

**MARKET FORMATION AND RE-FORMATION IN SERVICE ECOSYSTEMS: AN  
INSTITUTIONAL PERSPECTIVE ON INCREMENTAL AND DISCONTINUOUS  
INNOVATION**

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## Abstract

Grounded in a conceptualization of markets-as-practices, the current work proposes and empirically investigates a conceptual framework that provides a foundation for rethinking the relationship between technology and markets by showing that institutionalization—the change, maintenance and disruption of institutions—is a central process for both technology and market innovation. Building on practice and institutional theory, markets are conceptualized as being performed and institutionalized through co-created processes of multiple actors, or stated differently, as institutionalized solutions. Thus, market innovation is viewed as an interactive and iterative process by which markets are continually formed and re-formed through the actions and interactions of systemic actors. Similarly, technology is not only shaped and interpreted through institutional processes but, at the same time, technology shapes institutions during the entrenchment processes of new institutionalized solutions (i.e. markets). Thus, market innovation is viewed as a socio-technical process which is embedded in complex and dynamic social systems (i.e. service ecosystems) in which resource integrating actors are not only connected by shared institutions, but these institutions which make resource integration and value creation practices possible and meaningful, are themselves always dynamically co-created. Foundational to these co-creation processes are four analytical change mechanisms, practical-evaluation, projectivity, evolutionary change, and dialectical change whose interplay is, two various degrees, part of any incremental and discontinuous market (re)formation. In explaining the interplay among these four change processes, the framework points to the important role of narrative infrastructures. Narrative infrastructures of markets are the alignment of multiple stories that enable market actors

to craft coherence among them and to mobilize institutional support for particular practices.

## Dedications

To my father, whose love for his profession was the inspiration for my academic journey

To Jana, my biggest cheerleader

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In line with the work in this monograph, I view the creation of this dissertation as a resource integration process that was embedded in a network of actors. Over the past four and a half years, I have received invaluable support and encouragement from a great number of people and I will forever be indebted to the following individuals:

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## Introduction

Despite the fact that scholars have long recognized that innovation processes always possess both a technological and a market component (e.g. Abernathy and Clark 1985; Schumpeter 1934), innovation research has largely ignored the latter. Instead, often deeply grounded in a goods-dominant (G-D) logic, this research has mainly focused on the technological aspects of product design and manufacturing processes. In cases where, on the other hand, the market component was considered, researchers have mostly focused on firms' abilities to capture consumers' current and future needs and wants to design better products (Griffin and Hauser 1993; Urban and Hauser 1980) or on the nature of new product adoption processes into existing markets (Bass 1969; Moore 1999; Rogers 1995). Products, in this research, are viewed as exogenous to markets, and, in order to facilitate the integration and adoption of these products, scholars have often highlighted the need to segment markets into smaller and more manageable parts. More specifically, this product-driven view of innovation has, arguably, failed to establish a conceptual link between the technological and the market components of innovation. Consequently, this missing link has resulted in very disparate and fragmented innovation research streams which can be found in such diverse academic fields as marketing, product development, operations management, quality management and many others (Hauser et al. 2006).

A growing number of researchers, however, has begun to explore the link between technological and market components, and, in this effort, has started to question the underlying logic of innovation research (e.g. Drejer 2004; Geels 2004; Hakansson

1989). Coombs and Miles (2000), for example, argue for a service-driven view of innovation. Foundational to this view is the notion that a service driven approach moves away from a conceptualization of innovation that puts all the emphasis on artifact and technological development, and instead, toward a model that sees innovation in terms of changes in market relationships (Coombs and Miles 2000; Snehota 1993; Vargo and Lusch 2011b). The current work, in line with this thought, will show that a service driven view, by providing a reinterpretation of the concept of innovation, can help to provide a conceptual link between technological and market components.

Foundational to a service driven view is the conceptualization of market relationships that is grounded in service-dominant (S-D) logic (Vargo and Lusch 2004, 2008) and its central premises that (1) “all social and economic actors are resource integrators” and (2) value is always “co-created” in markets. In other words, market relationships are viewed as the connections of resource-integrating actors who co-create value through mutual and collaborative resource-integration practices among networked actors. This systemic and collaborative nature of resource-integration practices points to the fact that social contexts influence, and are influenced by, value co-creation practices within and among systems of service exchange (Chandler and Vargo 2001; Edvardsson et al. 2010). In other words, resource integrating actors connect with the help of shared institutions, humanly devised rules, norms, and believes that enable and constrain action and make social life predictable and meaningful (Scott 2001; Vargo and Lusch 2011b).

Vargo and Lusch (2011b) capture this relational, systemic, and contextual aspect of value co-creation and resource integration in their definition of the service ecosystem: “relatively self-contained, self-adjusting systems of resource-integrating actors connected

by shared institutional logics and mutual value creation through service exchange (Vargo and Lusch 2011a).” Markets, in these ecosystems, are not seen as static or preexisting, but as being “performed” through the actions and interactions of market actors (Harrison and Kjellberg 2010; Kjellberg and Helgesson 2007). These market interactions often become reconciled and stabilized, resulting in relatively durable resource integration and value co-creation practices, and markets, viewed through an S-D logic and service ecosystem lens, can be conceptualized as “*institutionalized solutions*” (Vargo and Lusch 2013a). Thus, S-D logic, in line with other contemporary innovation research (Geels 2004; Nelson and Nelson 2002; Pinch 2008), points to the fact that institutions and institutional change are always foundational to innovation and market formation processes.

The goal of the current research is to more deeply explore and delineate institutional change processes in markets. This exploration will not only provide important insights into the systemic, reciprocal and interactive relationships and practices among social actors, but also provide the necessary link between the technological and the market dimension of innovation. More specifically, the current work proposes an ecosystems approach for considering that both “types” of innovation (i.e., technological and market innovation) are driven by a common process – i.e., *institutionalization*. It will be shown that, based on an institutional perspective, innovation does not automatically occur when firms, or even networks of firms, introduce “better” products or services. Instead, the innovation of both technologies and markets is conceptualized as being driven by collaborative efforts that involve the active participation (e.g. enactment of practices) of firms, customers, and other stakeholders in the change, maintenance and

disruption of institutional arrangements. Institutional arrangements, in this context, are defined as systems of meanings, norms, values, beliefs, and rules (Scott 2001).

In an effort to address institutions and institutional change, some marketing scholars (e.g. Chandler and Vargo 2011; Edvardsson et al. 2011; Korkman et al. 2010; Vargo and Lusch 2011b) have begun to recognize the valuable contribution of practice approaches, such as Giddens's (1984) structuration theory and Bourdieu's (1977) habitus. However, while these early practice approaches are foundational to understanding the tension between institutional determinism and agency, they have been criticized for their inability to explain discontinuous change as they somewhat ignore the nested and multidimensional nature of social systems (e.g. DiMaggio and Powell 1991; Seo and Creed 2002; Sewell 1992) which allow actors to apply institutions from a wide range of circumstances.

Institutional change in markets often displays both incremental (i.e. gradual) and discontinuous (i.e. significant or radical) change characteristics (Michel et al. 2008). The transition from physical books to eReaders, for example, required various degrees of institutional change. While many new users of eReaders could incrementally adapt their rules and norms in regards to integrating resources such as electricity, wireless networks, credit cards, and reading skills, they had to more drastically depart from their belief systems about book ownership, and from rules about acquiring books, navigating within and between books, and sharing books with friends. This brief example shows that a model of institutional change, in the context of markets, needs to be able to explain both incremental and discontinuous change processes.

To delineate institutional change processes, the current work introduces a framework that, using a service-driven view, extends the intersection between marketing and practice theory by providing a model that can explain both incremental and discontinuous change in relationships and practices of systemic actors. In order to provide the theoretical foundation for this model, innovation and market creation literature from such disparate areas as, sociology, organizational studies, social movement theory, product development, marketing and technology development is synthesized to not only provide a broad theoretical foundation but to also align the needed core components to address innovation processes in service ecosystems. At the core of the developed model (hereafter referred to as the Institutional Change Mechanism or ICM Model) is the use of two analytical change mechanisms, the evolutionary and the dialectical motor of change (Van de Ven and Poole 1995), which are adapted to the context of market formation and re-formation. Based on this ICM Model and after introducing foundational concepts, such as technology and its duality, the role of institutions, markets as *institutionalized solutions*, the paradox of embedded agency, and institutional work, I argue that, on a macro-level, evolutionary and dialectical institutional change mechanisms are always, to various degrees, part of incremental and discontinuous market (re)formations.

Foundational to these institutional change mechanisms is the notion that, contrary to traditional innovation research, technology needs to be viewed as being endogenous to markets and that operant resources (competences, knowledge, and skills) lie at the heart of technology (Arthur 2009; Vargo and Lusch 2004; Vargo and Lusch 2008). Institutional arrangements (i.e. sets of institutions that are nested in multiple levels of

social systems (Kiser and Ostrom 1982)) shape how technologies are created and viewed and, at the same time, technologies shape institutions during entrenchment processes of new *institutionalized solutions*. Furthermore, it will be shown that all actors involved in entrenchment processes equally engage in translations, interpretations, modifications and accommodations of institutional arrangements (Lawrence and Suddaby 2006). The current work argues that markets are always “performed” and institutionalized through the co-created processes of multiple actors and, thus, that market innovation is an interactive and iterative process by which markets are continually formed and re-formed through the actions and interactions of these actors.

It is important to realize, however, that any model of institutional change needs to take into account that this change can only be understood in the context of interrelated micro, meso, and macro levels of nested systems (Battilana et al. 2009; Chandler and Vargo 2011). While the above mentioned evolutionary and *dialectical change* mechanisms are meso or macro level processes, the ICM Model also considers the nested role of micro level agency in institutional change processes and market (re)formation. By conceptualizing human agency as a multidimensional concept which suggests that social actors always live simultaneously in the past, present and future, Emirbayer and Mische (1998) point to the fact that actors who are positioned at the “intersection of multiple temporal-relational contexts” might be able to develop greater capacities for creativity and critical intervention and therefore a greater capacity for the co-creation of new institutional arrangements. Stated differently, the intersection of past, present and future is suggested to not only enable actors to reflexively proceed toward goals, but to also

enable these actors to co-create discontinuous institutional arrangements, thereby adding a nested projective component to the ICM Model.

Furthermore, it will be shown that Emirbayer and Mische's (1998) "intersection of multiple temporal-relational contexts" points to the importance of *narrative infrastructures* as foundational components in the institutionalization of new resource integration and value co-creation practices and as the glue between micro and macro levels of service ecosystems. In social systems, multiple stories can come into alignment to form *narrative infrastructures* that have a constitutive role in the creation of agency by enabling market actors to envision desired states (Deuten and Rip 2000). In other words, and in the context of markets, *narrative infrastructures* can be conceptualized as the alignment and combination of multiple market stories that can craft coherence among social actors and mobilize support for particular resource-integration practices.

Following existing innovation and market formation research (e.g. Golder and Tellis 1993; Humphreys 2010), a longitudinal, multi-method (qualitative and quantitative) approach is used to investigate the market formation around digital video recording (DVR) technology. More specifically, it will be shown that the ICM Model is corroborated by empirical evidence, and, that all actors involved in economic exchange are doing the same thing when they participate in the creation of market stories, institutions, and markets. Thus, the ICM Model supports and extends the actor-to-actor (A2A) concept recently proposed by Vargo and Lusch (2011, p. 182), that states that systems of actors "relationally co-create value and, at the same time, jointly provide the context through which 'value' gains its collective and individual assessment."

In summary, the current research will develop a model that, by providing a non-linear and co-created account for the social construction of *institutionalized solutions* (i.e. one of ongoing negotiations and socio-technical compromise), closes a gap in the innovation literature. As stated, this framework can not only explain the mechanisms of incremental and discontinuous change in institutional arrangements that enable and constrain resource integration practices and relationships of market actors, but bring together historically divergent views on innovation—particularly those centered on technological development and those centered on market relationships. Stated differently, and consistent with Akkrick, Callon, and Latour’s (2002b) claim that it is pointless to try to separate the human factors and the technical factors of innovation, this framework provides a foundation for rethinking the relationship between technology and markets by showing that institutionalization—the change, maintenance and disruption of institutions—is a central process for both technology and market innovation.

Finally, as indicated, the ICM Model shows that *narrative infrastructures* enable individual-level actors to project themselves into a desired future despite the fact that the future, in continually changing service ecosystems, is indeterminable. This service-driven model highlights that innovation and new market formation should not be viewed as introducing new products and services into existing or prescribed practices of other actors, but that, in innovation processes, fitting institutional arrangements that make resource integration and value creation practices possible and meaningful are always dynamically co-created. To facilitate the use of this service-driven lens, the following section will provide a brief overview of the S-D logic literature with a focus on the systemic and contextual nature of value co-creation and resource integration.

## **An S-D Logic and Service Ecosystem Lens for Innovation and Market Formation**

As stated, foundational to the conceptual work of this monograph is the use of a service driven lens. In this section, this lens, and more specifically the S-D logic framework, will be introduced to provide a basis for thinking about the nature of exchange relationships, value creation, technology, and resource integration practices in which economic and social actors engage. The S-D logic framework in general and its concept of the service ecosystem in particular will then, in the following sections, be used to introduce and extend contemporary views on markets, operant resources (i.e. knowledge and skills), and the role of institutions and institutional change in innovation and market formation. It will then be argued that an S-D logic lens, by providing a new conceptual foundation to these critical building blocks of innovation and market formation, cannot only provide a deeper understanding of these blocks but also of their connections and interplays.

The original paper on S-D logic was published by Vargo and Lusch (2004) and S-D logic thought has rapidly grown into a literature stream that has not only challenged traditional marketing thought but also resonated with many academic disciplines beyond marketing and economics (for a more detailed review see Vargo and Lusch 2004; 2011b; 2008). S-D Logic is a mindset for a unified understanding of the purpose and nature of organizations, markets and society and its essence is captured in ten foundational premises (FPs), eight of which were introduced in the original article. Four years later, Vargo and Lusch (2008), in an effort to extent and refine their earlier work, modified the wordings of several of these original FPs and added two additional ones.

More recently, Vargo and Lusch (2013b) highlighted that four of these ten FPs are particularly foundational and that these four FPs can therefore be viewed as the axioms of S-D logic (see Table 1). The current work will focus on these four axioms and show that they are critical building blocks that begin to point beyond the traditional dyadic exchange between firms and customers toward a more complex and contextual view of interconnected systemic actors. These four FPs are: FP1-service is the fundamental basis of exchange, FP6-the customer is always a co-creator of value, FP9- all social and economic actors are resource integrators, and FP10- value is always uniquely and phenomenologically determined by the beneficiary.

	Premise	Explanation/Justification
FP1	Service is the basis of exchange	The application of operant resources (knowledge and skills), "service," is the basis for all exchange. Service is exchanged for service.
FP6	The customer is always the co-creator of value	Implies value creation is interactional.
FP9	All economic and social actors are resource integrators	Implies the context of value creation is networks of networks (resource-integrators).
FP10	Value is always uniquely and phenomenologically determined by the beneficiary	Value is idiosyncratic, experiential, contextual, and meaning laden.

*Table 1: S-D Logic, adapted from Vargo and Lusch (2008)*

FP1 describes the foundational distinction between S-D logic and the traditional goods-dominant logic. In S-D logic (Vargo and Lusch 2004), “service” (singular) is conceptualized as the application of competence (knowledge and skills) for the benefit of another party. More specifically, S-D logic defines service as the process of doing

something for and with another party, and thus always as a collaborative process. G-D logic, on the other hand, views “services,” (usually plural) as units of (intangible) output. The use of the singular “*service*” as opposed to the plural “*services*,” is therefore intentional and significant. It highlights a shift from thinking about value creation in terms of *operand resources* – usually tangible, static resources that require some action to make them valuable – to *operant resources* – usually intangible, dynamic resources that are capable of acting on operand and even other operant resources to create value (Constantin and Lusch 1994). This does not mean, however, in S-D logic, that operand resources are viewed as being unimportant. Goods, in service for service exchange, often function as service-delivery mechanisms. In other words, goods are seen as intermediaries or vehicles in the provision of service, rather than primary to exchange and value creation (Vargo and Lusch 2004).

FP6 defines another tenet of S-D logic which establishes that value is always co-created through the combined resource integration of service providers and beneficiaries. This focus on the process of resource integration mandates a shift from primarily thinking in terms of value-in-exchange, toward a realization of the primacy of “value-in-use.” More recently, Vargo et al. (2009) have replaced the term ‘value-in-use’ with the term “value-in-context” to capture the notion that value must be understood in the context of the beneficiary’s world. “Value-in-context suggests that value is not only always co-created; it is contingent on the integration of other resources and is contextually specific (Vargo et al. 2010, p. 141).”

Vargo and Lusch (2013b) argue that FP9 is one of the most important additions to S-D logic. This foundational premise suggests that resource integration is the second core

activity (besides service provision) of economic and social actors. In this context, Vargo and Lusch (2011b) use the term “actor” to emphasize the notion that all entities (e.g., firms, customers and other stakeholders) are integrators of (mostly operant) resources and co-creators of value. Therefore, except in a relative sense, when providers and beneficiaries of service are both considered as resource integrators, the producer-consumer distinction vanishes (Vargo 2009; Vargo and Lusch 2011b). FP9 therefore sets the stage for thinking about the mechanics and the systemic nature of value co-creation, as well as the process through which the resources for service provisions are created; the integration of existing resources.

The last of the four axioms, FP10, describes the contextual and unique nature of value realization and value determination. More specifically, it states that value is always uniquely and phenomenologically determined by the beneficiary (Vargo and Lusch 2008). In other words, value is always unique to a single actor and, thus, can only be determined by this actor. Additionally, the term “phenomenological” points to the experiential nature of value in which value must be understood in terms of the holistic combination of resources that lead to it.

As stated, these four axioms of S-D logic point beyond the traditional dyadic exchange between firms and customers toward more complex networks of interconnected actors. In fact, Vargo and Lusch (2013b; 2008) suggest that FP9 points beyond earlier used network-with network conceptualizations in which the “customer” and the customer’s resources are seen as not only integral to but primary in the value co-creation process. More specifically, Vargo and Lusch (2011b, p.5) argue that “as much as the idea of resource networks contributes to the understanding of value creation and context, its

consideration sometimes lacks a critical characteristic of systems, which are dynamic and potentially self-adjusting and thus simultaneously functioning and reconfiguring themselves.” Similarly, more dynamic network perspectives, such as the one proposed by the IMP group (e.g. Hakansson and Snehota 2000), suggest that each instance of resource integration, service provision, and value creation, changes the nature of a system to some degree and thus the context for the next iteration and determination of value creation.

In an attempt to capture this systemic nature of value co-creation and resource integration and its governance mechanisms, S-D logic scholars (e.g. Lusch et al. 2010; Vargo 2009) have, as stated, used the term “service ecosystems<sup>1</sup>: “relatively self-contained, self-adjusting systems of resource-integrating actors connected by shared institutional logics and mutual value creation through service exchange (Vargo and Lusch 2011a).” This service ecosystem conceptualization, in line with a growing number of scholarly work (e.g. Lewin 1993; Morrison 2005), seems to suggest that social systems and societies in general need to be thought of as open complex adaptive systems and that a complexity-driven paradigm is necessary to understand social change. Service ecosystems are constantly adapting to changing contextual requirements and are simultaneously creating these changing contexts in the process (e.g. Giddens 1979 see also Vargo and Lusch 2011b). The next section will provide a brief review of the innovation literature in marketing and related business disciplines to provide a foundation for the following discussion on the institutional change mechanisms that drive incremental and discontinuous change in service ecosystems and markets.

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<sup>1</sup> The service ecosystem definition used here is a slight evolution from Vargo and Lusch’s (2009, 2011a) earlier work.

## **Innovation Research**

### **The Fragmented Nature of Innovation Research**

Innovation is one of the broadest and most important topics in the business literature.

Joseph Schumpeter (1934), in his work on the elements of innovation, was one of the first scholars to describe this broadness, and, almost eighty years after its first publication, his seminal work is still being widely cited. Schumpeter used five categories to demarcate economic innovations. These five categories are (1) the introduction of a new good or of a new quality of good, (2) the introduction of a new method of production, (3) the opening of a new market, (4) the conquest of a new source of raw materials or half-manufactured goods, and (5) the carrying out of new organization of any industry. This early conceptualization of economic innovation is, almost by definition, deeply grounded in neoclassical economic thought, and may, arguably, explain why subsequent innovation research has followed a product and technology focused and fragmented research trajectory. Schumpeter (1934), for example, made a clear distinction between technological and market innovations and, also arguably, both he and many subsequent scholars have failed to establish a convincing conceptual link between these two components.

It is important to highlight, however, that this missing link was not caused by a lack of attention to innovation. On the contrary, the business literature has always realized the importance of innovation due to the fact that innovation can cause dramatic transformations in social systems, markets, and practices. As Hauser et al. (2006) point out, “by finding new solutions to problems, innovation can destroy existing markets,

transform old ones, or create new ones.” Due to this potential to create dramatic transformations, innovation has been researched in various academic fields such as marketing, quality management, operations management, technology management, organizational behavior, product development, strategic management, and economics and from various perspectives (Hauser et al. 2006). More specifically, Gourvile (2005) points out that “researchers have explored how firms are best structured to foster and leverage innovation (Christensen 1997b; Clark and Wheelwright 1995; Tushman and O’Reilly 2002; Utterback 1996; Wheelwright and Clark 1992), how firms can best capture consumers’ current and future needs and wants (Griffin and Hauser 1993; Urban and Hauser 1980; von Hippel et al. 1999), and the nature of the new product adoption process (Bass 1969; Moore 1999; Rogers 1995).”

In a review of innovation in the marketing literature, Hauser et al. (2006) highlight that this research sub-stream is, in line with the broader innovation research, also fragmented in nature. The authors provide a taxonomy of the following five research fields: consumer response to innovation, organization and innovation, strategic market entry, prescriptions of product development, and outcomes of innovation. They realize, however, that this fragmented approach has serious limitations and expressed the hope that their taxonomy of the innovation fields (and various embedded subfields) would stimulate fertilization and interaction across them. While their efforts to create this extensive literature review is commendable, this work, arguably, fails to provide a theoretical foundation that can bridge these disparate innovation fields. Below, it will be shown that a “service”-based model of innovation, on the other hand, can provide a framework for a more encompassing understanding of innovation (e.g., Drejer 2004;

Gago and Rubalcaba 2007) that can provide the necessary link between the technological and the market dimension of innovation.

### **Service Innovation as the Overarching Framework**

Not surprisingly, most concepts and frameworks of innovation are firmly based in the study of manufacturing and product design (Coombs and Miles 2000; Drejer 2004), or stated differently, in G-D logic thought (Vargo and Lusch 2004; Vargo and Lusch 2008) which views the purpose of firms as making and selling more units of output. Since the beginning of the 20<sup>th</sup> century, as stated, the majority of the innovation literature has focused on some aspect of technological advancements of goods or on the improvement of firms' operations (Drucker 1985). Cooper (1999), for example, highlights the underlying G-D logical thought of this time (i.e. the view that products are embedded with value) by claiming that it is almost "too obvious" that superior products are the dominant business success factor since they deliver unique benefits and better value to the customer. In fact, all but one of the five innovation research fields proposed by Hauser et al. (2006) seem to be focused on product development, organizing to produce more innovative products, or the timing and outcomes of bringing these innovative products to market. Similarly, Michel, Brown, and Gallan (2008) cite work from Robertson and Gatignon (1986), Kim et al.(2000), and Golder and Tellis (1997) to show that, even in relatively recent work, innovation research is more often than not narrowly focused on tangible products, product attributes, and artificial divides between innovators and adopters.

Some scholars, however, have begun to realize the resulting disconnect between the technological and the market dimension of innovation, and have moved the scope of their innovation work beyond products and corporate processes, to consider the way in which new markets are created (e.g. Jaworski et al. 2000; Rosa et al. 1999). Part of this work includes the study of innovation networks (e.g., Corasaro, Cantu and Tunisini 2012) which provide a broader view of the participants and processes that contribute to innovation. While much of this literature remains “production”-centric, and maintains a distinction between those who “develop” and those who “adopt” innovations, the realization that users have the capacity to drive innovative efforts (Oudshoorn and Pinch 2003; Von Hippel 2007) points to a more interactive and systemic view of innovation. This movement toward a more dynamic approach raises issues with innovation models that center on unidirectional processes, such as the linear model of innovation<sup>2</sup>, and emphasize firms as innovators and customers as adopters. Akrich, Callon, and Latour (2002b) (p. 212), for example, explain that a successive stage model whose chronological order cannot be disrupted does not allow “the multiple socio-technical negotiations which give shape to the innovation to be followed” and argue for the need for a more unified and comprehensive framework that can provide a deeper understanding of the various participants and underlying processes from which new technologies and, ultimately, markets emerge.

Another stream of research that has adopted a broader and more comprehensive view on innovation, technology and market formation is the work on the history of

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<sup>2</sup> The term linear model is used in a variety of ways that seem to converge in the notion that “innovation starts with basic research, then adds applied research and development, and ends with production and diffusion” (Godin 2006, p. 639).

technology. Since this research is often concerned with more macro level historical trends, it views innovation and technological developments as embedded in complex social systems. Hughes (1989), for example, describes the key innovation and technology trends that led to America's growth over the last century, Misa (1995) the emergence of the steel industry in America, and Mokyr (1992) the role of resistance in the British or French economy during the Industrial Revolution. In his work, Hughes (1989) points out that these systems do not only involve "so-called hardware, devices, machines and processes and the transportation, communication, and information networks that interconnect them" but that these systems consist of people and organizations. Consistent with the systems view that is foundational to this monograph, Hughes (1989) describes these (technology) systems as "messy and complex," and points to the importance of human-made patterns that actors create. More specifically, citing Lewis Mumford (1934), Hughes argues that technology is always socially constructed since "technology is both a shaper of, and is shaped by, values (p. 5)." Similarly, Misa (1995) describes technologies as not only "socially constructed but society-shaping," a notion that will receive detailed attention in a latter section.

Recently, some scholars are beginning to realize, in line with an S-D logic lens, that service based models and frameworks may contribute to the general understanding of innovation (e.g., Drejer 2004; Flint 2006; Michel et al. 2008). Coombs and Miles (2000), for example, propose that a focus on service innovation can throw light on neglected elements of the whole economy. In their work, they describe an evolution of service innovation research and present a typology of three approaches—assimilation, demarcation, and synthesis—to define and study innovation in service.

The first approach, assimilation, treats service innovation as fundamentally similar to manufacturing innovation. Consequently, methods and concepts developed for manufacturing and product design are applied to service innovation (Coombs and Miles 2000). Levitt (1972), for example calls for a “production line approach” to service. He claims that if service is treated as manufacturing, “it will be carefully planned, controlled, automated where possible, audited for quality control, and regularly reviewed for performance improvement and customer reaction (Levitt 1972, p.51).” Miles (2000) describes examples of this manufacturing approach to service innovation. He points out that the fast food industry, for instance, can be associated with increased standardization of its service provisions. Miles also argues that the application of information technology (IT) tools such as document processing, email, and enterprise resource planning has had an “industrializing” role on the innovation processes of service firms.

The second approach, demarcation, grew out of the need for new, service-oriented models focused on customer relationships when the perceived emergence of service economies highlighted the inadequacies of manufacturing based models (Coombs and Miles 2000). It is important to note that S-D logic rejects the idea of a “service revolution” or of the emergence of service economies. Instead, it argues, more foundationally, that service provision has always been central to economic exchange and value creation but has been relatively ignored in the manufacturing-based perspective (Vargo and Lusch 2004). Contrary to S-D logic thought, demarcation approaches often distinguish “goods” from “services” innovation based on the traditional differentiating (from goods) characteristics of services, such as the “IHIP” characteristics – intangibility, heterogeneity, inseparability of production and consumption, and perishability (Zeithaml

et al. 1985). In other words, this approach differs from the assimilation approach by arguing that services are highly distinctive and in need of unique models and measurements for innovation. Researchers using this approach specifically study “services” firms and industries to develop distinct tools and methods. These tools and methods are focused on customer relationships rather than product development and, thus on the development of new and enhanced services.

More recently, scholarly work has started to suggest that the boundaries between manufacturing and service activities might be more blurred than the traditional distinguishing characteristics suggest. Coombs and Miles (2000), for example, use the term “rainbow economy” to argue that service and service-like activities can be found in all sectors of the economy. Similarly, Drejer (2004) claims that service and manufacturing activities are becoming increasingly intertwined (also see Miles 2000). This thought can also be found in the notion that “servitization”—a concept that suggests that organizations benefit from deemphasizing products in isolation, in favor of promoting product-service systems—is steadily increasing (Baines et al. 2009). While the idea of a rainbow economy clearly differs from S-D logic’s notion that service provision has always been central to economic exchange and value creation, it directed Coombs and Miles (2000, p.97) toward the important conclusion that “material products themselves are only physical embodiments of the services they deliver, or tools for the production of final services.” In S-D logic terms, goods function as appliances or service-delivery vehicles for service provisions by conveying the knowledge and skills embedded in them (Vargo and Lusch 2004).

The third approach, the synthesis approach, is based on the claim that the traditional approaches, assimilation and demarcation, cannot provide an adequate model for service innovation (Coombs and Miles 2000; Drejer 2004). This emerging approach calls for a unification of innovation in manufacturing and services based on the overarching qualities of service innovation. It reestablishes industry boundaries, in line with S-D logic (Vargo and Lusch 2004; 2008), based on innovation dynamics rather than characteristics of outputs (e.g., tangible goods and intangible services) (Preissl 2000). Coombs and Miles (2000, p. 100) argue that “we are moving away from a model of innovation that puts all the emphasis on artifacts and technological innovation; and towards a model which sees innovation in terms of changes in market relationships but with major artifact and technological dimensions.” This view of innovation suggests that material artifacts and technologies are, as described in the section above, embedded within systems of market relationships, and that a deeper understanding of market relationships is needed in order to better understand how to systematically innovate service provisions. Coombs and Miles (2000, p. 100) suggest that this movement toward understanding relational aspects of service innovation is “liable to lead to nothing less than a widening or even complete reinterpretation of the concept [of innovation] itself.”

### **The Service Ecosystem and the Synthesis Approach**

As stated, one of the main goals of the current work is to explicate how a service based view can help to synthesize existing innovation approaches and offer a transcending view, which embeds technological innovations in more encompassing

structural aspects of service innovation and market (re)formation. Such an approach to innovation broadens the process of value creation beyond a firm's operational activities to include the active participation of customers and other stakeholders. Snehota (1993), for example, argues that true innovation is based on changes in market relationships, and success in the market is subsequent to establishing new and strengthening existing relationships. Similarly, Anderson et al. (2000) describe innovation systems as dynamic bundles of resources that create and disperse new knowledge as a consequence of the division of labor and the exchange and application of useful and practical knowledge.

In support of a systemic approach, Vargo and Lusch argue for an A2A or actor-to-actor perspective in ecosystems, which points “away from the fallacy of the conceptualization of the linear, sequential creation, flow, and destruction of value and toward the existence of a much more complex and dynamic system of actors that relationally co-create value and, at the same time, jointly provide the context through which ‘value’ gains its collective and individual assessment (Giddens, 1984, p. 25; Slater, 2002, p. 60)” (as cited in Vargo and Lusch 2011b, p.182).

In the context of innovation and as an extension of Vargo and Lusch's (2011b) work on the actor-to-actor approach, it will be suggested that this A2A approach can not only remove the divide between “producers” and “consumers” of value but also the divide between “innovators” and “adopters in which corporate producers are viewed as creators of innovative products and consumers as adopters of these products. This divide, for example, is clearly evident in Hauser, Tellis, and Griffin's (2006) earlier discussed taxonomy. Four of their five innovation categories are focused on providing prescriptions for corporate actors to improve product development methods and tools, organizational

forms, and to choose successful strategies for entering and defending existing markets. The fifth category, on the other hand, is concerned with consumers' responses to innovation, that is, their propensities to embrace new products. Rogers (2003) and Moore (1999), for example, categorize consumers into five groups—innovators, early adopters, early majority, late majority, and laggards—in an effort to explain why some consumers have a higher tendency to adopt innovative products.

Contrary to this thought, it will be shown that an A2A view leads to the realization that innovation is a collaborative process, rather than an outcome, which involves the efforts of multiple parties and social, as well as technical developments. In other words, an A2A orientation can overcome the commonly used linear innovation and adoption conceptualization and create a view that sees innovation as dynamic and co-created practices embedded in service ecosystems of resource-integrating actors held together by institutional arrangements.

In summary, using an S-D logic lens, I argue that innovation, similar to value creation, does not happen in sequential steps, such as the stage of the linear model: basic research, applied research, development, production, and diffusion (Godin 2006), but always needs to be viewed from a complex and dynamic system's perspective. A synthesis approach to innovation, based on a conceptualization of service that signals a shift from thinking about inventors and adopters to processes of creating new relationships and resource integration practices for mutual value creation, needs to be viewed as being embedded in the contextual context of self-adjusting systems. Stated differently, as highlighted by Vargo and Lusch (2014) in their definition of the service ecosystem, institutional arrangements need to be viewed as endogenous to the innovation

process. In the following sections, I will develop a framework that explicates the role of institutions and institutional change in innovation processes in more detail. However, since the current work is focused on providing a framework that can explain both incremental and discontinuous innovation in market (re)formation, it is necessary to briefly define these two concepts.

### **Degrees of Innovativeness or Newness**

The innovation literature has not converged on a single construct or definition to define the degree of innovativeness or newness of a product or service. A review of this literature, for example, yields a variety of terms and dichotomies such as radical vs. incremental innovation, discontinuous vs. continuous innovation, revolutionary innovation, disruptive innovation, really-new-products, highly-innovative-products, and new-to-the-world products. Alternatively, some researchers defined various degrees of innovating firms. Golder and Tellis (1997, p.159), for example, define a product pioneer as the “first firm to develop a working model or sample” and a market pioneer as the “first firm to sell in a new market category.” Not surprisingly, many of these terms and their underlying definitions are deeply grounded in G-D logic and its lexicon. Chandy and Tellis (1998, p.475), for instance, define radical product innovation “as the propensity of a firm to introduce new products that (1) incorporate substantially different technology from existing products and (2) can fulfill key customer needs better than existing products.”

The radical vs. incremental dichotomy is probably the most common measure of newness or innovativeness in marketing. It can be found in the work of Hauser, Tellis and

Griffin (2006), Wuyts, Dutta, and Stremersch (2004), and Galbraith (1982) to just name a few examples. Galbraith further divides the range between radical and incremental innovation into seven subcategories, anchored by style changes and disruptive new technologies. He defines disruptive new technologies as those “which cause discontinuities in current practices and products.” While this definition is still somewhat centered on products, it does highlight the importance of changes in practices, which aligns with the focus of the current work.

Galbraith (1982) and Robertson (1967), for example, point out, that behavioral changes are common traits of innovation. The notion that innovation requires actors to change the way they do things can also be found in Michel, Brown and Gallan’s (2008) definition of discontinuous innovation, a term that goes back to innovation thought from Schumpeter (1939) and an earlier used classification from Robertson (1967). In their S-D logic related work, Michel et al. define an innovation as discontinuous if it (1) significantly changes how customers co-create value and (2) significantly affects market size, prices, revenues, or market shares. According to these authors, the first dimension of this definition is based on S-D logic’s value-in-use concept (as explained above “value-in-context” is now the preferred term (Vargo et al. 2009)) while the second dimension is based on the more traditional value-in-exchange.

