) after the release of Swatch and the beginning of the fashion period. However, as the field moved toward luxury, the use of metaphors associated with Swiss quartz ads fluctuated a great deal; in 1994 no quartz ads used metaphors, but 75% used them in 1996. These fluctuations allude to the challenges faced by Swiss companies who decided to continue to produce quartz watches in the 1990s while the mechanical watch was re-emerging. See Figure 15.

Figure 15: Linguistic Framing Mechanisms – Use of Metaphors



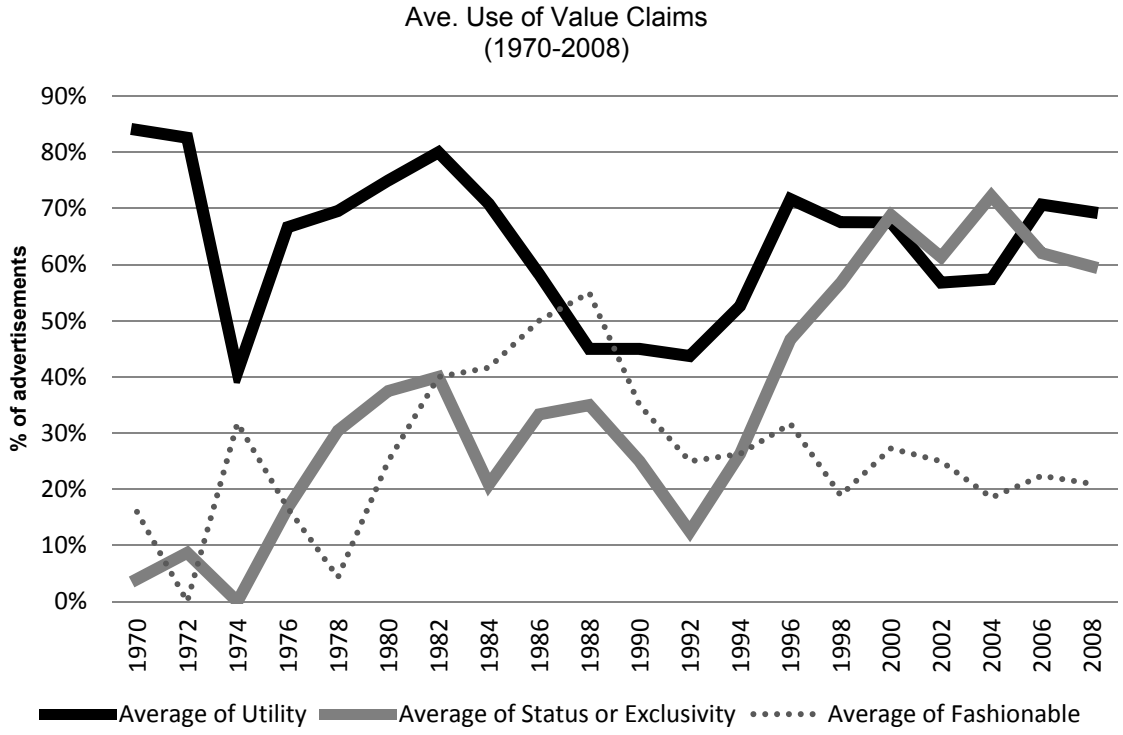
Symbolic Framing: Use of Value Claims (H4c). I found support for hypothesis 4c, that mechanisms of symbolic framing are associated with the re-emergence of market demand for a legacy technology. Analysis of variance tests showed significant differences between the periods for claims of status [$F(2, 697) = 43.51$, $p<0.001$] and fashion [$F(2, 697) = 12.65$, $p<0.001$]. Post hoc analysis for status found differences between periods 1 and 3 and 2 and 3; and fashionable claims experienced differences between periods 1 and 2 and 2 and 3. These

differences affirm that fashionable value claims were indeed important during period 2 (fashion), and similarly, that status or elite value claims were salient during period 3 (luxury).

In the precision craftsmanship period (pre-1983), I found value claims related to the utility and functionality of the watch averaged 71%; conversely, claims for status or exclusivity, as well as fashion, averaged 18%. These findings suggest that during this initial period, Swiss firms continued to rely on a centuries-old assumption that precision and functionality were the qualities that made watches superior and appealing. During the fashion period, however, average claims for utility dropped to 59%, but claims associating watches with both fashion and status climbed to 49% and 29%, respectively. The significant increase in fashion value claims during this period was likely influenced by the launch of Swatch, whose ads encouraged customers to treat their colorful watches as fashion accessories. Finally, during the luxury period, fashion claims subsided to only 24%; alternatively, 57% of all ads made claims for status or exclusivity. Interestingly, utility claims continued to remain salient during this period, averaging 64% of all the ads during the period. Such findings suggest that the mechanical watch producers relied on both status and utility as value claims in the luxury period.

Notably, I did not find significant differences across the periods for value claims related to utility and functionality. Swiss watchmakers may have been unwilling to completely relinquish the functionality claims that had made them so successful in the past, but rather, complemented utility with status. These dual value claims appear to have allowed the Swiss to redefine their competitive set (Porac et al., 1989) within the high-end luxury segment. Unlike the quartz revolution of the 1970s and early 1980s, Swiss watchmakers in the 1990s and 2000s appeared more comfortable making claims for utility once they were not competing against (more precise and cheaper) quartz watches. See Figure 16.

Figure 16: Symbolic Framing Mechanisms – Use of Value Claims



To summarize, I found support for Hypotheses 1, 2, and 3; changes in product, organizational, and community identities are associated with the re-emergence of market demand for a legacy technology. In addition, temporal framing, linguistic framing, and symbolic framing all served as significant mechanisms of identity change. Interestingly, my post hoc analyses revealed that not all the mechanisms or elements of identity were consistently salient within the field of Swiss watchmaking across all the time periods between 1970 and 2008. This is a topic I discuss more fully in the following section.

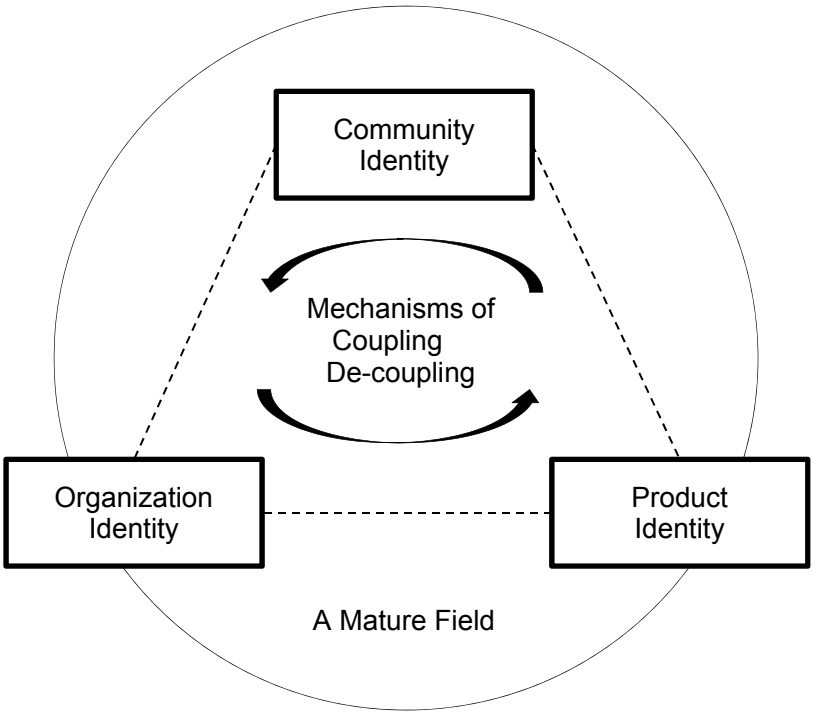
DISCUSSION

I began my inquiry with a question: Can market demand for "dying" technologies in a mature field re-emerge and re-shape it? I sought answers in my study of Swiss watchmaking, during the period 1970-2008, in an historical analysis of the field and the ways in which product,

organizational, and community identity shifted with the introduction of a discontinuous technology (quartz watches) and the reclamation of a legacy technology (mechanical watches). Using content analysis of watch advertisements appearing in leading industry journals and interview data, I found evidence not only for the decline of legacy identities (i.e., Swiss mechanical watches) but also their subsequent re-emergence. I unearth several mechanisms that potentially facilitated these changes in the field: temporal bridging, from a past legacy to a desired future; linguistic framing, particularly with metaphors; and symbolic framing, with respect to value claims. This evidence suggests an intriguing counter-intuitive: although new or discontinuous technologies tend to displace older ones (e.g., Anderson & Tushman, 1990), these legacy technologies can re-emerge, co-exist with, and even come to dominate newer technologies. Core to this process seems to be the creation – and re-creation – of product, organization, and community identities that resonate with the re-emergence of markets for legacy technologies.

I summarize my key findings in a conceptual framework (Figure 17) depicting the relationships between product identity, organizational identity, and community identity. The framework focuses on the interaction of each component during periods of field change and re-emergence. My findings suggest that technology re-emergence is related to processes of identity "coupling" and "de-coupling." These processes highlight the interplay among *community, organization,* and *product* identities and suggest that substantial economic change may not be contained only within organizational or industry boundaries (Davis & Marquis, 2005), but extend outward to include broader forces related to field level change. Below, I discuss how processes of identity coupling and de-coupling are salient to technological re-emergence.

Figure 17: Conceptual Model of Identity Change Associated with the Re-Emergence of a Market for a Legacy Technology in a Mature Field



Defining *community identity* as the shared sense of "we-ness" (Snow, 2001) among Swiss watchmakers, *organizational identity* as that which is core, distinctive and enduring about a company (Albert & Whetten, 1985), and *product identity* as the key attributes, design, and architecture (Ulrich, 1995) of the watch, I revealed that all three components were important to the field level identity change, but their inter-relationships differed in accord with field shifts – coupling, de-coupling, and then re-coupling over time.

In the case of watchmaking, before the rise of quartz technology, the dominant design of the watch was based on precision and the creation of highly intricate mechanical products. These design attributes were particularly well-suited for the snow-locked Jura farmers who could build watches in the winters without the need to import considerable raw materials from outside the region. They excelled at this and by the early 19th century, particularly within the Jura community, began to identify with the highly complicated watches they made, rather than the

farms they maintained during the summer. Over time, the Jura community's connection to the mechanical watch led them to develop some of the first standardized tests for accuracy, global competitions, regulations, and schools devoted to watch innovation.

By the early 20th century, the region's success in the mechanical watch industry led the Jura to label itself "the land of precision." Annual competitions allowed companies to claim they were distinct and produced uniquely superior watches; yet, for many decades following World War I, the Swiss government imposed a highly effective cartel system that demanded close familial-like relationships and cooperative research programs between all organizations involved in watchmaking (Uttinger & Papera, 1965). As one social scientist noted, "More important to the development of Swiss skill levels was the cultural organization of the Jura region" (Glasmeier, 2000: 99). During this period, the product identity (of the mechanical watch), the organizational identity (of the firms), and the community identity (of the Jura region watchmakers) were tightly *coupled*.

However, as the field of Swiss watchmaking moved away from precision craftsmanship and toward fashion, product, organizational, and community identity decoupled. Many credit SMH CEO, Nicolas Hayek, whose vision restructured (and possibly saved) the entire Swiss watchmaking industry (Glasmeier, 2000; Moon, 2004; Taylor, 1993). Under his leadership, novel products like Swatch were launched during this period. An early Swatch ad boasted:

> Swatch. On one hand it's very Swiss, Water-resistant, shock-resistant. With precise Swiss quartz technology. On the other hand, it rocks the boat. With outrageous colors, up-to-the minute styles, and prices under $35. So why not get two or three? [Company archival document, 1983]

The advertisement offers a clear contrast to the tightly coupled identities that linked the master craftsmen and mechanical watches a decade before. The Swiss watchmaking industry, when faced with adapting to a new dominant design, was forced to *de-couple* product identity (low

cost, few parts, quartz), their organizational identity (anchored in a historical tradition of mechanical watchmaking) and community identity ("land of precision").

Finally, as the field moved toward a focus on luxury, a re-coupling of product, organizational, and community identity occurred that allowed the master craftsmen to continue to build their works of art. One industry expert (Pasquier, 2008: 314) noted how the shift facilitated a re-coupling of "who we are" and "what we do":

> Companies began making mechanical watches that they instilled with a large dose of emotion as compared to the quartz models, considered merely functional. Mechanical timekeepers became objects of luxury consumption and social distinction. In producing mechanical watches, watchmaking companies cast themselves in the role of guarantors of a centuries-old regional tradition. Several industrial groups active in the luxury sector (LVMH, Richemont, Bulgari) were sensitive to this factor.

With this study, I contribute to theory in several ways. First, I explore the relationship among field dynamics, identities, and technological change. By treating fields and identity as dynamic and mutable, I was able to explore their association with technology cycles that affected products, organizations, and communities. Although I identified technological change as an impetus for field change, in reality, the relationship is likely more contemporaneous than causal; after all, the Swiss were the first to develop the quartz movement. However, its disruptive potential to the extant identity coupling between product, organization, and community tended to dampen the Swiss enthusiasm for developing it further. Thus, it was not technology per se that precipitated field change, but rather, what Orlikowski (2000: 407) termed "technologies-in-practice," i.e., "the sets of rules and resources that are (re)constituted in people's recurrent engagement with the technologies at hand" which function as a ''behavioral and interpretive template'' (Barley, 1988: 49). Such a view suggests the viability of using a practice lens with which to view technology, as well as fields.

Second, I extend the theorization of identity to products, organizations, and communities and embed these within technological cycles of change. I have already observed the tight identity coupling and subsequent re-coupling – between product (mechanical watch), organization (firms), and community (Swiss watchmakers) – in watchmaking. I can speculate that the potency of this link may have been reinforced by a number of factors external to the industry. In this case, for instance, "community" connoted both the historical heritage associated with skilled industry producers (Jura-based farmers and Geneva-based jewelers) and the geographic region in which they lived and worked; as such, they were simultaneously embedded in geographic and industry communities which tended to reinforce each other (Marquis & Battilana, 2009) and encourage the kind of institutional entrepreneurship (Battilana et al., 2009) that could redirect the field of watchmaking. Thus, "who we are" (as a community) and "what we do" (as watch producers) were mutually constitutive for Swiss watchmakers and may have been a potent force that sought re-coupling in the face of the de-coupling precipitated by technological change.

Finally, I offer an important empirical setting to revisit assumptions about Schumpeter's notion of Creative Destruction and technology cycles. Certainly, technological shifts can create waves of creative destruction, but these are likely bound in time and place and better seen as provisional rather than permanent; in Swiss watchmaking, I saw how market demand for legacy technologies can re-emerge and allow them to thrive. Thus, treating field level change as tentative and time-bound may allow deeper insights into the mechanisms that propel emergence, and even re-emergence.