Sood and Tellis (2005, p.153) argue that the use of terms such as “disruptive” and “discontinuous” is problematic given that “they define an innovation in terms of its effects rather than its attributes”; especially since these constructs are often used to describe market outcomes. To remedy this perceived circularity, they define innovation, based on G-D logical terms and thought, as platform, component, and design innovations.

In contrast, viewed from an S-D logic and systemic perspective, innovation needs to be conceptualized as dynamic change processes in relationships and practices that provide new bundles of mostly operant resources. I will use the terms “incremental” and “discontinuous” innovation and, based on the service-driven view of this monograph, define both without a reference to products. More specifically, I define discontinuous innovation as significant change processes in resource integration practices and their underlying institutional arrangements. Incremental change, on the other hand, describes more gradual change processes. In this context, the use of the terms incremental and discontinuous innovation is not circular, since innovation is not viewed as a market outcome, but rather as a collaborative process which involves the efforts of multiple parties and social, as well as technical developments. In other words, innovation is viewed as being synonymous with market formation processes and the institutionalization of new solutions.

This section has provided a brief review of the innovation literature in marketing and related fields. More specifically, using an S-D logic lens, it has defined the concepts of incremental and discontinuous innovation which are important building blocks for the work below. These definitions move away from traditional views that focus on various degrees of product uniqueness and newness. Instead, they point to the systemic nature of innovation and highlight the importance of institutional change in social systems (Geels 2004; Nelson and Nelson 2002; Pinch 2008). This view mandates a change in the role of firms from providing resources that *fit* into the practices of customers to the dynamic process of enabling customers (and other stakeholders) to co-create fitting institutional

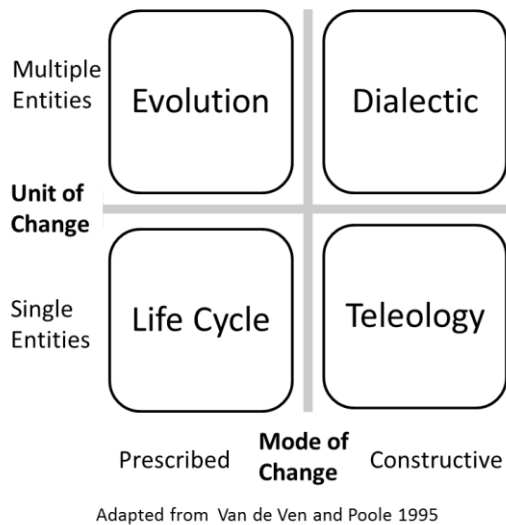
arrangements that make resource integration and value creation practices possible and meaningful.

## Typology of Systemic Change

The section above points to the need for a deeper understanding of systemic change in highly relational and contextual social systems, or, in other words, to the need for a deeper understanding of human practices and institutional change. Before I continue this analysis however, it is useful to look at theories of change in more detail. In an interdisciplinary literature review, Van de Ven and Poole (1995) identify about twenty different process theories that are used to explain change processes in the social, biological, and physical science. Based on an inductive examination, they suggest that most of these theories can be grouped into a typology of four basic schools of thought: the life cycle, the teleological, the dialectical, and the evolutionary motor of change. While these generative mechanisms of change can and often do occur in hybrid, layered, and nested forms, it is useful, for the subsequent analysis, to understand their ideal-types.

Van de Ven and Poole's (1995) typology is shown in Figure 1. Their first motor of change, the life cycle, describes the process change of an entity as the progression through a necessary sequence of stages or phases in which "the specific content of these stages or phases is prescribed and regulated by an institutional, natural, or logical program prefigured at the beginning of the cycle." Teleological change, the second motor of change, is conceptualized as a cycle of goal formation, implementation, evaluation, and modification of actions. In other words, a purpose or goal is the final cause for guiding the movement of an entity. Van de Ven and Poole's (1995) third motor of change, the evolutionary motor, is based on a cycle that consists of variation, selection, and retention events among entities in a designated population whereby selection

primarily occurs through the competition for scarce resources. Finally, the fourth and final motor of change, *dialectical change*, is a theory of development conflict that “emerge between entities espousing and opposing thesis and antithesis that collide to produce a synthesis, which in time becomes the thesis for the next cycle of a dialectical progression.”



*Figure 1: Typology of Change Mechanisms*

As Figure 1 illustrates, Van de Ven and Poole’s (1995) typology is characterized by two analytical dimensions: the *unit of change* and the *mode of change*. In regards to unit of change, evolutionary and dialectical theories are classified as theories that operate on *multiple entities*. Dialectical theories, by definition, need at least two entities to create opposing thesis and antitheses. Similarly, evolutionary forces are defined in terms of their impacts on populations and have no meaning at the level of the individual entity. Van de Ven and Poole (1995), on the other hand, classify life cycle and teleological theories as *single entity* motors of change. The unit of analysis in the life cycle model, for example,

is a singular discrete entity that undergoes change while maintaining its identity.

Likewise, the teleological model also requires only a single entity's goals or envisioned end state to explain change.

The highly relational and systemic nature of institutional change suggests that one or both of the *multiple entity* models of change must be foundational to institutional change processes. However, as I will show below, it would be a mistake to dismiss the role and importance of *single entity* models. As I will further explain in more detail, change processes in social systems need to be viewed as embedded and nested and any single theoretical perspective (motor) would be insufficient in explaining the complex adaptive nature of institutional arrangements. Instead, in order to fully understand systemic institutional change processes in these systems, micro, meso, and macro levels need to be viewed as interrelated. In other words, the *unit of change dimension* is a useful tool for understanding the interrelated nature of social and institutional change by allowing to zoom out to meso and macro levels (multiple actors) and by zooming in on micro levels (single actors)(Poole and Van de Ven 2004).

Van de Ven and Poole's (1995) second analytical dimension, mode of change, further delineates the difference between prescribed and constructive modes of change. The two differ in that a prescribed mode of change "channels the development of entities in a pre-specified direction, typically of maintaining and incrementally adapting their forms in a definite, calculable way" whereas a "constructive mode of change generates unprecedented, novel forms that, in retrospect, are often discontinuous and unpredictable departures from the past (Poole et al. 2000, p.68).“ Evolutionary models, for example, are based on a prescribed mode of change and can be viewed as the cumulation of small

events that gradually change the nature of the larger population. Dialectical models, on the other hand, are based on a constructive mode of change and can be conceptualized as breaking with the past and are therefore characterized by more radical change. Similarly, as shown in Figure 1, the life cycle model operates in a prescribed modality, while the teleological model operates in a constructive modality. In a life cycle process, for example, the immanent form is driven by a logic, program or code and therefore predictable while the teleological process, by definition, seeks divergence and often unpredictable breaks from the current order (Poole et al. 2000).

As stated, it is important to stress that the above described motors of change are ideal types and that, in real empirical settings, a complex interplay of the different and nested motors is likely (Van de Ven and Poole 1995). However, in line with Poole et al. (2000), I will show below that these motors (or variations of them), as analytical distinctions, are foundational for more complex theories of change, and, in the context of innovation in social systems, that understanding the tensions between units of change and modes of change provides strong explanatory powers for market (re)formation and, more specifically, for the convergence of the technological and the market components of innovation.

## Converging Views on Markets and Technologies

In the section above, the underlying change mechanisms that can drive incremental and discontinuous change were highlighted. In the current section, these change mechanisms will be applied to the context of technological and market innovation using an S-D logic lens. More specifically, this section will begin to delineate how a service ecosystem perspective can help to provide the important, and arguably missing, bridge between the technological and the market dimension of innovation, by showing that both “types” of innovation (i.e., technological and market innovation) are driven by a common process – i.e., *institutionalization*.

S-D logic identifies resource integration as one of the core activities of economic and social exchange (Vargo and Lusch 2008). This integration process does not only allow actors to access resources for their own benefits, but also to create new and exchangeable resources in the process. In the words of Vargo and Lusch (2004), “resources are not: they become.” Resource integration of social actors must therefore be viewed as being at the core of any innovation process. Arthur (2009), for example, in his work on the nature of technology, points to the fact that innovative and novel technologies arise through the combination of existing technologies. Technologies are therefore, not surprisingly, important elements of innovation and market formation. The term technology, however, as Trevor Pinch (2008) points out, is elusive and immediately problematic since it has taken on various disparate and often limiting meanings (e.g. in regards to material constraints). It is therefore important to unpack this central concept further.

## Technology as Institutional Developments

Arthur (2009) defines technology as an assemblage of practices and components that are means to fulfill human purposes. More specifically, he suggests that devices and processes should not be classified as disparate categories, but, instead, that the term technology can be applied to a wide class of phenomena which can be both “software” (i.e. processes or methods) and “hardware” (i.e. physical devices). He, for example, includes non-conventional phenomena such as contracts and legal systems in the technology category. Similarly, Layton (1974) equates technology to knowledge that provides a rational basis for design. Design, in this context, can be viewed as the reconfiguration of resources to solve a variety of problems (Simon 1996). Thus, in these views, technology, both physical and social, can be conceptualized as *potentially (i.e. contextually contingent) useful components of knowledge* that may or may not provide solutions for new or existing problems. Similarly, Hughes (1989, p. 6) defines technology as “the effort to organize the world for problem solving so that goods and services can be invented, developed, produced and used.”

These definitions point to the fact that competences (knowledge and skills) and not physical things lie at the heart of technology; a thought also shared by Mokyr (2004) who defines technology as useful knowledge. Similarly, as stated, S-D logic (Vargo and Lusch 2008) highlights the primacy of knowledge and skills in exchange and markets by defining service provisions as the ongoing combination of mostly operant resources, through integration. This primacy of operant resources, however, does not diminish the importance of “hardware” (i.e. physical devices or goods) in technological change and

innovation since, as discussed, hardware can be viewed as a vehicle to convey its embedded knowledge and skills.

Now that the concept of technology has been defined, its underlying change processes can be delineated further. Arthur (2009) proposes that innovation or changes in technology occur through “*combinatorial evolution*.” “[N]ew elements (technologies) are constructed from ones that already exist, and these offer themselves as possible building-block elements for the construction of still further elements (Arthur 2009, p.167).” In other words, all technologies are birthed from previous technologies through resource integration. As can be inferred from its name, Arthur describes the combinatorial evolution as an evolutionary process which is not unlike biological evolution. “[Technology] reproduces itself in the sense that its individual elements, like cells in an organism, die and are replaced. Their elements grow—they grow without cease. It adapts closely to its environment, both collectively and in its individual elements (Arthur 2009, p.189).” A *combinatorial evolution* conceptualization of technology, however, as will be explained in more details below, also points to dialectical change and, using this framework, even radically novel technology changes seem much less abrupt when the underlying building blocks are examined.

The discussion above points to the fact that, on a macro level, technological change can be viewed as *combinatorial evolution* processes that are the means to fulfill human purposes and that an evolutionary motor of change needs to be part of an innovation framework. This does not mean, however, that life cycle and teleological motors cannot also play a role in technological change. On a nested micro level, for example, Griffin (1997) proposes that a formal product development process (life cycle

motor of change), can lead to increased success and shortened development durations. Similarly, trial and error learning approaches follow teleological models in which alternatives are tested until the envisioned solution can be implemented (von Hippel 2001).

It is therefore tempting to arrive at a model that views technological change as, on a higher level, an evolutionary process, which can, on a lower level, be linked to life cycle and teleological change processes. However, while this conceptualization highlights the primacy of knowledge and skills, such a model is arguably too simplistic to delineate discontinuous innovation and new market creation. Geels (2004), for example, argues that innovation research needs to broaden its unit of analysis to explicitly incorporate the user and the use of technology in the analysis in order to achieve a systemic view of innovation.

Orlikowski (1992), recognizing the role of users in socio-technical innovation processes, points out that, “[w]hile technologies appear to have objective forms and functions at one point, these can and do vary by different users, by different contexts of use, and by the same users over time.” In other words, the human purpose of technology is constantly adapting in order to fit to changing contextual requirements of human actors while, simultaneously, creating changing contexts in the process.

Her work incorporates the social construction of technology (SCOT) approach (Pinch and Bijker 1984), which highlights that social groups play an important role in the construction of technology. More specifically, the SCOT approach argues that different actors can “construct radically different meanings of a technology (Oudshoorn and Pinch 2003, p. 3).” Building on this concept, which has become known as “interpretive

flexibility” and explains how different social groups can construct radically different meanings of technologies , Orlikowski (1992, p.406) argues for a duality of technology:

“Technology is the product of human action, while it also assumes structural properties. That is, technology is physically constructed by actors working in a given social context, and technology is socially constructed by actors through the different meanings they attach to it and the various features they emphasize and use. However, it is also the case that once developed and deployed, technology tends to become reified and institutionalized, losing its connection with the human agents that constructed or gave it meaning.”

This description of the duality of technology highlights the need for a deeper understanding of institutional processes in the formation of markets. As pointed out by the SCOT approach, the social construction of technology points to the fact that, through institutional processes, technologies stabilize and predominant meanings and predominate uses emerge (Pinch and Bijker 1984).

Consequently, Geels (2004, p. 915) argues that only an institutional perspective of innovation can provide “a dynamic sociological conceptualization which understands human action as structure, but leaves much room for intelligent perception and strategic action.” In the context of technology, Nelson and Nelson (2002, p. 267) conceptualize institutions as “social technologies” that contribute to “molding the technologies used by a society, and technological change itself.” Going one step further, Pinch equates technology and institutions since both have the ability to enable and constrain human actions (Pinch 2008).

As stated, innovation processes always possess both a technological and a market component. This section has provided conceptual evidence for the fact the technological

innovation is a socio-technical process that is driven by the combinatorial evolution of knowledge and skills and institutionalization processes. The next section, showing that both “types” of innovation (i.e., technological and market innovation) are driven by a common underlying process—institutionalization—will provide a review of institutional thought in markets and marketing.

## **Markets as Institutional Developments**

### **A Review of Institutional Thought in Marketing**

Institutional thought has a long history in marketing research. More than fifty years ago, Alderson’s (1965; 1957) functionalism, for example, highlighted that institutions are foundational to systemic marketing processes. Despite this early attention, however, many marketing scholars have overlooked the importance of institutions. Arndt (1981) suggests that this gap in the marketing literature is caused by the fact that marketing thought is, as discussed, still profoundly dominated by the paradigm of neoclassical economic theory and its emphasis on marginal analysis, utility maximization, and market equilibriums. Arndt, in line with Granovetter’s (1985) seminal work on the embeddedness of economic action in ongoing social relationships, points out that marketing scholars need to cut their “umbilical cord” to neoclassical economics in order to develop a richer marketing theory that can address the reciprocal and interactive social relationships among actors, institutions, and the environment. In other words, Arndt seems to suggest that, in line with S-D logic, dyadic views, focused on value-in-exchange between value creating producers and value destroying consumers (or a G-D logical view) cannot capture the complexity of markets.

To remedy the dependence on neoclassical thought, Arndt called for an underlying institutional paradigm for thinking about commerce, marketing, and exchange in general. Drawing on Alderson (1957) and Revzan (1968), Arndt (1981) defines institutions as sets of conditions and rules for transactions and other interactions and suggests that neoclassical theory focuses on individual decision or adjustment processes while institutionalism addresses the reciprocal and interactive relationships and transactions among actors. Furthermore, he claims that while neoclassic economists have been mainly concerned with properties of the final state of systems, institutional thought focuses on the process of change. According to Arndt (1981), institutionalists recognize the importance of other interest groups for this process of change and he posits that an institutional approach is a mandatory requirement for a deeper analysis of relational mechanisms such as domesticated markets (Arndt 1979).

The paragraph above shows how closely Arndt's early call for an institutional paradigm aligns with S-D logic in general and its service ecosystem conceptualization in particular. Both approaches highlight the relational and systemic nature of resource integration and value creation. Resource integrating actors, in these systems, are connected by shared institutional logics and these systems are constantly adapting to changing contextual requirements and are simultaneously creating these changing context in the process (Vargo and Lusch 2011b). Regrettably, much of the subsequent work on institutional thought in marketing has somewhat ignored this systemic nature.

Multiple marketing scholars, for example, have studied institutions in the context of linear supply- or value-chain processes (e.g. Carson et al. 1999; Grewal and Dharwadkar 2002), often combined with an international or global focus (e.g. Bello et al.

2004; Yang et al. 2012). While this research contributes to the institutional literature in marketing by explicating how social context can facilitate or hinder transactions, it is mostly focused on dyadic channel relationships and largely ignores the systemic nature of value creation and resource integration.

A second, very similar research stream in marketing, has developed around the notion that inter-firm transactions and exchanges can only be inadequately described by legal contracts as mechanisms for governing exchanges (e.g. Cannon et al. 2000; Gundlach and Achrol 1993). Often based on Macneil's (1980) seminal work on social contracts, this literature highlights the importance of relational norms. Heide and John (1992), for example, show that norms play a significant role in structuring economically efficient relationships between independent firms. They define norms as expectations about behavior that are at least partially shared by a group of decision makers. More specifically, Heide & John point to the importance of relational norms, those based on the expectation of mutuality of interest, essentially prescribing stewardship behavior for exchange relationships. Relational norms enhance the wellbeing of the relationship as a whole and can be manifested in several different though related domains, such as flexibility, solidarity, and information exchange. Likewise, Canon, Achrol, and Gundlach (2000) describe five cooperative norms—flexibility, solidarity, mutuality, harmonizing of conflict, and restrain in the use of power—as important in adaptations to dynamic market conditions and safeguarding the continuity of exchanges.

## Institutions and Related Concepts in Marketing

In order to show the similarities and overlaps between these two research streams described above—*institutions* and *relational norms*—a more detailed conceptualization of institutions is necessary. Scott (2008, p. 48) describes institutions as being “comprised of regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life.” Scott suggests that institutions impose restrictions by defining legal, moral, and cultural boundaries. However, he also points out that it is important to recognize that institutions not only possess constraining but also empowering properties for activities and actors. In other words, “institutions provide guidelines and resources for taking action as well as prohibitions and constraints on actions (Scott 2008, p.50).”

Scott’s three institutional elements or pillars represent a continuum between the conscious and the unconscious, or, similarly, between the legally enforceable and the taken-for-granted (Hoffman 1997 as cited in Scott 2008). The first pillar, the regulative element of institutions, is located in the conscious and legally enforceable condition of the continuum. This pillar pertains to regulatory processes such as laws and regulations. More specifically, Scott (2008, p.52) defines regulatory processes as those that have “the capacity to establish rules, inspect other’s conformity to them, and as necessary manipulate sanctions—rewards or punishments—in an attempt to influence future behavior.” The reward and punishment mechanisms of regulative institutions can be either formalized (e.g. licenses or court punishments) or informal (e.g. losing or gaining face through shaming or legitimizing activities) (Jansson et al. 2007). As Scott points out, many economists (e.g. the economic historian Douglass North) emphasize the regulative

institutional element since it provides relatively stable rules, whether formal or informal, for individuals and organizations, to pursue their contending self-interests. Using the analogy of rules for a competitive sport, for example, North (1990, p.4) describes institutions as “rules of the game” that “consist of formal written rules as well as typically unwritten codes of conduct that underlie and supplement formal rules.” Similarly, many marketing scholars have highlighted the impact that regulatory policies, rules, and technical standards have on consumption in such diverse contexts as minimum age for automobile driving, alcohol consumption, restriction on the sale of prescription drugs, and limitations on the number of utility companies that can operate in a city (Sheth and Parvatiyar 1995).

Scott’s second pillar, the normative element of institutions, describes a prescriptive, evaluative, and obligatory dimension of social life which includes values and norms. “Values are conceptions of the preferred or the desirable, together with the construction of standards to which existing structures or behaviors can be compared and assessed. Norms specify how things should be done; they define legitimate means to pursue valued ends (Scott 2008, pp.54-55).” Similarly, in the marketing literature, Heide and John (1992), as stated above, define norms as expectations about behavior that are at least partially shared by a group of actors. In the marketing literature, as mentioned, terms such as flexibility, solidarity, cooperation, and information exchange are often used to describe normative implications for exchange practices and relationships (e.g. Luo 2002; Miniard and Cohen 1983). While much of this work, due to narrow conceptualizations of these terms, might not explicitly mention the role of institutions, it still highlights the importance of an institutional perspective. On the above described

institutional continuum, the normative element lies somewhere between the conscious and unconscious. Values and norms can be internalized in varying degrees and therefore create a broad spectrum of awareness in economic and social actors (Scott 2008).

The third and final pillar is the cultural-cognitive element of institutions. By using a hyphenated label, Scott highlights the socially mediated constitution of a common framework of meaning. He points out that “cognitive frames enter into the full range of information-processing activities, from determining what information will receive attention, how it will be encoded, how it will be retained, retrieved, and organized to memory, to how it will be interpreted, thus affecting evaluations, judgment, predictions, and inferences (Scott 2008, p.57).” In other words, the cognitive element mediates between the external stimuli and actors responses and, thus, provides actors with prefabricated models, templates and scripts for action (i.e. schemas) (Bello et al. 2004). Scott (2008), citing Hofstede (1991), explains that culture provides patterns of thinking, feeling, and acting and therefore shapes cognitive institutions. However, Scott also points out that cultural beliefs are not always homogenous. Instead, they are frequently contested and actors in the same situation can perceive situations quite differently.

This conceptualization of cultural complexity can also be found in the marketing literature. Consumer culture theory (CCT), for example, does not view culture “as a fairly homogenous system of collectively shared meaning, ways of life, and unifying values shared by a member of society (e.g., Americans share this kind of culture, Japanese share that kind of culture)” but, instead, “CCT explores the heterogeneous distribution of meanings and the multiplicity of overlapping cultural groupings that exist within the broader sociohistoric frame of globalization and market capitalism (Arnould and

Thompson 2005, p.869).” CCT scholars, in line with Scott (2008), believe that consumer culture frames the conceivable actions, feelings, and thoughts, making certain patterns of behavior and sense-making more likely than others (Askegaard and Kjeldgaard 2002; Holt 1997; Kozinets 2002a; Thompson and Hirschman 1995 as cited in Arnould and Thompson 2005). Marketing research also corroborates Scott’s conjecture that symbols, words, signs, and gestures shape the meaning that actors attribute to objects and activities. Venkatesh, Penaloza and Firat (2006), for example, argue for the conceptualization of a market as a sign system, which is based on the idea that both value and markets are socially constructed. More specifically, these authors (2006, p. 258) suggest that “signs of all types are conceived and exchanged in markets and each (type of) market is itself a category constructed in the context of a particular sign system.” However, it is not the signs themselves that are most important in markets, but the meanings and values associated with them. Similarly, other marketing researchers also actively investigate the contextual, symbolic, and experiential aspects of consumption (e.g. McCracken 1986; Mick 1986) and describe markets as socially constructed (e.g. Rosa et al. 1999).

Humphreys (2010) work on the casino gaming industry, which is based on Scott’s three pillar concept, establishes an important connection between his broad conceptualization of institutions and market creation. However, her empirical work, while insightfully highlighting the legitimation process, is limited to an entire industry as the level of analysis. This macro level view eliminates many of the nested properties of institutional change and leads Humphreys to a four stage market creation model that is, arguably, not able to capture Arndt’s (1981) rich and systemic conceptualization of institutions and institutional change or to explain change in service ecosystems.

In summary, marketing thought has both explicitly and implicitly highlighted the importance of institutions in marketing systems. Paradoxically, however, despite the broadness of this work, it often narrowly focuses on sub-categories of institutions such as relational norms, governmental regulations, or mental frames. Additionally, much of this work has not been able to overcome the limitations of neoclassical or G-D logical thought; often resulting in a narrow focus on dyadic consumer behavior or supply-chain management processes that conceptualize linear, sequential creation and destruction flows of value. While this work has significantly advanced institutional thought in marketing, it, for the most part, has not fulfilled Alderson (1965), Arndt (1981), and Vargo and Lusch's (2011b) calls for broader and more systemic approaches to institutional research.

Furthermore, it is important to highlight that, in almost all empirical marketing settings, all three institutional elements—regulative, normative, and cultural-cognitive—are at work in parallel. Scott, for example, points out, that “[i]n stable social systems, we observe practices that persist and are reinforced because they are taken-for-granted, normatively endorsed, and backed by authorized power (Scott 2008, p.62).” In other words, Scott argues that, due to their interplay, the three pillars are more than the sum of their parts. In a market channel setting, Deligonlu, Elg, Cavusgil, and Ghauri (2011), provide empirical evidence for the existence and importance of this interplay among the three institutional elements and suggest that it has been neglected by previous research.

Similarly, Kates (2004) highlights the broadness of institutions in his work on the intersection of brands, institutions, and legitimation. Legitimation can be defined as “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, p.574)” and an actor who can achieve sociocultural alignment is considered to be legitimate or institutionalized (DiMaggio and Powell 1983; Suchman 1995). By using the definition above, Kates highlights the proposed systemic nature of institutionalization and legitimatization processes. Furthermore, he suggests that legitimation processes are co-creational, which indicates that an investigation of these processes through an S-D logic lens should provide important insights.

In the context of innovation, as will be describe in more detail below, the systemic interplay between the three pillars is critically important in facilitating institutional change. This interplay can be viewed as a continuum whose extremes correspond, respectively, with aligned pillars whose combined forces can be a driver for institutional stasis and misaligned pillars that motivate changes in practices and behavior (Scott 2008). Following Grewal and Dharwadkar (2002), institutionalization can be defined as the process by which the three sets of institutions are formed and misalignment among and within the three pillars needs to be viewed as an important driver of innovation. As multiple institutional scholars point out, situations with cognitive, normative, and regulative misalignment create institutional ruptures, contradictions, and conflicts which can provide resources that different actors can employ for different ends (e.g. Caronna 2004; Strang and Sine 2002).

In this section, institutional arrangements were conceptualized as systems of meanings, norms, values, beliefs, and rules. As highlighted by Vargo & Lusch (2011a), a service ecosystems approach not only emphasizes the dynamic integration of resources, but also the importance of institutions in interrelated systems of service-for-service

exchange. However, as stated, institutions do not only provide enabling but also constraining properties, and, based on their degree of alignment are more or less susceptible to change. The next section, by focusing on institutional change, will examine this tension further.

### **A Practice Approach for the Study of Market Change**

In an effort to address institutional change, many marketing scholars have begun to recognize the valuable contribution of a practice approach, such as Giddens's structuration theory and Bourdieu's habitus (e.g. Chandler and Vargo 2011; Edvardsson et al. 2011; Korkman et al. 2010; Vargo and Lusch 2011b). Structuration theory (Giddens 1984) is a sociological approach for studying social systems that is based on the idea that these systems are formed and reformed through the enactment of practices – routine actions or “doings and sayings” (Schatzki 1996). The central idea behind structuration is that “social systems, as reproduced social practice, do not have ‘structures’ but rather exhibit ‘structural properties’ and that many normative and cultural-cognitive elements of institutions exist, as time-space presence, only in its instantiations in such practices and as memory traces orienting the conduct of knowledgeable human agents (Giddens 1984, p.25).” In other words, institutions can be conceptualized as both the medium and the outcome of human practices. In reproducing structural properties, actors also reproduce the conditions that make such actions possible (Giddens 1984). Resource integration and exchange practices, and their enabling and restraining institutional properties, are therefore shaped by an interaction of institutions and human agency. Agency, in this context, can be conceptualized as a knowledgeable actor's capacity to reinterpret and mobilize an array of resources (Sewell 1992).

Similarly, Bourdieu's theory of practice also describes the mutually sustaining relationship between actors and their institutional environments (Bourdieu 1977) and is, in many respects, fully compatible with the conception of the duality of structure (Sewell 1992). Foundational to this theory is the link between *fields* and *habitus*. Bourdieu calls fields game spaces or structured systems (e.g. the field of education) in which social actors struggle over resources, stakes, and access. Habitus, on the other hand, is conceptualized as "systems of durable, transposable dispositions...that is, as principles of the generation and structuring of practices and representations (Bourdieu 1977, p.72)." Stated differently, habitus is a system of temporal durable structures based on the mutual reproduction of rules and resources.

### **Markets as Institutionalized Solutions**

In line with the emerging views on technology described above, a sociological perspective on market formation has also emerged in recent years. Based on an institutional approach, for example, S-D logic conceptualizes service-for-service exchange and its resulting co-created benefits (i.e., common goals of survivability and wellbeing) as the glue that hold social systems and societies together (Vargo and Lusch 2011b). Not surprisingly, many forms of resource integration practices are repetitive social practices which are embedded in the reproduction of social order. More specifically, all resource integration practices are embedded in systems of meanings, norms, values, beliefs, and rules, or, in other words, in cultural-cognitive, normative, and regulative institutional arrangements. As stated, while the three pillars of institutions might have different strengths and variations, almost all empirical settings include all three.

Enjoying a meal at our favorite restaurant, for example, highlights the importance and interplay of all three institutional pillars. The regulative element consists of numerous laws and regulations that regulate health codes, credit card transactions, and property rights. The normative element, on the other hand, describes expected behavior of the involved parties. In a restaurant setting, for example, most patrons would expect a courteous and friendly wait staff and a certain flexibility in regards to the customization of menu items. Lastly, the social-cognitive element would allow the diner to choose and interpret menu items and brands of beverages using cognitive templates and scripts.

Thus, resource integration practices need to be viewed from a dynamic and institutional systems perspective, and markets are not seen as static or pre-existing but rather, in line with Kjellberg and Helgesson (2006; 2007), as being continually performed and shaped by multiple actors. Stated differently, markets are continually formed and re-formed through the activities of economic actors, and, multiple versions of practices may co-exist (Azimont and Araujo 2007). However, many forms of economic and social exchange can be conceptualize as relatively (i.e. within a relevant group) durable and repetitive resource integration and value co-creation practices as they become reconciled and stabilized. Consequently, Vargo and Lusch (2013a) view markets as institutionalized resource integration and application practices, or, stated differently, as “*institutionalized solutions.*”

Relevant groups of actors, in service ecosystems, based on their institutional arrangements, therefore often have shared conceptions of problems and solutions. These problems are always “wicked”; implying that they have no stopping rules or right solutions, as any solution can only improve or hinder a situation (Buchanan 1992). Stated

differently, Hughes (1989, p. 5) points out that problems in social systems do not have “an absolute one-best-way solution” and that “practitioners creat[e] new problems as they solve old ones.” Thus, markets need to be viewed as socially constructed and market creation can be defined as the recursive genesis of new institutional arrangements for economic exchange.

The emerging research trends on technology and markets described above converge on the centrality of practices and institutions in innovation. They point toward the notion that innovation of both technologies and markets are driven by collaborative efforts to find or develop new ways to solve problems. Based on these perspectives, innovation does not automatically occur when firms, or even networks of firms, introduce new ideas or develop new products. Rather, in this view, both technological and market innovation involve the active participation (e.g., enactment of practices) of firms and customers, as well as other stakeholders. These dynamic views of technology and markets point toward shared social structures or institutions as a critical aspect of innovation because they enable and constrain the enactment of practices and interactions among multiple actors and, thus, are guiding forces in the creation and determination of value. This emphasis on institutions in innovation suggests that, in order for new practices to be developed and adopted (i.e., for innovation to occur), institutions need to change, including some that can be recombined into new ones.

This genesis of new institutions often includes the deinstitutionalization of given solutions (markets) and therefore points to “the classic debate on social structure versus agency, which implies that actors are somehow able to disengage from their social context and act to change it (Leca et al. 2008, p.4).” Thus, a systemic and institutional

perspective reframes innovation from creating better products to collaborative market formation and re-formation processes and their institutional change mechanisms.

## **Institutional Change in Service Ecosystems**

### **The Paradox of Embedded Agency**

Sociology and work on institutional theory has made significant progress in delineating the “paradox of embedded agency” (e.g., Battilana and D'Aunno 2009; Battilana et al. 2009; Seo and Creed 2002), which refers to the tension between institutional determinism and agency and addresses the question of how “organizations or individuals innovate if their beliefs and actions are determined by the institutional environment they wish to change (Leca et al. 2008).”

In the initial development of institutional theory, neo-institutional research was mainly focused on the cultural processes through which institutions affect organizational practices and structures (Greenwood and Hinings 1988). Much of this work was centered on the occurrence of isomorphism in organizational development that could not be explained by competitive pressures or efficiency motives (DiMaggio and Powell 1983). This early work downplayed the importance of agency and instead emphasized the impact of institutional environments on organizational structure and practice (Lawrence et al. 2009). By using acceptable structures and practices, according to neo-institutional theory, organizations earn legitimacy, which can be conceptualized as a force that constrains change and fosters organizational isomorphism (DiMaggio and Powell 1983).

More recent work, however, has focused on the processes through which actors affect the institutional arrangements within which they operate in an attempt to overcome the “oversocialized” view of the neo-institutional approach (e.g., Battilana et al. 2009; DiMaggio 1988; Greenwood and Suddaby 2006). Seminal to this research stream was DiMaggio’s (1988) introduction of institutional entrepreneurship which is grounded in

Eisenstadt's (1964, 1980) model of social exchange. DiMaggio (1988) defines institutional entrepreneurs as actors who initiate changes that contribute to creating new or transforming existing institutions. Thus, institutional entrepreneurship aims not only to explain "how institutions influence actors' behavior but also how these actors might, in turn, influence, and possibly change institutions (Battilana and D'Aunno 2009, p.66)." At the core of this question lies the tension between the two classical figures of homo economicus (i.e., the perfectly rational economic actor of classical economics) and homo sociologicus (i.e., an actor paralyzed by social constraints). DiMaggio and Powell (1991) point to the importance of a practice approach, such as the above described structuration theory or Bourdieu's habitus, to develop a more balanced view of the relationships between actors and institutions. However, while both of these theories describe institutional properties as evolving through the reproduction of structures, they have been criticized for their incapability to explain dynamic change. Sewell (1992, p. 16), for example, suggests "that a theory of change cannot be built into the theory of structure unless we adopt a far more multiple, contingent, and fractured conception of society—and for structure." To remedy this issue, Sewell, focusing on the more unconscious or taken-for-granted elements of institutions, introduced the concept of transposability of schemas which suggests that actors can apply their schemas across a wide range of circumstances. In other words, he points out that the reproduction of structure is never a given and argues that structures are at risk of instability and change because they are intersecting with other structures.

Foundational to the concept of transposability is the notion that institutions need to be viewed as nested in systems (Holm 1995) since only this nested nature of

institutions can allow actors to apply schemas from a wide range of circumstances. Lawrence and Suddaby (2006, p. 248), for example, suggest that institutions exist in nested systems “across many levels, from micro-level institutions in groups and organizations that regulate forms of interactions among members to field-level institutions such as those associated with professions or industries, to societal institutions concerned with the role of family, the nature of gender and the status of religion.” This layered conceptualization of institutions and contexts is also echoed by Chandler and Vargo (2011) who, in the context of value co-creation, proposed three levels of analysis (micro, meso, and macro) to capture the complex interplay of social systems. This important realization points to the limitations of previous research. While practice-oriented writing has been mostly focused on micro/individual levels, institutional studies have been primarily concerned with the role of collective actors in terms of transforming institutional arrangements (Lawrence et al. 2009). The layered conceptualization of institutions and contexts also supports and extends Scott’s (2001) earlier introduced claim that, in social systems, misalignments among institutional pillars are the norm rather than the exception. Below, I point to a framework that highlights the need to view micro, meso, and macro levels as interrelated.