CHAPTER V. STRATEGIC AND IDENTITY AMBIDEXTERITY IN ORGANIZATIONS DURING FIELD RE-EMERGENCE

ABSTRACT

This study moves beyond the field as the primary level of analysis and focuses instead on the organizations within the field. I conducted a comparative case analysis of eight exemplar watchmaking firms to examine how each managed the tension between preservation and change during the re-emergence of the Swiss watch industry. I focus on firms' management of technology uncertainty, instability, embedded competencies, entrenched cultures, routinized processes, and especially, their identities. I find that while successful firms adopted a variety of different identity management strategies, they exploited elements associated with their old identity (e.g., heritage, craftsmanship) while paradoxically appending new identity elements (e.g., status, fashion, luxury) to redefine their identity. Building on recent work by Tushman and colleagues that explores ambidexterity as a dynamic capability, I extend this line of research to the processes of managing organizational identity change during periods of environmental change. I introduce the notion of *identity ambidexterity*, i.e., an organization's ability to exploit past and present identities while simultaneously integrating elements of a new organizational identity, by delving into the strategic positioning and re-positioning of firms in the face of technology re-emergence.

INTRODUCTION

When faced with institutional and technological change, organizations must manage multiple components of their identity (Tripsas, 2009; Zilber, 2011), attending to both the symbolic and strategic nature of identity, as well as its relevance to internal and external audiences. Organizational identity can focus a firm's attention, promote action, and drive decision making that can promote stability or initiate change (Albert & Whetten, 1985; Glynn, 2008). Conversely, ignoring or overlooking identity can pose a risk to an organization's survival (Gioia, Patvardhan, Hamilton, & Corley, 2013; Petriglieri, 2011), particularly in the wake of environmental change.

In late 1970s, the field of Swiss watchmaking experienced the kind of major upheaval (Landes, 1983) that threatened the survival of incumbent firms and prompted significant identity ambiguity (Gioia et al., 2000). Most Swiss watch companies had failed to adopt or accept quartz technology (Donze, 2011), a discontinuous innovation (Anderson & Tushman, 1990) that would eventually dismantle 200 years of Swiss watchmaking supremacy. Additionally, the firms did not expect that the Japanese would be able to produce more accurate quartz timepieces at prices equal to or far below mechanical watches. Within seven years of inventing the first quartz movement, Swiss watch producers witnessed two-thirds of their industry jobs disappear (Perret, 2008a) and some of the most venerable companies become insolvent because of their unwillingness to mass produce quartz timepieces.

Surprisingly, however, by 2008 many of the previously endangered Swiss watch companies were reporting record profits, led by none other than sales of the mechanical watch. This unexpected re-emergence of market demand for a "dying" technology appears to have been facilitated by a group of companies that re-defined the core components of their organizational

identity, transforming how internal and external audiences defined "who they were" and "what they did" (Navis & Glynn, 2011). Not only did these companies survive the threat of a competency-destroying technology (Tushman & Anderson, 1986), but they redefined the Swiss mechanical watch industry. Thus, in this study I investigate, *"How do incumbent organizations manage identity and institutional change associated with the re-emergence of a legacy technology?"*

In this study, I use multiple organizational cases to analyze the various strategies that firms employed during field re-emergence, between 1983 and 2008, shedding light on how they managed their identities. To foreshadow some of my results, I find that successful firms adopted a variety of different strategies, but they had one key factor in common: they all exploited elements associated with their old identity (e.g., heritage, craftsmanship), while paradoxically allowing new identity elements (e.g., fashion, luxury) – that could have been considered a threat to the old technological and institutional order – to permeate their organizations. Thus, I advance the notion of *identity ambidexterity,* i.e., an organization's ability to exploit past and present identities while simultaneously integrating elements into a new organizational identity.

This study makes several contributions to the extant literature. First, I build on work by Tushman and colleagues (O'Reilly & Tushman, 2007; Raisch, Birkinshaw, Probst, & Tushman, 2009; Tushman & O'Reilly III, 2006) that explores ambidexterity as a dynamic organizational capability and extend this line of research to the processes of managing organizational identity change. The strategies employed by the firms in this study point to identity ambidexterity as a dynamic capability that is particularly salient for managing a complex and changing institutional environment (Greenwood, Díaz, Li, & Lorente, 2010; Greenwood, Raynard, Kodeih, Micelotta, Lounsbury, 2011).

Second, I reveal micro-macro linkages (DiMaggio, 1991) between the levels of the organization and that of the broader field, thereby answering calls for research that explores the micro-mechanisms of organizational behavior that drive field-level change (Powell & Colyvas, 2008). Using a rich set of interview and archival data, I explore the specific activities, decisions, and responses of firms. More specifically, I explore the ways in which firms use identity as a symbolic and strategic resource that they target for both internal and external audiences, and to guide strategic decision making. I find that identity ambidexterity is an important dynamic capability that allows firms to resolve tensions that sit between isomorphic pressures for homogeneity at the field level and the heterogeneous response at the organizational level.

Third, I consider the actions that organizational leaders took to manage the political instability and the threatened competencies, cultures, structures, and processes of incumbent firms when faced with a competency destroying innovation (Abernathy & Clark, 1985; Tushman & Anderson, 1997: 6). I also explore the notion of institutional leadership (Raffaelli & Glynn, Forthcoming; Washington et al., 2008) by tracking how these individuals infused values (Selznick, 1957) that supported the sustainability of their organizations in the years that followed the "quartz crisis" in Switzerland.

I begin with an overview of the organizational identity literature, focusing on various elements that play an important role in managing change. I then provide a brief overview of the literature on ambidexterity, which I believe is useful in explaining how successful firms manage conflicting elements of their identity during periods of field-level change and instability. Using a multiple case study method, I analyze how eight Swiss watchmaking firms developed and implemented strategies to survive between 1983 and 2008. These findings contribute to a more

general model of identity ambidexterity. Finally, I discuss the theoretical and practical implications of my findings and offer suggestions for future research.

THE CHALLENGES OF MANAGING ORGANIZATIONAL IDENTITY DURING PERIODS OF TECHNOLOGICAL AND INSTITUTIONAL CHANGE[11]

Defining Organizational Identity

Defining an organization's identity is critical to survival during periods of institutional and technological change (Dacin et al., 2002; Glynn & Abzug, 2002; Kaplan & Tripsas, 2008). Broadly speaking, organizational identity can be defined in terms of "who we are" and "what we do" as an organization (Navis & Glynn, 2011: 479). In their original formulation, Albert and Whetten (1985: 269) defined organizational identity as the answers to the questions of "What kind of organization is this?" and "Who are we?" Although their answer to the first implied that identity involved organizational categorization (as a bank and not a school, for instance), Albert and Whetten (1985) directed attention instead to the second question and the distinctive organizational attributes that constitute the organizational identity, i.e., what is *core*, *distinctive*, and *enduring.* They conceptualized *core* as the "claimed central character" of the organization; *distinctive* as claims to those identity elements that make an organization seem different from others; and, *enduring* as a "degree of sameness or continuity over time" (Albert & Whetten, 1985: 265).

Dimensions of Organizational Identity

Two dimensions differentiate and organize the theoretical variants of organizational identity and are of particular interest in understanding organizational response to the threat of a

[11] Portions of this section are adapted from the following working paper: Raffaelli, R., Glynn, M.A., & Tushman, M. 2013. "Are we there yet? Towards the theoretical maturation of organizational identity: considering identity ambidexterity and the organizational life cycle."

discontinuous technology: one concerns the primary *function* of organizational identity, as a symbolic meaning-maker or a strategic orientation, and the other, the focal *audience* for organizational identity, as internal (i.e. a set of attributes shared by organizational members) or external (i.e., expectations of audiences outside the firm, such as analysts, consumers or the public). Here, I provide a brief overview of both dimensions.

Function of Organizational Identity: Symbolic Meaning vs. Strategic Resource.

Conceptualizations of organizational identity differ in their focus on identity as either an "attribute-based" configuration of meanings or as a strategic resource, orienting the organization's action in the market (see Glynn, 2008: 416-417 for an overview). The attribute-based view draws on the symbolic function of identity, tapping into the cognitive, institutional, and even emotional aspects of an organization's character. Focusing on identity as symbolic meaning draws primarily from Albert and Whetten (1985), conceptualizing identity as a symbolic representation of those attributes essential to the organization, but sometimes varying in the relative strength and visibility they place on each element (Corley et al., 2006). For example, scholars have explored the inherent nature of an enduring identity, asking how attributes of identities evolve over time (Anteby & Molnár, 2012; Gioia et al., 2000; Meyer et al., 2002; Ravasi & Schultz, 2006).

Alternatively, the strategic function of identity draws attention to those resources (tangible and intangible) that advantage the competitive position of the firm. As such, identity itself can serve as a strategic resource, "being deployed to competitive advantage and functioning as a guide to firm-decision making and strategic choice" (Glynn, 2008: 416). In this case, organizational identity is similar to other resources the organization has on hand that can create or destroy a firm's competitive advantages (Fiol, 2001). For example, Glynn and colleagues

have examined how organizational identity serves as a source of legitimacy and resource allocation for entrepreneurs and new organizational forms (Lounsbury & Glynn, 2001; Navis Glynn, 2011; Wry et al., 2011). Gioia and colleagues explicate identity as a tool for managing strategic change (Gioia & Thomas, 1996) and new venture creation (Gioia, Price, Hamilton, Thomas, 2010). Therefore, the 'functional' dimension of organizational identity can vary in its orientation: to give meaning to the organization or to orient strategic action.

Audience for Organizational Identity: Internal vs. External Orientation

A common debate among organizational identity scholars has centered on where identity resides (Ravasi & Canato, 2010). Whetten and Mackey (2002: 395) suggest that scholars have developed two fundamentally different conceptions: identity *in* organizations and identity *of* organizations. They argue, "At the heart of these competing conceptions of organizational identity is the distinction between identity-as-shared perceptions among members versus identity-as-institutionalized claims available to members." These claims focus primarily on the ways in which internal and external actors access and create meaning about the organization.

Identity in the organization is most often associated with the core, distinctive, and enduring characteristics, as defined by Albert and Whetten (1985). [See Gioia, Schultz & Corley 2000 and Corley et al, 2006 for a discussion]. Gioia et al (2013: 13-14) articulate this "internally defined" identity orientation and differentiate it from an external orientation, which they claim is image:

> Identity theorists usually view outside perceptions as images—which affect identity, but are not identity, per se. Recognizing this, some authors (Tripsas, 2009) use the term "external identity" to refer to what ecological scholars refer to as "identity" (or code or category) and organizational behavior scholars refer to as "image." Our stance is consistent with the original definition of organizational identity as an internally defined phenomenon.

An organization's identity consists of a claim (Albert & Whetten, 1985) to membership in an institutional field or category that helps to align the organization with others' expectations for what is considered legitimate (Mervis & Rosch, 1981; Navis & Glynn, 2011), making it more attractive or real (Glynn & Navis, Forthcoming; Kennedy, 2008). For example, in the early days of satellite radio, Navis and Glynn (2010) highlight how the two competing firms welcomed positive reports from external analysts who tended to perceive their identities as similar based on their membership in the market category of "satellite radio;" it was only after the "legitimacy threshold" for the collective identity of the market category was crossed that firms differentiated their identities from each other. Likewise, Zuckerman (2000) illustrates how firms de-diversified their stock portfolios to help analysts order them more easily, thereby avoiding an "illegitimacy discount."

Taking a perspective oriented more to the external audience, ecologists advance the notion of an "identity code," which serves as a label to help outsiders classify the organization's identity (Hannan, Polos, & Carroll, 2007; McKendrick, Jaffee, Carroll, & Khessina, 2003). Identity codes are used as cognitive signposts to help evaluate the firm in comparison to others; those who fall outside these boundaries are vulnerable to sanctions if the organization violates perceived classificatory norms. The population ecologist conceptualization (e.g., Pólos, Hannan, & Carroll, 2002) "takes an 'external' view and casts identity inevitably as socially determined," claiming that "an organization's identity to be essentially assigned by external observers; identity is, therefore, imposed by category (industry) membership and thus overdetermined" (Gioia, et al, 2013: 50). Thus, organizations face an inherent tension in claiming a distinctive identity that has special meaning for its internal membership and claiming a less distinctive identity that positions them as members of categories in a larger classification scheme. Deephouse (1999: 147) argues

that organizations should be "as different as legitimately possible." Therefore, the 'audience' dimension of organizational identity encompasses both the meaning claimed internally by organizational members and externally by various audiences.

In sum, the organizational identity literature highlights how several elements of identity, including function (symbolic and strategic) and audience orientation (internal and external), are important factors organizations must address, particularly when facing disruptive field-level change. One could imagine, for instance, that a firm facing the threat of a new technology may need to manage several identity elements simultaneously; while an incumbent's identity and competitive position may be preserved and protected by an old technological order, the firm might also need to consider adopting somewhat conflicting identity elements that allow it to transform and change.

Identity, Ambidexterity, and Congruence

Balancing multiple, and sometimes conflicting, elements of an organization's identity has been an important research topic for organizational identity scholars (Albert & Whetten, 1985); finding congruence across the strategic and symbolic dimensions of identity is also important (Deephouse, 1999; Gioia et al., 2013). Relatedly, Nadler and Tushman (1980: 45) define congruence as a measure of "how well pairs of components fit together," hypothesizing that higher degrees of congruence between strategy, structures, and contingencies will lead to greater organizational performance (Nadler & Tushman, 1997). Whetten and Mackey (2002) posit that organizations will aim to develop "an acceptable level of congruence between organizational activities and organizational identity claims." Santos and Eisenhardt (2005: 501) advance the notion that organizations continually manage vertical and horizontal identity boundaries that determine "how members perceive what is appropriate for the organization…[and] guides

decisions regarding the value-chain activities to incorporate or product/market domains to enter." Nonetheless, empirical examples of congruence across multiple aspects of an organization's identity are relative sparse (Raffaelli, Glynn, & Tushman, 2013) and do not fully address how organizations manage seemingly conflicting elements of identity simultaneously during periods of field-level change (for a noteable exception, see Tripsas, 2009).

Organizational Ambidexterity

In addition to being aware that the facets of the organization's identity may in fact be congruent, managers may choose to adopt strategies that require dimensions of the organization's identity to remain fundamentally at odds with each other. For instance, Gioia, Schultz and Corley (2000) posit that organizations struggle to align the enduring internal perceptions of identity while adapting to conflicting external audience views. Paradoxically, they (2000: 74) argue that organizations may benefit from identity conflict because it allows the organization to "better [adapt] to the demands of the environment that is itself going through change."

Tushman and O'Reilly (O'Reilly & Tushman, 2011; 2008; Tushman & O'Reilly, 2006) advance a related paradoxical construct, organizational ambidexterity, which they define as an organization's ability to balance the routines, processes, and skills required for exploitation with a set of fundamentally different capabilities that are required for exploration. They (2008: 22) locate this dynamic capability within the organization's existing operations, structure, cultures, and mindset of leadership, arguing:

> [Ambidexterity] entails not only separate structural subunits for exploration and exploitation but also different competencies, systems, incentives, processes, and cultures – each internally aligned. These separate units are held together by a common strategic intent, an overarching set of values, and targets structural linking mechanisms to leverage shared assets.

Maintaining a balance between exploitation and exploration (March, 1991) is critical to ambidexterity. Raisch and Birkinshow posit (2008: 375), "To be ambidextrous, organizations have to reconcile internal tensions and conflicting demands in their task environments." To date, however, most research has focused primarily on resolving "structural" ambidexterity tensions (e.g., developing separate units for exploitation and exploration), while little work as focused on address ambidexterity's "contextual" conflicts (e.g., forms of cognitive dissonance that may permeate the organization beyond its structure; (Raisch & Birkinshaw, 2008)). In this vein, one important tension that has yet to be addressed in the management literature is how organizations explore and exploit multiple dimensions of their identity.

In this study, I attempt to bridge theories of organizational identity and ambidexterity. My goal is to explore *how* organizations rely on ambidexterity to manage multiple dimensions (identity functions and audience orientation) of their identity during periods of radical technological and institutional change (e.g., Romanelli & Tushman, 1994).

METHODS

This study aims to achieve a "theoretical extension" (Snow et al., 2003) that bridges literatures related to organizational identity and ambidexterity. Because the relationship between these two constructs is not well understood, I chose to conduct an inductive qualitative study that employed multiple cases (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Yin, 1989). Multiple case studies serve to confirm or disconfirm patterns, key factors, and inferences drawn from others and are "typically more generalizable and better grounded than those of single-case studies" (Graebner & Eisenhardt, 2004: 367-368). The Swiss mechanical watch industry from

1983 to 2008 offers a unique setting to illustrate how organizations weigh the specific dimensions of identity over time in a mature industry.[12]

I selected 1983 as the starting point for this study because it marked a major transition period in Swiss watchmaking after a decade of serious losses that followed the introduction of quartz technology in the late 1960s; the period is often referred to in Switzerland as the "Quartz Crisis." The launch of the Swatch watch in 1983 provided hope and confidence that Swiss watchmaking could survive and paved a path for the field's re-emergence (see Chapter III). I chose 2008 to conclude the study because it marked the 19th consecutive quarter of record growth for the Swiss watch industry, led primarily by unprecedented sales for mechanical watches. This 25-year period of field level change and re-emergence provides a rich context to study conditions where organizational identity and ambidexterity were salient for organizational survival.

Data Sources

I used several data sources, including: (1) semi-structured interviews with 25 CEOs and 16 senior executives, (2) archival interviews with an additional 27 CEOs, conducted by a prominent online watch collector's association, (3) company-specific archival data, such as organizational history books (written by company historians, outside collector groups, and watch enthusiasts, archival documents), press releases, advertisements, industry certifications, and annual reports[13]; and, (4) participant observation, including attendance at an industry-wide field configuring event (Lampel & Meyer, 2008), and multiple factory tours of watch companies in Switzerland.

[12] See Chapters II and III for a comprehensive overview and history of the Swiss watch industry.
[13] These data were collected by the author in industry and company museum archives in Switzerland, Germany, France, and the United States

These data were supplemented by additional sources, including another 81 semi-structured interviews with industry actors (e.g., watchmakers, retailers, government officials, trade associations, horological academies, horological societies, company historians, academics, collectors, auction house executives, and journalists) about non-company specific trends, as well as archival data related to industry production and the macroeconomic factors that influenced the field's re-emergence.

Data Analysis

The analytic approach I used can be described as analytic abduction (Peirce, 1955), which iterates between empirical data and preexisting theoretical constructs (Weber et al., 2008: 537). The process I followed included three separate but interrelated steps.

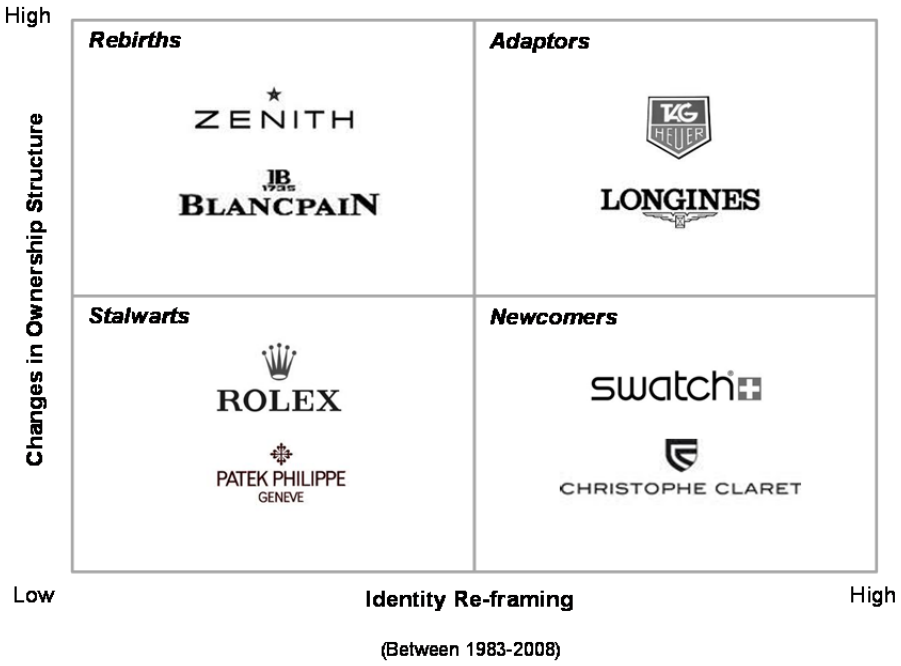
Step 1: understanding industry dynamics and key actors. To begin, I conducted interviews to become familiar with the important events, actors, and organizations in the Swiss watchmaking industry. These individuals included industry representatives, government officials, museum curators, prominent collectors, historians, and academics. Concurrently, I gathered and reviewed a significant amount of archival data, including every monthly issue of the leading industry trade magazines (*Journal Suisse D'Horlogerie, Chronos* and *International Watch)* that were published between 1966 and 2008. I also read and catalogued multiple historical accounts of the period written by academic historians (e.g., Donze, 2011; Landes, 1983), regional studies experts (e.g., Glasmeier, 2000), and Swiss watch industry authorities (e.g., Blanchard, 2008; Breiding, 2013; Pasquier, 2008; Perret, 2008a, b; Trueb, 2005). I grouped these interview and archival data into chronological time periods to see how perceptions of re-emergence, identity, and strategy evolved over time (Gilbert, 2005). From this review, I

compiled a 50-page single-spaced historical narrative about the industry that helped me clarify the most salient actors, events, and organizations.

Step 2: selection of sample cases. Since the primary goal of this study is to understand the strategies and identity management behaviors of individual firms, I selected firms that would serve as exemplars of the various strategies employed by a larger category of Swiss companies after the quartz crisis. To ensure variance across the sample of firms, I selected cases based on two dimensions that most respondents identified were important differentiators of firm-level strategy between 1983 and 2008. As one CEO described, "Many Swiss watch companies experienced a 'marketing and identity revolution' and an 'ownership revolution'" [Interview: Swiss watch CEO, 2012]. Thus, the first dimension focused on the level of identity change and re-framing the firm experienced during the period (i.e., how much the *function* of identity and the *audience* orientation changed). The second dimension focused on the level of change in ownership structure the firm experienced during the period (i.e., whether it had been acquired by another company (=high) or maintained its independence (=low)).

The two dimensions formed a 2x2 chart that helped me group firms into four different categories. I measured "identity reframing" by examining company advertisements for changes in identity claims over the period. I also compared interview responses from executives and employees to my questions about overall firm-level changes and examined the degree of relative importance they placed on organizational identity elements. Next, I measured "changes in ownership structure" by reading company annual reports and press releases to determine if the firm had been purchased by another company during the period. Finally, once I selected and grouped firms on my 2x2, I validated it with several industry experts and company executives. In total, my sample consisted of 8 firms, two in each of the four cells of Figure 18.

Figure 18: Case Sampling Dimensions



The firms in my sample served as "extreme cases" (Miles & Huberman, 1994: 28). Additionally, all the firms I selected successfully reflected a re-emergence within the broader field of Swiss watchmaking during this period. I did not include unsuccessful cases in the sample because there is already a wealth of research related to the challenges firms face when presented with radical change in a technological or institutional order (e.g., Benner, 2010; Christensen & Rosenbloom, 1995; Tripsas, 1997; Tushman & Anderson, 1997). Here I focused on selecting different types of firm-level strategies that were successful and were an important part of field-level re-emergence.

I labeled the four categories: S*talwarts*, *Rebirths*, *Adaptors,* and *Newcomers.* Stalwarts experienced relatively little change, and in effect, served as a base case for the rest of the field because most firms eventually modeled themselves after the Stalwart's strategy. Rebirths maintained their old identity as classical mechanical watchmaking firms, but were re-born when they were purchased by larger "watch groups," a type of holding company comprised of multiple

watch brands (or other luxury goods) that required them to adopt several group-wide standards, common production patterns, or revenue performance targets. Adaptors experienced the greatest amount of change, and made the most significant adjustments to their identity and ownership in order to stay in business. Newcomer firms entered the market during the period of re-emergence and were responsible for introducing "rule-breaking" practices that did not conform to the identity of traditional Swiss watchmaking. In this study, the Stalwart firms were *Patek Philippe* and *Rolex*, the Rebirth firms were *Zenith* and *Blancpain*, the Adaptor firms were *Tag Heuer* and *Longines*, and the Newcomer firms were *Swatch* and *Christophe Claret*.

Step 3: analysis of data. As is typical for multiple case analysis studies (e.g., Graebner, 2004, 2009), I first analyzed each case separately, searching for key factors that I believed could be associated with the identity challenges over the period. I attempted to triangulate common themes and patterns across the multiple data sources (Creswell, 2003). For each case, I compiled my interview notes, historical accounts, advertisements, annual reports, press releases, and archival materials collected in company or horological archives into a comprehensive summary sheet. Using NVivo 10, I then coded the data for all instances where identity was mentioned in regards to the organization. In addition, I coded for the actions of important organizational leaders (Washington et al., 2008), values (Selznick, 1957), and changes in functional, political, and social norms (Scott, 2008) that influenced the taken-for-granted norms and strategies that previously existed in each organization. Beyond these predetermined codes, I allowed other codes to emerge from the data so I could explore new relationships and possibilities. I organized these provisional first-order codes into broader emerging themes. During this step, I evaluated which categories came together to form theoretical themes. I then moved from analyzing

specific data to developing more abstract and theoretical concepts. Finally, I created tables, timelines and summary sheets that helped me summarize my findings for each case.

The second stage of analysis involved integrating the findings across the eight cases, using cross-case analysis methods suggested by Eisenhardt (1989) to search for replicability and differentiation. The goal of this step was to settle on the theoretical concepts, variables, and relationships that advanced a model of identity ambidexterity. In this stage, I decided on which themes from each case, related to other cases, were most germane to a broader conceptual framework. Throughout this iterative process, I continually shared my emerging findings with respondents in order to seek confirmation and clarification of data and to get reactions to my more general models.

FINDINGS

As I looked at the data from each firm over time, I found that two types of ambidexterity emerged. The first type, which I label *strategic* ambidexterity, explained how the firms explored and exploited elements related to ownership and structure that allowed them to maintain a competitive position in the market. The second type, which I label *identity* ambidexterity, focused specifically on how firms explored and exploited different elements of their organizational identity during the period of re-emergence. I explain each in more detail below.

Organizational Responses to Environmental Change

Management of Strategic Ambidexterity

After nearly a decade of continuous losses and significant downsizing, by 1983 the fate of the remaining Swiss watch companies was highly uncertain (Landes, 1983). Having struggled to adapt to a competency destroying technology (i.e., quartz timepieces), most firms relied on their existing know-how in mechanical watchmaking to employ a "racing strategy" – which

attempts to "fight off the rise of a new technology by extending the performance of the old technology" (Adner & Snow, 2010; Snow, 2008: 1655) – to complete with quartz technology. However, some firms also considered exploration strategies. Several funded R&D projects in quartz technology that they believed could help them regain control of the low-end of the market, now dominated by cheaper Japanese quartz alternatives.

Although I found elements of exploration of exploitation to be evident in each firm, they posed unique management tensions. Using a method common in multiple case study analyses to illustrate variance across cases (e.g., Graebner, 2004; Graebner & Eisenhardt, 2004), I created a scoring rubric to help distinguish differences in the relative amount of exploration (transformation of strategies) and exploitation (preservation of strategies) each firm employed between 1983 and 2008. I based my rankings on the following strategic elements: 1) organizational structure and autonomy (for exploitation: if they maintained components of their management structure and ownership autonomy; for exploration: if they were purchased by another company or increased their reliance on strategic alliances), 2) primary target market (for exploitation: if they maintained their primary customer segment [e.g., collectors, luxury buyers, sporting, fashion, etc.]; for exploration: if they searched for new primary customer segments); and, 3) production processes (for exploitation: if they maintained their existing core watch movement production processes and manufacturing facilities; for exploration: if they outsourced production and manufacturing). For each item, I assigned the firm a score of 0= very little, 1=somewhat, 2=very much, and then summed all three dimensions. Firms with total score of 0-2=low, 3-4=medium, and 5-6=high. I created separate scores for exploration and exploitation strategies. See Table 5 for a summary of findings, which I discuss below, by cell.