### **Institutional Work**

Hardy and Maguire (2008) see evidence for two distinct narratives in the contemporary institutional entrepreneurship literature. The first one is actor-centric and “tends to be more functionalist, and to paint a neat picture of relatively rational, linear, win-win problems-solving activities where the (usually successful) institutional entrepreneur possesses a degree of reflexivity or insight (Mutch 2007; Seo and Creed 2002) that allows

actors to identify opportunities for change as a result of some stimuli, such as uncertainty or a recognized problem in the field (Beckert 1999; Dew 2006; Lee and Pennings 2002 as cited in Hardy and Maguire 2008, p. 211).” Many scholars, for example, have investigated the role of environmental jolts such as competitive discontinuities, technological disruptions, or regulatory changes, in deinstitutionalizing social systems and in thereby contributing to institutional innovation by introducing new ideas (Greenwood et al. 2002; Oliver 1992). In this research tradition, multiple scholars have portrayed certain actors as powerful and heroic figures who are able to dramatically shape institutions (Battilana et al. 2009).

The second, more recent, narrative, in contrast, is more practice-centric and focuses on institutional entrepreneurship as an emergent outcome of activities of diverse spatially dispersed actors and their involvement in the political struggles and the interactions among them (Hardy and Maguire 2008; Lawrence and Suddaby 2006). Furthermore, this second approach, termed institutional work, expands the analysis beyond the creation of new institutions (institutional entrepreneurship) by highlighting the important influence of actors on purposefully, maintaining, and disrupting existing institutions (Lawrence and Suddaby 2006). It therefore connects, bridges, and extends work on institutional entrepreneurship, institutional change and innovation, and deinstitutionalization (Lawrence et al. 2009).

Lawrence and Suddaby (2006), grounded in the seminal research from DiMaggio (1988), Oliver (1991), Giddens (1979; 1984), and Bourdieu (1977) stress the fact that institutional work is not only concerned with transformative action, but also with repairing and concealing of tensions and conflicts within and across institutions. In other

words, Lawrence and Suddaby describe institutional work as translations, interpretations, modifications, and accommodations of the nested relationships between institutions at different levels. Their work aims to overcome the above stated tensions between micro and macro units of analysis by connecting the insights of practice theory with institutionalists' traditional concerns for collective action and social change (Lawrence and Suddaby 2006).

Out of the three components of institutional work, the study of institutional maintenance has received significantly less attention than the study of institutional creation or disruption (Scott 2001). This lack of attention is caused by the fact that institutional maintenance, in contrast to the often highly visible and dramatic institutional change, can be “nearly invisible and often mundane, as in the day-to-day adjustments, adaptations, and compromises of actors attempting to maintain institutional arrangements (Lawrence et al. 2009, p.1).”

It is important however to not confuse this lack of attention with a lack of importance. As Jepperson (1991) points out, relatively few institutions have such powerful reproductive mechanisms that they can be replicated without ongoing maintenance. An actively maintained institution can create powerful path dependencies and the role of actors in maintaining institutions is therefore as important for innovation as the role of creating or disrupting them. In his seminal work on increasing returns, for instance, Arthur (1994) uses the practice of entering text with the help of QWERTY keyboards as an example of path dependency (David 1986 and Rogers 2003 also use the QWERTY example in their work). The path dependency in the specific example is extremely hard to overcome since it is continually maintained by millions of actors

(Arthur 1994). Consequently, the pioneers of path dependency (e.g. Arthur 1994; David 1986) often described its effects in terms of restrictions or as a hindrance to innovation and new product development (Hakansson and Waluszewski 2002).

However, in more recent and more complex conceptualizations, multiple scholars (e.g. Araujo and Harrison 2002; Callon 1998; Hakansson and Waluszewski 2002) highlight the fact that path dependencies, similar to other institutions, always exhibit both constraining and enabling properties. While the QWERTY keyboard has prevented the diffusion of innovations such as the Dvarak keyboard which arranges the 10 most commonly used letters (composing 70% of the words in the English language) in the home row, it has, at the same time, enabled QWERTY trained users to seamlessly transition from different devices, such as typewriters, computers, smart phones, and tablets. Similarly, it has enabled users to effortlessly switch brands and manufacturers. Hakansson and Waluszewski (2002) therefore view path dependencies as important parts of larger resource collections in which crossroads of different kinds of path dependencies can create new resource combinations.

Similarly, Callon (1998) suggests that path dependencies and their resulting lock-ins are necessary to organize markets. He explains that human actors can only function when certain options have been eliminated and the range of options has been drastically reduced (i.e. “firms are similarly structured, occupational categories are standardized and extra-organizational structures are created to manage completion and articulate common goals) (Callon 1998, p.49).” Stated differently, path dependencies must also be viewed as important elements of innovation processes. The example of path dependencies therefore highlights the dynamic and systemic nature of institutional work. As Creed, DeJory, and

Loc (2010, p. 1337) point out, institutional work is not necessarily “aimed at either the creation, maintenance, or disruption of institutions, but, can paradoxically involve more than one of these categories at the same time.” A path dependency for example, can therefore maintain an institution, while, at the same time, it can also be a resource in institutional change. In this context, it is important to highlight that not only practices that are aimed at maintaining institutions, but also the ones that are aimed at transforming and disrupting them are themselves institutionally embedded and therefore rely on resources and skills that are specific to the field or fields in which they occur (Giddens 1984; Lawrence and Suddaby 2006).

In summary, both institutional work (e.g., Lawrence and Suddaby 2006) and a service ecosystems perspective (e.g., Vargo and Lusch 2011b) imply that social systems need to be viewed as higher-order social collectives that are socially constructed and discursively maintained and are best described as open systems with blurred boundaries and loosely coupled actors. An institutional perspective can help to inform the study of market creation in service ecosystems by providing insights of enabling and constraining conditions at nested levels of analysis, such as the individual, the organizational, and the societal levels of analysis (Battilana and D'Aunno 2009; Friedland and Alford 1991).

## **Institutional Work in Service Ecosystems**

### **Value Propositions are Outcomes and Mediums of Human Action**

The previous section has introduced the concept of institutional work to show that the practices in social systems are always institutionalized through the co-created processes of multiple actors and, thus, that market innovation is an interactive and iterative process by which markets are continually formed and reformed through the actions and interactions of systemic actors. In this context, following Lawrence and Suddaby (2006, p.33), it seems necessary to distinguish between institutional work that focuses on changing norms, belief systems, and informal rules (e.g. losing or gaining face through shaming or legitimizing activities) and work that addresses rules that involve formalized reward and punishment mechanisms (e.g. government regulations) (Scott 2008). The emphasis of the current work is focused on the former. While the case study in the empirical part of this monograph includes elements of legal conflict and deregulation, the current work will mainly focus on institutional change that does not involve actors with the ability to enforce compliance (i.e. a market formed by a government regulation).

More specifically, in this section, building on the concept of institutional work, it will be discussed how practices become institutionalized and entrenched in service ecosystems. Furthermore, the argument that technologies are always endogenous to markets will be extended. Lawrence, Hardy, and Phillips (2002, p.283) introduced the concept of proto-institutions for institutional logics that have “the potential to become full-fledged institutions if social processes develop that entrench them and they are

diffused throughout an institutional field<sup>3</sup>.” In a marketing setting, based on the earlier used definition of markets (Vargo and Lusch 2013a), this means that value propositions that have the potential to become *institutionalized solutions* (markets), have proto-institutional properties. Traditionally, as explained, innovation and marketing research has mostly viewed these entrenchment processes of proto-institutions as linear processes that maintain a clear distinction between those who “develop” and those who “adopt” and remains “production-centric”. Firms or networks of firms, individually or collaboratively developed products and their embedded institutional prescriptions are then diffused throughout a market.

However, Lawrence, Hardy, and Phillips (2002), in their introductory work on proto-institutions, suggest that actors who wish to effect change in institutional fields (i.e. systems) must not only focus on the relationships with their collaboration partners but also on the degree to which their collaboration is embedded in the wider institutional field (see Granovetter 1985 and Uzzi 1997 for more details on social embeddedness). More specifically, Lawrence, Hardy, and Phillips propose that a higher level of embeddedness can be viewed as an enabling field condition for institutional diffusion. In the context of markets, this thought has been expressed in the market orientation literature. Kohli and Jaworski (1993), for example, define market orientation as the organization wide information generation and dissemination and appropriate response related to current and

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<sup>3</sup> An institutional field, in this context can be defined as a community of actors that are connected by the presence of shared cultural-cognitive or normative frameworks or a common regulatory system Scott, W. Richard (2008), *Institutions and Organizations*, Third Edition. Thousand Oaks, CA: Sage. In the current work, I use the terms social system (or subsystem) and institutional field synonymously, since both are used in the extant literature.

future customer needs and preferences. However, empirical findings do not consistently corroborate this enabling quality of embeddedness. While some studies suggest that institutional change is initiated by powerful actors located in dominant positions in mature fields (e.g., Greenwood and Suddaby 2006; Hardy and Maguire 2008), others have shown that actors at the margins of an institutional field are more likely to act as institutional entrepreneurs since these margins offer less constraining institutional arrangements (e.g., Leblebici et al., 1991; Haveman & Rao, 1997; Garud et al., 2002). Christensen (1997b), for example, argues that it is often easier for small and less institutionally constrained startup companies to innovate than for the powerful and resource rich incumbents. In other words, these empirical inconsistencies point to a more complex model of institutional entrenchment and to the above described realization that the concept of institutional work might be more adequate than the more linear concept of institutional entrepreneurship.

However, before a more complex institutionalization processes of markets can be explored, it is important to define the value proposition concept in more detail. Not surprisingly, traditional marketing has approached value propositions using linear value flow conceptualizations. Even today, many contemporary marketing textbooks define a brand's value proposition as "the set of benefits or values it promises to deliver to consumers to satisfy their needs (e.g. Armstrong et al. 2009; Kotler et al. 2003)." S-D logic, on the other hand, as stated earlier, rejects this notion of linear and sequential value flows from value creating "producers" to value destroying "consumers" and arrives at a more generic A2A conceptualization in which all actors involved in economic exchange are active participants of the value creation process, and thus, co-creators of value (Vargo

and Lusch 2008). Furthermore, S-D logic defines value propositions as bundles of mostly operant resources that, when collaboratively applied, can facilitate the co-creation of value for the actors involved in a service provision (Vargo and Lusch 2008). In other words, value propositions are technologies (useful operant resources or knowledge), that, after becoming adopted and entrenched, enable resource integration practices.

Equating value propositions to technologies leads to the logical conclusion that the above described duality of technology can also be found in the context of value propositions. Stated differently, value propositions need to be viewed as both an outcome and a medium of human action (adapted from Orlikowski 1992). During the value-proposition-creation process, the creating actors envision an institutional context — meanings, norms, values, beliefs, and rules—for their value propositions. New value propositions, for example, are often introduced accompanied by manuals, demonstrations, or advertisements that depict the envisioned value creation practices and which aim to legitimize these practices. In this context, however, it is important to note that the value proposing actors are themselves embedded in institutional environments. In other words, the creation of value propositions is a co-creational process since this process is always enabled and constrained by institutional arrangements.

Institutional arrangements therefore need to be viewed as the venues for innovation and institutional transformation (Vargo and Lusch 2012). As discussed, these arrangements can stabilize markets, through lock-ins and path dependencies, which not only create the necessary platforms for subsequent innovation processes but also constrain and eliminate options. Furthermore, institutional arrangements continually provide new resource integration (wicked) problems, through their raptures and

contradictions within and among nested levels, without which new solutions would be meaningless and within institutional arrangements, institutional solutions can also become deinstitutionalized (destruction of markets) if these solutions are not actively maintained (Jepperson 1991). Stated differently, an institutional view of innovation rejects the notion that value propositions, and their embedded proto-institutional elements, are birthed purely based on the skills of highly reflexive or insightful entrepreneurs, or on the knowledge of relatively static customer needs. Instead, this view points toward the dynamic, systemic, and co-creational nature of innovation processes.

The second element of Orlikowski's (1992, p. 410) duality of technology conceptualization describes how technologies (value propositions or useful knowledge), once accepted, tend "to become reified and institutionalized, losing its connection with the human agents that constructed or gave it meaning." Using Pinch and Bijker's (1984) concept of interpretive flexibility, Orlikowsky argues that there is not only flexibility in how actors interpret technology but also that there is flexibility in how technology is used. By using their interpretive flexibility, "customers" and "users" themselves initiate value propositions by proposing resource integration and value creation practices based on their institutional arrangements and useful knowledge. The concept of institutional work, for example, highlights the fact that even the most extreme form of interpretive flexibility, the complete rejection of a value proposition by customers, can have value proposing properties. These rejections, as stated, help human actors to stabilize markets and, therefore, even lock-ins can become important resources in the formation of markets.

Thus, the transition from proto-institutions to institutions or from value propositions to *institutionalized solutions* or new markets (Vargo and Lusch 2011a) is always a co-created process. The duality of technology concept therefore seems to provide support for Vargo and Lusch's (2011b) normalized actor-to-actor view by highlighting the collaborative, systemic, and co-creational nature of resource integration. As explained above, the A2A view overcomes the "inventor" and "adopter" divide that conceptualizes corporate producers as creators and consumers as adopters of value propositions. Instead, often somewhat masked by the amount of operant resources that large corporations have at their disposal, all actors do the same thing, they engage in institutional work, or stated differently, in translations, interpretations, modifications, and accommodations of institutional arrangements (Lawrence and Suddaby 2006).

As highlighted earlier, the inventor/adopter divide is deeply engrained in the marketing and innovation literature. Gourville (2005), for instance, distinguishes between "product-based" and "consumer-based" innovation failures. Using this typology, he argues that the typical consumer is entrenched with the entrenched alternative and the typical developer is entrenched with their innovation, causing 40 to 90% of all new products to not gain acceptance in the market (Gourville 2005; Griffin 1997). As these traditional approaches fail to realize the systemic and relational nature of change processes that institutionalize and legitimize human practices, it is useful to turn again to institutional theory to further delineate the transition from value propositions to *institutionalized solutions* or markets. More specifically, I argue that the research on the intersection of proto institutions and institutional work can provide valuable insights into the formation of new markets.

Zietsma and McKnight (2009), for example, extend the research on proto-institutions by introducing a more complex framework that incorporates the notion of institutional work and by overcoming the seemingly linear fashion (proto-institutions are developed and then diffused throughout an institutional field) of Lawrence, Hardy, and Phillips' (2002) earlier work. Instead, Zietsma and McKnight propose a model in which several actors, who compete against other actors sponsoring differing institutional arrangements, engage in the three activities of institutional work at the same time and during substantially overlapping time periods.

More specifically, Zietsma and McKnight (2009) conceptualize institutional work as co-created. They view institutional work as a non-linear process in which multiple actors co-create institutions by competing and collaborating through multiple iterations of institutional developments until common templates become diffused. This implies that all three components of institutional work—creation, maintenance, and disruption—are continually overlapping processes. Consistent with the highlighted need to view service ecosystems as highly relational, this view overcomes a heroic conception of institutional entrepreneurs and highlights a systemic process that entails “ongoing negotiations, experimentation, competition, and learning, which resolve over time into shared conceptions of problems and solutions in social systems (Zietsma and McKnight 2009, p.145).”

Using a case study of forestry development in British Columbia, Zietsma and McKnight synthesize two co-creational mechanisms: collaborative co-creation and competitive convergence. The former are practices in which proto-institutions are adjusted in response to the demands of potential supporters. The latter are practices in

which the proto-institutions are adjusted in response to emerging competitive environments which often involves the integration of elements of competing proto-institutions. Apple's iPhone introduction, for example, has undoubtedly had a significant impact on many norms and taken-for-granted routines of our daily life. The introduction of an application platform, for instance, enabled Apple engineers, application developers, and iPhone users to collaboratively co-create institutions for the way we play games, find restaurants, and connect with companies. These institutional changes were, however, not limited to the Apple community. Competitive convergence, for example, forced many of Apple's competitors to also adopt application platforms to earn institutional legitimacy in the smart phone market. Likewise, iPhone users implemented practices that were not envisioned by Apple. Instead of buying music from iTunes, for example, many iPhone users now purchase songs from competitors such as Amazon or use Pandora and Spotify to stream music without owning it.

Based on this collective and iterative action, Zietsma and McKnight (2009) suggest that winning proto-institutions are always embedded with institutional components of multiple actors, or co-created, and that institutional work is never a winner-takes-all game. Institutional work therefore, in line with the S-D logics service ecosystem view, deemphasizes the action of single actors and, instead, focuses on collective action through which actors collaboratively shape their social systems. Furthermore, Zietsma and McKnight (2009), using Scott's (2008) three pillar conceptualization of institutions, not only corroborate the existence and importance of these three elements in institutional work, but also point to the potential importance of their interplay in change processes.

In this section, the concept of proto-institutions was introduced to explicate the entrenchment processes of institutions in service ecosystems. More specifically, the argument was made that value propositions can be viewed as technologies (useful knowledge) and that the earlier described duality of technology can also be found in value propositions. Furthermore, proto-institutional elements of value propositions were described as being continually shaped by overlapping and non-linear institutional work processes, both competitive and collaborative, until common templates become diffused. Stated alternatively, “doubt and trust, then gratitude and admiration, or on the contrary, suspicion, defiance and even hate, are at the heart of innovation (Akrich et al. 2002b).” Consequently, as stated at the beginning of the section, market innovation is conceptualized as an interactive and iterative process by which markets are continually formed and reformed through the actions and interactions of multiple actors. Viewing value propositions as mediums and outcomes of institutional arrangements, through their entrenchment and creation processes, firmly positions technology as endogenous to market and, thus, provides the conceptual foundation for the claim that institutionalization is the central process for both technology and market innovation. The next section, will discuss the underlying change mechanisms of these iterative institutional change processes in more detail.

## **Institutional Innovation: The Mechanisms of Evolutionary and Dialectical Change Processes**

### **The Fallacy of the Product Life Cycle**

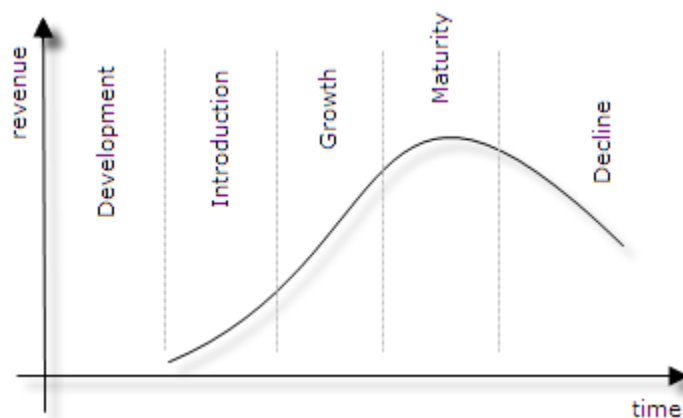
As discussed, the early marketing literature, deeply grounded in G-D logic thought and its perceptions of linear and dyadic value flows, largely ignored the systemic and

institutional aspects of value creation and resource integration. Consequently, changes in practices and solutions were viewed in terms of products and product innovation and traditional marketing scholars often used a life cycle conceptualization of change—the product life cycle (PLC)—to explain the phenomenon of market formation (Gardner 1987). Intuitively, viewed through a G-D logic lens, this analytical model was appealing because it is situated at the intersection of a single entity and a prescribed (predictable) mode of change (see Figure 1). In other words, it allowed the creation of normative models in which single producers of value (firms) can create predictable change (value laden products accepted by the market). In fact, even to this day, the PLC framework is still deeply entrenched in marketing thought due to its wide proliferation in journals, textbooks, and curricula (see Tellis and Crawford 1981 for a more detailed analysis of the PLC literature).

Gardner (1987), however, in his review of the PLC research, stated that the life cycle is more a metaphor than an empirically established construct. In line with this thought, Tellis and Crawford (1981) criticized the PLC as being too rigid and predictable, and as only applicable to single products or producers. While approaching the topic through a G-D logic lens, Tellis and Crawford (1981, p.131) argued “that products are in a state of constant evolution motivated by market dynamics, managerial creativity, and government intervention”, and, based on this argument, introduced the concept of the product evolution cycle (PEC). In other words, despite their G-D logical view, Tellis and Crawford realized that an underlying model of change for markets must be grounded in a more dynamic and systemic setting. Similarly, Lambkin and Day (1989) also reject the

validity of the PLC and highlight the potential of the ecological paradigm to study more dynamic market evolutions.

In summary, previous marketing research has begun to point out that market changes must be grounded in a dynamic and systemic approach. While the current work does not argue that successful products or services cannot display life cycle like growth patterns that includes development, introduction, growth, maturity and decline phases (see Figure 2), it is important to highlight that empirical evidence points to the fact that the majority of all products and services never reach the growth phase (Gourville 2005; Griffin 1997). Furthermore, growth patterns can also display sharp spikes of growth and decline, such as fads and fashions, or decline phases can reverse into new phases of growth.



*Figure 2: The Product Life Cycle (Anderson and Zeithaml 1984)*

Thus, following the arguments described above and using an S-D logic lens, the current work posits that there is a fundamental flaw in the PLC conceptualization. As highlighted in the discussion on markets, markets do not form around products and their

embedded value but are continually performed and shaped through the practices in social systems. Thus, a single entity change mechanism, such as the life cycle, is by definition incapable of capturing market change processes as it can only describe the change of an entity as the linear progression through a sequence of stages. Instead, as argued by the cited criticism of the PLC, a more systemic and dynamic approach to market formation and innovation is needed. Using Van de Ven and Poole's (1995) typology of change, such a systemic, dynamic and multi entity approach points to two possible analytical change mechanisms—evolutionary and dialectical process theory. As previously discussed, these two motors of change differ in regards to their *modes of change*. Evolutionary processes, as conceptualized by Van de Ven and Poole (1995) and described in the earlier part of this monograph, typically follow a prescribed mode of change in which the development of entities, institutions and human practices in this case, are incrementally adapting their forms in stable and predictable ways whereas dialectical processes typically lead to a constructive mode of change in which the change is discontinuous and an unpredictable departure from the past. The next two subsection will delineate both of these analytical models from an institutional perspective before addressing the interplay between the two in more detail.

### **Evolutionary Change Processes**

The literature on institutions in sociology, economics and organizational studies offers frameworks and empirical examples for both motors of change (i.e. the evolutionary and dialectical motors of change). Aldrich (1999), for example, argues that institutionalization or deinstitutionalization processes often follow the predefined steps of variation, selection, and retention . This view is also shared by organizational sociologists

who study institutional diffusion from a population ecology perspective. According to this work, competition for resources sets into motion evolutionary processes that force actors to imitate and conform to legitimate institutional practices (Campbell 1965; Loasby 2000; Poole and Van de Ven 2004). DiMaggio and Powell (1983), for example, describe *evolutionary change* processes in actors who, when faced with uncertainty, show mimetic isomorphism. Stated differently, the uncertainty inherent in markets, leads actors to imitate the actions of others (Haveman 1993) creating predictable environments that evolve gradually. The outcome of evolutionary institutional change as described in this literature is therefore consistent with Van de Ven and Poole's (1995) framework; mimetic isomorphism creates institutional change that is stable and develops in relatively predictable ways. Even the reproduction of structural properties, as conceptualized by Giddens (1984) and Sewell (1992) can, arguably, be viewed as resulting in evolutionary processes in which actors selectively reproduce the conditions that make such actions possible.

Similarly, the marketing literature provides evidence for micro level decision processes that support isomorphism in meso and macro resource integration processes. The earlier discussed work from Gourville (2005), for example, based on prospect theory (Kahneman and Tversky 1984; 1979), argues that human actors possess a status quo bias that counters discontinuous change. Gourville (2005, p. 13) points out that "highly innovative products, by their nature, often demand 'behavior changes' on part of the

consumers” and that consumers are likely to “see far less value in an innovation than an objective<sup>4</sup> analysis would suggest.”

### **Dialectical Change Processes**

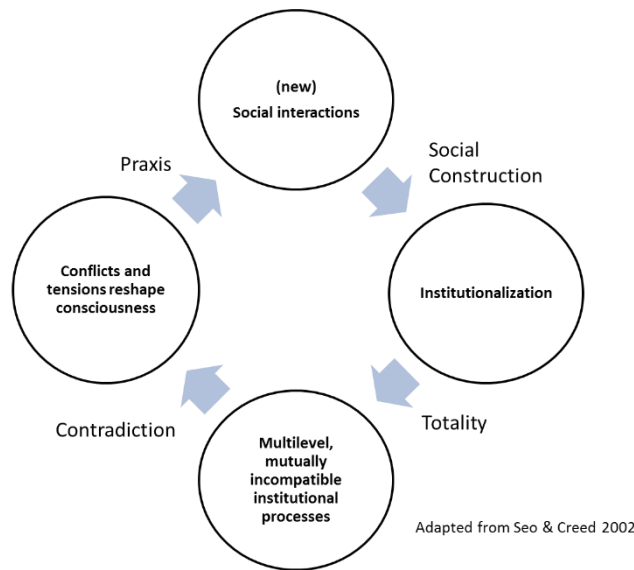
The evolutionary models of change described above have been criticized for taking the existence of markets and market niches as given. Fligstein (1996), for example, argues that a more political model is necessary to account for the social construction of institutions in the formation of markets. In line with this thought, Hargrave and Van de Ven (2006), building on a collective action model, propose that institutional innovation and change need to be viewed as dialectical processes. In these dialectical processes, institutional change emerges from the interaction of actors who are proponents of their institutional arrangements (thesis) and actors espousing contradictory arrangements (antithesis). New arrangements (synthesis) that emerge become new theses and are then challenged by proponents of alternative arrangements (antithesis) as the dialectical process recycles. The dialectical model therefore supports Zietsma and McKnight’s (2009) conceptualization of systemic actors, who compete against other actors sponsoring differing institutional arrangements.

In marketing settings, for example, Holt (2002) and Giesler (2008) use longitudinal analyses to show that the relationship between branding efforts and consumer culture is based on a dialectical entanglement between firms and consumers. While these studies have a somewhat narrow focus, they serve as an important indicator

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<sup>4</sup> In the context of the current work, the term “objective analysis” is obviously highly problematic. However, this citation correctly points out that different social groups can construct very different meanings (Pinch and Bijker 1984) in regards to the usefulness of technologies and value propositions.

that, in the marketing literature, the dialectical nature of social change needs further attention. Drawing on Benson (1977), Seo and Creed (2002, p. 240) have developed a model that, based on four basic principles: social construction, totality, contradiction, and praxis, can guide institutional change from a dialectical perspective (see Figure 3).



*Figure 3: Dialectical Change Model*

The current work will use and discuss a slightly adapted version of this model that uses the lexicon and conceptualizations that were introduced in the sections above (see Figure 4). More specifically, this adaptation uses the introduced concepts of mutual-resource-integration practices, *institutionalized solutions*, loosely coupled systems, and value propositions (Vargo and Lusch 2011b; Vargo and Lusch 2011a) to be consistent with the S-D logic lens used in this essay.

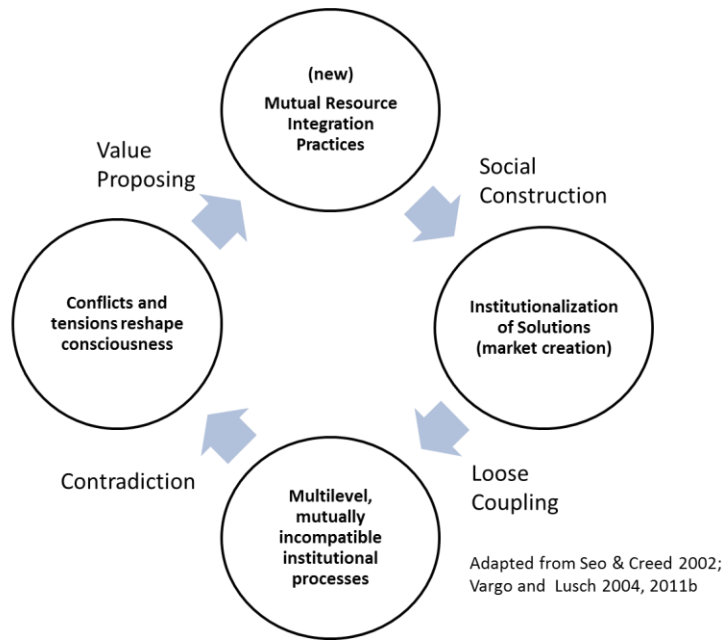


Figure 4: Adapted Dialectical Change Model

As indicated by the four arrows in Figure 4, the Adapted Dialectical Change Model is based on four basic principles. The first principle of this model, social construction, describes the construction of the social world. Human actors, through their interaction with each other, continually produce and reproduce social patterns that gradually built and eventually establish sets of institutional arrangements (Benson 1977). In the context of social and economic exchange, meso level resource integration practices can, as stated, establish institutionalized economic solutions or markets. As discussed, social construction is conceptualized as the parallel engagement of systemic actors in which both the creation of value propositions and the actual institutionalization of solutions is always a co-creational process of systemic institutional work.

The second basic principle, loose coupling (adapted from totality), refers to the need to conceptualize social phenomena as relational and interconnected. “Any particular

social structure is viewed not as an isolated, abstract phenomenon but, rather, as part of a larger whole composed of multiple, interpenetrating social structures operating at multiple levels and in multiple sectors (Seo and Creed 2002, p. 225).” As mentioned, institutions are imperfectly shared within and across nested systems and subsystems (Scott 2008; Vargo and Lusch 2012) and it is this attribute of the social world that mandates the proposed systemic approach to institutional change, discontinuous innovation, and market formation. However, it is important to note that the component social structures are loosely coupled and more or less autonomous and that this loose coupling facilitates incompatibilities both among and within social arrangements (Benson 1977). This loose coupling therefore directly leads to the third basic principle, contradiction. The principle of contradiction implies that the social order produced in the process of social construction contains contradictions, ruptures, inconsistencies, and incompatibilities (Benson 1977). Seo and Creed, in line with earlier cited work (e.g. Scott 2008), suggest that these structural contradictions are the catalyst for social change but not lead deterministically to such change.

The fourth and last principle, value proposing, (a form of praxis), relies on the notion that agents have the “abilities to artfully mobilize different institutional logics and resources, appropriated from their contradictory institutional environment, to frame and serve their interests (Seo and Creed 2002, p. 240).” Value proposing can therefore be conceptualized as a form of agency that mediates between institutional contradictions and institutional change. Based on perceived conflicts and tensions, and drawing on available resources (both operant and operand), actors engage in value proposing which may lead to changes in mutual resource integration practices. In other words, value proposing, as

all from of praxis is “the free and creative reconstruction of social patterns on the basis of a reasoned analysis of both the limits and the potentials of present social forms (Benson 1977, p. 5).”

As Callon (1998) points out, human actors can only function in environments in which certain options have been eliminated. Through the iterative nature of the dialectical cycle, the range of institutions and social patterns is continually regulated and kept at a level at which human actors can function. It is important, however, to not equate this regulating effect of *dialectical change* with deterministic outcomes. Dialectical institutional change, as all forms of *dialectical change*, is a constructive mode of change, meaning that the outcomes of *dialectical change* are often, in contrast to the evolutionary mode of change, discontinuous and unpredictable departures from the past.

### **Evolutionary and Dialectical Institutional Change in Service Ecosystems**

The section above has shown that the literature on systemic institutional change distinguishes between two analytical change mechanisms. The evolutionary institutional change process is more stable and predictable but tends to lead to mimetic isomorphism, both in terms of organizations and value propositions. The *dialectical change* process, on the other hand, is characterized by a higher degree of unpredictability. This latter perspective highlights that the action and consciousness of human actors are not only shaped by existing institutional arrangements but also by institutional incompatibilities which provide continuous sources of tensions and conflicts within and across institutions (Seo and Creed 2002).

It is important to keep in mind, however, that the above described motors of change are ideal types. Below, based on the concept of institutional work, I propose that in real empirical market settings, institutional change is always based on the existence and interplay of both motors. Even the creation of new useful knowledge (i.e. technologies) highlights this interplay. While new technologies are birthed through the combinatorial evolution of existing operant resources, or, stated differently from building-blocks of existing knowledge and skills, the perception and use of these technologies is enabled and constrained by existing institutions and influenced by the ongoing negotiations and recombination of overlapping institutions (i.e. social technologies).

This endogenous view of technology in market practices overcomes the notion of traditional innovation research that superior products deterministically lead to market leadership or, stated differently, that innovation is simply a race to accumulate the highest level of technological knowledge and skills. As Christensen (1997a) points out, discontinuous and disruptive innovations are often based on value propositions from smaller firms and startup companies with somewhat limited operant resources and market innovations do not necessarily require products with superior features. Thus, while the access to relevant technology is without a doubt an important aspect of creating innovative value propositions and new markets, the purpose of the current work is to highlight that market innovation is never just the outcome of technological development efforts but an interactive and iterative process in which markets are continually formed and re-formed through the actions and interactions of systemic actors.

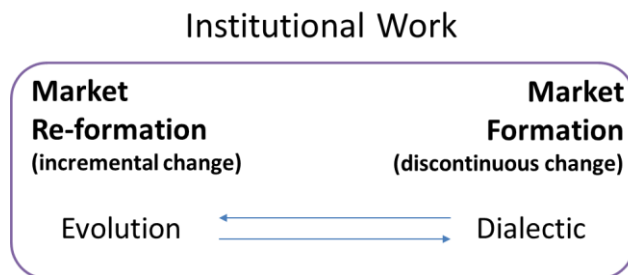
Kim and Mauborgne (2004) distinguish between two market environments: red and blue oceans<sup>5</sup>. “Red oceans represent all the industries in existence today—the known market spaces. In red oceans, industry boundaries are defined and accepted, and the competitive rules of the game are well understood (Kim and Mauborgne 2004).” In other words, red oceans are conceptualized as being somewhat isomorphic, limiting the strategic choices of firms to “beating the competition”, and “exploiting existing demand” within a given range of institutional arrangements. Blue oceans, on the other hand, are unknown and uncontested market spaces which are untainted by competition. Demand, in these spaces, is not fought over but newly created through the institutionalization of new solutions.

It is tempting to equate red ocean environments to evolutionary and thus more isomorphic institutional change processes and blue oceans to dialectical or more unpredictable institutional change processes. Such a view would suggest that value proposing actors have the choice to either introduce variations and modifications of existing value propositions into a red ocean or to create a blue ocean by introducing radically new value propositions. However, this view would not only be too undersocialized (i.e. a view that allows actors to reflexively disconnect from their institutional arrangements) but also too linear to reflect the dynamic, relational, and multidimensional nature of social systems. Instead, based on the earlier introduced conceptualizations of institutional work and proto-institutions, I suggest that all

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<sup>5</sup> In the context of the current work, red and blue oceans are introduced as two ideal types of markets. Using these ideal types can, arguably, help to explicate institutional change mechanisms in markets. However, the current work will show that this conceptualization cannot adequately describe real empirical market (re)formations.

institutional change is shaped by overlapping and non-linear institutional work processes, both competitive and collaborative. In other words, markets are continually formed and re-formed through the simultaneous and overlapping creation, maintenance and disruption of institutional logics by systemic actors or, stated differently, through an interplay of evolutionary and dialectical institutional change mechanisms (see Figure 5).