Table 5: Firm Exploitation and Exploration Strategies Associated with the Re-Emergence of the Swiss Watch Industry

	Case	Transformation of Strategy	Level of Exploration	Preservation of Strategy	Level of Exploitation	Illustrative Data
Stalwarts	Patek Philippe	Continued emphasis on tradition of mechanical watch craftsmanship. Targeted toward knowledgeable watch connoisseurs, collectors, and elites. Remained family-owned. Few changes in organizational values.	Low	Continued to produce mechanical movements for high the high end of the market. Did not attempt to compete with quartz technology. Committed to preserving the Geneva-based traditions of craftsmanship. Invited collectors and reporters into the workshops to show how the pieces were made. Hired many of the expert watchmakers who had been fired from other firms during the crisis.	High	"It has always been the same brand. We thought we would be making the right decision in continuing to invest in the traditional mechanical industry." – interview
	Rolex &	Continued emphasis on status and prestige. Targeted toward the masses interested in purchasing a Swiss watch. Remained independently owned. Few changes in organizational values.	Low	Continued to produce mechanical in-house movements for mid-range of the market. Continued to advertise their watches as status symbols. Never stopped having movements certified as accurate COSC chronometers, even when quartz watches were significantly more accurate. Maintain secrecy and privacy to protect their mechanical watchmaking techniques and dealer relationships.	High	"Rolex [is] around *despite* the crisis. They are immensely successful yet intensely private and closed. Whatever success Rolex has, it is as a partner with their dealers." –archival interview (Paige, 1998)
Rebirths	Zenith &	Re-introduced brand as luxury product, using marketing techniques from LVMH group. Maintain Swiss craftsmanship values, but also introduce elements associated with luxury.	Medium &	Re-introduced mechanical movements (e.g., El Primero) that had been discarded during quartz crisis. Supplied movements to other watchmaking companies that had disbanded some historical mechanical watchmaking techniques. Returned to old values of hand-made mechanical watchmaking. Purchased by LVMH group and adopted practices associated with luxury brands.	Medium	"For a brand like Zenith, with its history, product was really key. We belong to the first luxury group in the world, and being part of that group means we need to be performing." (Sandler, 2011) – archival interview
	Blancpain &	Use of marketing to create demand for high-end watches with a tradition tied to the origins of Swiss watchmaking. Developed high-end watches associated with elite watchmaking tradition. Gained efficiencies from sitting within Swatch Group. Maintain values anchored in Swiss handmade watchmaking.	Medium &	Marketing campaign ignored the challenges it faced during the crisis. New campaign exploited that they had only never made a quartz watch. Re-committed to historical and watchmaking techniques from early days of Swiss watch industry.	Medium	"We constantly have to reflect, weigh, and make choices among traditional and modern choices." – archival materials, 2001 "The Watchmakers Art since 1735." –company archival materials, 1985

	Case	Transformation of Strategy	Level of Exploration	Preservation of Strategy	Level of Exploitation	Illustrative Data
Adaptors	Longines	Merged with Swatch Group, ending its history as a family owned company. Repositioned as a status symbol for entry to mid-level consumers. One of the largest earning brands within group, re-issues many of its classic models. Values shift from family-owned to mid-range luxury brand.	High	Mostly discontinued making in-house movements after being purchased by Swatch Group. Used Swatch Group ETA movements and positioned itself as a mid-range luxury watch brand with a focus on "elegance." Determined not to compete with higher-end brands within group (e.g., Omega).	Low	"The mission is based on price segment and the culture of each brand – its DNA. For me, my mission is very clear. I have to be number one in my price segment." – interview
	Tag Heuer	Acquired by LVMH luxury group. No longer a family owned company. Repositioned as a status symbol for entry to mid-level consumers. Re-issues many of its classic models as well as creating new models. Values shift from family-owned to luxury brand.	High	Mostly discontinued making in-house movements after being purchased by LVMH. Used Swatch Group ETA movements. Positioned itself as a mid-range luxury watch brand with a focus on sporting. Repositioned the brand as a status symbol for active individuals.	Low	"So we are really in a niche and nobody realizes how lucky we are, but that s why we re at the high end the industry." – interview
Newcomers	Swatch	Redefined Swiss watchmaking tradition, by introducing Swiss quartz low-price watch for mass consumption. Broke rules of mechanical watchmaking production by introducing automated quartz production systems to the region.	High	Response to Japanese quartz movements. Re-introduced "emotion," fashion and beauty back into the Swiss watch industry, but in the form of quartz technology. Helped revolutionize Swiss automated manufacturing for quartz movements. Success of Swatch provided liquidity to Swatch Group and injected confidence back into industry.	Low	"Swatch has given us volume, the group volume, and has proven that can produce Swiss matches to compete with the Far East." – interview
	Christophe Claret	Independent watch brand pushed the limits of Swiss mechanical watchmaking by introducing innovative complications and movements for high-end consumers. Independent company, although often asked to subcontract to other brands that do not want to invest the R&D required to produce such unique mechanical complications. Maintains independent values that attempt to break the rules of traditional mechanical watchmaking.	High	Benefactor of increased demand for mechanical watches. Symbol of mechanical watch innovation on the periphery of the mainstream Swiss watch groups.	Low	"We're doing the mechanical watchmaking of the 21st century. But everybody else is in the 19th century and claiming to be from the 19th century." – interview

Stalwarts. *Stalwarts* continued to exploit many of the same strategies that had made them successful prior to the quartz crisis. Both Patek Philippe (a family-owned company) and Rolex (managed by a foundation) maintained their independence as privately-held companies. They advertised to similar customer segments and did little to transform their watchmaking production systems. Although each occupied a different price segment of the market (e.g., an entry level Patek sells for about four times more than an entry level Rolex), they both continued to market themselves as status symbols and makers of high quality mechanical watches. During the crisis, each firm was "stubbornly insistent" (Passell, 1995) that it should preserve its tradition of mechanical watchmaking, betting that continued demand from higher-end consumers would sustain them. In the long run, the stalwarts they may have even benefitted from the downturn. For instance, Patek hired many of the expert watchmakers who had been fired from other bankrupt companies.

Rolex also sustained an exploitation strategy associated mostly with mechanical watchmaking. Ironically, during the crisis, the firm increased the number of watches it sent out to be certified as chronometers (one of the highest marks of accuracy in mechanical watchmaking), even though a high-end mechanical Rolex was now far less precise than most of the very affordable quartz timepieces. See Appendix III. They also continued to pursue a similar marketing campaign. For several decades, the hallmark of Rolex's brand strategy had been to position its products as status symbols. Historically, Rolex invested far more in advertising than any other Swiss brand; as early as 1972 its advertising included slogans such as, "Men who guide the destinies of the world wear Rolex watches." Through the 1990s and 2000s, they continued to exploit this strategy, running advertisements with taglines such as, "The essence of success" and "The world is yours, from top to bottom." They believed their

customers would continue to buy their watches for the status value attached to them, making the brand less susceptible to competition based solely on accuracy or precision.

Although the stalwarts focused primarily on exploitation, they nonetheless also made some attempt at exploration. For example, Patek decided to break with its centuries-old convention of remaining highly secretive about its manufacturing processes and started to allow outside groups (and potential new customers) to witness its hand-made production methods. As one senior executive explained, "We were the first ones to open our workshops to press visits. If you see inside quality traditional watch making production you have to appreciate it. Because it's human work, it's real." [Interview: Swiss watch executive, 2012]. Allowing outsiders to see how its watches were made was an atypical strategic decision, especially for a firm that had been so careful to protect intellectual property for over 100 years. But to help sustain sales during the quartz crisis, Patek realized it would have to explore new methods to educate potential customers to appreciate the craft of mechanical watchmaking associated with Patek watchmaking.

Together, the two stalwart firms I studied – Patek Philippe and Rolex – represented a strategy that ultimately became the model for the entire Swiss industry during the re-emergence period. Mechanical watchmaking moved further into a luxury goods niche—and the Stalwarts' focus on both 'status' *and* 'craftsmanship' proved to be a successful combination that created and sustained demand for high end Swiss mechanical watches. And relative to the other firms, the Stalwarts benefitted from the new emphasis on luxury (in that they already fit the environment) and so they stayed the course. But nonetheless, they just as easily could have decided to abandon their traditional watchmaking process and invest all their energy in quartz technology. Instead, they realized the importance of exploiting both elements of status and craftsmanship that were already associated with their brand, and found new ways to integrate the

two (e.g. Patek opened up its workshops to visitors while substantially increasing its advertising in mainline outlets; Rolex continued to certify its mechanical watches for accuracy but also produced ads that focused primarily on status).

Rebirths. Rebirths focused mainly on preserving the tradition of Swiss watchmaking by exploiting their historical past, but unlike the Stalwarts, did not maintain ownership autonomy. Blancpain is perhaps the foremost example of a firm that exploited its past while simultaneously exploring opportunities to reach new customer segments. Jean-Claude Biver, a charismatic Swiss watch executive, purchased the struggling company in the 1980s and re-launched it as a high-end watchmaker specializing in handmade watches. His famous advertising slogan read: "Since 1735 there has never been a Blancpain quartz watch, and never will be." Rather than admitting that the company had failed to adapt to quartz technology, he attempted to reframe the conversation, suggesting the firm's tie to traditional watchmaking was its value proposition. The strategy worked and Blancpain achieved record sales in the 1990s. Biver sold the company to Swatch Group for over 1,000 times what he initially paid for it. The former CEO stated:

> We wanted to establish the old name as a reference in the art of traditional watchmaking, at a time when the whole Swiss watch industry, luxury segment included, was switching to the quartz technology. Entire workshops and tooling for mechanical movements were destroyed during these dark years. Our idea was to save, or more precisely to rescue and to redevelop the traditional watchmaking, in dedicating a manufacture entirely to the mechanical watch and only to this. [Archival interview: CEO, (Friedberg, 1999)]

Likewise, the Zenith watch company had also fallen on very hard times during the crisis. It had been purchased by the Zenith Radio Corporation in 1971 and in 1975 the US-headquartered company ordered all mechanical watchmaking to cease and its manufacturing tools to be scrapped. Charles Vermot, a long-time employee defied the order and at nights hid the components of the famous "El Primero" chronograph movement within an abandoned factory. He did not tell anyone for risk of being fired. Nonetheless, he could not imagine seeing

the tools and machinery that had defined his entire life's work being thrown out. A decade later, the company changed hands. The new owners were interested in producing mechanical watches. Assuming they would have to reinvest in rebuilding all the lost machinery and knowledge, they were surprised when Vermot resurrected the tools he had saved in the old factory building. As one of the few watchmakers in Switzerland that had access to the old dies and moulds in 1984, Zenith started producing its "El Primero" chronographs again and started supplying movements to other companies. One executive stated, "It may be fair to say that the El Primero saved Zenith, but in a way it's true because this movement is unique and for a very long time it was the only one like it on the market." [Interview: company executive, 2012] Thus, by exploiting their past achievements and know-how, the Rebirths were able to claim an authentic link to the past of mechanical watchmaking, which later proved to be an important value claim for consumers. Unlike the Stalwarts, however, the Rebirths gave up ownership autonomy because they were purchased by companies that helped them market their products and streamline production costs.

Adaptors. Relative to the Stalwarts and Rebirths, Adaptors relied less on exploitation strategies but far more on exploration strategies. Longines and Tag Heuer were both purchased by larger watch "groups," which were composed of multiple watch brands under on larger holding company. The Groups who bought the Adaptors ordered them cease the production of movements (i.e., the main component that sits inside the watch) and source the movements from other suppliers in order to defray rising costs of manufacturing and R&D. Some groups owned their own movement production factories and directly supplied the movements to their brands (e.g., Swatch Group supplied movements to Longines). The other groups that originated from the luxury industry purchased movements from similar sources (e.g., LVMH bought Tag Heuer and also sourced its movements from the Swatch Group). ETA, the mechanical and quartz

movement owned by Swatch Group, supplied nearly 80% of all Swiss movements to other brands in the 1990s and 2000s. Thus, the exploitation strategy employed by Adaptor firms focused primarily on preserving the old history and legacy of the brands through marketing, but they no longer manufactured the watch movements themselves and therefore could not claim that they were a "complete" manufacturer. Therefore, it was harder for the survivors to focus their marketing on craftsmanship, like the Stalwarts and Rebirths. Instead, the Groups assigned executives familiar with the luxury goods market to help the watch brands market their products like other luxury goods, but also made sure to communicate the brand's old history.

Seizing on their past successes and heritage, both of the Adaptors re-issued several of their most popular models from before the quartz crisis. As one former CEO stated, "So we are really in a niche and nobody realizes how lucky we are, but that's why we're at the high end of the industry" [interview with former CEO, April 2012]. Another noted the challenge of exploiting the norms of traditional watchmaking while adhering to the demands of being a part of the luxury group. "An important element during this period is that 'groups' started coming in from luxury to buy watch brands. You had companies from perfumes, from the bags and luggage industry that expected different things" [Interview: former CEO, 2012]. In short, the Adaptors exploited their past heritage, but were forced to explore novel production and marketing strategies.

Newcomers. The final category, Newcomers, focused primarily on exploration strategies, setting out to explicitly break the rules of traditional Swiss mechanical watchmaking. Swatch, a low cost quartz alternative to Japanese quartz timepieces, was launched in 1983 with great fanfare. According to one of the inventors of the Swatch watch, "The main [goal] of this watch was to prove it was possible to produce watches in Switzerland without our old technology. We

had to become more industrial. We had to adopt the electronic system. We needed a presence in the low segment of the market" [Interview: former Swatch engineer, 2012]. The colorful watch designs placed an emphasis on beauty, emotion, and fantasy (Moon, 2004), positioning it as a fashion product rather than simply as a cheap but accurate timepiece like its Japanese competitor. Nicolas Hayek, founder of the Swatch Group, and Ernst Thomke, who oversaw the development of the Swatch, believed that its success would allow them to resurrect many of the mechanical watch brands in the Group by exploring more efficient and automated production systems. As one former brand CEO within the Swatch Group stated: "Swatch gave back to the Swiss the base of the industry. It gave back [production] numbers. It enabled us to rebuild an industry, because an industry can only be built on numbers. If you produce 1 million watches, now you can build an industry" [interview with former CEO, March 2012].

An unlikely group of newcomers also emerged on the Swiss watchmaking scene during the 1990s and 2000s. Unlike the quartz-driven Swatch watch, these firms aimed to break the rules of mechanical watchmaking. Due to the successful growth in demand for mechanical watches in the 1990s, Christophe Claret founded an independent watchmaking company with the goal of crafting mechanical watches that "united the full range of professions linked to the design, development, and production of movements" [Company archival document, 2009]. His techniques were so innovative that he had to architect new production machinery in order to manufacture his designs. The company's novel techniques represented a group of independent mechanical watchmakers that bourgeoned in Switzerland at the turn of the millennium. Because they invested heavily in R&D, they often served as subcontractors to the major watch brands. As one executive explained, "We're doing the mechanical watchmaking of the 21st century. Everybody else is in the 19th century and claiming to be from the 19th century." [Interview:

company executive, 2012]. These firms purposefully chose to maintain their independence, allowing them to freely explore new methods of mechanical watchmaking; their innovative techniques were responsible for introducing some of the most influential mechanical watchmaking changes to the industry throughout the 2000s.