*Figure 5: Interplay of Institutional Change Mechanisms in Market (Re)Formation (1)*

Even the institutionalization of new solutions (blue oceans), for example, is always a co-created process with both evolutionary and dialectical components. Apple’s Multi Touch technology exemplifies this idea. By integrating very intuitive and established hand gestures to manipulate content on iPads, Apple designers took advantage of unconscious or taken-for-granted elements of practices that were highly institutionalized. In other words, the practices of manipulating content on the iPad screen are being reproduced in an evolutionary manner. At the same time, the iPad has enabled dialectical and discontinuous changes in the way we store, transport and access data. Stated alternatively, the creation of the tablet market, which most people would undoubtedly equate to a blue ocean environment, had both incremental and discontinuous change components. Similarly, even stable markets, with their established

*institutionalized solutions*, always possess dialectical elements since the nested and interdependent nature of service ecosystems ensures the continuous introduction of new and conflicting practices (antitheses) despite the fact that a high degree of institutionalization might discount them as illegitimate.

This interplay of *evolutionary* and *dialectical change* can not only adequately explain the formation of both blue and red ocean environments, but also any variations between these two ideal types. Furthermore, this interplay answers Fligstein's (1996) call for a more political model for the social construction of institutions in the creation of markets by delineating the non-linear, competitive, and collaborative co-creation of practices. It is important to highlight, however, that the focus on institutional change mechanisms proposed by this model does not result in a view in which value proposing actors are seen as incapable of influencing the formation or re-formation of markets, but in a balanced view that is, arguably, able to solve the paradox of embedded agency and to overcome the limitations of more traditional practice theories in explaining discontinuous change.

The interplay of the evolutionary and dialectical motors in service ecosystems is not random, but, as will be discussed, is influenced by important macro-micro linkages. As stated, based on the earlier introduced concept of totality, service ecosystems and their sub systems are conceptualized as relational and interconnected environments in which institutional arrangements are full of raptures and contradictions, and which need to be viewed as the venues for innovation and institutional transformation (Benson 1977; Scott 2008). In the context of markets, value proposing actors can use these raptures and contradictions to propose solutions (value propositions) to the pragmatic and normative

exigencies of co-created lived situations that established institutions (i.e. markets) cannot solve, and thus, create hopes, fears, and desires for the future. Furthermore, by finding resolutions for deeply felt raptures and contradictions, value proposing actors can increase the likelihood of *dialectical change* outcomes or the creation of blue ocean environments. This notion refocuses the goal of the value proposing actors from providing resources that “fit” into existing or prescribed practices of other actors, to enabling these actors (and other stakeholders) to co-create fitting institutional arrangements that make unique and novel resource integration and value creation practices possible and meaningful.

As described, this shift points toward the need for a more comprehensive, systemic, and service-oriented approach to innovation. Traditional marketing tools and strategies, such as the segmentation of markets and the targeting of these segments with the help of the four Ps, fail to address the co-created, systemic, and dynamic nature of the formation and re-formation of markets. Even the concept of market orientation cannot remedy this issue. Kohli and Jaworski (1993), for example, conceptualize market orientation as activities such as designing and offering new products or services, and producing, distributing, and promoting these products in a way that creates favorable customer responses. Similarly, Narver and Slater (1990) describe market orientation as an ideology that urges firms to develop and exploit market information in order to create and maintain superior customer value. Thus, while the market orientation literature recognizes the importance of customer needs and wants, it is still grounded in traditional value flows views of value producing firms and value consuming customers.

More recently, design thinking approaches have gained popularity and seem to show more promise in the creation of value propositions that can resolve institutional contradictions and ruptures (Venkatesh et al. 2012). While the term “design thinking” lacks a clear and concise definition (Kimbell 2009), these design methodologies aspire to frame problems and opportunities from a human-centered and dynamic systems perspective and view environments as venues for the development of new solutions (contradictory arrangements; antithesis) and institutional transformations (e.g. Buchanan 1992; Rittel and Webber 1973; also see definition of wicked problems above). It is not in the scope of the current work to explore the techniques and normative implications of design thinking methodologies in detail but these methodologies will receive more attention in the discussion section. Instead, I will return to the development of the ICM model. More specifically, after exploring more macro or market level processes above, the next sections will explore the role and impact of micro-level uncertainty on the interplay of the evolutionary and dialectical institutional change to arrive at a model that makes the importance of macro-micro linkages salient.

It makes intuitive sense that novel value propositions whose proto-institutional elements have not yet become institutionalized are linked to higher levels of uncertainty. As Akrich, Callon, and Latour (2002a) point out, “innovation by definition, is created by instability, by unpredictability which no method, however refined, will manage to master entirely (p. 195).” In this context it is therefore important to restate that all service ecosystems are uncertain and that value propositions can never exactly fit into existing institutional arrangements, since, as Vargo and Lusch (2011b) point out, service ecosystems are constantly adapting to changing contextual requirements of actors and are

simultaneously creating these changing contexts in the process. In other words, all markets are continually formed and re-formed through the actions and interactions of systemic actors and the notion of resources or value propositions that fit exactly into existing practices is an ontological fallacy.

As DiMaggio and Powell (1983) point out, when faced with uncertainty, actors tend to imitate the actions of other actors creating a status quo bias. Since service ecosystems are always complex and dynamic, and their change is, to various degrees, indeterminable, this thought might lead to the inaccurate conclusion that institutional change, in these systems, is mostly evolutionary. However, uncertainty, arguably, does not always inhibit praxis—the ability of actors to artfully mobilize different institutional logics—but micro-level actors can use an interplay of two change mechanisms to cope with this uncertainty. The next section will introduce and delineate these two micro-level change mechanisms and analytically connect them to the proposed interplay of the evolutionary and the dialectical motors of change to form a model that can provide a wide range of modes of institutional change, from almost prescribed to constructive modalities, or, stated differently, from incremental innovations to new market creations.

### **The Temporal-Relational Nature of Agency and Innovation**

Battilana and D'Aunno (2009), building on work from Giddens and Bourdieu and by extending it with insights from Emirbayer and Mische (Emirbayer 1997; Emirbayer and Mische 1998), highlight an important aspect of human agency. They reject Oliver's (1991) conceptualization of agency as a unidimensional concept that represents agency on a continuum whose extremes correspond, respectively, with the highest level of agency possible (active agency) and with the lowest level of agency possible (passive

agency). Battilana and D'Aunno claim that this concept ignores the evolving and contextual nature of agency and, instead, suggest that agency needs to be viewed as a multidimensional concept. Based on Emirbayer and Mische (1998), Battilana and D'Aunno (2009, p. 46) define agency “as an actor’s engagement with the social world that, through the interplay of habit, imagination, and judgment, both reproduce and transform an environment’s structures.”

This interplay points to what Emirbayer and Mische (1998) call the “temporal-relational context of human action”. More specifically, they define human agency “as the temporally constructed engagement by actors of different structural environments—the temporal-relational context of action—which, through the interplay of habit, imagination, and judgment, both reproduces and transforms those structures in interactive responses to the problems posed by changing historical situations (Emirbayer and Mische 1998, p. 970).” Based on this definition, Emirbayer and Mische propose that human agency has three constitutive elements or dimensions: Iteration (habit), *projectivity* (imagination), and practical-evaluation (judgment).

### **The Iterative Element of Agency**

The iterative element refers to “the selective reactivation by actors of past patterns of thought and action, as routinely incorporated in practical activity, thereby giving stability and order to social universes and helping to sustain identities, interactions, and institutions over time (Emirbayer and Mische 1998, p.971).” In other words, the iterative element can be described as the ability of actors “to select, and to appropriately apply the more or less tacit and taken-for-granted schemas of action that they have developed

through past interactions (Emirbayer and Mische 1998).” Thus, even habitual action needs to be viewed as intentional, since, due to the earlier introduced concept of the transposability of schemas (Sewell 1992), actors always have the option to choose from multiple and nested practices and routines at any given moment.

### **The Practical-evaluative Element of Agency**

The practical-evaluative element of agency encompasses “the capacity of actors to make practical and normative judgments<sup>6</sup> among alternative possible trajectories of action, in response to the emerging demands, dilemmas, and ambiguities of presently evolving situations (Emirbayer and Mische 1998, p. 971).” Stated differently, the practical-evaluative element of agency is oriented towards the present since even established institutions must be re-created and this re-creation needs adjustments to pragmatic and normative exigencies of lived situations.

### **The Projective Element of Agency**

The projective element of agency describes “the imaginative generation by actors of possible future trajectories of action, in which received structures of thought and action may be creatively reconfigured in relation to actors’ hopes, fears, and desires for the future (Emirbayer and Mische 1998, p. 971).” Emirbayer and Mische describe this dimension as an interactive and cultural embedded process in which actors negotiate their path into the future by constructing changing images of where they think they are going, where they want to go, and how they can get there. In other words, *projectivity* can be

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<sup>6</sup> These practical and normative judgments are, in line with the institutional thought of this monograph, always themselves grounded in the institutional arrangements of actors.

conceptualized as located at the juncture of iterational and practical-evaluative aspects of agency since, actors can adopt a reflexive stance and project themselves into the future when faced with problems that current institutional arrangements and practices cannot solve (Battilana and D'Aunno 2009; Emirbayer and Mische 1998). In other words, *projectivity* is based on the assumption that actors can reflexively proceed toward goals and *projectivity* can, thus, be characterized as a teleological motor of change.

Teleological change processes assume that actors are purposeful and adaptive, by themselves or in interaction with others, and that actors construct envisioned end-states, and take action to reach these end-states while monitoring their progress (Poole et al. 2000).

### **The Chordal Triad**

Emirbayer and Mische (1998) stress that the three dimensions of human agency need to be viewed as analytical distinctions, and that, in a concrete empirical instance of action, all three of these constitutive dimensions of human agency, in various degrees, can be found. To illustrate this point, Emirbayer and Mische use the metaphor of a chordal triad. The three dimensions of human agency resonate as separate but not always harmonious tones, and, depending on the context, one dimension might dominate the others.

The discussion above highlights the unfolding character of human practices since these practices are situated in time and can only be understood in terms of the circumstances that frame them (Suchman 1987). Practices of human actors are therefore not only shaped by existing institutional arrangements and institutional incompatibilities, but also by the temporal interpretations of these arrangements, ruptures, and

inconsistencies. Flaherty and Fine (2001), for example, point out that the past is open to reconstruction as it is constantly being reinterpreted in light of new experiences.

### **Temporal Orientations and Innovation**

Poole and Van de Ven (2004), highlight the importance of temporal orientations in change and innovation processes. Similarly, Araujo and Easton (2012) suggest that “[i]nnovators stand at the intersection of past, present and future. They offer interpretations of past history, actively shape objects and contexts of action, mobilize resources based on a particular version of the future which they attempt to render ‘real’ (Araujo and Easton 2012, p.314)”. Somewhat related, Håkansson, Olsen, and Tore (2013) look at the three elements of agency, in the context of innovation, from a relational perspective and argue that the combination of different histories, different expectations and different analysis often has surprising effects on the combinations of things and ideas. In line with this thought, Emirbayer and Mische (1998) believe that actors who are positioned at the intersection of multiple temporal-relational contexts might be able to develop greater capacities for creative and critical intervention. In other words, the intersection of the past, present, and future, might make novel solutions more salient and desirable, and, as a result, lead to higher levels of human consciousness and praxis; thus enabling dialectical institutional change.

## **Institutional Change Mechanisms in the Formation of Markets: Connecting the Conceptual Pieces into a Model**

As discussed in the previous section, Emirbayer and Mische (1998, p.1012) claim that social actors always live simultaneously in the past, present, and future and that these actors continually adjust “the various temporalities of their empirical existence to one another (and to their empirical circumstances) in more or less imaginative or reflective ways.” In other words, on a micro-level, human agents rely on an interplay between a practical-evaluative and a projective motor of change in which the practical-evaluative dimension of agency, the selection and application of more or less tacit and taken-for-granted institutions can be viewed as a life-cycle motor of change since it describes changes to a discrete entity that undergoes changes while maintaining its identity, and the *projectivity* dimension can be viewed as a teleological motor since it allows actors to adopt a reflexive stance and project themselves toward an envisioned end-state.

Furthermore, both of these change mechanisms fit the broad rubric of “bounded rationality” since they compensate for the fact that human actors have restricted access to information, cognitive limitations, and a finite amount of time to make decisions (Simon 1996). In the context of institutional change, I therefore adapt Van de Ven and Pool’s (1995) typology of change by substituting the lifecycle motor for a practical-evaluative motor of change and the teleological motor for a projective motor of change (see Figure 6). Furthermore, since the formation of new markets is conceptualized as a collective action through which actors collaboratively and temporarily stabilize institutional solutions, the formation of markets is more accurately shown by vertically rotating the

modes of change (in Van de Ven and Pool's (1995) typology of change); going from more constructive (discontinuous) to more prescribed (incremental) modes of change.

The previous section points not only to an interplay between the temporal dimensions of human agency (i.e. *practical-evaluation* and *projectivity*) but also to the existence of a nested relationship between the *projectivity* and the dialectical motors of institutional change (see Figure 6). More specifically, value proposing (i.e. a form of praxis), the fourth element of the *dialectical change* model, seems to be driven by an underlying *projectivity* motor of change, while at the same time, *projectivity* cannot be viewed as an isolated phenomenon but is always embedded in macro-level, multidimensional, and interpenetrating social structures (as indicated by the bidirectional arrows between the *projectivity* and the dialectical motor of change in Figure 6). Similarly, evolutionary macro-level change seems to exhibit an interplay with an underlying practical-evaluative motor, resulting in more incremental and predictable institutional adjustments. As Poole, Van de Ven, Dooley, and Holmes (2000) empirically show, such a nested relationship of motors of change is common in more complex systems and points to the importance of macro-micro linkages. This nested relationship therefore supports claims from Battilana, Leca, and Boxenbaum (2009) that the study of value co-creation and institutional change must include various levels of analysis and their interplay in order to capture the complex interactions of social systems.

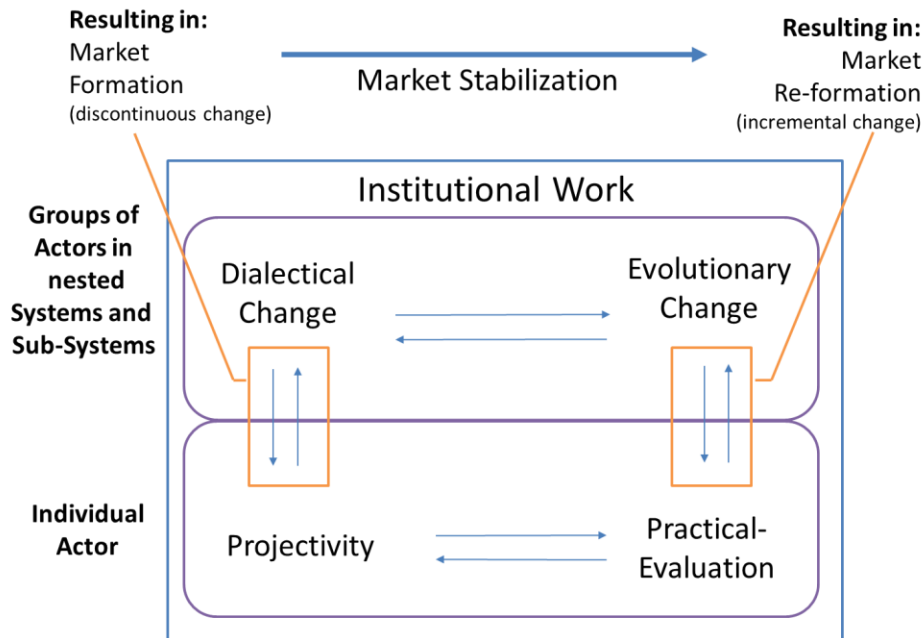


Figure 6: Interplay of Institutional Change Mechanisms in Market (Re)Formation (2)

It is important to point out that, while the IMC model not specifically highlights the role of iteration, it would be a mistake to assume that the iterative element is absent from this model. Emirbayer and Mische (Emirbayer and Mische 1998) describe the iterative element as helping to sustain identities, interactions, and institution over time. Thus, it can be equated to what Lawrence and Suddaby (2006) call institutional maintenance and, as explained, institutional maintenance part of all institutional change processes. Foundational to both practical-evaluation and projectivity, for example, are alternative or future trajectories. These trajectories, in line with institutional work, always carry traces of maintained institutions.

In summary, the micro-level positioning of actors at the intersection of multiple temporal-relational contexts is suggested to play an important role in institutional change processes. More specifically, the model highlights that macro-level *dialectical change* seems to be driven by an underlying interplay with a *projectivity* motor of change

whereas macro-level *evolutionary change* seems to be driven by an underlying interplay with a practical-evaluative motor. Consequently, corresponding to the micro-level interplay between the temporal dimensions of human agency (i.e. *practical-evaluation* and *projectivity*) is the interplay between the evolutionary and dialectical motors of change that was explained in the section leading to Figure 5.

The next section will highlight that, while the practical-evaluative motor of change is mainly based on existing institutional arrangements, the *projectivity* motor of change relies on alignments of value propositions and *narrative infrastructures*. More specifically, it will be proposed that *narrative infrastructures* that align with novel value propositions can guide actors to adopt a reflexive stance and help them to project themselves toward a version of the future<sup>7</sup> which they attempt to render ‘real’, or, stated differently, that the intersection of past, present and future might successfully invite actors to co-create new institutionalized solutions.

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<sup>7</sup> In line with effectuation theory (Sarasvathy, 2001, p. 247), these versions of the future are not viewed as static but actors “shape and construct them over time, making use of contingencies as they arise.”

## The Role of Narratives in Institutional change

### Narrative Infrastructures

The ICM Model describes the mechanisms of institutional change for value co-creation processes in service ecosystems and the (re)formation of markets. On a macro level, the model proposes two underlying institutional change processes, the more prescriptive *evolutionary change* and the constructive *dialectical change* and explicates how these two processes, to various degrees, always co-exist. Service ecosystems, by definition, are always complex and dynamic and their change is, to various degrees indeterminable. However, as argued above, the uncertainty of these systems, does not always stun praxis, since micro-level social actors possess ways of coping with this uncertainty.

Thus, uncertainty needs to be viewed as an important component of institutional change and market formation and it is therefore important to unpack this component further. Lane and Maxfield (2005), in their innovation research, introduce three distinct forms of uncertainty: truth uncertainty, semantic uncertainty, and ontological uncertainty.

In the first type of uncertainty, truth uncertainty, “actors are uncertain about whether well-defined propositions are true or not (Lane and Maxfield 2005, p. 9).” As mentioned, service ecosystems are constantly adapting to changing contextual requirements of actors and, even in highly institutionalized red oceans, practices, actions, and interactions evolve continually, creating truth uncertainty in the process. Actors cope with this uncertainty by appropriately applying “the more or less tacit and taken-for-granted schemas of action that they have developed through past interactions (Emirbayer and Mische 1998)”, or, stated differently, have the ability to choose from multiple and

nested practices and routines (institutions) at any given moment using their iterative elements of agency.

In the second type of uncertainty, semantic uncertainty, actors are uncertain about the meaning of propositions. Discontinuous innovations, for example, can create new artifacts and processes which are open to various interpretations in relation to existing institutional arrangements (Araujo and Easton 2012). The third and highest level of uncertainty, ontological uncertainty, describes the inability of actors to generate stable propositions about what kind of entities inhabit the world, what kind of interactions these entities can have among themselves, and how these entities and their interaction modes change as a result of these interactions (Lane and Maxfield 2005).

Lane and Maxfield (2005) propose that ontological uncertainty, despite the fact that it has received only limited attention in business research, is essential for understanding innovation processes. More specifically, they argue that ontological uncertainty can paralyze actors and, thus, deter institutional change and promote institutional stasis. This thought aligns well with the above discussed multidimensional concept of agency. Ontological uncertainty limits *projectivity*, and without *projectivity* actors cannot adopt a reflexive stance and project themselves into a desired future when faced with problems that current practices cannot solve. In other words, ontological uncertainty can prevent human actors from finding the intersection of the past, present, and future which Araujo and Easton (2012) and Emirbayer and Mische (1998) suggest as the contexts that can enable greater capacities for creativity and innovation.

Lane and Maxfield (2005) suggest narrative embedding as a means to overcome ontological uncertainty. They state that, “[b]y embedding their present context in a narrative structure and enacting their own assigned roles in the resulting plot...actors may combine teleology with indeterminism—that is, have a sense for where they are heading, even if they cannot foresee the interaction pathways that will take them there (2005, p. 1).” Social movement research further highlights the importance of *narrative infrastructures*, or “discursive fields” as this research terms them, in meaning making and as mediating the link “between structure and meaningful action (Spillman 1995, p. 139). Drawing on Steinberg’s (1999) conceptualization of discursive fields as “dynamic terrain[s]” in which meaning contests occur,” Snow (2008) argues that these fields not only enable and constrain meaning construction but also provide the tools for meaning work.

Using the “field” concept from Bourdieu (1977) and DiMaggio and Powell (1983), Snow (2008, p. 10) describes fields as set of “actors that ‘constitute a recognized area of institutional life,’ such as, in a given area of economic life,” the key suppliers, customers, regulatory agencies, and other organizations that produce similar resource integration and value co-creation practices. More specifically, “discursive fields evolve during the course of discussion and debate, sometime but not always contested, about relevant events and issues,” and are the dynamic systems in which meaning construction occurs. Furthermore, social movement scholars often employ the concept of “framing (e.g., Gamson et al. 1982; Snow and Benford 1992) to describe the institutional contexts in which human activities are embedded. As stated, without these constantly evolving and co-created frames, actors would have no sense for where they are heading, and would not

be capable of meaningful action when face with ontological uncertainty. Similarly, in the context of markets, Kjellberg and Helgesson (2006; 2007) describe how representational practices, the activities of describing and shaping images of markets, are core elements in the formation and re-formation of these markets.

Thus, discursive fields, or *narrative infrastructures* in service ecosystems, need to be viewed as enabling praxis—the ability of agents to artfully mobilize different institutional logics and resources—and therefore as an enabling element of dialectical institutional change. In other words, narrative structures help human actors to co-create new institutions that are “not merely aggregations of individual attitudes and perceptions but also the outcome of negotiated shared meanings” (Gamson 1992, p. 111) which are necessary to support the co-creation of discontinuous change. *Practical-evaluation*, on the other hand, is mainly based on the use of existing, unconscious or taken-for-granted aspects of institutions, which, through selection processes, support incremental change of existing outlines and templates for actions. Due to the important role of *narrative infrastructures* in institutional change, this concept needs to be incorporated in the institutional change model (see Figure 7) and unpacked further below.

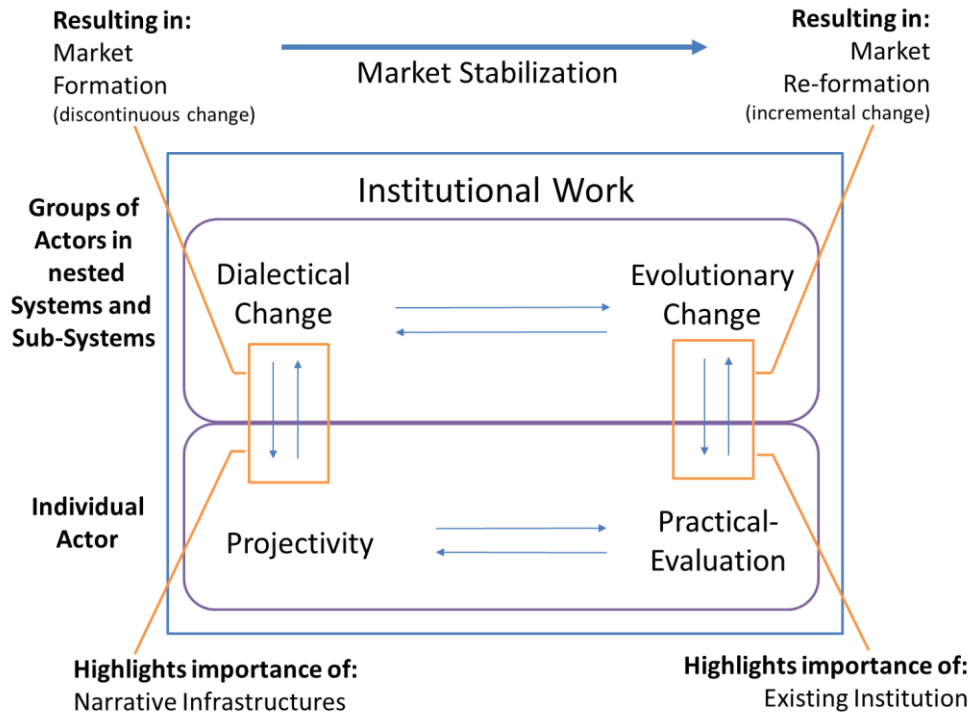


Figure 7: Interplay of Institutional Change Mechanisms in Market (Re)Formation (3)

Czarniawska-Joerges (2004) defines a narrative as a spoken or written text giving an account of an event or action or series of events or actions which are chronologically connected. These narrations occur in interactions, inform and shape action, and make action into something memorable (Deuten and Rip 2000). Deuten and Rip (2000), citing Boje (1991), point out that, in the past, the organizational literature has often treated storytelling as a managerial tool; implying that the agency of managers precedes the narratives or stories being created. Contrary to this thought, Deuten and Rip propose that agency appears only in and through narratives. They posit that “the manager’s own actions are as much a part of the evolving narratives as the actions of others that they intend to influence (Deuten and Rip 2000, p. 72).” In other words, narratives have a constitutive role in the creation of agency in general and the multidimensional concept of

agency in particular. More specifically, narrative infrastructures of markets can be viewed as antecedents of institutionalized resource integration practices and as the glue between micro and macro levels of service ecosystems.

In summary, based on the literature presented in this section, narrative structures are suggested to help human actors, through their ability to provide bridges between past, present, and future, to overcome ontological uncertainty. By framing otherwise discrete and disparate events into a narrative structure, actors are able to confront ontological uncertainty by temporarily stabilizing entities and their relationships whilst leaving room to accommodate changes (Araujo and Easton 2012, p. 315).”

The majority of the work on narratives in the innovation literature has focused on internal strategy development for firms and products (e.g. Barry and Elmes 1997; Deuten and Rip 2000; Lane and Maxfield 2005). However, as Boje (1991, p. 107) points out, “storytelling is the preferred sense-making currency of human relationships among internal and external stakeholders.” Simakova and Neyland (2008), for example, in an ethnography at a high-tech company, highlight the role of tellable and compelling narratives both internally and externally to the firm. While this work does not explicitly establish the here proposed link to institutions, it highlights the importance of narratives in the creation of new markets. Perhaps the most important work in establishing the link between narratives and market creation is Rosa, Porac, Runser-Spanjol and Saxon’s (1999) article in the *Journal of Marketing*. The authors argue for the importance of institutions, conceptualized as cognitive structures, in connecting the practices of market actors across time and space. Rosa and colleagues (1999) suggest that markets are

stabilized and created by means of market stories<sup>8</sup>. Citing Weick (1995), they claim that “stories in general are critical sensemaking tools among participants in social systems (Rosa et al. 1999, p. 68).” In line with this thought, Weick (1995, p. 4) describes sense-making as a recurring cycle through which “individuals form unconscious and conscious anticipations and assumptions, which serve as predictions about future events.” In this context, he (1995, p. 61) claims that “a good story holds disparate elements together long enough to allow people to make retrospective sense of whatever happened, and engagingly enough that other will contribute their own inputs in the interest of sensemaking.”

However, Rosa et al. (1999), undoubtedly influenced by G-D logic thought, provide a model that is, arguably, built on the earlier described fallacy of the producer and consumer divide (also see Vargo and Lusch 2011b). As evidenced by their hypotheses and their overall framework, these authors conceptualize distinct consumer and producer market stories. The current work, on the other hand, argues, following Araujo and Easton (2012), that *narrative infrastructures* are always based on an alignment of multiple market stories and that only these combined *narrative infrastructures* can craft coherence among social actors and mobilize support for particular practices. Stated differently, narratives are always co-produced (Boje 1991). “The teller of a story has a listener who will respond and become the author of a further story, building on, adapting and/or contrasting the earlier story—always in the broad sense, including material and social aspects (Deuten and Rip 2000, p. 74).” In fact,

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<sup>8</sup> In the literature on markets and innovation, the terms “stories” and “narratives” are often used somewhat interchangeably. In the current work, narrative infrastructures are conceptualized as the alignment of multiple stories.

Deuten and Rip suggest that, in social systems, there is no single author and no master text being written, but multiple stories can come into alignment to form a narrative infrastructure. According to these scholars (Deuten and Rip 2000, p. 74), this infrastructure can be seen as the ‘rails’ along which multi-actor and multi-level processes gain thrust and direction.” In the context of the institutionalization of novel solutions (i.e. the formation of markets), narratives “help generate the knowledge structures that enable market actors to reconcile current experiences and behaviors with preexisting beliefs, and by doing so, stories shape future behavior (Rosa and Spanjol 2005).” Market *narrative infrastructures* are therefore not only important sense-making tools but can, by helping actors to resolve the earlier described tension between *projectivity* and indeterminism, provide a pathway to a desired future and institutional change. However, as Araujo and Easton (2012, p. 41) point out, these ‘rails’ are not static, and *narrative infrastructures* are in constant danger of losing “their compelling character, as they fail to hold the attention of, and capacity to, mobilize constituencies.”

## **Market (Re)Formation in Service Ecosystems—A Summary of the Framework**

Based on the analysis up to this point, service ecosystems need to be conceptualized as systems of resource-integrating actors connected by shared institutional logics and mutual value creation through service exchange (Vargo and Lusch 2011b). The provided review of the relevant literature has demonstrated that marketing thought, at least selectively, has started to recognize the importance of institutions and institutional change. However, as highlighted, previous work in marketing has often narrowly focused on sub-categories of institutions such as relational norms, governmental regulations, or mental framing or on dyadic and linear relationships. In other words, it has somewhat ignored Alderson (1965) and Arndt's (1981) calls for more systemic approaches to institutional research in marketing.

This systemic approach, on the other hand, is foundational to the current work in which institutional arrangements are conceptualized, consistent with S-D logic, as systems of meanings, norms, values, beliefs, and rules. While the current work, using a service-driven and institutional lens, views innovation in terms of changes in market relationships and practices, it does not ignore the significance of technological development but, instead, establishes a needed link between the technological and the market components of innovation. By drawing on Arthur (2009) and Vargo and Lusch (2004; Vargo and Lusch 2008), the current work shows that operant resources (competences, knowledge, and skills) and not physical things lie at the heart of both technologies and value propositions. Using the aggregate term of “useful knowledge” for technologies and value propositions, it is argued that technological and market innovation

are not separate and sequential processes, but that the innovation of both is occurring through ongoing institutionalization processes.

Foundational to this endogenous view of technology is the mutually constitutive nature of structure and agency as illustrated by Giddens (1984) and Bourdieu (1977). More specifically, the relational nature of service ecosystems highlights the fact that, institutional work—the disruption, maintenance and creation of institutions—always involves the parallel engagements of systemic actors who compete against other actors sponsoring differing arrangements. In other words, using an A2A conceptualization, highlights the fact that the entrenchment of institutional change is always a non-linear, co-creational process with collaborative and competitive components.

I introduce a model of institutional change and explicate how four underlying change mechanisms and their interplay can be found in all market formation processes. On a macro-level, the interplay between the evolutionary and the dialectical motors of change can explain a wide range of modes of practice changes, from almost prescribed to constructive modalities. On a micro-level, on the other hand, human agency is delineated as a multidimensional concept which suggests that social actors always live simultaneously in the past, present, and future. This temporal-relational aspect of agency highlights, on a micro-level, an interplay between a practical-evaluative and a projective motor of change. On this micro level, it is argued that *narrative infrastructures* can help market actors to overcome ontological uncertainty and can set these actors on a path to co-create institutional arrangements that make novel resource integration and value creation practices possible and meaningful. In other words, as shown in Figure 7, a narrative infrastructure can be viewed as enabling praxis—the ability of agents to artfully

mobilize different institutional logics and resources—and therefore as an enabling element of macro-level dialectical institutional change whereas *practical-evaluation*, based on the use of existing, unconscious or taken-for-granted aspects of institutions, supports macro-level incremental change of existing outlines and templates for actions.

In summary, service ecosystems, based on the concept of totality (Benson 1977), need to be conceptualized as having various ruptures and inconsistencies within and among their institutional arrangements and the ICM Model was introduced that, using interlinked and nested motors of change, can explain incremental and discontinuous institutional change in these systems without adopting an under- or over-socialized view. Table 2 contrasts the foundational conceptualizations and premises of the emerging and the traditional view of innovation and market (re)formation. While the emerging framework is relatively simple and parsimonious, it does not create a reductionist view of complex and systemic social change processes. The simple rules of these nested and interrelated motors can, as proposed by complexity theory, interact in very surprising and complex ways (Waldrop 1992).

*Table 2: The Emerging and the Traditional View of Innovation and Market (Re)Formation*

	<b>Emerging View</b>	<b>Traditional View</b>
View of Markets	Markets are "performed" through the actions and interactions of market actors and can be viewed as <i>institutionalized solutions</i> .	Markets are preexisting (can be discovered) and relatively static and often segmented into smaller and more manageable parts.
View of Relationships	All actors involved in economic exchange are participating in resource integration, value co-creation, and innovation through reciprocal and interactive	Dyadic relationships in which corporate producers, entrepreneurial innovators, or innovation networks are viewed as creators of innovative products

relationships in service ecosystems.

and consumers as adopters of these products.

Venues for Innovation	Service ecosystems of interconnected and socially embedded actors. Innovation processes always possess both technological and market components.	Technology or product design teams of corporations, entrepreneurial innovators, or innovation networks.
View of Technology	Operant resources lie at the heart of technology and technologies are always endogenous to markets as they are and outcome and media of institutional change. In other words, technology have institutional properties.	Technology is embedded into products or processes by innovating firms or entrepreneurs and needs to be integrated or adopted into exogenous markets.
Innovation Processes	A nonlinear process in which multiple actors co-create institutions by competing and collaborating through multiple iterations of institutional work.	A linear, sequential flow in which corporate producers, entrepreneurs or innovation networks create innovative products and consumers adopt these products.
Innovation Drivers	Institutional change processes that can only be understood in the context of interrelated micro and macro levels and are driven by an interplay of evolutionary, dialectical, iterative, and projective motors of change in service ecosystems.	Formal product development processes (life cycle motor of change) or trial and error learning approaches (teleological motor of change) in which alternatives are tested until an envisioned solution can be implemented.
View of Market Stories	<i>Narrative infrastructures</i> are always coproduced and based on the alignment of multiple market stories. <i>Narrative infrastructures</i> have a constitutive role in the creation of agency by enabling market actors to envision where they are heading.	Storytelling is viewed as a managerial tool. The agency of managers precedes the narratives or stories being created (e.g. advertising and promotional material)

Adapted from (Deuten and Rip 2000; Griffin 1997; Kjellberg and Helgesson 2006; Lawrence and Suddaby 2006; Pinch 2008; Sewell 1992; Vargo and Lusch 2004; Vargo and Lusch 2011b; von Hippel 2001)

As Vargo and Lusch (2012) point out, “all this dynamic complexity could imply a somewhat impossible playing field for actors trying to acquire and integrate needed resources through service exchange.” However, despite this dynamic complexity of social systems, it is important not to adopt an undersocialized view. Actors in service ecosystems share practices across nested systems, create lock-ins, and, often influenced by the use of performativity and the need to earn legitimacy, make many practices quasi predictable and controllable. Giddens (1984), for example, states that structural properties make it possible for discernibly similar social practices to exist across varying spans of time and space and which lend them systemic form. As a result, novel inventions and solutions can, through institutionalization, become entrenched into the social fabrics of service ecosystems, thereby creating institutionalized economic solutions or markets.