In sum, I find that all firms engaged in some form of exploration and exploitation during this period of field-level environmental change and re-emergence. What differentiated them was the degree to which they emphasized each of these strategies. This finding is consistent with earlier work demonstrating that ambidexterity is an important dynamic capability required for firm survival and performance (O'Reilly & Tushman, 2008); however, my study extends this line of research to periods of re-emergence. Thus, ambidextrous strategies of balancing exploration against exploitation seem to enable organizational performance throughout the technology life cycle. Drawing from my empirical findings, I propose that:

> ***Proposition 1:*** *During periods of field re-emergence, successful organizations will engage in strategic ambidexterity, linking the past to the future, by exploiting competitive advantages associated with their past successes and conjoining these to explore new competitive positions that they believe will be advantageous to their future success.*

Management of Organizational Identity

My initial analysis highlighted that many of the strategic exploitation and exploration decisions the firms made also had significant implications for how they managed their identities (e.g., Glynn, 2000), and, in particular, the often conflicting internal and external views of "who they were" and "what they did" (Navis & Glynn, 2011). This insight led me to go back to my data and further explore the relationship between organizational identity and ambidexterity. More specifically, I focused on how firms explored and exploited various elements of their organizational identity during this period of institutional and technological change.

Function of OID: Strategic and Symbolic

All firms had to manage both the strategic and symbolic elements of their identity. The symbolic elements provided meaning (Glynn, 2000; Glynn & Abzug, 2002), and were focused largely on answering the question of "who we are," while the strategic elements linked identities to firm resources and sources of competitive advantage (e.g, Fiol, 2001; Glynn, 2008; Lounsbury & Glynn, 2001). I found that the firms in my sample managed both the strategic and symbolic elements; however, not all identity elements consistently aligned with their re-emergence strategy. Here I report how these tensions in organizational identity were managed, creating opportunities and challenges for organizational leaders and managers. See Table 6 for a summary of findings.

Table 6: Organizational Identity Management Associated with Re-Emergence of the Swiss Watch Industry: Strategic & Symbolic Identity Elements

	Case	Management of Symbolic OID elements	Management of Strategic OID elements	Illustrative Data
Stalwarts	Patek Philippe Rolex	Identity as a symbolic representation of craftsmanship and elite status.	Identity as a resource to attract individuals who want a distinctive Swiss made watch. Their identity largely defines the broader market category of Swiss watchmaking for most consumers. Watches seen as luxury and status objects that represent mechanical craft and precision.	"We were starting to unveil what is behind traditional mechanical watch of quality. And a lot of communication work was done to explain what is watch manufacture, what is mechanical movement." – interview
Rebirths	Zenith Blancpain	Identity as a symbolic representation of Swiss watch history and tradition.	Identity as a resource to preserve Swiss mechanical watchmaking, but repackaged as a scarce luxury good that should be valued like any other highly valued art form or type of skilled craftsmanship.	"The key message was that Zenith, with the El Primero, was the inventor of the high frequency self-winding chronograph. This means everything. It means knowledge. It means creativity. It means manufacture. It means collections with a future." – archival interview (Sandler, 2011) "A mechanical watch inherits a know-how, a tradition, and a culture that will never die." – company archival document (2001)
Adaptors	Longines Tag Heuer	Identity as a symbolic representation of competitiveness, high-activity and survival.	Identity as a resource to attract active individuals who seek a status-oriented Swiss watch brand at an affordable price. Rely on a tradition of timing elite sporting events (e.g., Formula 1 racing, golf, tennis) to support these claims.	"'Success. It's a mind game.' What happens in an athlete's mind before performing? Images of men and women at the limits of their physical prowess are incredibly powerful. They make it possible to understand what happens in a champion's head. And in the head's of TAG Heuer's directors!" –company archival document (1997).
Newcomers	Swatch Christophe Claret	Identity as a symbolic representation of innovation and rule-breaking.	Identity as a resource to attract consumers who want to make a statement about their creative side by wearing a watch that does not conform to typical standards of Swiss watchmaking.	"The Swiss Watch industry was not saved by mechanical watches. It was saved by quartz watches: The Swatch. We told people that the watch is the joy of life, that the watch can have multi-colors, that you can even wear two or three watches on the same wrist." – interview, 2012 "Many people buy expensive watches as a status symbol or an investment to show off they have money. And then there are some genuine lovers of fine mechanicals. And that's what we re here for. – interview

Stalwarts. The Stalwarts relied on organizational identity to reaffirm that mechanical watches were a form of craftsmanship but also to associate them with high-quality luxury goods, which were now in vogue. For example, beginning in 1886 many of the most prestigious and skilled companies based in Geneva stamped their watches with the "Geneva Seal" when they passed specific craftsmanship and accuracy standards. The seal helped the Geneva-based firms like Patek differentiate themselves from the "inferior" firms that were emerging in Swiss Jura mountains, as well as the quartz watchmakers. However, when Patek started producing many of its watches outside the Geneva region it could no longer use the mark. In response, it created its own "Patek Philippe Seal," which aimed to preserve the symbolic identity associated with a centuries-old tradition of Geneva watchmaking and had always been a mark of high-end ("*haute horlogerie"*) luxury watch craftsmanship for the firm. An archival marketing brochure stated: "[The Patek Philippe Seal] is a symbol of a world in which the exceptional becomes the rule." Symbolic identity claims like these had particular strategic importance for the Stalwarts because they communicated a form of exclusivity and status to consumers that justified their higher prices.

Rebirths. The Rebirths relied heavily on several symbolic elements of identity to convey new meanings associated with mechanical technology. Prior to the quartz crisis, their identity was tied to their ability to design and build some of the most accurate timepieces in the world. However, after the introduction of quartz technology, their know-how and organizational skills were largely obsolete, as the quartz watches were superior in accuracy (Tushman & Anderson, 1997). Thus, during the re-emergence period, they used symbolic identity claims associated with craftsmanship and artistry, as well as new definitions of innovation, to redefine themselves: they

claimed identities that were both traditional *and* modern. This underlying tension between old traditions and new innovations is illustrated in the following two quotes from the same CEO:

> We wanted to be out of the trends *and* in the center of the trend. This is why we never had a conventional factory, but an old farmhouse converted into workshops instead. [Interview: former CEO, 2012].

> There is no contradiction in using the words tradition and innovation together to describe us. Both are woven together to form the fabric of our philosophy. The watchmaking complications that so delight connoisseurs are, themselves, innovations from the past." [Company archival document, 2005]

In this case, the CEO renovated an old farmhouse to symbolize how the firm's identity claim of "who we are" was linked to a longer history of Swiss farming (farmers were some of the first people to take up the craft of watchmaking in the Swiss Jura region). The CEO redefines "what we do" by focusing on their creation of "delightful" mechanisms, rather than relying solely on the old identity that focused on making accurate watches. In effect, the CEO redefines the organization's identity to selectively dis-associate its identity with past failure to adapt to quartz technology but, instead, to associate it with a more distant and successful past, that of the industrious Jura farmers. Such symbolic identity claims also communicated values that aligned with a new strategic identity focused on tradition and craftsmanship, but also purposefully ignored the fact that mechanical watches could never be as precise as quartz timekeepers.

Adaptors. Adaptors had to manage the most significant changes in both symbolic and strategic identity elements. Like the Rebirths, they needed to change their identity to convey the new attributes that would be essential to the organization's survival as a luxury goods specialty product. This was particularly challenging since the Adaptors I studied were bought by larger "groups" that outsourced most watch movement production to other companies, thus making them more similar to their competitors. Changes in the watch technology production seemed to also precipitate organizational identity changes (Tripsas, 2009). According to one company

archival document, the fact that the company no longer made its own watches had a major impact on the company's identity:

> Everything to do with manufacturing disappeared. In addition, the office where the work was prepared, the mechno-technical office and the technical director's office all disappeared. The senior management then had to find an answer to the difficult problem of replacing staff, a task that was particularly hard in view of the fact that the company's philosophy until then had been based on long service and paternalism. [Company archival document: (Marti, 2007: 311)]

Nonetheless, while the Adaptors were closing their watchmaking movement factories, they were increasing their marketing budgets so they could make strategic claims to attract high-end consumers, enticing them with the possibility of owning a Swiss mechanical watch from a company that had a longstanding and proud heritage. Two of the companies' archival documents illustrate how firms managed this tension:

> Regarding its products, Longines' position in the top-range of the market contributed to the fact that the emphasis is no longer on regularly renewing its models and technology. Maintaining a certain stability in the general conception, which ensures the brand's identity in the long term, is the company's main preoccupation, while movements and components are designed to be produced in large series. [Company archival document, (Marti, 2007: 321)]

> The same resources given to technology and design were dedicated to Tag Heuer's communications. In 1995, 90 million dollars were devoted to marketing, of which 15 million covered sponsoring. Heuer was the first trademark in the world to sponsor a race car driver. [Company archival document, 1997).

Adaptors recognized that their identity was tied to a history that was no longer as valued as it had been; moreover, because they were no longer making watch movements in-house, identity challenges surfaced that threatened their craftsmanship identity. As a result, the identity tied to history became even over more important as a strategic resource for marketing and selling watches.

Newcomers. The Newcomers had to balance a separate set of identity tensions. Their identity was tied to being innovators, breaking with the traditional Swiss watchmakers, but they

also relied on relationships with these same established firms for resources and revenues. For example, Swatch developed separate manufacturing facilities to produce its initial quartz movements, but the "Group" eventually used the technology to produce movements for other brands not in the Group (i.e., Longines). Thus, while Swatch differentiated itself from the rest of the field by emphasizing its identity as a fashion accessory, it nonetheless was fully integrated with the rest of the larger Swatch Group; this allowed for the exchange of innovative new techniques between brands. Alternatively, at Christophe Claret, their identity was associated with being an independent mechanical watchmaking manufacturer, but also associated with serving as "backstage craftsmen" who subcontracted with brands to produce sophisticated movements which accounted for a significant portion of their revenues. An archival document explained the potential identity tension for the "independent" company:

> Each of our clients comes with its own heritage, namely brand history, with existing collections, as well as specific needs and specifications. Merely inventing a highly complicated calibre is not enough to meet demand; the movement must also be consistent with the existing collection and the with the overall brand universe." [Claret company book: (2009: 22-24)]

Christophe Claret managed this identity tension by structural partitioning, i.e., creating two separate subunits within the organization: one devoted to producing movements for other companies and one for producing movements for the Claret brand itself. However, to assuage possible identity tensions, the CEO created many opportunities for overlap and cross-pollination between these two subunits. Each year, for example, he sponsored an annual innovation contest for all employees to develop a mechanical watch complication that encouraged the types of innovations the founder wanted to pursue in the coming year.

Thus, across all eight organizations – Stalwarts, Rebirths, Adaptors, Newcomers – I found that leaders had to manage multiple components of the firm's core identity attributes (i.e.,

symbolic identity element), while also drawing attention to elements that allowed their firm to acquire resources needed to survive (i.e., strategic identity element). In several cases, these elements were not always aligned, but nonetheless the different elements were necessary for firm survival and needed to be managed. Drawing from my findings, I propose that:

> ***Proposition 2:*** *During periods of field re-emergence, successful organizations will engage in identity ambidexterity, linking the past to the future, in symbolic and strategic identity elements by: exploiting attractive elements from their past and conjoining these to explore new identity elements that they believe will be meaningful and strategic to their future success.*

Audience Orientation in Organization Identity Management: External and Internal

In addition to managing symbolic and strategic elements of organizational identity, each organization also highlighted the salience of managing the firm's internal and external audiences. Internal identity was located within the firm, especially among its employees, and associated with what they perceived or claimed to be the shared core, distinctive, and enduring characteristics of the firm (Albert & Whetten, 1985). External identity was that perceived or granted by various outsider stakeholders, such as consumers, analysts, professionals, regulators or other groups that located or sorted organizations into categories of classifications (e.g., in-house manufacturers of watches, assemblers of watches who bought their movements from another source, fashion brands). Although the identities claimed internally by firm members were sometimes congruent with those granted externally by outside audiences, at times they were not; such incongruences created identity challenges for the firms. See Table 7 for summary of findings.

Table 7: Organizational Identity Management Associated with Re-Emergence of the Swiss Watch Industry: Internal & External Audience

	Case	Management of Internal Audiences for Organizational Identity	Management of External Audiences for Organizational Identity	Illustrative Data
Stalwarts	Patek Philippe Rolex	Internal identity associated with independence and privacy.	External identity particularly influenced by vintage collector community, watch expert community, Swiss watchmaking community, and luxury goods community	"In the watch industry, everybody watches Patek." – interview "Rolex has no interest in what any other watch company is doing." – archival interview (Paige, 1998)
Rebirths	Zenith Blancpain	Internal identity associated with the employee's role in preserving Swiss traditions of watchmaking.	External identity particularly influenced by the Swiss watchmaking community and luxury goods community.	"I really want to push Zenith in the direction where we become a company for a buyer who knows. Who knows watches." – archival interview (Sandler, 2011). "Someone who buys a Blancpain is both simple and cultivated." – company archival document (2001) "I tell my watchmakers that every time you tighten a screw, put your whole heart into it. Make it a gesture of love every time. Think about the person who will wear this watch; that's the person you're doing this all for!" – company archival document (2001)
Adaptors	Longines Tag Heuer	Internal identity associated with adaptability and continued competitiveness.	External identity particularly influenced by elite sporting community and luxury goods community.	"Maximum rationalization of production methods has resulted in the company's not being involved in the production of its own watches for some time now, which leaves it free to concentrate on its sales activities [as a luxury good] and in developing a large after-sales service network." –company archival document (Marti, 2007: 321)
Newcomers	Swatch Christophe Claret	Internal identity associated with rule breaking, pushing the limits of typical standards, and the infusion of emotion and creativity into the watchmaking process.	External identity particularly influenced by collector community, style and high fashion community, luxury goods community.	"Everyone thought we were crazy. A plastic watch – a plastic shit, a watch which you cannot repair. Are you crazy? [But we believed] fashion would be our target, not low cost. "– interview "Christophe Claret views his work as a pioneer unfettered by any creative limits. 'You have to blaze certain trails.'" –company archival document

Stalwarts. The Stalwarts seldom released any information to external audiences about internal operations or performance. In fact, they purposefully remained somewhat elusive and secretive about internal matters, which appeared to foster even greater intrigue and mystique for their brands. Because they were the most profitable and venerable Swiss watch companies, they were less concerned about defining themselves as Swiss watchmakers, but were quite disciplined about communicating an identity that made very specific claims about who they were.

For instance, with respect to their identities, Stalwarts were especially sensitive to perceptions from the collector and watch expert communities. These communities were highly knowledgeable and involved with promoting the brand; many individuals from these communities wrote unauthorized books on the companies. As well, the collectors were quite influential in communicating their view of the companies. In fact, auction prices for Stalwarts' vintage watches were some of the first to sell at record prices. The brands took notice of the auction behavior and realized there was still demand for high-end mechanical watches, even in the late 1980s and early 1990s. This attention also attracted individuals with new money who were looking for status-oriented symbols and saw high-end watches as potential investments that also appealed to their luxury sensibilities.

Patek found ways to communicate their identity to potential customers by creating opportunities and events aimed at educating past and future customers about the company philosophy and the watchmaking tradition. These events served as ways to share some elements of the firm's identity with external audiences. For example, one executive reported:

> I mean, new rich people are working in a world that is not always concrete, something that's not material. But when [the new rich] discover us, when they learn about this very technical-mechanical world, they catch interest and buy our watches. [Interview: senior executive, 2012]

Additionally, the organizations' projected identity to external audiences also attracted potential watchmakers and executives who hoped to work for one of the firms. A former executive who worked at numerous Swiss watch brands noted that employees envied the identity of the Stalwarts:

> Rolex has its own market. Rolex is unique. Everybody wants to work for Rolex. You get to the top when you get to Rolex. You'll get to the top in all sense of the word. You get better pay, you get more respect, you get the image of being a Rolex guy. It was really something you wanted. It is a bit different for Patek. Patek is a totally family-owned business. Patek is even *more* exclusive. This is the ultimate dream when you are in the watch industry. [Interview: Former watch executive and industry representative, 2012]

Rebirths. The Rebirths had a different identity challenge, that of managing multiple audiences. Since they still manufactured their own movements, internally it was important to convey an identity linked to the brand's heritage of traditional Swiss watchmaking. Externally, they made identity claims that communicated the company's watchmaking heritage, but also hinted that its handmade watches were to be considered forms of beauty and technical artistry. Compare how a former CEO conveyed the same message about the firm's identity to internal audiences (e.g., employees) and external audiences (e.g., customers). To employees he wrote:

> "We constantly have to reflect, weigh, and make choices among traditional and modern choices." [Company archival document: 2001]

To potential customers he explained:

> "A machine can transfer excellence. A machine can transfer accuracy. A machine can transfer quality. A machine can transfer reliability. But the only thing a machine cannot do is 'soul', and human beings are the only ones that can give birth to soul so we are going to create watches with a soul." [Interview: former CEO, 2012].

Adaptors. Adaptors had significant identity hurdles to overcome when managing multiple audiences. When their factories shut down, they had to reframe the company's external identity as a luxury goods product sold in the high end of the market. External audiences needed to be reminded of the brands' past history, but not their most recent struggles during the quartz

crisis. To accomplish this goal, Adaptors focused on communicating how their brand was linked to other activities, such as sporting events and celebrity endorsements. The firms hired many new sales and marketing executives to promote the brands. Since many of the employees who had worked as watchmakers had been fired during the crisis, much of the organizational history had also been lost. Thus, extensive efforts were put in place to build company museums and to hire company historians who wrote commemorative books that retold company histories. These efforts also aimed to reinforce central, distinctive, and enduring identity attributes to new employees, many of whom had joined the company from the luxury industry rather than from traditional Swiss watchmaking.

Newcomers. Newcomers needed to espouse quite different identity claims to both internal and external audiences. For example, at the beginning of the Swatch development project, the lead executive communicated attributes that he hoped would represent the team's nascent identity: "Forget all that has been done up until now, but retain a sense of the classical" [Archival document: Auction house auction catalogue, (Carrera, 1991: 15)]. One member of the original Swatch development noted:

> We had fights with all the internal people. And they considered the project absolute nonsense. All the [early] marketing research gave us nonsense for an answer. All the marketing research was negative. [Interview: Swatch engineer, 2012]

The organization's identity as a rule-breaker and insignificant player (i.e., "nonsense" became less so when Swatch became a profitable world-wide fashion sensation. But those early days helped define the core attributes. Due to the success of the Swatch, Hayek, the CEO who oversaw the entire holding group, decided to rename it "The Swatch Group." Ironically, almost all the other brands in the group were mechanical, but the Swatch's identity signified external identity elements he hoped would extend beyond the technology itself. The move was further

supported by the fact that even high-end watch collectors started purchasing the $35 watches. As reported in an auction brochure:

> The Swatch has managed to enthuse [sic] a clientele by tradition attracted almost exclusively to the prestigious brands. Such catch phrases as "Men who preside over the world's destiny wear a [Rolex]" certainty still apply, but the extraordinary fact is that they wear Swatches, too! [Archival document: Auction house auction catalogue, (Carrera, 1991: 15)]

In sum, managing the organizational identity for those inside the firm proved to be just as important as understanding how identity was perceived by actors outside the organization. Internal actors (i.e., organizational members) needed to understand and appreciate the core attributes that defined who they were after the quartz crisis. Simultaneously, external actors (e.g., consumers, collectors, analysts, etc.) had to reconceptualize how to categorize and evaluate Swiss watchmaking under a new set of criteria once the brands had become more closely aligned with the luxury goods industry. These findings suggest:

> ***Proposition 3:*** *During periods of field re-emergence, successful organizations will engage in identity ambidexterity, linking the past to the future, with both internal and external audiences by: exploiting attractive identity elements from the past and conjoining these to explore new identity elements that they believe will appeal to relevant audiences.*

Towards a Theory of Identity Ambidexterity in Response to Environmental Change

To conclude, I advance a model of identity ambidexterity that summarizes my findings across the eight cases and aims to provide a more generalized model. It bridges the relationship between identity management and organizational ambidexterity during periods of environmental change. See Figure 19.

The horizontal box in the model represents the fundamental strategic tension between exploration and exploitation (March, 1991). Scholars have argued that organizations must be capable of managing both concepts simultaneously in order to survive and thrive (Gibson

Birkinshaw, 2004; Tushman & O'Reilly III, 2006; Zi-Lin & Poh-Kam, 2004). During a period of re-emergence, I found that firms attempt to preserve elements of their existing strategies which were anchored in the new old technological and institutional order, as well as their own histories. However, firms also needed to adopt new strategies that transformed the organization and allowed it to adapt to the new order. The ability to manage both of these somewhat conflicting behaviors is what scholars have referred to as 'ambidexterity' (O'Reilly & Tushman, 2008).

The vertical box in the model represents the organizational identity management challenges that emerged when firms attempted to adopt exploitation and exploration strategies. As strategies, practices, and behaviors were re-evaluated and changed, so too did fundamental questions about the organization's identity, including "who we are" and "what we do" (Navis Glynn, 2011). I observe that firms managed organizational identity by focusing on multiple elements of its elements, functions, and audiences. The management of the functional aspects of identity was related to the key attributes that defined the organization (e.g., symbolic elements of identity), as well as its ability to attract resources that differentiated the organization from competitors (e.g., strategic elements of identity). Concurrently, organizations also managed how symbolic and strategic elements of their identity were perceived by different audiences, both internal and external to the firm.

The cross-section in the middle of the model illustrates the notion of identity ambidexterity, which sits at a point between a firm's exploration and exploitation activities and indicates how these activities impact the organization's identity. The relationships between the horizontal (exploration and exploitation strategies) and vertical (identity management) combined

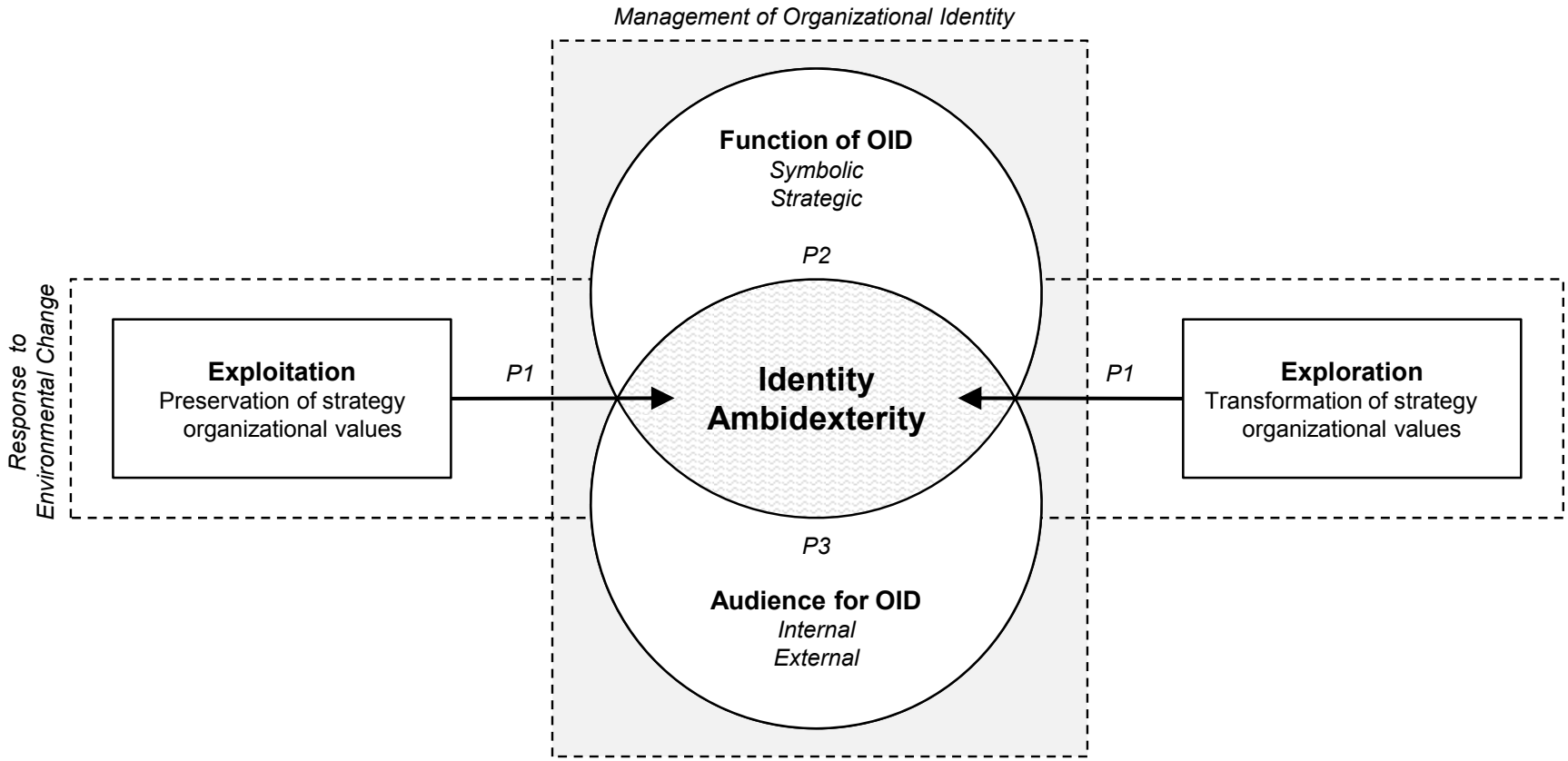
to illustrate identity ambidexterity. I offer an example from my data to illustrate the notion of identity ambidexterity as advanced in the model.

Blancpain, a Rebirth case, re-emerged because it focused on preserving its commitment to the family-owned watchmaking tradition rooted in the 18th century. The CEO's decision to house its watchmaking facilities in an old Swiss farmhouse supported this historical identity, along with the millions of dollars spent in marketing dollars to communicate it to external audiences. However, in the early 2000s the CEO agreed to sell the company to the Swatch Group. During the acquisition, many employees and outsiders questioned how the new ownership structure would impact the firm's unique culture and commitment to the family-owned Swiss watchmaking tradition. In response, the CEO released a company document that explained Blancpain's new relationship with the Swatch Group:

> The Swatch Group stands for exceptional production facilities, terrific cutting-edge technology, powerful marketing strength, and a rock-solid financial presence. No mechanical watch can be made without the Swatch Group. I would say being part of this industrial and commercial universe gives Blancpain total independence in terms of its art and distribution. And independence is key to the future. – The Ethic of Blancpain, 2001: 59, 61 (published shortly after being purchased by Swatch Group).

The statement provides a colorful example of identity ambidexterity. The CEO suggests that the acquisition by the Swatch Group provided his company with *greater* independence. He justified this statement by underscoring that Swatch Group was the most important actor in Swiss watchmaking, and because of its financial strength, Blancpain would gain additional resources to innovate and continue their mission to develop mechanical watchmaking movements. Thus, the CEOs actions illustrate how the organization had the ability to exploit its past and present identities while simultaneously allowing additional identity elements to permeate the organization: identity ambidexterity.

Figure 19: Towards a Model of Identity Ambidexterity



DISCUSSION

"In watchmaking,
Everything has been done,
Everything has yet to be invented."
- CEO of a Swiss watch manufacturer (Nardin, 2009)

The goal of this study was to examine the relationship between organizational identity and ambidexterity during periods of significant environment change. Using a multiple case method, I found that firms engage in both exploitation strategies that leverage their reputation in the old technological and institutional order, while paradoxically attempting to position themselves in the new order. In addition to managing strategic decisions, I found this process also exposed multiple challenges related to the organization's identity. And while these strategic and organizational identity management challenges varied across different categories of firms, it was evident that they were nonetheless salient across all cases.

I advance a model of identity ambidexterity that illustrates how firms balance the need to exploit existing components of their identity, but in order to survive periods of environmental change, must also allow novel and transformative identity elements to permeate their organization. Thus, I extend previous work that has conceptualized organizational ambidexterity as a dynamic capability (O'Reilly & Tushman, 2008) and propose similar dynamics are possible when a firm is forced to manage multiple elements, both traditional and modern, of its identity simultaneously.

This study makes several contributions to the extant literature. First, I extend prior work that has explored the nature of identity conflict. For instance, Glynn (2000) and Battilana and Dorado (2010) highlight several challenges that organizations face when managing identity conflicts. Similarly, Voss, Cable and Voss (2006) report a performance decrease when

organizational leaders in nonprofit professional theaters disagreed about the organization's identity. Pratt and Foreman (2000) suggest that multiple organizational identities can be managed by making decisions to either delete, compartmentalize, aggregate, or integrate components of the organization's identity. Albert and Whetten's (1985) early theorizing addressed how firms manage multiple identities by creating ideographic structures (i.e., each unit exhibits only one identity) or holographic structures (i.e., each unit exhibits multiple identities), but they did not offer guidance on *how* the organization should manage these opposing structures simultaneously. I addressed this gap by introducing several core concepts from the ambidexterity literature into the field of organizational identity and showed how these constructs were salient to several organizations that managed identity ambidexterity in the Swiss watch industry.