## Empirical Analysis

In the conceptual part of this essay, I argue that markets are always imagined and institutionalized through the co-created processes of multiple actors and, thus, that market innovation is an interactive and iterative process by which markets are continually formed and re-formed through the actions and interactions among participants in social systems. Using an institutional and service-driven view, technology, in this context, needs to be conceptualized as endogenous to markets since it is always socially constructed and interpreted (Pinch 2008; Pinch and Bijker 1984) and, this view can therefore, arguably, provide a converging view of technical and market innovation by pointing to institutionalization as the underlying process for both.

The goal of my conceptual work was to develop a model of institutional change that captures the systemic and relational nature of incremental and discontinuous market (re)formation. As explained, this model (Figure 7) not only provides a more multidimensional and political view (i.e. one of ongoing negotiations and socio-technical compromise) of the social construction processes in markets than previous practice oriented frameworks (e.g. Edvardsson et al. 2011; Korkman et al. 2010) but also highlights that institutional change can only be understood in the context of interrelated micro and macro levels of nested systems (Battilana et al. 2009). More specifically, it is argued that, during the formation of new markets, some of the proposed linkages (see Figure 7) are guided by *narrative infrastructures*. Rosa and Spanjol (2005), for example, describe the role of market stories in converting individual-level representations into shared market assumptions and frames of references. Citing Fligstein (1996) and White (1981), Rosa, Porac, Runser-Spanjol and Saxon (1999) suggest that through market

stories, networked actors who are bound together in equivocal practices stabilize new and emerging markets. In other words, in line with an S-D logic view, these authors claim that markets primarily exist because market actors agree on their existence.

The aim of this section is to show that, using a qualitative and quantitative analysis of narrative infrastructures of the successful formation of the DVR market, the ICM Model is corroborated by empirical evidence. On one hand, an analysis of narratives will be used as a methodology to provide empirical evidence for the linkages proposed in this model (e.g. the interplay of *dialectical* and *evolutionary change*). On the other hand, the empirical work will also provide evidence for the constitutive role of market stories and *narrative infrastructures* in the creation of *projectivity* and, through micro-macro linkages, for the formation of new markets. The role of market stories and *narrative infrastructures* in the analysis is therefore twofold. A narrative analysis will not only provide empirical evidence to corroborate the ICM Model but also for the fact that *narrative infrastructures* are themselves important components of the model itself.

## **DVR Market Formation**

### **Introduction to the Context of the Investigation**

The following section will introduce the context for the empirical investigation. While DVRs are widely adopted in North America, the details of their market development might be less the known. This section is therefore not meant to be part of the qualitative or quantitative analysis. It does, however, provide initial connections to the socio-technical systems view of innovation and the ICM Model that are foundational to the current work.

In 1997, two Silicon Valley engineers, Jim Barton and Mike Ramsay, received several million dollars from a pair of venture capital firms—New Enterprise Associates and Institutional Venture Partners—to start a technology company. Their business ideas evolved from a broad focus on home networking to a narrower focus on the heart of the American home, the television. More specifically, Barton and Ramsay envisioned a technology that could record any program as it was watched, as well as anything its owner instructed it to record (1)<sup>9</sup>. At roughly the same time, Anthony Wood, a young entrepreneur, started working on a very similar technology.

At that time, however, a highly institutionalized solution for the practice of recording and watching video content already existed. Video cassette recorders (VCRs) were part of most American households and their use was a common practice. A deeper look, however, reveals raptures in the institutional arrangements of the practice of using VCRs. Programing these devices was viewed as complicated and non-intuitive, resulting in the fact that many VCRs were almost exclusively used to play rented or purchased movies. With help of this social context, both newly founded companies, TiVo and ReplayTV, used their competences (i.e., operant resources), to create and propose value propositions that were aimed at improving the ease, speed, and flexibility of personal video recording and by providing a solution that required almost no technical aptitude from the user. The technological development, for both companies, occurred through combinatorial evolution as proposed by Arthur (2009). TiVo and ReplayTV were able to take advantage of developments in both computer chip and disk drive technology. Using

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<sup>9</sup> In order to differentiate academic citation from those that identify DVR narratives, two disparate citation styles and reference lists are used

these developments as building-blocks, both companies were able to develop their solutions by integrating these components in just 18 short months (2).

In 1999, TiVo and ReplayTV both announced their products and services (i.e. their value propositions) and, thus, started to engage in institutional work. As explained, somewhat paradoxically, value propositions are never just aimed at institutional change, but need to be conceptualized as being comprised of overlapping creation, maintenance, and disruption components (Creed et al. 2010). The use of TiVo and ReplayTV's digital video recorders, for example, maintained the practice of accessing video content through the television. DVR technology also included many VCR functions such as stop, rewind and fast forward. At the same time, this new technology drastically changed video consumption practices by allowing viewers to create their own television channels based on favorite themes, skip through commercials, pause live TV, and to watch what they want when they want without being bound by network schedules. The disruptive component of DVR technology was highlighted by the outcry of television networks and advertising agencies who viewed the ability to skip commercials as a grave threat to their business model.

During the early stages of the DVR introduction, on a market level, the proposed interplay of dialectical and *evolutionary change* was made salient through market narratives. On one hand, the practices of using DVRs were described as being similar to those of using VCRs. For example, DVRs were described as being “like videocassette recorders, except that they record shows onto hard drives instead of tapes (3)”, or as “advanced versions of the VCR (4)” with very similar functions. Thus, market actors made sense of these new value propositions and their proposed practices by framing them

as evolutionary developments from already established and legitimized practices. On the other hand, the practices of using VCR and DVR technology were also framed as disparate and conflicting, or as the thesis and the antithesis of a dialectical process. DVR technology, for example, was described as “an alternative to videocassette recorders (5)” due to their ability to give “viewers extraordinary power over their entertainment choices (6),” their ease of use, and their ability to skip commercials.

As the DVR market stabilized over time, through various iterations of institutional work, new institutional arrangements around the practices of DVR technology were co-created and the dialectical components of market (re)formation declined. This change was not only made salient by a decline in dialectical conflict between the use of DVR vs. VCR technology but also by an overall decline in collaborative co-creation and competitive convergence of institutional arrangements and their occurrences in relevant market narratives. As used by Zietsma and McKnight (2009), competition, in this context, is not of economic nature such as the competition between TiVo and ReplayTV, but is based on promoting differing (dialectical) institutional arrangements. While TiVo and ReplayTV, for example, during the early formation of the DVR market, competed economically, they, at the same time, collaborated in the institutionalization of many of the practices associated with this market. DVR users and TV networks, on the other hand, competed in the institutionalization of the DVR market while not competing economically. Users, for example, expressed their desire to skip commercials with the help of automated software functions and 30 second jumps, while TV networks, through their investments in the DVR companies and through legal actions, tried to eliminate these functionalities.

Similarly, references describing practices of using DVR technology as being similar (*evolutionary change*) to those using VCR technology also declined. As the DVR market stabilized, the newly formed institutional arrangements provided market actors with the meanings, norms, values, beliefs, and rules to envision these new practices and their benefits without the need to reference preexisting practices. In fact, in this specific example, the institutionalization and legitimation of this newly formed market became so strong that the term “tivoing” became a commonly used verb.

The narratives about the formation of the DVR market also provide important insights into change processes on the individual level (the proposed interaction between practical-evaluative and projective institutional change) and their interplays with the market or service ecosystem level. As stated, the DVR market stories provide empirical evidence for and interplay of evolutionary and *dialectical change*. Corresponding to the *evolutionary change* is the individual-level change mechanism of *practical-evaluation*. More specifically, human actors can adjust their existing, unconscious or taken-for-granted aspects of institutions to a wide range of circumstances due to the multidimensional nature of social systems.

As describe above, the DVR example makes the transpositions of institutions salient. Market stories show that DVR users seemed to easily combine and reproduce practice elements that had already been institutionalized through other practices. Basic practices such as rewinding, stopping, and fast forwarding of content had already been institutionalized through the use of video and music cassette recorders. Similarly, the use of hard drives as faster and more convenient storage devices had been institutionalized through their wide adoption in computers. Furthermore, many viewers of video content

already avoided commercials by temporarily surfing other channels or by shifting their focus to other tasks. The value proposition of viewing video content through the use of DVRs therefore reproduced and maintained many established practices from disparate circumstances. In market narratives, the use of transposed institutions and its interplay with an *evolutionary change* mechanism on the market level can be found in statements such as “a digital video recorder is a VCR that records television shows onto a hard drive instead of tapes (7)” and a DVR “is not much different in nature from the video cassette recorder (2).”

However, as discussed, DVR market narratives provide evidence for both evolutionary and *dialectical change*. DVR equipment is also described as “a life-changing machine that shatters the traditional broadcast schedule to suit your own, let you zip past ads and endless reality-show recaps (3)” and as revolutionizing the way viewers watch television (8). In other words, early market stories also described discontinuous change mechanisms through a vision for the future (projective goal formation) in which viewers “gain broad control over their television viewing, by organizing schedules of shows according to personal choice and taste. That means viewers could watch what they want when they want, not bound by the timetable of any continuous network schedule (2)” and not interrupted by commercials.

According to the ICM Model, following Lane and Maxfield (2005), market narratives enable the combination of *projectivity* and indeterminism—that is, market stories can give individual level actors a pathway toward a desired future. More specifically, market narratives can help to prevent isomorphic behavior by helping actors

to overcome the indeterminism associated with novel practice components (the antitheses of *dialectical change*).

In the early stages of new market formation (i.e. a process high in *dialectical change*), actors, almost by definition, lack the institutions to envision the proposed new practices. By providing this vision and other necessary skills and knowledge, *narrative infrastructures* of markets can enable the co-creation of new institutional arrangements. In the formation of the DVR market, for example, market narratives provided a large amount of objective-descriptive elements that explained the new practices and viewer benefits. Furthermore, early DVR market narratives also influenced the temporal orientation of individual actors by highlighting problems that current institutional arrangements could not solve (e.g. viewers can create custom “channels” with the help of filtering software) and providing goals and for a desired future (e.g. DVRs will revolutionize the way viewers watch television by eliminating traditional broadcast schedules).

These envisioned end-states, as explained, in an interplay with the more meso and macro levels, enable *dialectical change* through praxis, through which actors, interacting with others, can artfully create differing institutional arrangements. As the DVR market became institutionalized, uncertainty and the need for these types of temporal intersections in narratives started to diminish as the newly formed institutional arrangements started to provide individual level actors with the tools to function in this new market. However, it is important to highlight again that practices that are aimed at transforming and disrupting institutions are themselves institutionally embedded and therefore rely on resources and skills that are specific to the social system in which they

occur (Giddens 1984; Lawrence and Suddaby 2006). In the DVR case, for example, actors used established institutions and knowledge to frame discontinuous institutional change. DVR technology, for instance, was described as a blend of “personal computer and television (6)”, highlighting the fact that even discontinuous change processes are embedded in existing institutions.

Finally, the formation of the DVR market also shows that market narratives not only shape institutional arrangements, but also future market behavior as suggested by Rosa and Spanjol (2005). As stated in the New York Times, the DVR was “a good example of how even relatively easy-to-use technology with a huge potential market can be slow off the mark. (9)” DVR technology and its related practices could not be summed up nicely in an advertising slogan but required substantial skills and knowledge to be shared and legitimized. Thus, this example highlights the importance of market narratives not as reflections of market formations but, instead, as active components of institutionalization processes and as antecedence to market formation.

### **Conceptual Links and Hypotheses**

In this section, a set of conceptual links and hypotheses will be developed, evaluated and tested with the help of longitudinal, narrative data about the formation of the DVR market. The important link between market narratives and market developments, both as influencing elements and empirical evidence, has been demonstrated by empirical work from Rosa et al. (1999) in their work on the establishment of the minivan market, and Humphreys (2010) in her work on the institutionalization of the casino gaming industry. While this work has provided important insights into the relationships between market

narratives, institutional change, market (re)formation, and innovation, it has left many important questions unanswered. Rosa et al. (1999), for example, in their work on socio-cognitive dynamics (unconscious or taken-for-granted elements of institutions), show that market narratives can help to convert micro-level representations into stabilized shared cognitive structures. This research however, while influential for the current work, has important limitations.

Rosa et al.'s (1999) conceptualization of markets is, not surprisingly, deeply grounded in G-D logic thought; a fact made salient by their use of the “product market” construct. Traditionally, this *product market* construct has been used to describe markets for goods which are similar in “production process, function, or raw materials used (Day et al. 1979, p. 8).” Rosa et al. (1999), on the other hand, use a somewhat more contemporary approach by distinguishing between consumer and producer views of product markets. From the viewpoint of the consumer, citing work from Day et al. (1979) and Ratneshwar and Shocker (1991), Rosa et al. (1999) conceptualize product markets based on similar consumer usage conditions and available choices. Alternatively, from the viewpoint of the producer, Rosa et al. (1999), based on work from Porac et al. (1995) and White (1981), conceptualize product markets as similar competitive positionings. While this more contemporary conceptualization acknowledges the important concept of use, Rosa et al.'s view of product markets is, by definition, product focused and highlights the divide between consumers and producers which is deeply embedded in G-D logic thought (Vargo and Lusch 2011b). By doing so, Rosa et al. (1999) largely ignore the relational, systemic, and institutional processes, that are, as argued by the current work, foundational to innovation and market formation in service ecosystems. Their

analysis, while useful, is therefore limited to unconscious processes in which market actors make sense of market categories of physical goods and ignores the changes in relationships, norms and rules that are always part of market (re)formations (Andersson et al. 2008).

Humphreys, on the other hand, due to a macro-level focus, shows how Scott's (2008) three institutional pillars of markets change over time but fails to capture the interrelated nature of the market and the individual levels of nested social systems. Analyzing the earlier introduced institutional model will therefore inform both of these research streams and close important gaps in the innovation and market formation literature.

On a meso and macro level, the ICM Model suggests that market (re)formation is driven by an interplay of evolutionary and dialectical institutional change processes. Dialectical institutional change, as explained, is a constructive mode of change, often resulting in discontinuous and unpredictable departures from the past, while *evolutionary change* typically follows a prescribed mode of change in which institutions are incrementally adapting their forms in stable and predictable ways. Thus, following this logic, the formation of an entirely new market should exhibit observable *dialectical change* processes.

*Dialectical change* processes, as shown in Figure 4, are based on the development of incompatible practices (Benson 1977). In the context of markets, this implies that the formation of new resource integration and value co-creation practices is always conceptually linked to preexisting *institutionalized solutions* (the thesis and the antithesis

of the dialectical process). In line with a dialectical process, the ICM Model suggests that a successful formation of a new market is preceded by market narratives referencing the conflict between existing (institutionalized) and emerging practices, and that, as the new solutions gain legitimacy (become institutionalized), the reference to these conflicts decreases. More formally, it is expected that

H<sub>1A</sub>: In emerging and discontinuous institutionalization processes of new solutions, references<sup>10</sup> to the dialectical conflicts between preexisting *institutionalized solutions* and emerging solutions will decline as the institutions for these solutions stabilize (i.e. markets are forming).

Hypothesis 1A highlights the conflict that is foundational to all *dialectical change* processes. When existing markets are destabilized by new and emerging practices, conflicting stories often circulate among social actors (Rosa and Spanjol 2005; Weick 1995) resulting in institutional contradictions that “may not only trigger the shift in actors’ collective consciousness but also may provide alternative logics of action and psychological and physical resources to be mobilized, appropriated, and transpose in the process of institutional change (Seo and Creed 2002, p.231).” As markets stabilize, references to incompatible preexisting practices decline as institutional contradictions resolve.

However, as described in the proposed model, even discontinuous change in newly forming markets is always based on an interplay of evolutionary and *dialectical change* mechanisms. Stated differently, even successful and novel value propositions,

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<sup>10</sup> A references is conceptualized and operationalized as an occurrence of a construct in these chosen narrative infrastructure.

based on the concept of institutional work, always maintain some aspects of already established and legitimized practices, resulting in the fact that institutional change mandates an evolutionary institutional change component. The ICM Model suggests that a successful formation of a new market is preceded by market narratives referencing the similarities between existing (institutionalized) and emerging practices. As the new solutions gain legitimacy (become institutionalized), the need for these references decreases as the new institutional arrangements eliminate the need for these references as sense making tools. Thus, it is expected that

H<sub>1B</sub>: In emerging and discontinuous institutionalization processes of new solutions, references to similarities between preexisting *institutionalized solutions* and emerging solutions will decline as the institutions for these solutions stabilize (i.e. markets are forming).

Furthermore, as highlighted by Zietsma and McKnight (2009), institutional change processes that lead to shared conceptions of problems and solutions in social systems always have two co-creational mechanisms, collaborative co-creation and competitive convergence. In other words, human actors compete and collaborate through multiple iterations of institutional developments until common templates become entrenched (see also Akrich et al. 2002a). Institutional collaboration, in this context, can be viewed as a largely evolutionary process in which practices adjust to the demands of potential supporters. Institutional competition, on the other hand, can be viewed as a largely dialectical process in which practices are adjusted in response to competing institutional logics. As new institutional arrangements form, references to both collaboration and competition decline. As explained, collaboration and competition, in this context, are not

of economic nature but are conceptualized as promoting similar or differing (dialectical) institutions. Thus, it is expected that

H<sub>1C</sub>: In emerging and discontinuous institutionalization processes of new solutions, references to both collaboration and competition will decline as the institutions for these solutions stabilize (i.e. markets are forming).

Figure 8 graphically shows how hypotheses H<sub>1A</sub>, H<sub>1B</sub> and H<sub>1C</sub> relate to the institutional change model. All three hypotheses address the interplay between *dialectical* and *evolutionary change*; the upper part of the model. Furthermore, Figure 8 also shows the directions of the predicted trends.

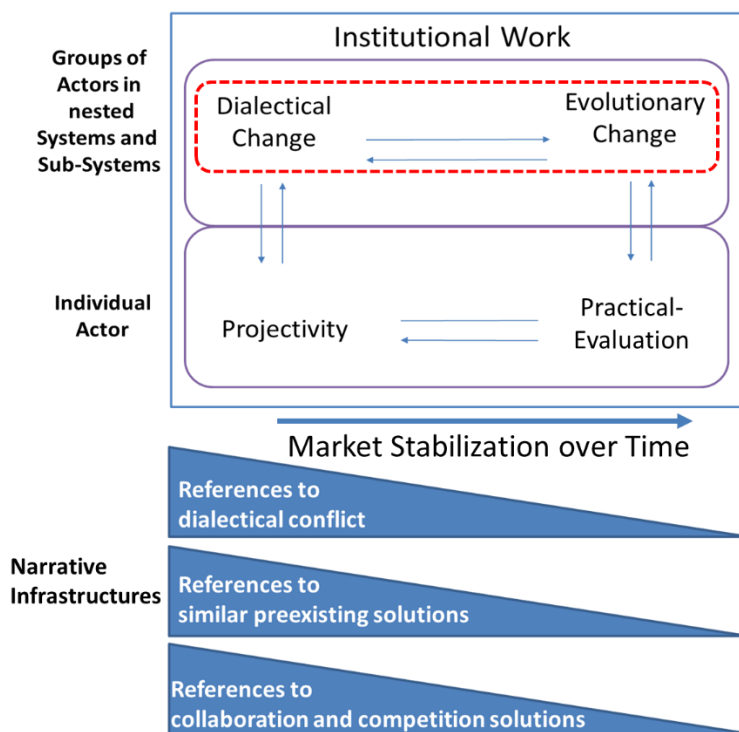


Figure 8: Depiction of H<sub>1A</sub>, H<sub>1B</sub>, and H<sub>1C</sub>

Rosa and Spanjol (2005) point out that market narratives often contain objective-descriptive and subjective-evaluative elements and that both of these elements equally help market actors to reconcile preexisting knowledge with new information. Objective-descriptive elements are valence-neutral (e.g. technical specifications) whereas subjective-evaluative elements describe subjective assessments (e.g. preferences between competing services or products). While not empirically tested, Rosa and Spanjol (2005) suggest that objective-descriptive elements are more dominant as new markets form and subjective-evaluative elements are more dominant as market stabilize and re-form. In other words, objective-descriptive narratives seem to be necessary antecedents to *dialectical change*.

As explained in the earlier part of this essay, value propositions need to be conceptualized as useful knowledge that, when collaboratively applied, can enable new resource integration and value co-creation practices. In the early stages of new market formation (i.e. high in *dialectical change*), actors, almost by definition, lack the meanings, norms, values, beliefs, and rules (i.e. institutions) to envision these new practices and their benefits. As Lawrence and Suddaby (2006, p.29) argue, the formation of new institutions involves the “educating of actors in skills and knowledge necessary to support the new practices.” During the early stages of market formation, value propositions and their inherent practice proposals are often described by actors with high levels of expertise in the area in which these new market form, since these actors are the first to evaluate and comment on these proposed solutions. These actors can be industry experts, consumers with high levels of expertise, or journalists researching new products and services.

Thus, even these early market narratives are co-created, or, as stated, *narrative infrastructures* that can craft coherence among social actors form through the alignment of multiple stories. Previous research argues that experts, in contrast to laypersons, tend to describe new value propositions in technical and objective language (Mitchell and Dacin 1996; Rosa and Spanjol 2005). Even evaluative statements, during this early phase of market formation, are often made indirectly through the comparisons of technical and objective facts (Mitchell and Dacin 1996). However, as markets stabilize, actors rely less on objective details since these details become taken for granted as the essential “ingredients” of the new market (Pinch and Bijker 1984). Thus, it is expected that

H<sub>2A</sub>: In emerging and discontinuous institutionalization processes of new solutions, objective-descriptive narratives will decline as the institutions for these solutions stabilize (i.e. markets are forming).

When viewing markets through a traditional G-D logic lens, it is common to focus on new products as the main ingredients of new markets. Objective descriptive narratives in new market formations, for example, undoubtedly often describe the form and function of new products and how specific product attributes provide value to potential customers. An S-D logic and institutional view, on the other hand, broadens the scope of a new market formation not only beyond firm-centered production activities, but also beyond firms’ collaboration networks. More specifically, through this lens, as discussed, market formation needs to be viewed as the co-creation and collaborative formation of durable resource integration and value creation practices, or stated differently, as the institutionalization of new solutions.

In the early stages of market formation, ontological uncertainty, the byproduct of institutional ruptures and inconsistencies and the foundation for *dialectical change*, leads to the inability of actors to generate stable propositions about entities and their interactions (Lane and Maxfield 2005). In order for markets to form, actors need the necessary skills and knowledge to understand the emerging practices. Stated differently, actors need to be able to envision their own role, the other entities, and the interactions between all entities in these new resource integration practices. Akrich and Latour (1992), propose a vocabulary for addressing these entities and interactions from a practice perspective. They use the term “prescription”, for example, for action that is anticipated (i.e. it defines what is allowed or forbidden). “Subscriptions” on the other hand are the reactions to what is “prescribed” (Akrich and Latour 1992). As explained, new value propositions are often launched with manuals and demonstrations that not only depict the envisioned value creation practices but also assign properties to acting entities.

However, as explained in the conceptual part of this monograph, innovation and market formation is always a systemic process through which human actors, using their interpretive flexibility, through “ongoing negotiations, experimentation, competition, and learning” derive at “shared conceptions of problems and solutions in social systems (Zietsma and McKnight 2009, p.145).” Thus, it can be argued that the formation of markets, due to the dialectical component of this process, is not prescribed by value proposing actors but that both subscriptions and prescriptions are co-created and negotiated through systemic processes. More specifically, it can be argued that gaps between prescriptions and subscriptions decrease as markets stabilize. Thus, it is expected that

H<sub>2B</sub>: In emerging and discontinuous institutionalization processes of new solutions, narratives about gaps between prescriptions and subscriptions will decline as the institutions for these solutions stabilize (i.e. markets are forming).

Hypotheses H<sub>2A</sub> and H<sub>2B</sub> point to the importance of narratives in adding properties to acting entities and in making their interactions salient. Figure 9 graphically shows how hypothesis H<sub>2A</sub> and H<sub>2B</sub> relate to the institutional change model. Both hypotheses address the interplay between *dialectical change* and *projectivity*; the left side of the model. Figure 9 also shows the directions of the predicted trends.

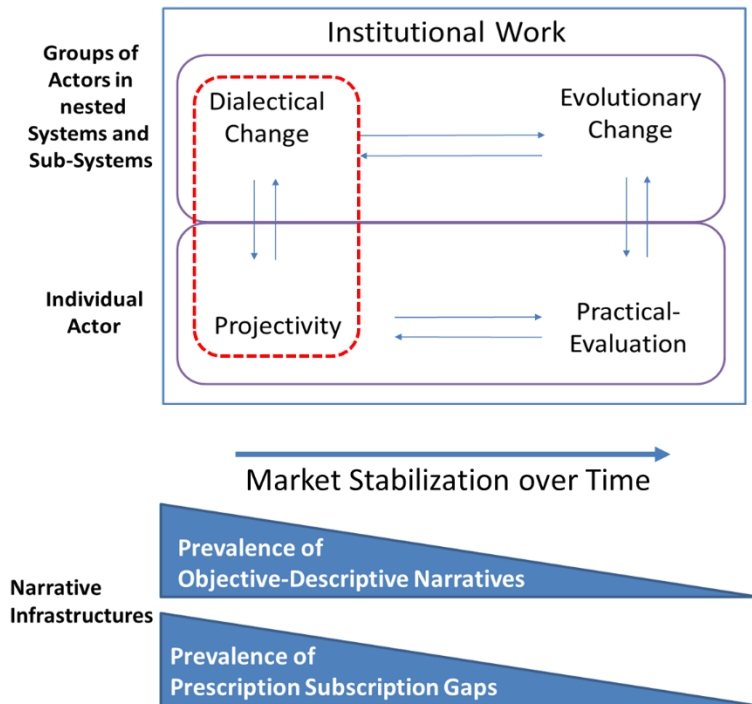


Figure 9: Depiction of H<sub>2A</sub> and H<sub>2B</sub>

However, these elements of narratives alone, arguably, cannot help human actors overcome ontological uncertainty. As stated, ontological uncertainty is conceptualized as

the inability of actors to generate stable propositions about the world, its entities and their interactions (Lane and Maxfield 2005). As explained, *dialectical change* processes point to the need for praxis, the ability of human actors to mobilize different institutional logics and resources (Benson 1977), and praxis, by definition, needs to be conceptualized as an act of agency. Lawrence and Suddaby (2006, p. 30), suggest that institutional change needs frameworks “that provide actors with an outline, or template, for action.” Defining agency as a multidimensional construct points to the importance of the temporal intersection of past, present, and future and its ability to make new solutions more salient and desirable.

“[*Narrative infrastructures*] help generate the knowledge structures that enable market actors to reconcile current experiences and behaviors with preexisting beliefs, and by doing so, stories shape future behavior (Rosa and Spanjol 2005, p. 199).” This thought extends S-D logic’s (2008) notion that every actor uniquely and phenomenologically determines value. Every assessment of service provisions and value propositions takes place in a different context, involving not only the availability and use of different combinations of resources but also different preexisting beliefs and goals for the future. More specifically, it can be argued that *narrative infrastructures*, during the emergence of markets, highlight the temporal intersection of past, present, and future by displaying elements of *practical-evaluation* and *projectivity* and therefore provide micro-level actors, based on a projective change mechanism, a path to a desired future despite the fact that the future, in continually changing service ecosystems, is indeterminable. As new markets stabilize, actors form meanings, norms, values, beliefs, and rules (i.e. institutions) and actors rely more on the iterative component of agency.

H<sub>3</sub>: In emerging and discontinuous institutionalization processes of new solutions, narrative references of *practical-evaluation* and *projectivity* will decline as the institutions for these solutions stabilize (i.e. markets are forming).

Hence, it is suggested that co-created narrative market infrastructures, with their *practical-evaluative* and *projective* temporal components, are important sense-making tools that can help micro-level actors to overcome the paralyzing effects of ontological uncertainty. Stated alternatively, in the context of market formation, the alignment of market stories to *narrative infrastructures* can, by addressing the tension between institutional determinism and agency (the paradox of embedded agency), overcome some of the limitations of traditional practice theory approaches in explaining discontinuous market formation. Figure 10 graphically shows how hypothesis H<sub>3</sub> relates to the institutional change model. This hypothesis addresses the interplay between *practical-evaluation* and *projectivity*; the lower part of the model. Figure 10 also shows the direction of the predicted trend.

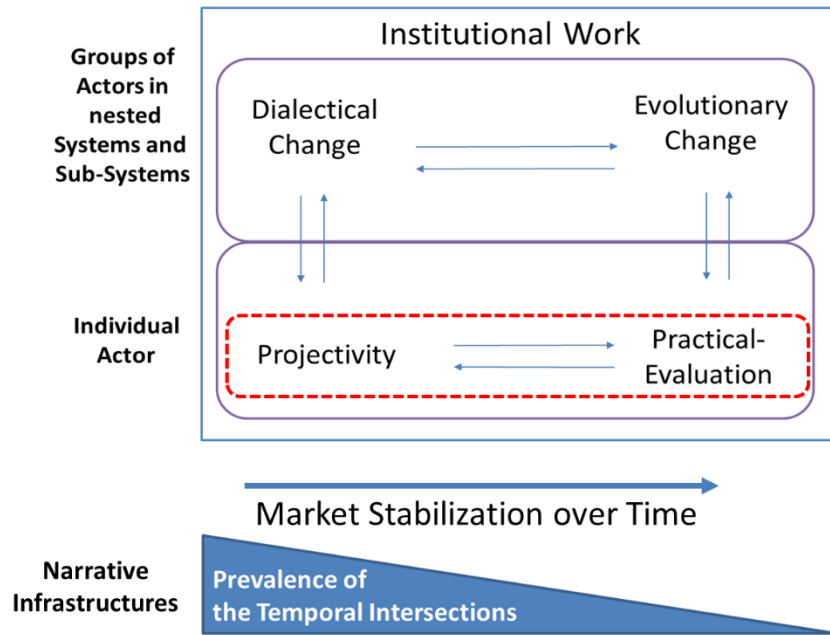


Figure 10: Depiction of  $H_3$

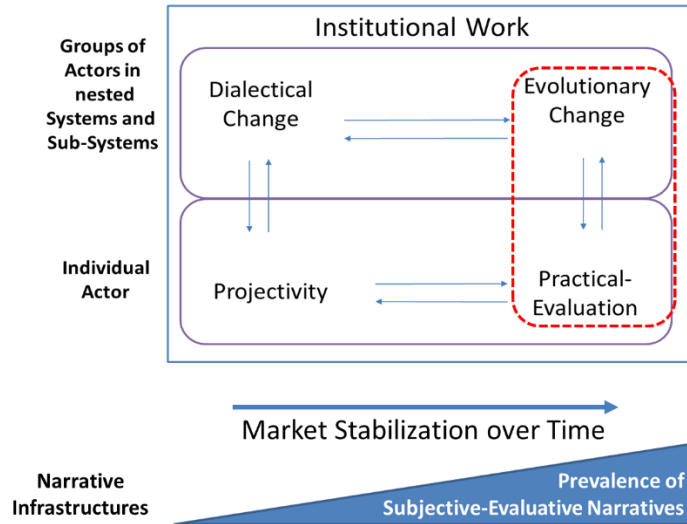
While hypotheses  $H_{1A}$ ,  $H_{1B}$  and  $H_{1C}$  can provide evidence for the proposed market-level interplay of evolutionary and *dialectical change* in market (re)formation, it is useful to explore this interplay further by returning to the earlier described notion that most market narratives contain a mix of objective-descriptive and subjective-evaluative elements (Rosa and Spanjol 2005). In the discussion leading to  $H_{2A}$ , it was explicated that the early stages of (dialectical) new market formation, are enabled by objective-descriptive elements of market narratives and that actors rely less on these elements as markets stabilize. Similarly, I hypothesize that as markets stabilize, subjective-evaluative elements become more dominant. Rosa and Spanjol (2005) suggest two factors for this development. First, as markets stabilize successfully, new competitors enter the market, resulting in more subjective evaluations as competing practice variations are being

evaluated. Second, as market practice prototypes emerge (i.e. new institutions take hold), practice variations are often compared to these prototypes in a way that is not valence-neutral.

In other words, it can be argued that market formation displays less dialectical and more *evolutionary change* as markets stabilize. As discussed, *evolutionary change* is driven by an underlying cycle that consists of variation, selection, and retention events (Van de Ven and Poole 1995). As markets become institutionalized, the new resource integration practices are increasingly supported by stabilizing institutional arrangements and these arrangements evolve, to an increasing degree, through *evolutionary change* events, which are made salient and are supported by subjective-evaluative narratives. Thus, it is expected that

H<sub>4</sub>: In emerging and discontinuous institutionalization processes of new solutions, subjective-evaluative narratives will increase as the institutions for these solutions stabilize (i.e. markets are forming).

Figure 11 graphically shows how hypothesis H<sub>4</sub> relates to the ICM Model. This hypothesis addresses the interplay between *dialectical change* and *projectivity*; the left side of the model. Figure 11 also shows the direction of the predicted trend.



*Figure 11: Depiction of H<sub>4</sub>*

In summary, as visualized in Figure 12, the seven hypotheses introduced above enable the testing of all four interplays that the model of institutional change mechanisms (ICM Model) proposes. The next section will provide a detailed description of the sampling, content coding and statistical methods used in the testing of these seven hypotheses. Furthermore, the following section will also introduce additional research questions for an added qualitative analysis.

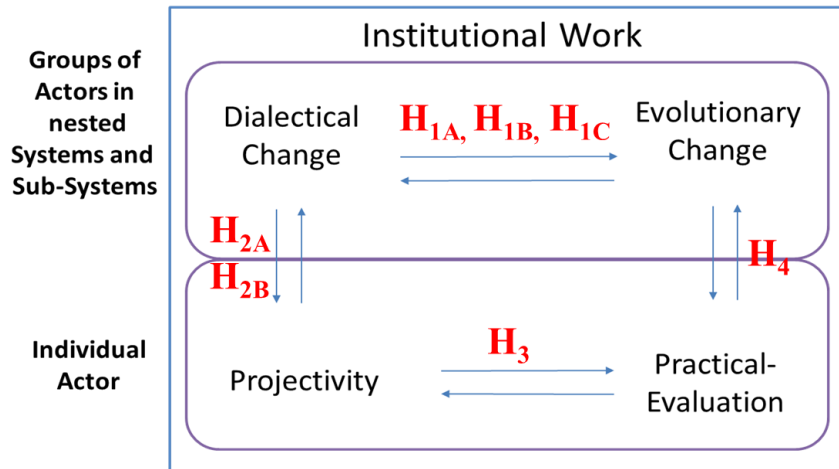


Figure 12: Model with All Hypotheses

## Method and Empirical Context

By using a multi-method approach that includes a combination of quantitative and qualitative methods, the current research will be able to corroborate a model that can explain the complexity of institutional change processes in innovation and market (re)formation without eliminating the richness that systemic A2A relationships in service ecosystems provide. Furthermore, this section will also introduce and answer two additional research questions in regards to the co-created nature of narrative infrastructures in markets. Previous work has highlighted the usefulness of longitudinal analyses to elucidate market formation and institutional change processes (e.g. Humphreys 2010; Rosa et al. 1999; Theoharakis and Wong 2002). In the current work, as stated, the market formation around DVR technology will be investigated. DVRs were first introduced in 1999 and have reached an adoption rate of more than 50% of all US households in 2012 (IDC).

The DVR introduction and its associated practice changes, as explained above, provide a recent example of a successful new market formation. DVR technology has significantly changed the practices of viewing video content. Additionally, DVR technology is an excellent example of a resource integration platform since it assists users in gaining access to, and idiosyncratically integrating, resources in ways that make value co-creation particularly salient. DVRs, for example, integrate operand resources from users (i.e. knowledge of users about TV-shows, actors, and movies) with operand and operand resources from DVR providers and with video content from studios and networks that is transmitted via cable and satellite technologies. The value perceptions of these co-creational processes are therefore not only idiosyncratic but also highlight the importance of the larger contextual environment of the users' lives (e.g. available leisure time).

## **Method**

Following a growing trend in innovation and market formation research, a longitudinal method (e.g. Golder 2000; Smith and Lux 1993; Zaltman 1997) that is based on the analysis of archival data (e.g. Golder and Tellis 1993; Golder and Tellis 1997; Humphreys 2010; Rosa et al. 1999) was used. As Smith and Lux (1993, p. 595) point out, longitudinal approaches are especially useful in the investigation of “causal motors that drive change through time” and emphasize complexity rather than simplicity. While, as described, institutions can change dynamically, they are often enduring in time-space (Giddens 1984). Furthermore, it is important to note that practices that are aimed at maintaining, transforming and disrupting institutions are themselves always institutionally embedded and therefore specific not only to the environment (Giddens

1984; Lawrence and Suddaby 2006) but also to the time in which they occur. As Flaherty and Fine (2001) and Akrich, Callon and Latour (2002a) point out, the past is open to reconstruction as it is constantly being reinterpreted in light of new experiences. A longitudinal, historical method using archival data not only accounts for the enduring nature of institutions but also ensures that the descriptions of institutional change events are captured in a close temporal proximity to these events to avoid reinterpretations in changing institutional environments.

To study institutional change in service ecosystems, newspaper articles describing the DVR market formation from the first quarter of 1999 to the first quarter of 2005 (25 quarters) were evaluated. Theoharakis and Wong (2002) established the significance of the print media as a relevant information source for the consumer electronics industry. More foundationally, Humphreys (2010), citing Deephouse (1996), Gamson (1992) and Gamson and Modigliani (1989), describes newspaper articles, in the aggregate, as reliable indicators of generalized public perception. Gamson and Modigliani, for example, point out that “public discourse is carried out in many different forums (p. 2).” However, these forums need to be viewed as interactive systems. In the regards to newspaper articles and other public media, Gamson and Modigliani (1989) argue that “media discourse is part of the process by which individuals construct meaning, and public opinion is part of the process by which journalist [...] develop and crystalized meaning in public discourse.”

Thus, while general audience media, such as the newspapers used in the current work, are only selected forums of public discourse, they are sites on which various social actors “struggle over the definition and construction of social reality (Gurevitch and Levy 1985, p. 19).” General audience journalist draw their ideas and language from a large

variety of forums of public discourse and, while they often paraphrase the ideas and language of their sources, their aggregate range of positions and content can be seen as an important reflection of the discourse on social issues (Gamson and Modigliani 1989). Thus, while narrative infrastructures, due to the systemic and diverse nature of their forums, can never be captured in their entirety, newspaper articles can be viewed as “good synthesizers” of the voices<sup>11</sup> of market actors (Rosa et al. 1999).

Consequently, previous research has successfully used newspaper data in longitudinal studies to investigate institutional change (e.g. Humphreys 2010) and market formation (e.g. Giesler 2012; Rosa et al. 1999; Theoharakis and Wong 2002). However, it is important to remember that no data source is without error. While Franzosi (1987, p. 7) points out that “there is no a priori reason to believe that the data collected from newspapers would be less valid than other commonly used sources” he also argues that newspapers can differ widely in their reporting practices and news coverage. More specifically, he posits that the type of bias that is likely to occur in newspaper media “consists more of silence and emphasis rather than on outright false information” and that this type of bias is often driven by ideological and political orientations. Thus, this bias should be less of a concern for the largely non-political context of the current study (i.e. innovation and market formation) especially since three independent newspapers are used.<sup>12</sup>

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<sup>11</sup> As will be shown in a later section, these voices can be verbalized and non-verbalized.

<sup>12</sup> The discussion on the limitations of using newspaper data will be picked up again in the Future Research section of this monograph.

## Coding Scheme Development and Sample

A Microsoft Access database was constructed to facilitate the coding process. Access was chosen over dedicated CAQDAS programs because of its high customizability and flexibility. Through multiple iterations of deductive and inductive coding scheme developments, this relational database was continually expanded and adjusted. The database was designed to not only hold the code data but also the entire content of the articles. Additionally, each code is linked to an evidence text field to facilitate reliability testing. Figure 13 provides a high-level overview of the used tables and their relationships.

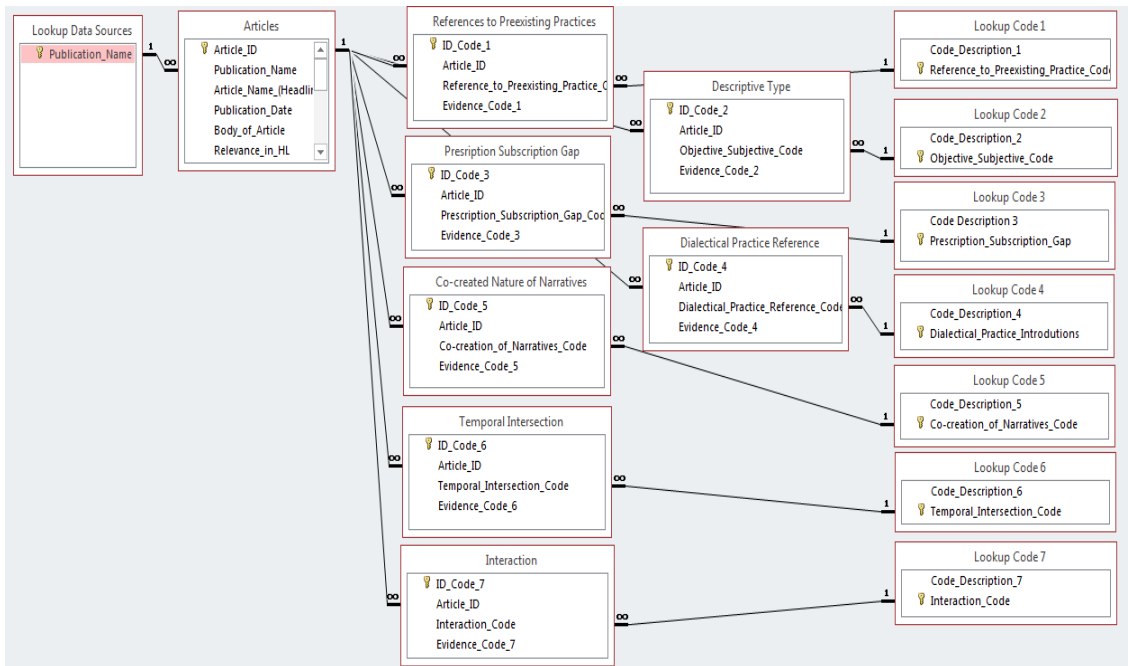


Figure 13: Relational Database used in Content Coding Process

Following previous research (e.g. Humphreys 2010), the sample was drawn from the three U.S. newspapers with the largest circulation and readership in all 50 states: The New York Times, Wall Street Journal, and USA Today. More specifically, the LexisNexis and the ABI Inform databases were searched using the following search terms: DVR, digital video recorder, PVR, personal video recorder, TiVo, ReplayTV. For this query, in addition to the three newspaper sources described above, a longitudinal range of 25 calendar quarters, starting in quarter1 1999, was specified. The search resulted in n=443 articles.

These articles were then coded for relevance in regards to the formation of the DVR market. Articles that only minimally addressed the practice of digital video recording were excluded from the sample. For example, articles with statements such as “don’t forget to set your TiVo”, or the “TiVo generation” were eliminated if their remaining content was not relevant to the practices related to DVR technology. Pure financial news, such as reporting on stock prices, was also marked as not relevant resulting in a relevant sample of n=236 articles (New York Times: n=123, Wall Street Journal: n=74, USA Today: n=39)<sup>13</sup>.

These usable articles were then coded with a coding scheme that was developed for the current research. All coding was done on an occurrence level, or stated differently, each article could have multiple occurrences of each code. In total, for the quantitative and qualitative analysis, 3,506 codes were captured. The coding scheme was based on a blend of deductive and inductive strategies. Many of the codes, for example, were based

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<sup>13</sup> See Appendix, Table 12 for the complete list of articles

on the theoretical developments of this paper in general and the ICM Model in particular. However, during the progression of the analysis, codes were modified in an iterative cycle between theory and coding scheme development. Codes, for example were renamed based on the language of the data under investigation and new codes and code categories were added (Hesse-Biber and Leavy 2005).

Furthermore, for three additional qualitative research questions that will be introduced in a later section, a coding scheme was developed more inductively since these research questions were only broadly defined in an attempt to capture the full richness of the newspaper article data. Below, the codes used to test the seven hypotheses introduced above are described (see Table 3; detailed examples of the codes can be found in the appendix, Table 10).

*Table 3: List of Codes*

Hypotheses	Codes
H <sub>1A</sub>	References to Dialectical Conflict between Preexisting and Emerging Solutions
H <sub>1B</sub>	References to Similarities between Preexisting and Emerging Solutions
H <sub>1C</sub>	References to Institutional Collaboration and Competition
H <sub>2A</sub>	Objective-Descriptive Narratives
H <sub>2B</sub>	References to Gaps between Prescriptions and Subscriptions
H <sub>3</sub>	References to Practical-Evaluative and Projective Narratives
H <sub>4</sub>	Subjective-Evaluative Narratives

*Dialectical and Evolutionary References to preexisting Institutionalized Solutions (H<sub>1A</sub> and H<sub>1B</sub>)*

In this coding category, every occurrence of references that compare DVR related practices to previous *institutionalized solutions* were coded. From the data, two previous *institutionalized solutions* emerged. Namely, these were practices in regards to VCR and computer usages with VCR practices being the dominant comparison. Additionally, all of these references were further coded as *dialectical change* (unlike preexisting *institutionalized solutions*) or as *evolutionary change* (like preexisting *institutionalized solutions*).

Codes for H<sub>1A</sub> highlight the difference between preexisting *institutionalized solutions*, namely VCR and computer technology and DVR related practices. The data show that these mainly center on ease of use (e.g. “unlike, say, the VCR, it [the DVR] requires almost no technical aptitude (1)”, or “the VCR proved too unwieldy to be used for anything but rented videos (1)”). Alternatively, differences between the preexisting and the emerging practices are highlighted (e.g. “Because it is a real-time recoding, the ReplayTV device has capabilities that go far beyond the VCR. One can sit down to watch a program, then pause it for a few minutes to answer a phone call or to nuke some popcorn in the microwave (10)”).

Codes for H<sub>1B</sub>, on the other hand, highlight the similarities between preexisting *institutionalized solutions*, namely VCR and computer technology and DVR related practices. The data show that these differences mainly center on similarities in form (e.g. “The ReplayTV is the first of several new tapeless VCR devices (10)” or “A new, innocuous-looking consumer electronic device known as a personal video recorder is not much different in nature from the video cassette recorder (2)”) or function (e.g. “There are VCR-like controls for fast forward and reverse (10)” or “A TiVo is a digital video

recorder (DVR), a VCR that records television shows onto a hard drive instead of tape (7)".

*References to Institutional Collaboration and Competition (H<sub>1C</sub>)*

In this coding category, every occurrence of references that describe institutional collaboration or competition is coded. As stated above, it is important, in this context, to distinguish between economic and institutional collaboration and competition; although overlaps are frequent. Institutional competition is operationalized as an aggregate of institutional competition of users and corporate actors. The institutional competition from corporate actors was further divided into legal and non-legal conflicts. Also included as an institutional competition was a code that tracked the promotion of disparate and competing practices (e.g. the promotion of video-on-demand (VOD) as in institutional competition to DVR practices). Institutional collaboration, on the other hand, is an aggregate of collaboration from users and corporate actors. These can be formalized partnerships or the active user participation in the institutionalization of DVR related practices. Also included in this category are licensing agreements and other investments that either broaden the practice of using DVRs (e.g. the integration of DVR technology into other devices) or provide resources to actors that actively promote DVR practices.

Lastly, the economic competition in a similar practice was also coded as institutional collaboration. When the satellite companies, for example, started to promote their own DVR technologies, they, while economically competing with TiVo and Replay, strongly collaborated in the institutionalization of DVR related practices.

Thus, codes for H1C reflect the occurrences of references that describe either institutional collaboration or competition. Examples for collaboration include technical agreements (e.g. “Consumer electronics manufacturers including the Pioneer Corporation and the Toshiba Corporation are already marketing new sorts of combination products that include digital recorders with TiVo software (11)” and non-technical agreements (e.g. “Other marketers experimenting with the TiVo digital video recorder technology to deliver advertising include BMW, Club Med, Chrysler, Dell and General Motors”). Examples for competition include the conflict between viewer and networks to automatically skip commercials (e.g. ”Jamie C. Kellner, the chief executive of Turner Broadcasting, warns users of digital video recorders, ‘If you don’t watch the commercials, someone’s going to have to pay for television and it’s going to be you’ (12)”).

*Objective-Descriptive and Subjective-Evaluative Narratives (H<sub>2B</sub> and H<sub>4</sub>)*

In this coding category, every occurrence of objective-descriptive and subjective-evaluative statements is coded. Objective-descriptive statements are based on objective facts and are valence-neutral whereas subjective-evaluative statements include, as the name implies, subjective evaluations. As Rosa and Spanjol (2005) point out, most market stories contain a mix of objective-descriptive and subjective-evaluative elements and the two categories are not mutually exclusive. Statements that contain both objective-descriptive and subjective-evaluative elements are therefore coded as combinations or as containing both categories.

Codes for H<sub>2B</sub> reflect the occurrences of objective-descriptive statements about DVR practices that are based on objective facts and that are valence-neutral. Examples for these statements include technical (e.g. “Because TiVo’s are essentially computer hard drives connected to a central server, the company can monitor viewers’ second-by-second behavior (13)”) and functional (e.g. “It is capable of pausing a live broadcast, zipping over ads, auto-recording any show you choose from a two-week display of TV listing, and much more (7)”) statements. As stated, statements with both objective-descriptive and subjective-evaluative elements (e.g. “In return, you get a life-changing machine that shatters the traditional broadcast schedule to suit your own, lets you zip past ads and endless reality-show recaps, and relegates ‘There’s nothing good on’ to the phrase bin of history (3)”) are counted in both categories.

Codes for H<sub>4</sub>, on the other hand, reflect the occurrences of subjective-evaluative statements about DVR practices that are based on evaluations that are not valence-neutral. Examples for these statements include evaluations such as “Either one [TiVo or ReplayTV] will change the recipients’ lives so profoundly, they’ll heap blessings on your head every time they switch on the tube (14)” or “In many respects, the TiVo (www.tivo.com) and ReplayTV (www.replaytv.com) are practically identical (15).”

#### *Prescription and Subscription Gaps (H<sub>2B</sub>)*

In this coding category, every occurrence of prescription and subscription gaps is coded. In other words, every statement is coded that expresses actors’ unwillingness or concerns to subscribe to the proposed practice of DVR usage. Based on the data, this category was further coded as open gaps from viewers/users and open gaps from corporate actors for a

possible deeper analysis. Examples for these statements include user gaps (e.g. “I’ve been thinking about buying a Replay or a TiVo. But after reading Michael Lewis’s article (Aug. 13), I’ve decided to wait until someone invents a complementary and equally subversive device -- one that prevents Replay and TiVo from packaging my viewing habits for resale (16)”) or corporate gaps (“[Ad skipping] numbers like that have provoked gloomy pronouncements from industry executives. Some even come close to accusing habitual ad skippers of theft (1)”).

*References to the Practical-Evaluative and Projective Elements of Agency (H<sub>3</sub>)*

In this coding category, every occurrence of practical-evaluative and projective elements in narratives is coded. In line with Emirbayer and Mische (1998), this coding category comprises of two related codes. The practical-evaluative element of agency is coded as statements that describe the exigencies of lived situations that established *institutionalized solutions* cannot solve. The projective element of agency, on the other hand, is coded as statements that describe hopes, fears, and desires for the future in regards to DVR related practices.

As stated, practical-evaluative statements describe the exigencies of lived situations that create tensions in established institutional arrangements (e.g. “Television recording devices like TiVo free viewers from rigid network schedules by letting them decide when to watch their favorite programs (17)”) and projective elements describe hopes, fears, and desires for the future in regards to DVR related practices (e.g. “But for those who have looked into [DVRs] and what they can do now and have the potential to do in the future, the reactions ranged from acknowledgment that significant changes are

coming to predictions of nothing less than the end of conventional television as it has existed for a half century (2”).

*Summary of Codes by Hypothesis*

Table 4 shows the number of codes per hypothesis. A more detailed summary of these codes can be found in the Code Book in the appendix.

*Table 4: Number of Codes per Hypothesis*

<b>Hypothesis</b>	<b>Institutional Change Mechanism</b>	<b>Number of Codes for Quantitative Analysis</b>
H <sub>1A</sub>	Dialectical Conflict (preexisting/emerging solution)	84
H <sub>1B</sub>	Similarities (preexisting/emerging solution)	62
H <sub>1C</sub>	Collaboration and Competition	500
H <sub>2A</sub>	Objective-Descriptive Narratives	612
H <sub>2B</sub>	Prescription/Subscription Gaps	130
H <sub>3</sub>	Temporal Intersections	410
H <sub>4</sub>	Subjective-Evaluative Narratives	516

**Quantitative Data Analysis**

The seven hypotheses (1 through 4; and their subcategories) were tested by regressing the number of references per article for each of the seven coded institutional change mechanisms on a market stability construct. Market stabilization, in line with the earlier defined definition of markets as “*institutionalized solutions* (Vargo and Lusch 2013a)” is conceptualized as the institutionalization of DVR related resource integration practices. More specifically, the institutionalization of these resource integration practices is

operationalized as the ongoing use of DVRs; reflected in their adoption numbers (see Appendix, Table 11). Adoption numbers differ from sales numbers in that they track the actual use in contrast to hardware sales which may or may not result in ongoing practice changes (e.g. discontinuation after trial).

Since the coding was done on an occurrence level per article, it was also necessary to control for the length of the articles to eliminate the possibility that variances in occurrence levels were driven by changes in the number of words per article. Consequently, the number of words per article was used as a control variable. More specifically, the number of relevant words was used and this construct was operationalized as the number of words pertaining to the formation of the DVR market. For example, an article might discuss the hottest new products in the consumer electronic industry for the upcoming year. In this case, only the DVR relevant text was counted. The data were modeled using a linear model time series regression with the following regression equation:

$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \epsilon_i$$

where  $y_i$  is the  $i^{\text{th}}$  observation of the dependent variable (number of references for each of the seven hypotheses), and  $x_{i1}$  is the  $i^{\text{th}}$  observation ( $i=1, \dots, 25$ ) of the independent variable (market stability), and  $x_{i2}$  is the  $i^{\text{th}}$  observation ( $i=1, \dots, 25$ ) of the control variable (word count per article). For the analysis, the SPSS Version 21 software package was used.

## Results

The results for the regression analyses are summarized in Table 5. The first three hypotheses, H<sub>1A</sub>, H<sub>2B</sub> and H<sub>2C</sub>, test the proposed interplay between dialectical and evolutionary institutional change mechanisms; the upper part of the model. H<sub>1A</sub> is supported. This hypothesis predicts that the occurrence of references to dialectical institutional conflict between preexisting and the emerging solution decline as the market stabilizes. The negative standardized beta coefficient for market stability (-.471, p<.01) confirms that the number of occurrences declines as predicted. H<sub>1B</sub> is also supported. This hypothesis predicts that occurrences of references to similarities (i.e. evolutionary institutional change) between preexisting and an emerging solution declines as the market stabilizes. Again, the negative standardized beta coefficient for market stability (-.424, p<.05) confirms the direction of the predicted trend (the number of occurrences declines as the market stabilizes).

H<sub>1C</sub> is also supported. While H<sub>1A</sub> and H<sub>1B</sub> focus on a comparison between the preexisting and the emerging solution, H<sub>1C</sub> shifts the focus to interactions among market actors. More specifically, this hypothesis predicts that occurrences of references to institutional collaboration and competition among actors decline as the market stabilizes. The negative standardized beta coefficient for market stability (-.577, p<.01) confirms the direction of the predicted trend.

H<sub>2A</sub> and H<sub>2B</sub> test the interplay between *projectivity* and *dialectical* institutional change; the left side of the model. H<sub>2A</sub> is supported. This hypothesis predicts that the use of objective-descriptive narratives, which are needed to describe and understand new and dialectical solutions, decline as markets stabilize. The negative standardized beta coefficient for market stability (-.497, p<.01) confirms the direction of the predicted

trend. H<sub>2B</sub> is also supported. This hypothesis predicts that references to prescription/subscription gaps decline as markets stabilize. Prescription/subscription gaps show the interactions of actors who are proponents of institutional arrangements (thesis) and actors espousing contradictory arrangements (antithesis) and are therefore core components of *dialectical change*. Again, the negative standardized beta coefficient for market stability (-.482, p<.01) confirms the direction of the predicted trend.

H<sub>3</sub> tests the temporal-relational nature of agency; the lower part of the model. H<sub>3</sub> is supported. This hypothesis predicts that references to practical-evaluative and projective elements decline as the market stabilizes. More specifically, *narrative infrastructures* of markets can highlight problems that current institutional arrangements cannot solve and point out projections into a desired future. The negative standardized beta coefficient for market stability (-.616, p<.01) confirms the direction of the predicted trend.

Lastly, H<sub>4</sub> tests the interplay between *practical-evaluation* and *evolutionary change*; the right side of the model. H<sub>4</sub> is supported. This hypothesis predicts that the use of subjective-evaluative narratives increases as markets stabilize. Actors use these narratives in their processes of combining and re-combining (selecting and applying) more or less tacit and taken-for-granted schemas, and, through this selection process, drive gradual change over time. The positive standardized beta coefficient for market stability (.387, p<.01) confirms the direction of the predicted trend.

*Table 5: Time Series Regression Results*

<b>Institutional Change Mechanism</b>	<b>Market Stability</b>	<b>Words per Article</b>	<b>Hypotheses</b>
Dialectical Conflict (preexisting/emerging solution)	-.471**	.508**	H1A supported
Similarities (preexisting/emerging solution)	-.424*	.582**	H1B supported
Collaboration and Competition	-.596**	.281**	H1C supported
Objective-Descriptive Discourses	-.497**	.583**	H2A supported
Prescription/Subscription Gaps	-.482**	.447*	H2B supported
Temporal Intersections	-.616**	.519**	H3 supported
Subjective-Evaluative Narratives	.387**	.370*	H4 supported

n=25

\* Significant at .05 level

\*\* Significant at .01 level

*More Detailed Analysis of Hypothesis H1C*

As explained above, the theoretical foundation for hypothesis H<sub>1C</sub> is the work of Zietsma and McKnight (2009) that describes institutional work as non-linear processes in which multiple actors co-create institutions by competing and collaborating through multiple iterations of institutional developments until common templates become entrenched (see also Akrich et al. 2002a). H<sub>1C</sub> therefore differs from all other tested hypotheses (with the exception of H<sub>3</sub> which will be discussed below) in that it has two components;

institutional competition and collaboration. The used coding scheme breaks down these components even further and therefore captures additional richness of the data.

As stated, institutional competition, for example, was operationalized as an aggregate of institutional competition of users and corporate actors (both legal and non-legal conflicts). Also included as institutional competition were occurrences that indicated the promotion of disparate and competing practices (e.g. the promotion of VOD) as in institutional competition to DVR practices). Institutional collaboration, on the other hand, as described above, is an aggregate of collaboration from users, corporate actors, and other stakeholders. Also included in this category are licensing agreements and other investments. Lastly, the economic competition in a similar practice was also coded as institutional collaboration.

As discussed above,  $H_{1C}$ , based on the aggregated collaboration/competition construct is significant and the negative standardized beta coefficient for market stability (-.596,  $p < .01$ ) confirms the predicted direction. However, the use of this aggregated view hides some of the richness that the data and the coding scheme provides. To remedy this issue, a more detailed regression analysis of the codes included in hypothesis  $H_{1C}$  is provided in Table 6. Not surprisingly, for example, economic competition with a similar practice, does not follow the overall declining trend of institutional collaboration and competition as the DVR market stabilized. The regression analysis shows that the standardized beta coefficient for this code is, while not significant, positive (indicating a growing number of occurrences throughout the markets stabilization process). Intuitively, this makes sense since it is very common for economic competitors, by copying existing

solutions, to enter a market in which the institutionalization of practices has already begun.

The third row of Table 6 shows the result for a modified Collaboration and Competition construct in which the code of Competition with a Similar Practice has been eliminated. As expected, the standardized beta coefficient of market stability increases slightly (from  $-.596$  to  $-.663$ , both at  $p < .01$ ). Next, to further delineate the behavior of this construct, the two components, institutional collaboration and competition, are analyzed separately. The regression analysis for institutional collaboration, in line with  $H_{1C}$ , has a negative standardized beta coefficient for market stability ( $-.598$ ,  $p < .01$ ) that confirms the direction of the predicted trend. The analysis for institutional competition, on the other hand, while having the predicted negative standardized beta coefficient for market stability ( $-.327$ ), is not significant at either the  $p < .01$  or the  $p < .05$  level.

A possible explanation for this non-significance could lie in the prolonged conflict between DVR companies and content providers such as TV networks and studios. Even before the introduction of DVR technology, the entertainment industry had a long and contentious history of fighting the spread of digital content and many entertainment executives privately “acknowledge that they feared that the spread of personal video recorders could do to their business what Napster did to music (18).” As will be discussed in greater detail below, this institutional conflict escalated in 2001 and 2002 when twenty-eight entertainment companies sued Sonicblue, the maker of the ReplayTV DVR. This drawn out lawsuit, which resulted in the collapse of Sonicblue in 2003, might have distorted the predicted downward trend of institutional conflict throughout the formation of the DVR market.

In order to test this possible impact of the drawn out lawsuit, a regression analysis was performed in which the legal component of institutional competition was excluded. In other words, the institutional competition construct was re-operationalized using non-legal conflicts of users and corporate market actors and the promotion of disparate and competing (with DVR technologies) practices. The outcome of this analysis can be found in the last row of Table 6. This re-operationalized (without legal conflict) institutional competition construct is significant and the negative standardized beta coefficient for market stability (-.360,  $p < .05$ ) confirms the predicted direction.

*Table 6: Analysis of Hypothesis H1c*

<b>Institutional Change Mechanism</b>	<b>Market Stability</b>	<b>Words per Article</b>
Collaboration and Competition	-.596**	0.281
Economic Competition with Similar Practice (Institutional Collaboration)	.209	.276
Collaboration and Competition without Similar Practices	-.663**	0.176
Collaboration Only (without Similar Practices)	-.598**	.106
Competition Only	-.327	.215
Competition Only (without legal)	-.360*	.479**

n=25

\* Significant at .05 level

\*\* Significant at .01 level

*More Detailed Analysis of Hypothesis H3*

The second hypothesis that has two components is H<sub>3</sub>. It consist of two related codes: practical-evaluative elements and projective elements. As shown in Table 7, both of these elements are significant and the negative coefficients for market stability (Practical Evaluation -.575, p<.01; *Projectivity* -.576, p<.01) confirm the predicted trends.

*Table 7: Analysis of Hypothesis H3*

<b>Institutional Change Mechanism</b>	<b>Market Stability</b>	<b>Words per Article</b>
Practical Evaluation	-.575**	0.517**
Projectivity	-.576**	.365*

n=25

\* Significant at .05 level

\*\* Significant at .01 level

### **Additional Research Questions**

The hypotheses and their theoretical foundations address the components and proposed relationships of the ICM Model. However, to further uncover the complex nature of institutional change in nested social systems, the current work also conducts more inductive and qualitative investigations of the following research questions:

- 1) Do the data support the proposition that *narrative infrastructures* are always co-created among systemic market actors and that these narratives are not dominated by a single author or master text but that they are the alignment of multiple stories?
- 2) Do the data support the institutional change mechanism and their interplays that the ICM Model proposes?

- 3) Do the data support a true A2A conceptualization that overcomes the divide between passive listeners and active tellers of stories and the assumption that only a small number of market actors are story tellers, whereas others are content with adopting stories that are already circulating?

### **The co-created nature of narrative infrastructures**

Above, and in line with Vargo and Lusch's (2011b) A2A conceptualization, it was proposed that all actors involved in social and economic exchange are not only active participants in value creation and resource integration processes, and thus, co-creators of value and resource integrators, but also active participants in the creation of market stories and *narrative infrastructures*. As suggested by Deuten and Rip (2000), Boje (1991), and Rosa and Spanjol (2005), market narratives are always co-created by disparate market actors since stories in social systems are always interdependent (Weick 1995). These interdependent market stories, building on, adapting or contrasting earlier stories, can come into alignments (i.e. narrative infrastructures) that help to generate knowledge structures that enable actors to re-produce and co-creatively change market practices.

The goal of this section is to provide, through a qualitative analysis, empirical evidence for the co-created nature of *narrative infrastructures* (qualitative research question 1). Additionally, this section also further corroborates the institutional change mechanisms proposed by the ICM Model (qualitative research question 2) and supports the quantitative findings discussed above. While this qualitative analysis is based on the same data (relevant newspaper articles from the New York Times, the Wall Street

Journal, and USA Today) it uses a more inductive approach and should therefore make the findings of the case study more reliable, convincing and accurate (Dubé and Paré 2003).

As part of the initial coding process, 22 categories of actors, who verbally or non-verbally<sup>14</sup>, participated in the formation of the DVR market narrative infrastructure were identified. These actor categories are shown in Table 8; ranked by their contribution. The contribution was calculated based on the number of disparate actors per category per article. The weight of each actors' story (e.g. word counts) was not considered since, due to the co-created nature of *narrative infrastructures*, a clear demarcation is often not possible. For example, in the hypothetical scenario that all article narratives are based on stories from TiVo, ReplayTV, User 1, and User 2, both the DVR Company category and the User Category would be assigned a 50% contribution. While DVR Companies are, not surprisingly, with 29%, the most referenced contributors in the formation of *narrative infrastructures*, Table 8 shows that no actor category, in the coded newspaper data, can be viewed as the “master story teller” or the owner of the DVR narrative. In fact, the remaining 71% of the contribution is distributed over a relatively large number of disparate actor categories.

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<sup>14</sup> The distinction between verbal and non-verbal participation will be addressed in more detail below.

Table 8: Narrators in DVR Market Stories

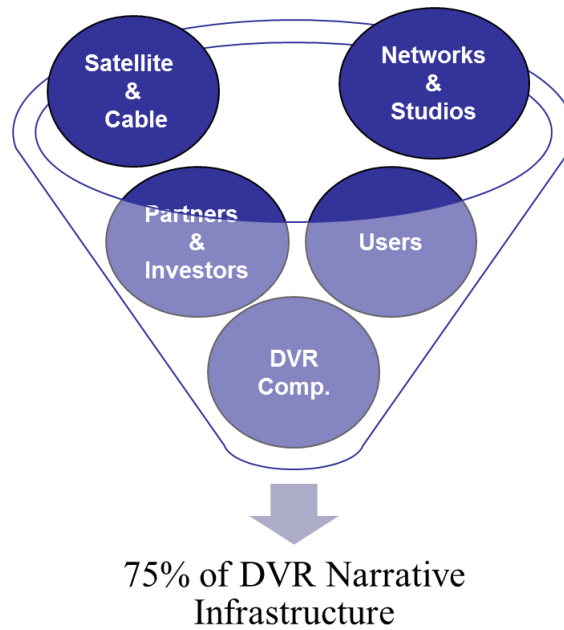
	Narrator	Contribution
1	DVR Companies	29.0%
2	Partner of DVR Companies	9.1%
3	Industry Analysts	8.3%
4	TV Networks	8.1%
5	Users	7.8%
6	Cable Companies	6.0%
7	Satellite Companies	5.5%
8	Competitors (disparate practice)	5.4%
9	Studios	4.8%
10	Investors	2.9%
11	Advertising Agencies	2.8%
12	Advertisers	2.7%
13	Technology Partners	1.6%
14	Reporters (active)	1.4%
15	Legal System	1.1%
16	Telecom Companies	1.0%
17	Retail	0.9%
18	Consumer Advocacy Organizations	0.5%
19	Trade Groups	0.5%
20	Regulators	0.3%
21	PC Users	0.2%
22	Music Labels	0.2%

The longitudinal data in Table 9 further corroborates the fact that *narrative infrastructures* of market formations are always co-created. This table shows, on average per article and year, how many disparate market actors, verbally or non-verbally, participated in the formation of these *narrative infrastructures*. Over the six years that were observed and coded, the average participation remained relatively consistent between five and six actors per article (with a range from 4 to 6.5).

*Table 9: Average Number of Narrators over time*

	1999	2000	2001	2002	2003	2004	2005
Average Number of Actors Involved in the Infrastructure Creation	6.5	5.6	5.5	5.6	4.0	5.8	5.6

Using the data displayed in Table 8, a second round of content coding was conducted to capture the longitudinal developments of market stories in eight main actor categories. As stated, this second round of coding was more inductive in nature, as opposed to the more deductive coding of tightly defined constructs in the quantitative part of this monograph. As will be explained in more detail below, the inductive approach in this second round of coding resulted in the collapse and consolidation of some actor categories. Not surprisingly, the stories from the two content providing actors, for example, networks and studios behaved in a closely aligned and interdependent fashion. Similarly, the following groupings were formed: Partners and Investors of DVR Companies, and Satellite and Cable Companies. After this consolidation, the following five main categories became salient: DVR Companies, Partners and Investors of DVR Companies, Users, Networks and Studios, and Satellite and Cable Companies (see Figure 14). Together, these actor categories account for almost 75% of the DVR market narrative infrastructure in the analyzed media.



*Figure 14: Five Actor Categories*

In contrast to the first round of content coding, which captured codes on an occurrence level, the second round was aimed at identifying high level story developments per actor category and year. As Weick (1995) points out, narratives are critical sense making tools among participants in social systems and subsystems and the goal of this qualitative analysis was to not only reveal the narratives in the chosen actor categories but also their interdependencies. The coding scheme was developed based on a few iterations between thinking about the collected data and generating a coding system. After these iterations, codes were grouped in annual time segments (calendar years) since the variance within market stories, at this aggregation level, seemed to be most salient at this duration.

*Qualitative analysis of the five actor categories  
DVR Companies*

Traditionally, marketing often views the producer of products or services as the master teller of market stories. The entire field of market communication, for example, seems to be centered on the notion that companies, through use of marketing communication—a blend of advertising, public relations, personal selling, sales promotion, and direct marketing tools—can effectively support their strategies (Armstrong et al. 2009). Today’s digital and wireless age, however, in which consumers are more informed and can easily communicate with each other and other stakeholders, shows that *narrative infrastructures* are always co-created. While, as Akrich, Callon, and Latour (2002b) point out, successful innovation needs a “good speaker” and firms undoubtedly play an important role in the formation and alignment of these infrastructures, they are far from being in control. In the current analysis, the importance but lack of dominance of the focal firm is shown in Table 8 in which the DVR companies achieve the top ranking but only account for 29% of the narrative contribution.