Second, my findings highlight how managing organizational identity requires different skills and capabilities over time. I build on previous work that has highlighted the challenges and importance of organizational identity management throughout the technology life cycle (Tushman & Rosenkopf, 1992) and as a firm evolves (Albert & Whetten, 1985; Cameron & Whetten, 1981; Navis & Glynn, 2010; Quinn & Cameron, 1983). Previously, identity has been shown to play a an important role for an organization during the emergence of an industry (e.g., Navis & Glynn, 2010), during eras of technological ferment (e.g., Tripsas, 2009), when organizations are attempting to reposition themselves in an established industry (e.g., Fiol, 2001), and during a prolonged period of incremental change and adaptation (e.g., Dutton & Dukerich, 1991). This study illustrates that identity management is also critical during periods of field re-emergence. And while every stage of an organization's evolution provides its own set of management challenges, identity ambidexterity proves to be particularly important during re-emergence

because it is a period where so many of the firm's core attributes are questioned and need to be realigned.

Third, I observe that leaders play a critical role in developing the necessary conditions to foster identity ambidexterity. While certain functions (i.e., symbolic or strategic) and audiences (i.e., internal or external) of organizational identity may become more or less salient over time, leaders espouse and diffuse values that sustain and persist (Selznick, 1957). According to Selznick, promoting values is core to developing an organizational identity. He (1949: 40) argued that when organizations are infused with value, they are "prized not as tools alone but as sources of direct personal gratification and vehicles of group integrity. This infusion produces a distinct identity for the organization." I, too, find that successful leaders infuse values that support identity ambidexterity, whereby promoting identity elements that alleviate uncertainty and instability during an environmental change.

To conclude, identity ambidexterity provides a novel approach to resolving some of the longstanding debates in the organizational identity literature about how firms manage identity conflict and ambiguity (Corley & Gioia, 2004; Gioia et al., 2013; Gioia et al., 2000; Glynn, 2008). The cases presented here from the Swiss watch industry offer evidence that when faced with the threat of displacement, they were able to employ multiple strategies that allowed them to simultaneously manage multiple (and sometimes conflicting) views of their identity. As the quote in the beginning of this section alludes, their ability to hold on the past may have been the key to their future.

CHAPTER VI. DISCUSSION AND CONCLUSION

INTRODUCTION

This dissertation set out to explore how legacy technologies, and the related organizations and communities that support them, survive periods of technological ferment and eventually re-emerge. Drawing from prior work on organizational identity, institutions, innovation, and ambidexterity, I asked "*How, when, and why does market demand for a legacy technology re-emerge?"* Using the Swiss watch industry as my empirical setting, I examined the conditions and mechanisms that marked the decline of the mechanical watch in the 1970s and early 1980s, and surprisingly, its rebirth in the 1990s and 2000s. My analysis consisted of three empirical chapters that employed both qualitative and quantitative methods: Chapter III revealed the phenomenon of field and technology re-emergence, Chapter IV introduced mechanisms that enable field-level change, and finally, Chapter V examined the processes, decisions, and activities of individual organizations managing identity and institutional change. In this chapter, I offer a recapitulation of my findings and contributions from each of the empirical chapters and then discuss more broadly how they relate to each other. I conclude with a summary of the theoretical and managerial implications of this dissertation.

SUMMARY OF RESULTS

Chapter III introduced the setting and context of my dissertation (i.e., the field of Swiss watchmaking) and asked *"What factors influence the re-emergence of market demand for a legacy technology in a mature institutional field?"* By extending previous work related to field emergence and institutions (e.g., Glynn & Navis, 2010; Hargadon & Douglas, 2001; Holm, 1995; Leblebici et al., 1991), I offer empirical support for a theoretical model of field re-emergence and

how it enabled the rebirth of a legacy technology. Using qualitative methods and multiple data sources, I recognized the possibility of field-level change that comes from the residues (Kaghan Lounsbury, 2006) of previous institutional and technological orders, as well as from field members who rediscovered the value of the past.

I found that field re-emergence requires components that, paradoxically, facilitate both field transformation and field preservation. Although these processes appear to be at odds with one another, during a period of re-emergence they serve as necessary counterweights, encouraging the preservation of some valued elements of the old institutional order field and new elements that allow for change and survival.

I also showed how these processes were supported by a diverse set of actors and activities, one set serving as *institutional entrepreneurs* who encouraged change and transformation, and a second set serving as *institutional guardians* who encouraged stasis and preservation. I show that during field re-emergence both types of actors and activities are important because they diffuse a mix of counterbalancing values (e.g. innovation and conformity) that enable change *and* preservation. Finally, I identified several mechanisms that are critical during field re-emergence, including: the role of identity construction, interpretation and translation, and the reproduction of patterns. The findings in Chapter III were especially important for laying the groundwork for the following studies of the dissertation.

Chapter IV emphasized several of the key mechanisms I found to be significant in field re-emergence in Chapter III. I asked *"How are mechanisms of identity change associated with the re-emergence of market demand for a legacy technology?"* Using qualitative and quantitative analysis, I found general support for the following hypotheses which proposed that re-emergence was associated with: 1) product identity redefinition; 2) historical organizational identity

reclamation; 3) changes in community identity that reshape systems of meaning; and 4) identity change facilitated by mechanisms temporal framing, linguistic framing, and symbolic framing. I then offered a conceptual framework that depicts the relationships between product identity, organizational identity, and community identity (Figure 17). The framework illustrates how re-emergence is related to processes of identity "coupling" and "de-coupling," pointing to an interplay among *community, organization,* and *product* identities as important factors in field-level change and, particularly, re-emergence.

Chapter V moved beyond the field as the primary level of analysis and focused instead on the organizations within the field. I asked, *"How do incumbent organizations manage change when faced with the re-emergence of market demand for a legacy technology?"* I conducted a comparative case analysis of eight exemplar watchmaking firms to examine how each developed unique strategies to manage the tension between preservation and change during the re-emergence of the Swiss watch industry. I found that firms engage in both exploitation and exploration: exploitation strategies leveraged organizational resources and capabilities anchored in the old technological and institutional order, while exploration strategies facilitated the development of new ways of competitive positioning that could enable survival under new environmental and market conditions.

In addition to managing strategic decisions, I found this process exposed multiple challenges related to the organization's identity. More specifically, I found that while successful firms adopted a variety of different identity management strategies, they all exploited elements associated with their old identity (e.g., heritage, craftsmanship) while paradoxically appending new identity elements (e.g., fashion, luxury) to redefine their identity. My findings led me to advance the notion of *identity ambidexterity*, which I define as an organization's ability to exploit

past and present identities while simultaneously integrating elements of a new organizational identity. I found that firms balanced the need to exploit existing components of their identity, but also explored novel and transformative identity elements in order to survive the changes precipitated by re-emergence.

Observations across the Empirical Studies

When I began this dissertation, I was motived to understand the theoretical and phenomenological factors associated with the concept of re-emergence. Admittedly, at first I struggled to define the construct. Was re-emergence tied to a specific technology (e.g., mechanical watches)? Or possibly a community of actors within an institutional field (i.e., Swiss watchmakers)? Or was it a construct that should be defined by the actions of an organization (e.g., the Swiss watch companies)?

Over time, my analyses led me to believe that the answers to my research questions necessitated a multi-level, multi-case, multi-theoretical perspective. And so I sought convergence and triangulation (Creswell & Clark, 2007; Jick, 1979) across multiple theories, methods, and types of data. Although I designed each of the three empirical studies to explore the notion of re-emergence from the vantage point of a specific level of analysis (e.g., the field, the organization), I believe many of my most important discoveries came from understanding their interconnectedness. This is also why I employed a problem-driven and mechanisms-based approach (Davis & Marquis, 2005), examining how my core construct of re-emergence could involve multiple levels of analysis (Hedstrom & Swedberg, 1998). So, in the spirit of my initial questions related to re-emergence, I now take a step back and highlight several connections that I feel link my three empirical studies.

First, I believe that one of the most exciting findings from this dissertation is that re-emergence occurred at multiple levels of analysis: community, organization, and individuals. I found that some of my most promising findings came from the convergence of data, rather than the isolation of it. For example, many of the individuals I interviewed credited Nicolas Hayek, the former CEO of the Swatch Group, as the "savior" of the Swiss watch industry (one person I interviewed preferred to address him as "Daddy" because he believed Hayek was the father of the current Swiss watch industry). However, it was clear that while he may have been an instrumental institutional leader who infused new values and orchestrated a transformative vision for the industry, many other individuals and factors also played important roles.

For instance, companies such as Patek Philippe and Rolex had already proven that they could continue to thrive by focusing on status and craftsmanship. Record breaking prices for vintage mechanical watches offered at auction provided evidence that the market for the "dying technology" had not completely dried up. Passionate Swiss watchmakers, such as the employee at Zenith who believed so much in mechanical technology that he risked his job and livelihood to hide the old dies and moulds in abandoned warehouses in order to preserve the technical know-how for future generations. The introduction of the organizational "group" model brought in new expertise from the luxury industry that helped many defunct watch brands redefine themselves as luxury goods well suited for high-end consumption. Finally, demand-side factors, especially increased discretionary household incomes, the rise of upper-class populations in Asia and the Middle East, and "luxury fever" (Frank, 2001) certainly helped drive up demand for high-end goods like Swiss watches. While these elements are not meant to serve as an exhaustive list of the factors that allowed for the re-emergence, they hint at the complex web of relationships that facilitated such an unexpected outcome.

Nonetheless, a mechanisms-based approach provides some clarity to help organize and build relationships among such a diverse set of findings. Hedstrom and Swedberg (1998: 23) posit that social mechanisms can be divided into three categories: situational, action-formation, and transformational. In the case of the Swiss watchmaking industry, *situational mechanisms* help explain how field-level conditions affected organizational level actors in a particular way, *action-formation mechanisms* explain how action opportunities generated specific organizational level outcomes, and finally, *transformational mechanisms* explain how organizational actors influence the field-level environment. I discuss each below.

In Chapters III and IV, I exposed several field-level situational mechanisms and demonstrated how they affected organizational level behaviors. In the late 1970s, the community of Swiss watchmaking generally rejected quartz technology, and found they were ill-suited to transition to the automated mass production systems required to compete with Japanese quartz timepieces. As a result, situational mechanisms, such as imprinting and isomorphism, left many organizations extremely susceptible to the same traps that incumbent firms often face when a competency-destroying innovation enters the market (e.g., Schumpeter, 1947; Tushman & Anderson, 1986).

Conversely, in Chapters III and V, I illustrate how transformational mechanisms, such as innovation diffusion, leadership, and entrepreneurship, enabled organizations like the Swatch Group and others to affect field-level outcomes. For example, the actions Hayek took in the early 1980s to restructure his organization's production systems ultimately created new standards and supply chain relationships that later impacted the entire watch industry; by 2000, over 80% of all Swiss industry watch movements were produced by Swatch Group. Similarly, in Chapter V, I showed how identity ambidexterity was an important dynamic capability that enabled firms to

resolve tensions between isomorphic pressures for homogeneity and competitive differentiation or heterogeneity. For instance, Jean-Claude Biver, the former CEO of Blancpain, initiated a novel advertising campaign that touted his brand had never made a quartz watch, and never would. The ads aimed to redefine the mechanical watch as an object of artisanship and beauty whose Swiss heritage made it valuable, re-directing attention from critiques of mechanical technology as a less accurate alternative to cheaper Japanese quartz timepieces. Such firm-level decisions helped market Blancpain watches, but also helped redefine the broader field of Swiss watchmaking. As one executive who worked for another Swiss brand at the time recounted:

> People started to quote [the Blancpain advertising slogan] in Switzerland. They were really well-amazed by the statement. You have to imagine little bits of work from everyone going the same direction, plus this ad, contributed to the revival and to the press talking and writing again about traditional mechanical watches. [interview with a Swiss watch Chief Marketing Officer, March 2012].

The quote highlights how the actions of a specific organization (and its organizational identity construction) served as a transformation mechanism for field-level change. More generally, across all three chapters, I found that the decisions of organizational leaders such as Biver and Hayek provided a renewed sense of "confidence" (c.f., Kanter, 2006) throughout the field of Swiss watchmaking that contributed to an industry-wide turnaround and re-emergence.

From these observations, I hope to have conveyed how the re-emergence of market demand for a legacy technology was tied to *several interconnected factors and mechanisms* that were embedded within the norms, values and practices of an institutional field, the residue left behind from an old technological order, the strategies and behaviors of organizations, and the role of individual actors (e.g., leaders and guardians) who infused values that simultaneously induced change and preservation.

CONTRIBUTIONS

Summary of Theoretical Contributions

Together, all three studies in my dissertation make several contributions. First, they expose the conditions and processes of field re-emergence, which I see as interwoven with corresponding institutional, technological, and identity re-emergence. Thus, my dissertation complements prior research that has focused on field emergence and death and extends it to re-emergence. I find that the fate of legacy technologies may not be displacement. Rather, they can persist, perhaps in non-obvious ways, to eventually re-emerge and re-configure a field. Second, my mechanisms-based approach revealed the processes of coupling and decoupling among product, organizational and community identities that can accompany or undergird field-level identity change. I highlight identity tensions that sit between the isomorphic pressures for homogeneity at the field level and heterogeneous strategic responses at the organizational level. I expose several core mechanisms of field re-formation, including: institutional leadership and guardianship, identity construction, interpretation and translation, the reproduction of patterns, and temporal, linguistic, and symbolic framing. Finally, I explore how individual organizations manage processes of identity change while attempting to preserve a legacy identity, introducing the notion of 'identity ambidexterity' as a dynamic capability necessary for organizations to navigate re-emergence.

Summary of Managerial Implications

Here, I highlight three of the most salient managerial implications of my dissertation research. First, I illustrate that it may be possible to protect some "dying" technologies from displacement by re-evaluating the factors that shape market demand for the product. As the rate of technology innovation and diffusion continues to increase (Utterback, 1996), organizations are

constantly faced with the threat of new technologies capturing their existing market share. However, as witnessed in the Swiss watch industry, I find that some technologies may have intrinsic worth that can extend beyond their utility value.[14] For the Swiss watch, consumer demand for mechanical watches re-emerged when the brands reoriented their organizational identities to amplify the "emotional" and "self-expressive" benefits of their products (Aaker & Joachimsthaler, 2000). The lesson here for managers is to consider how one might go beyond the functionality of products to embrace non-functional aspects (e.g., aesthetics, status, etc.) that can influence consumer buying behaviors. Although it is unlikely that such emotional or self-expressive benefits will completely trump functionality, developing these may provide organizations with valuable extra time to develop possible adaptation strategies.

Second, there is an important implication of my dissertation about how to manage organizational, community, and product identities during periods of radical environmental change and disruption. I find that firm and industry preservation are predicated on the ability to re-conceptualize "who you are" and "what you do." However, knowing *when* to align these concepts may be just as important as knowing *how*. For instance, during periods of disruption, the mantra heard around boardrooms is often "circle the wagons" and hold tight to one's organizational values. But, as illustrated in my dissertation research, in the 1970s and early 1980s, the Swiss' insistence to hold firm to the core principles, values, and culture of traditional watchmaking likely led to their downfall. While these identity elements were important factors in their past success, loosening their grasp on these earlier might have led to more effective

[14] I should note that it is unclear from this single case study which types of technologies may be more or less suited to benefit from similar re-emergence dynamics as the Swiss mechanical watch. Nonetheless, sustained or renewed consumer demand for products such as the Apple iPhone, French organic wines, and even vinyl records, suggests that organizations may be able to bolster consumer demand for their products by positioning them as self-expressive identity makers representing communal, organizational, regional, or historical values that the consumer may wish to claim as part of his or her own identity.

organizational responses. Thus, the Swiss watch industry provides a cautionary tale for managers: reinforcing the importance of exploiting key elements of an organization's past identity and values, but also exploring new identity elements that might be incorporated to adjust to a changing environment.

Finally, my findings make very clear that leadership is an important mechanism by which values are transmitted to internal and external audiences who can rekindle market demand for old technologies. Not only are leaders themselves important carriers of values that sustain organizations during periods of radical change, they must also seek out individuals or groups who can serve as "guardians" of the organization's core values. Like the mechanical watch collector community, some consumer groups may hold valuable insights about where to seek unclaimed market share or can serve as bellwethers who can indicate when the re-emergence of market demand for a legacy technology is possible.

CONCLUSION

George Herbert Mead asserted (1932: 31): "The novelty of every future demands a novel past." The unexpected re-emergence of the Swiss watch industry is a story of perseverance, hope, and rebirth. Although certain elements of the technological and institutional orders associated with mechanical watchmaking will forever be lost to history, my findings suggest that industries, organizations, and individuals have the ability to preserve their past, recreate their present, and imagine a future. Similarly, this dissertation has been a source of personal discovery and motivation. While I believe it makes several contributions to the management literature, I am most excited about the broader research program that it has inspired. Like the Swiss peasant cow farmers who were introduced to the craft of mechanical watchmaking in the 16th century, the

process of writing this dissertation introduced me to many of the tools and concepts that I will undoubtedly take with me as I embark on a my own path of academic exploration.

APPENDICES

Appendix I: Supplemental Watch Industry Data

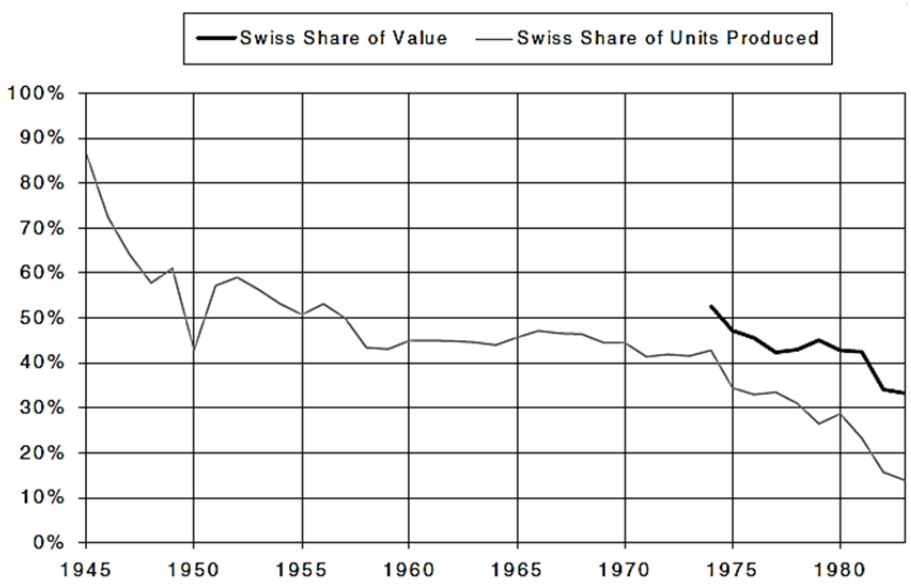
Appendix II: Interview Protocol

Appendix III: Mechanical Watch Chronometer Certifications (COSC)

Appendix IV: Illustrative Watch Journal Advertisements

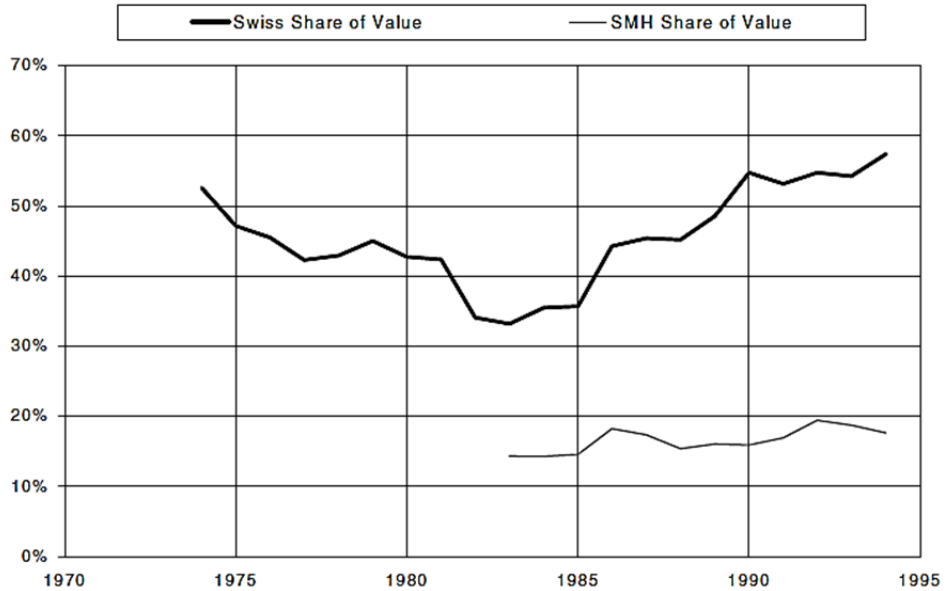
Appendix I: Supplemental Watch Industry Data

Swiss Share of Global Watch Production, 1945-1983



Source: Tushman, M.L., & Radov, D. 2000. Rebirth of the Swiss Watch Industry. HBS Case 9-400-087

Swiss and Swatch Group Share of Worldwide Watch Export Value



Source: Tushman, M.L., & Radov, D. 2000. Rebirth of the Swiss Watch Industry. HBS Case 9-400-087

Appendix II: Interview Protocol

Interviewer: _____ **Location:** _____

Identifier #: _____ **Date / Time:** _____

General introduction and interview rationale:
Thank you for taking the time to speak with me. I am a doctoral student at the Carroll School of Management at Boston College. I am conducting research that focuses on understanding the evolution of the watch industry, and especially the role of the Swiss community of watchmaking. To do this, I am interviewing people who have industry knowledge, through their own work experience in watchmaking or as a part of the field more generally.

I want to assure you that your responses will be confidential. Your name, any other names you mention [and, if relevant, your current or former employer's name(s)] will not be disclosed to anyone; there will not be any information reported that will identify you. I will report the findings anonymously and as an aggregate. Your participation is voluntary and if you wish, you can withdraw at any point. You can also choose not to respond to any question. The duration of the interview will be approximately 45 minutes to one hour.

Please read through the IRB consent form. If you agree to participate, we can proceed with the interview. [Pause; give the interviewee the consent form. Proceed when signed].

Participant Background Information

1. What roles and responsibilities have you had over the course of your career related to the watch industry? [Probes: In what organizations? For how long? What kinds of watches were in your realm of experience? Ask for some specifics.]

2. How would you describe your knowledge or understanding about the watchmaking industry in general from 1970-present day? [Probes: Would you describe yourself as current and up-to-date? If not, how recent is your knowledge? In particular, how familiar are you with *Swiss* watchmaking?]

Historical and Contextual Information

3. In your experience, what were the most significant changes to occur in Swiss watchmaking before 1980? [Probe: Why do you think they happened? Ask for examples. Note: dates will be amended based on respondent's experience].

4. In your experience, what have been the most significant changes to occur in Swiss watchmaking since 1980? [Probe: Why do you think they happened? Ask for examples. Note: dates will be amended based on respondent's experience].

Industry and Field Level Dynamics

5. How would you describe the nature of the Swiss watchmaking industry in 1970 vs. 2008? [Probe: ask about any widespread norms and values, perceived identity of the industry, any regulations that significantly affected the industry].

6. How would you describe the characteristics that made the Swiss watchmaking industry unique and distinctive in 1970, if any? In 2008? [Probe: ask about any widespread norms and values, perceived identity of the industry, or regulations that affected the industry].

Product Characteristics

7. How would you describe the various technologies used in the production of Swiss watches in the early 1970s? 1980s? [Probe: how would you compare quartz watch technology to that of the mechanical watch?]

8. & How would you describe the architecture, design, and common functions of Swiss watches in the early 1970s? 1980s? In 2008? [Probe: if they perceive differences between the periods, ask how and why the differences may exist.]

9. What do you think were the most significant actions that the Swiss watchmaking community took to preserve the technology of the mechanical watch over the past 35 years?

Swiss Watchmaking Community and Organizations

10. How would you describe the community of Swiss watchmakers in the early 1970s? 1980s? [Probe: ask for examples of how the Swiss watchmaking community managed to survive during this period. Ask for examples from specific organizations].

11. How would you describe the shared norms and values, if any, that characterized the community of Swiss watchmakers in the early 1970's. In 2008? [Probe: ask about specific organizations as well].

12. How would you describe the coalitions and coordination mechanisms, if any, within the Swiss watchmaking community during the 1970's? [Probe: How have these evolved over the past 35 years?]

13. In your perception, who were the power brokers within the Swiss watchmaking industry in the early 1970s? 1980s? [Probe: has this locus of power changed or remained the same?]

14. In your perception, what were the most significant <u>actions</u> that the Swiss watchmaking community took to preserve itself over the past 35 years? [Probe: ask about specific organizational actions].

15. Can you point to a specific <u>event(s)</u> and <u>people</u> that were vital to the survival of Swiss watchmaking during the past 35 years? [Probe: ask about specific organization-sponsored events or organizational members].

Conclusion

Those are all the questions that I have. Is there anything else you would like to tell me about watchmaking?

In closing, I'd like to ask you some questions about yourself …

Age: _____

Nationality: _____

Education: _____

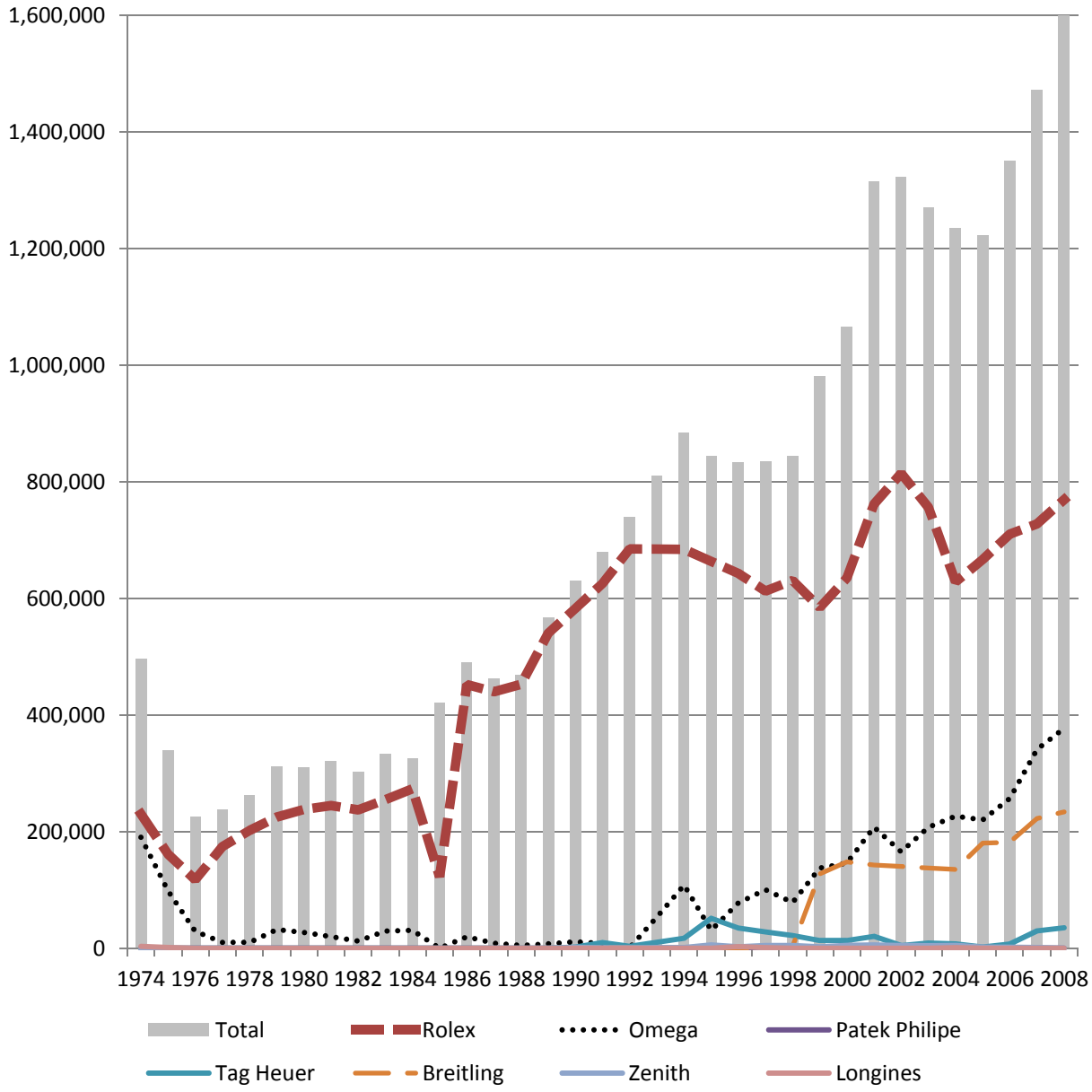
Gender (Note): _____

Do you have any questions for me?

Can I follow up if I have any additional questions?

Thank you for your time and participation in my study.

Appendix III: Mechanical Watch Chronometer Certifications (COSC)



Source: Contrôle Officiel Suisse des Chronomètres (COSC), analysis by author.

Appendix IV: Illustrative Watch Journal Advertisements

a) Precision Craftsmanship Period (pre-1983)

"Super accuracy is only half the story. The GP Quartz Watch is rugged & carefree as well."

"Is it any wonder that experienced professionals have faith in the waterproof qualities of their Omega?"

b) Fashion Period (1983-1989)

c) Luxury Peirod (1990-2008)

"You never actually own a Patek Phillippe, You merely look after it for the next generation."

"Class is forever." (Rolex)

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"All that really belongs to us is time; even he who has nothing else has that."

- Baltasar Gracian, S.J.
(1601 –1658)