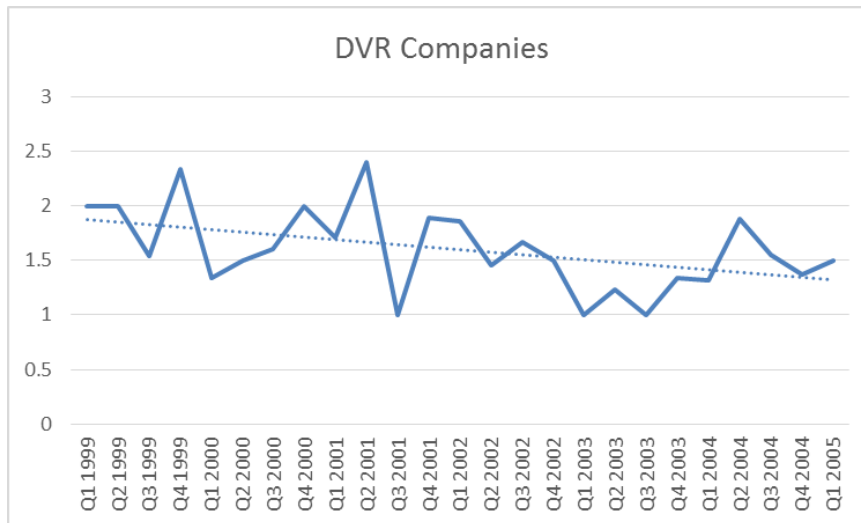


Figure 15: Average DVR Company Participation per Article

Figure 15 shows the longitudinal development of the narrative participation of the DVR Company category. The data are relatively tightly grouped around a slightly declining trend line. This decline can be explained by the increasing institutionalization of the DVR market. Early market stories often center on the two pioneers, TiVo and ReplayTV, and on the objective-descriptive explanations of their new devices, processes, and institutional prescriptions. As explained above and shown in the quantitative section of this monograph, objective-descriptive language, such as technical and objective facts, is often used by actors with high levels of expertise in the area in which a new market forms. As more actors in a service ecosystem absorb the skills and knowledge necessary to support the new institutions (Lawrence and Suddaby 2006), the need for objective-descriptive narratives diminishes, somewhat reducing the focus on experts and the focal companies.

A deeper look into the market stories of the newspaper articles that can be associated with DVR companies highlights the initial interplay between *evolutionary* and *dialectical change* processes as proposed by the institutional change model. From the introduction of the pioneering products (TiVo and ReplayTV) in 1999 through 2001, these stories often compare the practice of digital video recording to the practice of recording video on tape. As discussed, in this context, practices around DVR technology are discursively described as both evolutionary and dialectical. For example, the basic analogy to the VCR describes the fact that “[b]oth record TV shows and, on replay, let viewers go back, forward, and pause (19).” At the same time, dialectical differences are also highlighted. DVR practices, for example, are described as being dramatically

different than those associated with VCRs because they allow users to personalize their video consumption in unprecedented ways.

In addition to highlighting the interplay between *evolutionary* and *dialectical change*, early DVR company driven stories also provide references to *practical-evaluation* and *projectivity*. The ability to create “personal channels”, for example, describes a practice that established *institutionalized solutions* cannot conveniently and easily provide. Similarly, these early stories also describe visions of the future in which DVRs are described as potentially “lead[ing] to a broad change in TV viewing habits (20).”

Longitudinally, from 1999 through 2001, the stories of DVR companies, viewed from a high-level perspective, changed very little. This inertia can be explained by the fact that practices around DVR technologies are not easy to communicate. TiVo senior vice president Brodie Keast, for example, stated that there was no good, one-sentence pitch (21). In those early years of market formation, the concept of TV personalization remained nebulous to many potential customers (21), highlighting the role of users in the social construction of the DVR technology (Pinch and Bijker 1984). This involvement of users in the social construction process will be discussed in more detail in the next section.

The year 2001 marks an increase in more subjective-evaluative references in the used media in which DVRs were depicted as “life changing”, “the next big thing”, and “expected to take off.” While many potential users still did not fully understand the

technology, DVR evangelists now provided DVR companies with believable anecdotal evidence that the technology will likely be successful and impactful.

In the following year, 2002, the emphasis on the basic benefits of DVR technology remained salient in the stories of DVR companies, but the focus somewhat shifted to the new and controversial features of automatic commercial skipping and networked file sharing. More specifically, Sonicblue, the mother company of ReplayTV, escalated the ongoing institutional conflict between studios and networks and DVR companies about the commercial skipping abilities of their devices. Sonicblue announced that their latest DVR version would come with a software, called "Commercial Advance," that automatically detects and skips advertisement. Andy Wolfe, chief technology officer at Sonicblue described this escalation as follows: "They [studios and networks] said, 'If you go through with this, we will be very mad and sue you,'" "But the consumer will be happy. Who are we going to choose, people who don't want our business to exist at all or the customer (22)?" Furthermore, these new ReplayTV DVRs, due to their added network connectivity, also allowed users to share content via the Internet which further escalated the conflict between studios, networks and Sonicblue.

TiVo, at that point the clear market leader in this newly forming market, on the other hand, chose a less confrontational approach. While TiVo offered a fast-forward button that advanced through commercials at 60 times the normal speed, it did not use automatic ad-skip circuitry. "Our philosophy is to balance the needs of consumers with inclusive business practices," said TiVo senior vice president Brodie Keast. "There's no need for us to lean a left hook into the side of these giant [media] companies (22)."

In 2003, Sonicblue collapsed after Hollywood pummeled its ReplayTV service with a copyright lawsuit. This lawsuit, which will be discussed in more detail below, therefore, at least partly, ended various iterations of institutional conflict and prescription and subscription gaps. The years 2003 and 2004 saw further advances in-home networking capabilities (both Ethernet and wireless based) which added new entertainment hub features to DVR technology. This technology not only allowed home users to share music and photos between PCs and DVRs, but also enabled users to access video content from new providers, who acted in competition to the traditional TV channels. Netflix, for example, partnered with TiVo to provide streaming capabilities and satellite companies used DVRs to provide video-on-demand like features to compete with cable companies.

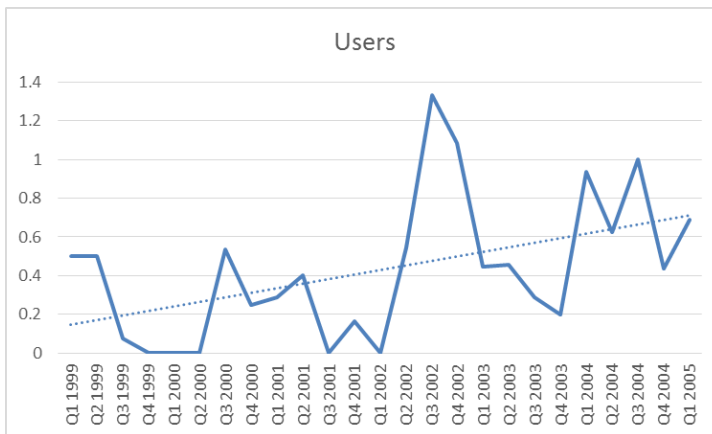
Lastly, the DVR company stories of 2005 often referenced changes in the competitive landscape. Led by the introduction of DirecTV's own DVR, both satellite and cable companies had begun to aggressively offer DVR with the promise of simple devices with integrated billing, easy installation and less clutter (hardware and software integrated in the cable box) whereas TiVo tried to position itself as the innovation leader.

In summary, the stories of the DVR companies in the three analyzed newspapers highlight many institutional processes and change mechanisms described in the conceptual part of this monograph. More specifically, these stories provide evidence for an interplay of dialectical and evolutionary institutional change mechanisms, make the interpretive flexibility of users salient, describe practical-evaluative and projective evaluations, and show that prescriptions and subscription gaps are often resolved through multiple iterations of institutional conflict and collaboration. Below, by adding additional

stories from other actor categories, the co-created and interrelated nature of narrative market infrastructures will become even more salient.

### *Users*

As stated, while much of the innovation literature remains “production”-centric, and maintains a distinction between those who “develop” and those who “adopt” innovations, more recent views on innovation are beginning to highlight the important role of users in innovation processes. The realization that users have the capacity to drive innovative efforts (Oudshoorn and Pinch 2003; Von Hippel 2007) points to a more interactive and systemic view of innovation in which the unit of analysis explicitly incorporates the user and the use of technology (Geels 2004). Thus, this section will focus on the role of users in the institutionalization of DVR technology and their participation in the creation of the corresponding *narrative infrastructures*.



*Figure 16: Average User Participation per Article*

As indicated by the upward facing trend line in Figure 16, average user participation, in the analyzed media, grew throughout the DVR market stabilization. In 1999, the year of the introduction of both the TiVo and ReplayTV DVRs, awareness of DVR technology among users jumped relatively quickly to 31% (according to the Yankee Group (23)), but only 16% of the population was “at least somewhat intrigued” by the concept while 53% were “not at all” interested. Using their interpretive flexibility, many potential users viewed DVR players as being too similar to VCR players which, at that time, enjoyed a very high adoption rate (85 million in 2000 (24)) and much lower price points.

Not surprisingly, by far the most popular DVR feature (86% viewed it favorably), according to those familiar with the technology, was the ability to skip commercials (23). This practice probably resonated with users, because commercial skipping was already highly institutionalized by using interruptions in programming to get a snack, switch to other channels, or for trips to the bathroom. Studios, networks, and the advertising industry, on the other hand, as will be explained in more detail below, viewed the practice of skipping commercials as a major threat to their business models. These disparate and opposing viewpoints of users and content providers highlight the socially constructed nature of the DVR technology and raptures and inconsistencies in institutional arrangements.

As shown in the quantitative part of the analysis (in the discussion of H<sub>2B</sub>), the early user *narrative infrastructures* of the DVR market formation, in the analyzed media, were dominated by objective-descriptive discourses from video enthusiast and professionals. These stories of sophisticated users, with their deep technical understanding, often described DVR technology in terms of features and specifications.

This began to change in the years 2000 and 2001 when regular DVR users slowly started to share their stories in more subjective-evaluative descriptions of their experiences.

While these descriptions of the new practices were mainly positive, and even life-changing, some users were concerned about the ability of DVR companies to collect data on their viewing habits. These privacy concerns, however, seemed to be a rather isolated discourses. Despite the mainly positive nature of user market stories, however, DVR adoption rates remained much lower than predicted. Many potential users continued to view DVR technology as not providing enough benefits to incorporate it into their life (i.e. an example of interpretive flexibility).

Consistent with the positive narratives in earlier years, the 2002 and 2003 user market narratives, in the newspaper articles, were dominated by descriptions of a very loyal and often cult like following and DVR evangelist were often depicted as actively promoting DVR technology to their families, friends and coworkers. Some members of this enthusiastic user community, however, did much more than just promote DVR related practices. Enabled by books and online forums, users started to not only change the way in which they interact with DVR technology, but also changed the DVR technology itself. Even relatively non-technical users started to “hack” their devices to activate a hidden 30-second skip functionality (in TiVo boxes), to blaze through commercials, or to upgrade DVR hard drives to allow longer recoding times. Furthermore, tech-savvy users began designing their own Ethernet cards and web interfaces to program their devices remotely and to extract and transfer video content among them.

Additionally, the internet allowed users to start sharing the shows that they had saved on their DVR devices. Chad Little, for example, a web designer from the San Francisco Bay Area, built a site called Planet Replay which served as an internet based platform that enabled users to communicate and share their recorded shows with each other. The DVR user narratives are therefore a salient example for the social construction process. Users engage both in institutional collaboration (e.g. by promoting DVR technology to family members and friends) and in institutional competition (e.g. by hacking their devices in a way that went against the institutional prescriptions of DVR companies). The exchange of video content over the internet, for example, increased the conflict between DVR companies, networks and studios, highlighting the earlier stated notion that users are not only important in the determination of how a technology is viewed but also in how it is used.

In 2004 and 2005, DVR technology became mainstream as large numbers of Americans began” ditching their videocassettes to record their favorite shows (25).” The corresponding institutionalization and sense making was highlighted by the fact that “TiVo [had] become as synonymous with DVRs as Xerox is with photocopiers—as with ‘Xeroxing,’ ‘TiVoing’”[had] become a verb (26). User stories in the analyzed media, in this stage of the market development, focused less on objective-descriptive discourses about the core practices and functionalities, and, instead, shifted to more subjective-evaluative descriptions of differing solutions. For example, the question whether lower price boxes from cable and satellite companies, which also offered the convenience of having everything in one box (cable/satellite receiver and DVR) and all costs on one bill, were preferable to the more feature laden TiVo boxes.

### *Partners and Investors of DVR Companies*

As pointed out in the conceptual and the quantitative part of this monograph, the interplay between dialectical and evolutionary institutional change mechanisms often coincides with what Zietsma and McKnight (2009) call collaborative co-creation and competitive convergence. In other words, actors compete and collaborate through multiple iterations of institutional developments until common templates are adopted. In this section, the market stories of partners and investors of DVR companies are analyzed to explore the collaborative side of market formation. It is important to note, however, that institutional collaboration is not limited to formal partnerships. As highlighted in the user section above, users, for example, actively collaborated and competed in the institutionalization of the DVR market. Furthermore, as will be discussed below, formal partnerships do not necessarily lead to institutional collaboration but also often include institutional competition.

In this section, partners of DVR companies are conceptualized as actors who directly collaborate through (formal) production, licensing, or patent agreements. Phillips and Panasonic, for example, formed production partnerships with TiVo and ReplayTV and Sony and Toshiba licensed TiVo's technology to integrate it into their own devices. Investors, on the other hand, as the category name implies, are those actors who invest in DVR related technologies. Methodologically, it is important to highlight that some actors, depending on their context, were coded in more than one category. The satellite company DirecTV, for example, was, depending on the context of the market story, both coded as a partner of a DVR company as well as a satellite company.

The downward trend of the narrative contribution of DVR Company partners (see Figure 17) is consistent with the findings of the quantitative section in that it shows that, in emerging and successful institutionalization processes of new solutions, references to collaboration decline as new *institutionalized solutions* (i.e. markets) stabilize.

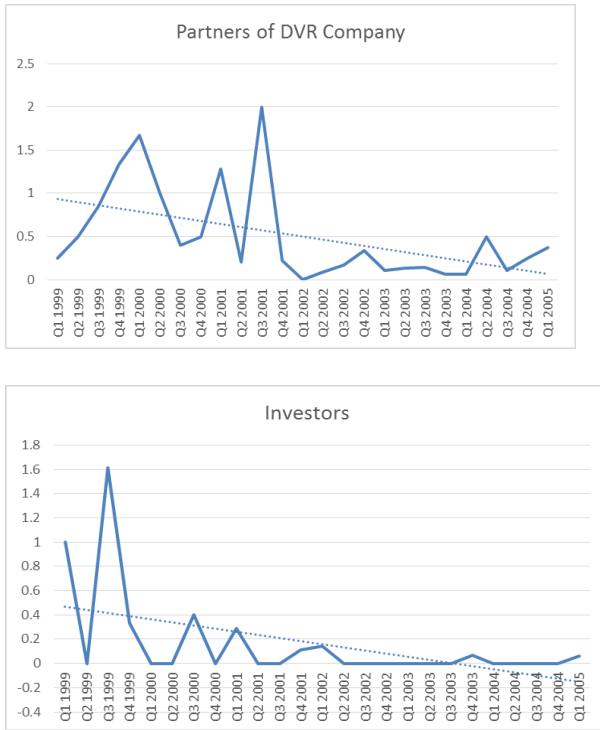


Figure 17: Average Partner and Investor Participation per Article

As described in the user section above, the ability to use DVRs for commercial skipping resonated with users from the very beginning. This functionality was therefore immediately viewed as a major threat by actors whose business models relied on revenue from advertising, such as TV networks, studios, and advertising agencies. It is therefore somewhat surprising that many early investors in DVR technology came from this group. Walt Disney, NBC, Liberty Media, Time Warner, and Viacom’s Showtime, for example, invested \$57 million into ReplayTV. Concurrently, Disney, NBC and Liberty Media also

financially backed TiVo; joining the ranks of other media companies such as CBS, Comcast, Cox, Discovery Communication, DirecTV and TV Guide (27). The somewhat bizarre nature of these investments was highlighted by the fact that, at the same time, Time Warner, Disney, News Corp., CBS and Discovery said they might sue ReplayTV and TiVo if they don't buy the licensing right to TV shows that viewers might record. As David Lieberman, the consumer electronics expert of USA Today put it "[while] it's hard to tell who's on whose side, it's harder to say who's friend or foe (27)."

In terms of institutional change, these media investors therefore participated in both institutional collaborative co-creation and competitive convergence. Their investment enabled TiVo and ReplayTV to advance the evolution of their DVR technologies, with their institutional prescriptions, and allowed both companies to develop, promote and advertise their products and services. The dialectical conflict about commercial skipping, on the other hand, resulted in a direct institutional competition.

In addition to the media companies, both TiVo and ReplayTV also had more traditional investors such as entrepreneur and venture capitalist Paul Allen and technology partners such as Philips and Panasonic. In the second year of the DVR market formation (2000), stories about additional alliances included the cooperation between TiVo and companies such as GE's NBC, and AOL Time Warner while Microsoft, a new entrant to the DVR market, formed an alliance with Thomson/RCA. After the year 2000, the discourse from investors decreased pretty significantly. Following the same trend, though slightly delayed, discourses from DVR partners also decrease substantially.

In 2003 and 2004, after the collapse of ReplayTV, TiVo hoped to make its “service ubiquitous by persuading cable, satellite and consumer electronics companies to license and offer its consumer-friendly system for their DVRs” in the same way it had already made deals with DirecTV, Sony and Toshiba. TiVo’s hope however, never came to fruition. Instead, as described above, lower priced boxes from cable and satellite companies, which offered a single box and invoice, rapidly grew in popularity, making existing partnerships among cable and satellite companies and their traditional set-top box manufacturers such as Motorola and Scientific-Atlanta salient.

As part of this trend to integrate DVR and cable/satellite boxes, the important (for TiVo) partnership with DirecTV began to dissolve. Rupert Murdoch’s News Corporation, the owner of DirecTV, also controlled the NDS Group, a company that started to produce integrated satellite and DVR boxes. While TiVo formed a partnership with Netflix to stream video content to the hard drives of their devices via the internet, it failed to capture the critical cable and satellite market. In 2004 and 2005, investors began to question the viability of TiVo’s standalone model.

In summary, this section has shown that the two institutional change mechanisms, collaborative co-creation and competitive convergence, in the analyzed data, can both be found in formalized partnerships. While formal partnerships often promote *evolutionary change*, for example the integration of DVR technology into TVs and DVD players, they are not free of dialectical elements. As suggested in the conceptual and the qualitative part of the monograph, both these evolutionary and dialectical institutional change mechanisms declined as the DVR market stabilized.

## Networks and Studios

The section above has already begun to highlight the important and complex roles of networks and studios in the formation of the DVR market. It has shown that, somewhat paradoxically, these two actor groups participated in both the collaborative co-creation and the competitive convergence of the institutional processes that led to the stabilization of the DVR market. Hypothesis H<sub>1C</sub> has shown that, in emerging and successful institutionalization processes of new solutions, both of these institutional change mechanisms, in the analyzed data, decline as markets stabilize and it is therefore not surprising that the average participation of networks and studios in the *narrative infrastructures* of the DVR market also follows this trend (see Figure 18)

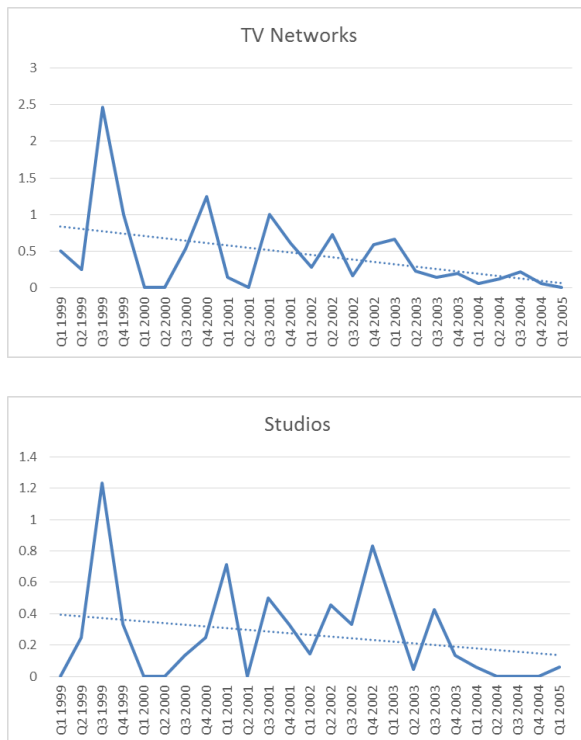


Figure 18: Average Network and Studio Participation per Article

As discussed, in 1999, many media companies simultaneously began “fighting and joining” providers of DVR technologies. While DVRs were seen as the latest, and possibly greatest, threat to their \$100 billion-a-year business bottom lines (10), many broadcasters concluded that they might as well join TiVo and ReplayTV to blunt their damage. Media companies especially disliked ReplayTV’s advertising skips. As mentioned above, in regards to commercial skipping, the two DVR pioneers, TiVo and ReplayTV, followed slightly differing strategies. TiVo’s functionality allowed users to fast-forward through commercials at 60 times the normal speed, and thus, chose a compromise, or, in institutional terms, a competitive convergence between the desires of users to skip advertising automatically and the wish from media companies to not provide any skipping functionality at all. ReplayTV, on the other hand, chose a direct institutional confrontation with studios and networks that went to the heart of their TV business. This conflict continued through the year 2000, with the ongoing threat of legal action by the media companies.

In 2001, Sonicblue, the parent company of the ReplayTV brand, escalated this already tense conflict by announcing a new DVR model, the ReplayTV 4000, which not only let users automatically skip commercials, a feature that was called “Commercial Advance”, but also allowed users to send shows to friends over the Internet (28). As a consequence, twenty-eight entertainment companies sued Sonicblue. In their market stories, ReplayTV executives often referenced the Supreme Court case in which the entertainment industry, in 1984, could not make the case that VCRs would destroy their business. In other words, they argued, in an evolutionary fashion, that DVR technology enables similar practices and functionalities. Media companies, on the other hand, in a

dialectical fashion, argued that DVR technology was radically different. “Digital technology is the first that lets consumers make perfect copies of songs, films, and shows—a big step up from fuzzy cassette duplicates (29).”

Thus, the empirical evidence found in the newspaper articles not only highlights the importance of the interplay of dialectical and evolutionary institutional change mechanisms, but, that the socially constructed nature of technology allows varying interpretations in different context. While DVR pioneers, TiVo and Replay, highlighted the dialectical advantages of their DVR over VCR technology to promote the benefits to their users, ReplayTV, in stories in regards to the pending litigation, described the institutional change associated with DVR technology as an evolutionary development from the practice of using tape to record TV programming.

In 2003, due to Hollywood’s copyright lawsuit, Sonicblue collapsed and the ReplayTV brand was sold to D&M Holding, a Japanese company. D&M Holding dropped the two controversial features in a move that “some observers consider a major shift in power toward providers of entertainment content and away from the manufacturers of devices that deliver that content to homes and the consumers who ultimately see it (30).” Following this shift, the conflict between media and DVR companies died down significantly and the fast-forward functionality institutionalized by the use of VCRs and TiVo boxes became the norm. Even hybrid companies who were invested in both the content and the hardware side, such as Time Warner Cable and Murdoch’s News Corp offered DVR technology with this feature.

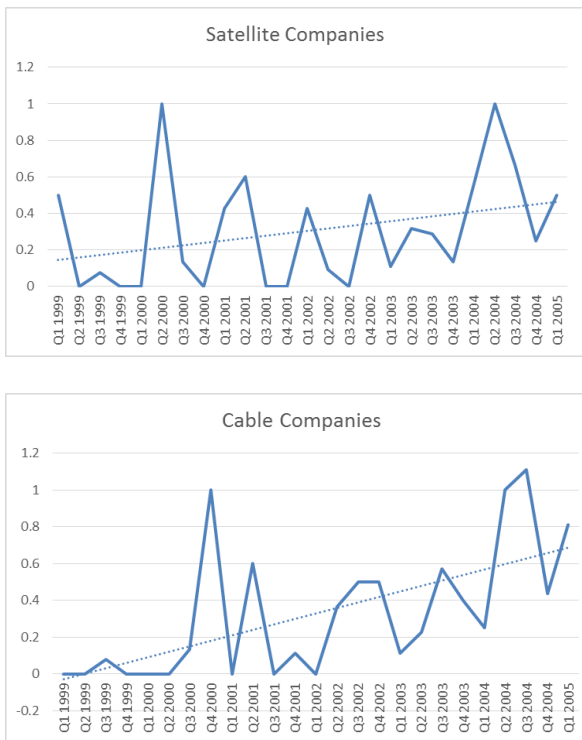
By 2004, the institutional conflict between media companies and DVR companies seemed to be resolved. CBS research chief David Plotrack, for example, rejected the earlier described “doomsday scenario” by saying that digital video recorders “may end up being more of a blessing than a curse (31).” His research indicated that while the majority of DVR users “fast-forwards through the ads, they still watch the screen—and 21% recall at least one of those ads the next day (31).” This recall rate is comparable to the recall rate of live TV viewers. Additionally, DVR users watched a lot more TV and were more likely to try a new series and their behavior, thus, more than offset losses from ad skipping.

Even after the Federal Communications Commission, in 2004, approved DVR technologies that enabled the copying of digital programs for personal use while preventing their mass distribution on the Internet, the institutional truce held. While some media companies, for example the National Football League, worried that DVR users could provide unscrambled content to their friends “or sell them to others who could then watch games transmitted via the Internet,” the practice of using DVRs, at this point of the market development, had become so institutionalized that none of the actors, in the analyzed data, seriously opposed the use of this technology.

### *Satellite and Cable Companies*

The last group of narrators in this qualitative investigation are the satellite and cable companies. As will be explained below, both of these company groups were strong institutional collaborators in the establishment of the DVR market by emerging as successful economic competitors to TiVo and ReplayTV. While these companies

competed economically with the two DVR pioneers, they also played an important role in the broader institutionalization of DVR related practices. It is therefore important to clearly differentiate economic and institutional competition. Based on their success in the market, satellite and cable companies not only increased their contribution to the overall narrative market infrastructure (see Figure 19) but also led to an increase in the subjective-evaluative narratives that was based on the evaluation of competing solutions by users and industry experts.



*Figure 19: Average Satellite and Cable Company Participation per Article*

Satellite and cable companies recognized very early on that DVR technology could be important for their business. EchoStar CEO Charles Ergen, for example, had stressed the potential of DVR-equipped satellite receiver boxes since 1999, the year of the first product introductions, and began offering the service free of charge in 2001 (32).

Throughout the following two years (2000-2001), most of the other satellite and cable companies also started to announce field tests, and began offering set-top boxes with built-in DVR technology.

By 2002, satellite providers EchoStar and DirecTV aggressively promoted DVR boxes, which they viewed as tools to increase their market share in a market dominated by cable companies. At that time, 72 million US households received their TV signal via cable, outnumbering homes with satellite or antenna access by almost 4-to-1 (32). Satellite companies also began to see DVR technology as important in competing with the video-on-demand (VOD) technologies that many cable companies were field testing. The lack of dedicated upload and download capabilities (lack of two-way communication) inherent in satellite technology prohibited satellite companies to offer a comparable service, but they were able to use satellite channels to preload movies onto DVR hard drives of their customers that could be accessed in a pay-per-view fashion very similar to VOD (hence sometimes called “near VOD”).

Cable companies, on the other hand, were a little slower to adopt DVR technology because of worries that this technology “would steal thunder from the potentially more lucrative video-on-demand” that they were rolling out (32). Bred Beale, senior vice president of DirecTV stated “I see the battle lines drawing here.” “It’s [D]VR vs. VOD (32).” Proponents of VOD argued that this technology could offer video content anytime, overcoming the need of scheduling and recording.

Despite the worries that DVR technology might interfere with their VOD rollout, many cable operators began testing and offering DVR functionalities in their set-top

boxes. The aggressive and very successful promotion of DVR boxes by the satellite companies, had, for the first time ever, resulted in a loss of overall cable subscriptions, and, research from the cable companies showed that defection rates were especially high among the valued 17 million subscribers who paid a premium for digital cable (32). In 2003, to stop the switch to satellite services, the top cable operators such as AOL, Comcast and Cox began hedging their bets by offering DVR-equipped cable boxes to subscribers. This institutional competitive-convergence therefore turned cable companies into important institutional collaborators.

To manufacture their integrated DVR and cable boxes, many cable companies used their established suppliers such as Motorola, Scientific-Atlanta, Pioneer and Pace. Simultaneously, the Federal Communications Commission deregulated the cable box market by creating standards that allowed all equipment manufacturers to design and build cable boxes that work on any cable system. Consequently, TiVo integrated these cable standards into its DVR boxes. According to Scientific-Atlanta CEO Jim McDonald, this effort to become a full-fledged convergence service "represent[ed] a direct competitive threat to cable operators' strategy (to control) the home entertainment network." As a result, while starting to offer VOD for a lot of conventional, scheduled TV shows, many of the key cable operators, including AOL, Comcast and Cox, began offering DVR-equipped cable boxes to their subscribers.

During the years 2004 and 2005, the growth in the DVR market accelerated as a large number of deep-pocketed TiVo competitors, including cable, satellite, computer and consumer electronics companies, introduced affordable and simple DVRs using their own software and services. DirecTV, for example, introduced DVRs made by the NDS

Group, another Murdoch company, and companies such as Comcast, Time Warner, Cox and others started promoting digital set-top decoders with built-in DVRs and their own services. TiVo's strategy, on the other hand was to provide state-of-the-art features—such as the capability to connect with home Ethernet and wireless networks—to differentiate its products from the more basic DVRs offered by cable and satellite operators.

In summary, while the emergence of DVR boxes from cable and satellite companies resulted in a strong economic competition for TiVo, it also introduced DVR technology to the majority of American homes and therefore, from an institutional standpoint, must at least partly be seen as collaboration in the institutionalization of the DVR market and its related practices (i.e. market formation). While the simpler and integrated boxes from satellite and cable companies were less feature laden than TiVo's DVRs, they provided a solution that was easy to install, use, and pay. In other words, these simple DVRs provided a somewhat disruptive innovation (Christensen et al. 2006) in the DVR market in which a seemingly inferior technology becomes “good enough” to solve the problems of the majority of users. At the latter stages of market formation, these introductions of slightly differing solutions correspond with a shift in the language used in the *narrative infrastructures* of the analyzed data. Since the overall concept of DVR technology and the related practices were well understood (i.e. institutionalized) these narratives substituted objective-descriptive for subjective-evaluative language that, as the name implies, is more suitable to describe subjective assessments such as preferences between competing practices, services and products (i.e. in a way that is not valence-neutral).

## Participation in the Creation of Narrative Infrastructures

The section above has shown that narrative market infrastructures are based on the alignment of numerous stories from disparate actors. It has not fully explicated, however, how market actors participate in these co-creational processes. Rosa and Spanjol (2005) argue that only a small number of market actors are story tellers, whereas others are content with adopting narratives that are already circulating. While their work supports the notion that market narratives are collectively shaped by multiple and disparate market actors, Rosa and Spanjol suggest the existence of a divide between active story tellers and passive listeners.

Boje (1991), on the other hand, argues that both listeners and tellers of stories co-create narratives (i.e. are active creators). He points out that the audible part of a narrative is only a fraction of a storytelling episode and that listeners fill the blanks and gaps between the lines with their own experiences. Using the terminology of the current work, every actor, both tellers and listeners of market stories, use their interpretive flexibility to uniquely and phenomenologically co-create their stories.

Since co-created market narratives have a constitutive role in the creation of agency, they must be viewed as both a medium and an outcome of human action. More specifically, even not (fully) verbalized stories enable and constrain human practices and are therefore, as argued above, key components of institutionalization processes. All this suggests that, while the teller and listener distinction might exist in a particular storytelling episode, it vanishes in continuous multi-actor and multi-level processes in

which stories come into alignment to form *narrative infrastructures* that are the rails for human action and institutional change.

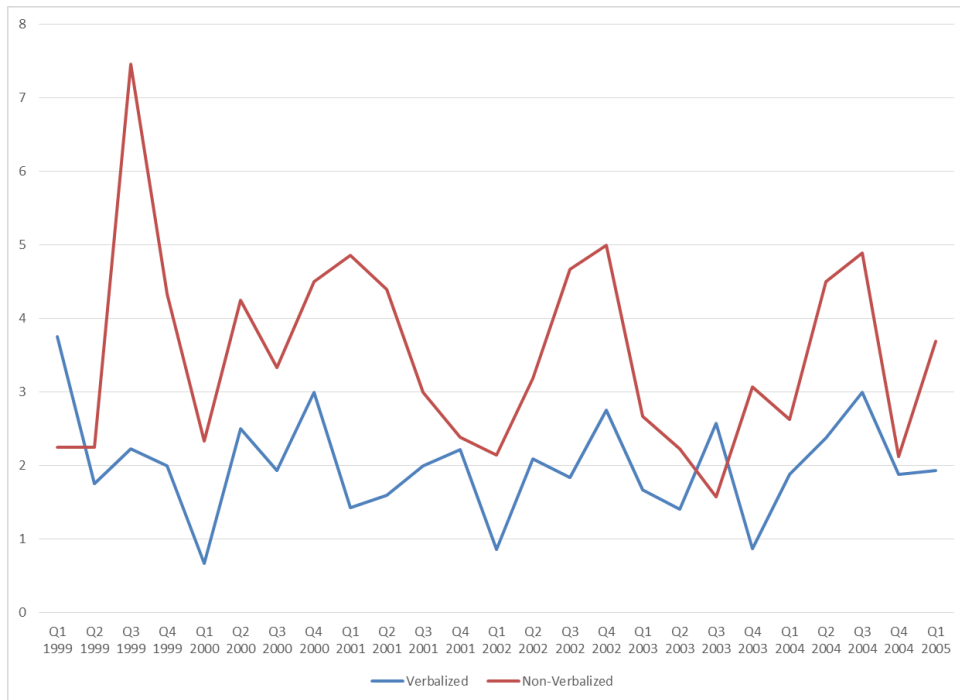
The above described coding process, in which twenty two categories of actors who participated in the formation of the DVR market narrative infrastructure were identified, was further extended. All participation codes were also coded as verbal or non-verbal participation. Active verbalization in market narratives includes the occurrence of direct quotes, answered interview questions, and press releases. Non-verbal participation, on the other hand, include third party descriptions (i.e. reporters, market researchers) of activities, processes, and practices.

The conflict around commercial skipping, for example, highlights both verbal and non-verbal participation in market stories. In 2002, during the height of this conflict, networks and studios, through interviews and press releases, actively verbalized their disagreements with this practice. They, for example, highlighted that “there is no Santa Claus” and that free television “is based on us watching commercials (12)” and even equated commercial skipping with “theft”. Mr. Kellner, the chief executive of Time Warner's Turner Broadcasting unit, for example, said in an interview that “[a]ny time you skip a commercial...you're actually stealing the programming. (33).” Similarly, the two DVR pioneers, TiVo and ReplayTV, also engaged in active verbalization about this topic. ReplayTV’s chief executive, Ken Potashner, for example, argued that “it is up to the networks and advertisers to come up with creative ways to persuade viewers to watch [commercials] (12).” In other words, Mr. Potashner pointed out that his company is just providing “an efficiency improvement for a consumer who is compelled to skip a commercial (12).”

TiVo senior vice president Brodie Keast, on the other hand, described that his company's "philosophy is to balance the needs of consumers with inclusive business practices." In line with these verbalized statements in the creation of DVR market narratives are non-verbal activities and practices of both TiVo and ReplayTV. Based on their view of the market, ReplayTV, for example, provided automatic ad-skipping circuitry while TiVo only provided a fast-forward button. More importantly, users, often through non-verbal participation, also participated in the shaping of DVR market narratives by aggressively adopting the practice of commercial skipping. Since the DVR companies were electronically tracking and reporting these commercial skipping practices, users actively participated in the co-creation of the narrative infrastructure of the DVR market even if they never verbalize these practices. In 2002, for example, the average DVR user skipped more than half the commercials and one in five users never watched any. Furthermore, as stated above, users, mostly with the help of information shared on internet forums, started to hack their TiVo boxes in order to reprogram their fast-forward into a 30 second skip button.

The commercial-skipping example above highlights that verbal and non-verbal participation both actively shape the formation of market stories and *narrative infrastructures*. Both TiVo and ReplayTV expressed slightly differing views of the DVR market, not only through their active verbalization, but also through the institutional prescriptions they embedded in their products. Users, on the other hand, participated in the creation of narrative infrastructures of markets through their practices which were then verbalized through market research, interviews, and by promoting commercial skipping to their friends, coworkers and families.

Figure 20 shows the distribution between verbal and non-verbal participation, based on the coding scheme described above, over the entire sample. More specifically, Figure 20 shows the average number of actively verbalized and non-verbal participation per article in the DVR market development from Q1 1999 to Q1 2005.



*Figure 20: Average Verbalized vs. Non-Verbalized Participation per Article*

With the exception of one quarter, the non-verbal participation is higher than the verbal one. Based on this data, it can be argued that speaker and listener categories used by previous research (Rosa et al. 1999), are creating a false divide between active speakers and somewhat passive listeners. *Narrative infrastructures* of markets (i.e. the alignment of market stories) are always the outcome and medium of human activities. Using their interpretive flexibility and their institutional arrangements, all actors, in the same way, evaluate market stories, fill in gaps and blanks, and find their roles in the

developing plots. Equally, all human actors use *narrative infrastructures* as vehicles for learning and sense making (Weick 1995), or stated differently, *narrative infrastructures* can be viewed as constitutive to agency. In other words, the duality of market stories further highlights the above discussed A2A perspective by showing that all market actors use and actively co-create market stories through institutional processes. This view, as stated, therefore eliminates an artificial speaker and listener divide.

## Discussion, Managerial Implication, and Future Research

In this monograph, I propose that a service-driven and systemic view of innovation cannot only provide important insights for “traditional service relationships” but, instead, provide an overarching framework that re-conceptualizes both innovation and market (re)formation. Based on this approach, which views dynamic service ecosystems as venues for resource integration and value co-creation (Vargo and Lusch 2011b), innovation is not defined in terms of products or technology improvements but in terms of changes in market relationships and practices. This shift highlights the important role of institutions in innovation and the formation of market since institutions enable and constrain resource integration and value creation practices of social actors.

Markets, in this context, are conceptualized as *institutionalized solutions* (Vargo and Lusch 2013a) and innovation can be broadly viewed as the co-creation or collaborative recombination of practices that provide novel solutions for new and existing problems. Furthermore, this focus on the integration of dynamic resources and collaboratively created value points toward institutionalization, the change, maintenance, and disruption of institutions (i.e. institutional work (Lawrence and Suddaby 2006)), as the central process of innovation for both technology and markets. In this context, technologies are conceptualized as potentially useful knowledge, or value propositions, that are both the outcome and the medium of human actions. Stated differently, technologies are always socially constructed (Orlikowski 1992; Pinch and Bijker 1984) and therefore possess institutional properties (Nelson and Nelson 2002; Pinch 2008).

Thus, the current work proposes that an institutional view can not only capture the systemic, reciprocal and interactive nature of social systems (i.e. the service-driven nature) but also provide a conceptual link between the technical and the market component of innovation that can, arguably, help to consolidate the fragmented innovation literature.

In order to delineate the mechanisms of institutional market change, a model is introduced that, based on analytical change mechanisms, can capture the systemic and relational nature of this change. More specifically, this ICM Model can, arguably, by highlighting the interplay among four institutional change mechanisms—*dialectical change, evolutionary change, practical-evaluation, and projectivity*—provide a more multidimensional and political model of the social construction processes in market formation and re-formation than traditional practice approaches. In other words, this model can help to resolve the tension of the paradox of embedded agency by explaining how actors can co-create new markets despite the fact that their actions and practices are enabled and constrained by the institutional arrangements that they wish to change. By allowing researchers to zoom out to meso and macro levels and to zoom in on micro levels, this model also highlights important macro-micro interplays and shows that institutional work is always a co-creational and political process in which actors try to reconcile the contradictions, ruptures, and inconsistencies that are elements of all institutional arrangements in nested and multidimensional service ecosystems.

The use of this service-driven model reframes the purpose of firms from providing resources that *fit* into the practices of customers to enabling dynamic processes in which all market actors (including customers and other stakeholders) can co-create

fitting institutional arrangements that make resource integration and value creation practices possible and meaningful. In this context, and by pointing out important macro-micro linkages, it is argued that dialectical and dynamic change processes are guided by *narrative infrastructures*. More specifically, these co-created *narrative infrastructures* are not only important sense-making tools but they can, by helping actors to resolve the tension between *projectivity* and indeterminism, help to overcome ontological uncertainty and therefore lead to greater capacities for creativity and innovation among systemic actors.

## **Managerial and Scholarly Implications**

### **Implication for Product and Service Design**

As cited, Simon (1996) defines design as any action that is aimed at changing existing situations into preferred ones. Design activities are therefore not limited to entrepreneurs or design and marketing departments in corporations but, consistent with the ICM Model proposed in this monograph, include the socio-technical work of all actors in a service ecosystem. However, as described in the section on innovation, many practitioners and scholars still view design as a linear process in which a problem is defined (by determining the requirements that a successful design solution must have) and then solved through the precise calculation of means to achieve this given end (Buchanan 1992).

However, work on design processes in social systems, including the current work, point out that this traditional two step approach is ill suited for nonlinear and non-deterministic open adaptive systems such as service ecosystems, since problems in these

systems have innumerable solutions and no clearly defined ends as any solution only improves or hinders a situation (Buchanan 1992; Rittel and Webber 1973). More specifically, Buchanan (1992) sees the key distinction between traditional linear and wicked problem design in the relationship between determinacy and indeterminacy. The linear, deterministic model of design has clearly defined problems (ends) with calculable solutions (means) whereas wicked problems suggest a fundamental indeterminacy in all but the most trivial design problems (Buchanan 1992). Stated in a vocabulary consistent with the current work, all actors in social systems, based on their institutional arrangements, continually form shared conceptions of problems and solutions and these problems do not have “an absolute one-best-way solution” as actors create new problems when they solve existing ones (Hughes 1989).

Design thinking, a shift toward methodologies that aspire to frame problems and opportunities from a human-centered systems perspective may offer new approaches for solving these wicked design problems. While the term design thinking, as discussed above, lacks a clear and concise definition (Kimbell 2009; Venkatesh et al. 2012), these design methodologies aspire to frame problems and opportunities from a human-centered and dynamic systems perspective. More specifically, in design thinking, problems and opportunities are framed using a contextual perspective which incorporates the institutional arrangements, resources, and practices that influence the concrete value perceptions of human actors in various situations (Buchanan 1992). Thus, in the context of institutions, a design attitude enlarges the circle of concern to include emotions, customer experiences, ethical behaviors, environments, cultural norms, and aesthetic appeals (Boland et al. 2008). In fact, design thinking is centered on integrating seemingly

contradictory idioms (i.e. reconciling institutional ruptures and inconsistencies) (Venkatesh et al. 2012).

While design thinking started in the realm of industrial product design, it can be applied to any complex design problem; regardless if this problem is a tangible object or an intangible system (Buchanan 1992; Kimbell 2009). In fact, Venkatesh et al. (2012) view design as an alternative management philosophy that can transcend traditional market and customer orientations. Thus, design thinking seems to show promise in the co-creation of solutions that can resolve institutional contradictions and ruptures by shifting managers' emphases from analysis of existing solutions (i.e. *institutionalized solutions* or red oceans) to the co-created synthesis of new solutions (i.e. institutionalization processes or blue oceans).

#### Closure of Innovation and Market Formation Processes

The ICM Model highlights that innovation and market formation processes do not end when a product is prototyped or a service flow is blueprinted. Instead, innovation is conceptualized as an ongoing socio-technical process in which solutions can become stabilized (i.e. markets become institutionalized). Pinch and Bijker (1984), for example, point out that these stabilization processes are always a matter of degree, since, as shown in the DVR case study, a variety of social groups, with potentially differing interpretations of technology, are involved. Furthermore, these authors use the term closure to define the stabilization of a technology to a point where the problem “disappears.” In line with the thought in this monograph, Pinch and Bijker (1984, pp. 426-427) argue that in order “to close a technology ‘controversy’ the problem need not be

solved in the common sense of the word<sup>15</sup>. The key point is whether the relevant social groups see the problem as being solved.” These stabilization and closure processes therefore often take extended periods of time. The DVR case study, for example, shows that it took a few years before the DVR solution stabilized and that the solution that was broadly adopted differed significantly from the pioneering solution (e.g. simpler integrated boxes vs. more sophisticated stand-alone solutions).

Contrary to this need to tolerate uncertainty during prolonged institutionalization phases, many companies have short-term perspectives. Piety (2004), for example, argues that most corporate firms are driven by quarterly financial results while Lemon and Seiders (2006) point out that sales, profits and market shares are often not only tracked “quarterly, but monthly, weekly, and even daily.” Liedtka (2010) claims that managers and business executives, in general, value stability and control and that they design their organization to produce it. In line with this strategy, managers are held accountable for achieving forecasted targets and are expected to successfully solve problems on the first attempt (Liedtka 2010). This creates a decision culture that is very similar to traditional design problems in which the designer tries to find a solution for predetermined ends.

Boland and Collopy (2004), based on their work with star architect Frank Gehry on the design of a new building for their business school, suggest that a design thinking approach offers additional benefits. They claim that it is very common for business school trained managers to have “decision attitudes” which lead them to reduce uncertainty in the environment by quickly reducing their choices instead of allowing

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<sup>15</sup> That is with an introduction of a new product or service.

multiple ideas and models to coexist. A “design attitude”, on the other hand, mandates that projects are intentionally prevented from crystallizing too soon to keep the flow of ideas in a liquid state (Boland et al. 2008). This way, managers are required “to develop multiple models, theories, and conceptualizations of their business, their markets, their environments, and their competitors (Boland and Collopy 2004, p.23).”

Design thinking teaches managers and organizations to resist the premature closure of design problems, to maintain an open and liquid flow of ideas, and to be wary of falling in love with the first feasible idea (Boland et al. 2008). It therefore fights modern management practices that are aimed at controlling uncertainty in the environment by quickly deciding between predetermined alternatives based on deductive reasoning; an approach that often creates mediocre results (Dunne and Martin 2006). Maintaining fluidity, as highlighted by the DVR case study, is an important consequence of the ICM Model since co-created innovative designs are often messy as they emerge. The current work shows that this fluidity needs to be extended well beyond product or service introductions. Traditionally, companies, using a predictive rationality, have viewed changes and uncertainties in markets as threats which must be minimized with the help of planning and predictions (Read et al. 2009). An institutional service ecosystem view of innovation and market formation, on the other hand, points to the fact that innovation is an ongoing socio-technical process and that changes (i.e. the reconciliation of institutional ruptures and consistencies) need to be viewed as further chances to innovate and transform markets.

This view of innovation should therefore shift the goals of firms and entrepreneurs from achieving risk-adjusted forecasted profits, to design their ventures as

nearly decomposable systems with interconnected subsystems to increase fitness levels (Sarasvathy 2003). These subsystems can, almost independently, provide the flexibility to quickly and continuously adjust value propositions to changing institutional arrangements and failure, in one of these subsystems, does not have disastrous system-wide consequences but provides learning opportunities for following value propositions (Sarasvathy 2003).

### **Narrow Customer and Customer Segment Focus**

Lemon and Seiders (2006) point out that marketing practice has not only long been skewed by a short-term orientation but also by “a relatively narrow concept of *customer*, with a focus on the immediate: immediate results and the immediately reachable customer.” They argue that, by focusing on increasingly narrowing customer segments, firms limit their understanding of markets, which, in turn limits their performance.

While recent work on innovation has begun to provide broader views of the participants and processes that contribute to innovation, it still does not fully capture the broad participation of systemic actors proposed in the current monograph. Work on innovation networks, as stated, aims to capture relationships and interactions between firms, universities and other actors who engage in innovation-supporting activities ranging from R&D to commercialization and diffusion (Dodgson et al. 2008, p. 431) while other scholars have begun to broaden the unit of analysis in innovation research to explicitly incorporate the user and the use of technology in the analysis (Geels 2004; Oudshoorn and Pinch 2003; von Hippel 2005; von Hippel 2007). However, these users

often only make up relatively small segments, identified with the help of segmentation, targeting and positioning processes, of larger service ecosystems.

The current work goes beyond these innovation and user networks. It provides evidence for the fact that, consistent with the need to view service ecosystems as highly relational, all actors in service ecosystems, in the same way, engage in “ongoing negotiations, experimentation, competition, and learning (Zietsma and McKnight 2009, p.145).” Stated differently, it is argued that innovation in social systems is always a co-creational, systemic and institutional process that is not only driven by highly salient actors, such as entrepreneurs, innovating firms, adopters and active opponents, but by a multitude of actors with different problems, institutional arrangements, and visions of the future which they attempt to render “real” (Emirbayer and Mische 1998). This not only highlights the importance of users but also the importance of non-users in the institutionalization of new markets (i.e. innovation). More specifically, it is argued that all actors participate in institutional work processes that is in co-creational processes in which actors try to resolve the nested contradictions and inconsistencies that are foundational to all institutional arrangements.

Thus, the current work argues that both practitioners and academicians need to overcome narrow customer and non-customer views. Listening to and observing the institutional work processes of a broad actor base not only makes ongoing socio-technical developments more salient, but the ability to solve problems for a broad number of actors, often with a seemingly inferior solution, regularly results in disruptive innovation processes (Christensen et al. 2006).

## From Monologue to Dialogue

As stated, much of the marketing literature views the firm as the main story teller in the context of new innovations. Commonly used marketing management books, for example, focus their attention on the promotional mix of advertising, public relations, personal selling, sales promotions and direct marketing. Ballantyne and Varey (2006) describe this dominant form of communication as a “monological” or “one-way message-making system.” These communication tools mainly aim to inform, persuade, and remind potential buyers by influencing an opinion or eliciting a response (Armstrong et al. 2009) without creating a true dialogue.

More foundationally, Ballantyne and Varey (2006) argue that much of today’s thinking in marketing has accepted a decoupling of interaction and communication. Citing Luhmann (2000), they argue that communication, as oppose to mere acts of uttering, always require someone who listens, watches, reads, and responds. Consistent with the conceptualization of *narrative infrastructures* used in this essay, Ballentyne and Varey further argue that we need to escape from a “twentieth-century monological communication model that converts all explanation into discrete message particles for mechanistic transmission and give primacy to the role of sender as the dominant agent.” Instead, they posit that dialog “is an essential basis for the authentic pursuit of innovation and creativity in markets.” In this context Ballentyne (2004) defines dialogue as an interactive process of learning together. Consistent with the current work, Ballentyne and Varey (2006) point out that *narrative infrastructures* are always dialogical and that only true communication can facilitate the co-creation of meanings, thought patterns assumption and knowledge (i.e. institutions). “True dialog requires going beyond merely

listening to the other party. It requires building upon the comments of the other party. It is not enough to merely understand what a dialog partner says; it is critical to be responsive to what the partners says (Jaworski and Kohli 2006).”

The ICM Model, with its focus on socio-technical change mechanisms and co-created *narrative infrastructures* highlights the need for true dialogue, as appose to one-way messages, in innovation and market formation. The institutionalization of solutions (i.e. formation of markets) is a continuous process in which norms, meanings, values and rules are formed, or stated differently, a continuous learning process. Only through dialogical interactions can actors (e.g. firms) become aware of the continuously changing institutional arrangements held by themselves and others, or as proposed by Ballantyne and Varey (2006, p. 225), only through dialogical interaction can actors gain the ability to “learn together.”

## **Future Research**

Although research has begun to recognize the importance of practices and institutions in markets and marketing (e.g. Edvardsson et al. 2011; Kjellberg and Helgesson 2006; Korkman et al. 2010; Vargo and Lusch 2011b), the extant work is still in its infancy and has only begun to explicate institutionalization processes in social systems. While the current work makes many important contributions, it is, like all research, not without limitations and weaknesses; the most salient one being that it is based on a single case study. While this type of case study, in the context of institutional market development, has shown to be valuable and insightful (e.g. Humphreys (2010), Rosa et al. (1999),

Theoharakis and Wong (2002)), it is important to duplicate and confirm these findings in similar and disparate market contexts.

The empirical context of the current work, the successful institutionalization of the DVR market, for example, was specifically chosen to highlight the constructed nature of technologies and markets using a somewhat complex and radically new service/product combination. To make the findings more generalizable, future research should also focus on less complex (i.e. less knowledge intensive) market formation. While Rosa and Spanjol (2005) show that even low-tech solutions, such as paper clips, are socially created, more research is needed to investigate the differences and similarities not only between high-tech and low-tech solutions but also between successful and unsuccessful market formations.

Also interesting, as suggested by Humphreys (2010), would be a cross-sectional, variance approach in which the institutionalization of DVR markets would be compared across different regulatory, normative and cultural contexts. In other words, future research could compare and contrast the institutionalization of DVR technologies across countries. Another limitation of the current work is the use of narratives from commercial journalist as surrogates for co-created *narrative infrastructures*. While previous research (e.g. Rosa et al. (1999), Humphreys (2010), Theoharakis and Wong (2002)) has demonstrated that it is the journalists' job to reflect the shared stories of firms, consumers, and other stakeholders, it can be argued that many journalist share educational and experiential backgrounds, and often have more developed and deeper knowledge of markets, products and services than the majority of market actors (Rosa et al. 1999). To overcome this potential bias, institutional market researchers, going

forward, could collect data using alternative methods, such as “netnographies”.

Netnographies are online marketing research techniques that provide information on the symbolisms and meanings of online consumer groups in a more naturalistic and unobtrusive way (Kozinets 2002b). While this type of online data was not available for the early formation of the DVR market, it will be increasingly becoming available and impactful for more recent and future market formations.

Alternatively, Hoholm and Araujo (2011) promote the use of real-time ethnographies for innovation processes. They argue innovation research need to improve the “understanding of the mechanisms and dynamics of how innovation emerge and unfold in practice.” However, while an ethnographic approach undoubtedly is useful in uncovering the mechanisms and dynamics of human practices, studying innovation-in-the-making comes with its own set of challenges. As both Van Maanen (2011) and Hoholm and Araujo (2011, p. 935) point out, it is very hard to “‘follow the action’ when it is unclear what constitutes ‘action’ and where and when it is occurring.” Furthermore, as highlighted by the current and other institutional studies, the institutionalization of markets is a process that often develops over several years and involves a large number of systemic actors. Thus, resource and time limitations will often prohibit the use of ethnographies for longitudinal innovation and market formation observations.

Thus, there remain many opportunities for an essential and deeper exploration of the role and change mechanism of institutional arrangements in service ecosystems. These research opportunities do not only include positive conceptual and empirical investigations of relationships and practices in markets, but also the uncovering of

important normative avenues for reconsidering the purposes and processes of marketing and innovation.

## Conclusion

In the current work, I have introduced a rich yet parsimonious model of institutional change mechanisms in the formation of markets. This work not only extends previous work on institutions in markets (e.g. (Humphreys 2010; Kjellberg and Helgesson 2006; Kjellberg and Helgesson 2007; Rosa et al. 1999; Vargo and Lusch 2013a)) by providing additional details in regards to institutional change mechanisms but also highlights the convergence of technological and market innovation by describing institutionalization as socio-technical processes.

Thus, it is argued that a systemic, service-driven, and co-creational model of innovation can provide a transcending view that reframes the concept of innovations from technology embedded artifacts or products to dynamic changes in market relationships and resource integration and value co-creation practices. Consequently, innovation is viewed as a collaborative process, rather than an output. This view not only reframes the role of companies from institutional entrepreneurs to collaborators and competitors but also the role of user/customers from (passive) adopters to collaborators and competitors in systemic institutional change processes. Furthermore, it underscores the need for a more unified and comprehensive framework that can provide a deeper understanding of the various participants, including non-users and other stakeholders, and the underlying processes from which new technologies and markets emerge.

Finally, this view of markets also highlights the co-created nature of narrative market infrastructures, which overcomes the artificial divide between active story tellers and passive listeners, and their importance in sense-making, enabling agency, and

discontinuous change. As Coombs and Miles have suggested, this shift in thinking has the potential for a “complete reinterpretation of the concept [of innovation] itself.”

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## Appendix: Code Book

Table 10: Coding Examples

Hypothesis	Example	Example Code	Article ID
<b>H<sub>1A</sub></b>	1	Because it is a real-time recording, the ReplayTV device has capabilities that go far beyond a VCR	1910
	2	But the difference between a VCR and a next-generation digital device goes well beyond tape versus hard drive	1898
	3	Apparently, many consumers still see the machines as too pricey an alternative to the old-fashioned VCR	1813
	4	Unlike a VCR, which records shows on removable videotapes, a DVR stores its content on an internal hard drive that you can browse with your remote control and the recorder's software	1610
	5	What makes time-shifting simpler than with a VCR is that these machines handle the details	3012
<b>H<sub>1B</sub></b>	1	A new, innocuous-looking consumer electronic device known as a personal video recorder is not much different in nature from the video cassette recorder, and very few of them have been sold to date	1904
	2	They're like VCR's, but instead of using tape, they record onto a huge hard drive	1845
	3	SonicBlue responded to the lawsuit by saying that its ad-skipping technology is similar to time-honored fast-forwarding feature of a VCR	1813
	4	A TiVo is a digital video recorder (DVR), a VCR that records television shows onto a hard drive instead of tapes	1732
	5	A digital video recorder, or DVR, is a set-top box that, like a VCR, can record and play television programs so you can watch them when you have the time	1610
	1	Replay Networks has licensed its technology to Panasonic, which manufacturers a \$699 branded version of the device (Collaboration)	1898

<b>H<sub>1c</sub></b>	2	Blockbuster plans to dispense movies via TiVo, a digital service in California that can serve up films in the home through a device placed on television sets (Collaboration)	1878
	3	Coca-Cola has paid for advertising that appears on the screen of a ReplayTV user when a viewer pauses a program for more than a few minute (Collaboration)	1778
	4	NBC and many advertisers are growing more alarmed by the threat of new inventions like TiVo, which allow viewers to record programs and skip through the commercials (Competition)	1671
	5	A group of the country's top broadcast and cable-TV network owners have banded together and are threatening to sue makers of so-called personal video recorders unless the manufacturers agree to obtain license agreements for use of the networks' programming (Competition)	3005
<b>H<sub>2A</sub></b>	1	The machines also make it possible to pause and rewind programs that are being broadcast live, and to replay part of a show while the rest of it is still being recorded	1896
	2	Both systems also utilize a dial-up telephone-line connection that downloads television listing information	1910
	3	Unlike the more common videocassette recorders, digital video recorders capture programs as digital files on a giant hard disk	1877
	4	The hard drive allows a quick reverse, too, unlike tape, which has to be rewound	1910
	5	They can also skip through commercials with the click of a remote control button that advances recorded television at 30-second intervals	2866
	1	Another barrier is the "teeter factor," said Mr. Hodge, who owns a TiVo and uses it to record sports events. "There's a lot of clutter in the family room," he said	1874
	2	VR's may be easy to use, but some buyers have complained that they are not easy to set up.	1874

<b>H<sub>2B</sub></b>	3	In the end, Mr. Palermo was turned off from TiVo by the prospect of having to connect all kinds of wires and adding a new box to his home entertainment system	1648
	4	The concern among the network owners point up the legal thickets that surround the introduction of new technologies in the marketplace	3005
	5	Some faithful early adopters of the personal video recorder made by TiVo Inc. are up in arms over one of the company's first attempts to get users to watch advertising instead of just fast-forwarding	2901
<b>H<sub>3</sub></b>	1	I think it will absolutely change the habits of people watching television. If it gets penetration, it will create a dramatic shift in this business. (Projective)	1904
	2	But some people clearly think that TiVo-like gadgets are about to change the world. (Projective)	1845
	3	Either one will change the recipients' lives so profoundly, they'll heap blessings on your head every time they switch on the tube (Projective)	1726
	4	Certainly, the machines have the potential to give people broad control over their television viewing, by organizing schedules of shows according to personal choice and taste. (Practical-Evaluative)	1904
	5	There is no need to enter channels or start and stop times, as ReplayTV keeps track of all that (Practical-Evaluative)	1910
<b>H<sub>4</sub></b>	1	Despite its cleverness, ReplayTV is not going to send the VCR to the junk pile any time soon	1910
	2	Unlike, say, the VCR, it required almost no technical aptitude	1876
	3	I've decided to wait until someone invents a complementary and equally subversive device -- one that prevents Replay and TiVo from packaging my viewing habits for resale	1869
	4	Thanks to some slick software and a remote control the size of India, DVR's let you bend TV to your will in all kinds of wild ways	1845

	5	Both the UltimateTV and the TiVo are blessings for heavy TV watchers, of course, but maybe even more so for busy people, who can not only eliminate random TV junk from their lives but can also watch a one-hour show in 46 minutes (by bleeping the ads)	1845
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*Table 11: DVR Adoption Number by Calendar Quarter*

Calendar Year Quarter	Adoption Numbers	Adoption Numbers (in 100k)
Q1 1999	-	-
Q2 1999	1,794	0.018
Q3 1999	9,193	0.092
Q4 1999	50,000	0.500
Q1 2000	55,937	0.559
Q2 2000	66,004	0.660
Q3 2000	80,034	0.800
Q4 2000	100,000	1.000
Q1 2001	170,130	1.701
Q2 2001	255,102	2.551
Q3 2001	358,998	3.590
Q4 2001	500,000	5.000
Q1 2002	750,693	7.507
Q2 2002	1,026,337	10.263
Q3 2002	1,329,307	13.293
Q4 2002	1,700,000	17.000
Q1 2003	1,938,616	19.386
Q2 2003	2,207,781	22.078
Q3 2003	2,547,885	25.479
Q4 2003	3,000,000	30.000
Q1 2004	3,707,459	37.075
Q2 2004	4,439,394	44.394
Q3 2004	5,334,110	53.341
Q4 2004	6,500,000	65.000
Q1 2005	7,427,202	74.272

Table 12: Coded Articles

Article ID	Publication Name	Article Name (Headline)	Publication Date
2327	USA Today	Personalized TV no longer remote	3/3/1999
3012	Wall Street Journal	Time Machines: A whole new kind of device to record TV shows is on the way; It'll be watching you	3/22/1999
1911	New York Times	2 Makers Plan Introductions of Digital VCR	3/29/1999
3011	Wall Street Journal	TiVo to Begin Sales of Digital VCRs	3/29/1999
3010	Wall Street Journal	Two Companies Offer TV-Viewing Options For the VCR-Challenged	4/8/1999
1910	New York Times	STATE OF THE ART;;Making Television Searchable	4/22/1999
1906	New York Times	Panasonic in Deal to Make Digital Recorders for Replay	6/9/1999
3008	Wall Street Journal	NBC, Matsushita Both Create Ventures For Easier Recording of TV Programs	6/9/1999
1904	New York Times	Will This Machine Change Television?	7/5/1999
3007	Wall Street Journal	TIVO INC.: Investments Are Received From 8 Media Companies	7/28/1999
3005	Wall Street Journal	Personal-Video-Recorder Makers May Face Suit	8/12/1999
1902	New York Times	Aiming a Little Persuasion At Makers of TV Recorders	8/16/1999
2322	USA Today	TV titans have love-hate relationship with recorders	8/18/1999
3004	Wall Street Journal	America Online Takes Stake In TiVo for Interactive-TV Push	8/18/1999
1900	New York Times	Replay Receives \$57 Million in Financing	8/19/1999
2321	USA Today	Broadcasters make allies of rivals TV giants prepare for business-altering digital video recorders	8/20/1999
1898	New York Times	Sony and TiVo Sign a Deal On Digital Video Recorder	9/9/1999
3002	Wall Street Journal	Sony, TiVo Set Deal on TV-Recording Device	9/9/1999
2320	USA Today	TV 'time machine' serves the time-pressed	9/15/1999
1896	New York Times	THE MEDIA BUSINESS;;Replay Networks to Appoint Ex-CBS Programmer as Chief	9/16/1999
2318	USA Today	Electronic sales looking for big year with DVD, satellite dish success	9/21/1999
2994	Wall Street Journal	TiVo Surges 87% From Offering Price, Giving Firm a \$1.1 Billion Valuation	10/1/1999
1889	New York Times	OUTLOOK 2000: TECHNOLOGY & MEDIA;;Technology Could Soon Hand TV Control to the Viewer	12/20/1999

1888	New York Times	STATE OF THE ART;;WebTV Puts It All Together	12/30/1999
1887	New York Times	TIVO AND BLOCKBUSTER TO JOINTLY DEVELOP VIDEO SERVICE	1/8/2000
2983	Wall Street Journal	TIVO INC.: Electronic Video Delivery Planned With Blockbuster	1/10/2000
1886	New York Times	STATE OF THE ART;;Video, Audio and AOL TV	1/13/2000
1883	New York Times	COMPANY NEWS;;AOL IN AN AGREEMENT WITH TIVO TO DEVELOP CUSTOMIZED TV	6/15/2000
2964	Wall Street Journal	AOL, Investing in TiVo, Aims for Digital VCRs	6/15/2000
2303	USA Today	Tech firms rush to enter interactive TV race	6/19/2000
2961	Wall Street Journal	Technology (A Special Report) -- Buying Decisions --- Driving Force: Digital video recorders may revolutionize the way we watch TV; You can thank the hard disk for that	6/26/2000
2959	Wall Street Journal	TiVo Ad Campaign's Sly Humor Isn't a Hit With CBS Executives	7/5/2000
1878	New York Times	HOME VIDEO;;Store to Home, By Satellite	8/4/2000
1877	New York Times	NEWS WATCH;;Now You Can Miss Your Show From Just About Anywhere	8/10/2000
1876	New York Times	Boom Box	8/13/2000
2296	USA Today	At work, passing porn is worse than betrayal	8/17/2000
2956	Wall Street Journal	ReplayTV Postpones: Initial Public Offering, Citing Adverse Market	8/22/2000
1872	New York Times	Digital Recorders Aren't Quite Plug and Play	8/24/2000
1874	New York Times	Don't People Want to Control Their TV's?	8/24/2000
2955	Wall Street Journal	Universal Sets Screen Test for ReplayTV	8/29/2000
1868	New York Times	Introduction	9/3/2000
1869	New York Times	Boom Box (Reader I Feedback to 1876)	9/3/2000
1870	New York Times	Boom Box (Reader II Feedback to 1876)	9/3/2000
1866	New York Times	Coca-Cola Signs Deal On Programming TV's	9/11/2000
1863	New York Times	ENTERTAINMENT: What's the Right Gizmo for TV Interactivity? It All Depends	9/20/2000
2953	Wall Street Journal	Coke Takes Ad Plunge With ReplayTV	9/28/2000
1861	New York Times	THE MEDIA BUSINESS: ADVERTISING;;TiVo teams up with the Omnicom Group to tell the world about digital video recorders	10/13/2000
2947	Wall Street Journal	How Technology Has Changed the Way We... ...Watch TV --- As the television changes, so do we	11/13/2000
1855	New York Times	TECHNOLOGY: New Leader and Layoffs at ReplayTV	11/28/2000
2945	Wall Street Journal	ReplayTV Will Exit Direct Set-Top Sales, Focus on Licensing Software to Others	11/28/2000

2943	Wall Street Journal	Electronics 2001: The Essential Gadget Guide	1/5/2001
1849	New York Times	TECHNOLOGY: Internet Media Company Buys 2 Rivals for \$128 Million	2/2/2001
2937	Wall Street Journal	Sonicblue Agrees To Buy 2 Firms, Posts Quarter Loss	2/2/2001
2936	Wall Street Journal	TiVo, ReplayTV Fail to Take Off Despite Big Fans	2/7/2001
2935	Wall Street Journal	Super Set-Top Boxes Put Viewers in Charge, Change TV Habits	2/22/2001
2283	USA Today	Privacy organization hits recorder maker	3/26/2001
2282	USA Today	TV watches you	3/29/2001
1845	New York Times	STATE OF THE ART: Recorders To Let You Tame TV	4/5/2001
2279	USA Today	Video recorders sneak into homes	4/17/2001
2280	USA Today	PVRs move TV forward, fast	4/17/2001
1835	New York Times	Technology Briefing Hardware: Sony Adds TV To PC	5/18/2001
1834	New York Times	Technology Briefing Hardware: TiVo Wins Video Recording Patent	5/25/2001
2912	Wall Street Journal	Business Brief -- TiVo Inc.: Debt, Warrants Are Issued To Help Fund Operations	8/30/2001
2911	Wall Street Journal	TiVo, Sonicblue Still See the Bright Side	8/31/2001
1818	New York Times	Technology Briefing Hardware: Rival Sues TiVo Over Patent	10/3/2001
1817	New York Times	Technology Briefing Hardware: TiVo In Licensing Deal With Sony	10/19/2001
2906	Wall Street Journal	Sony Agrees to License Video-Recording	10/19/2001
1816	New York Times	Technology Briefing Hardware: Broadcasters Sue ReplayTV	11/1/2001
2904	Wall Street Journal	Entertainment Firms Sue SonicBlue Over Features of New ReplayTV Device	11/1/2001
1813	New York Times	Networks See Threat in New Video Recorder	11/5/2001
2903	Wall Street Journal	Business Brief -- TiVo Inc.: AT&T Broadband Offers Video Recorder to Clients	11/8/2001
1812	New York Times	Technology Briefing Hardware: AT&T Broadband To Offer TiVo	11/9/2001
1808	New York Times	TiVo Reports Subscriber Growth	11/21/2001
2901	Wall Street Journal	Digits	11/29/2001
2902	Wall Street Journal	Business Brief -- SonicBlue Inc.: Shipments to Begin Of Device That Skips TV Ads, Copies Shows	11/29/2001
2899	Wall Street Journal	Business Brief -- SonicBlue Inc.: Broad Patent May Be Used In Claims Against Rivals	12/4/2001
1806	New York Times	Technology Briefing Hardware: Patent Spat Over TV Recording	12/12/2001

2898	Wall Street Journal	SonicBlue Sues TiVo, And Alleges Its Rival Infringed on a Patent	12/13/2001
2896	Wall Street Journal	E-Business: Digital Video Recorders Stir Up a New Battle --- SonicBlue's Replay 4000 Lets Users Zap TV Ads, Forward Shows Via Web	12/17/2001
2897	Wall Street Journal	E-Business: Digital Video Recorders Stir Up a New Battle --- TiVo Does an About-Face By Telling Subscribers Commercials Are `Fun	12/17/2001
2272	USA Today	ReplayTV has fans, lawyers salivating	12/26/2001
1801	New York Times	TECHNOLOGY: DIGITAL VIDEO RECORDERS	12/31/2001
1797	New York Times	TiVo To Sell Digital Video Recorder	1/8/2002
1795	New York Times	Technology Briefing Software: Microsoft Shuts TV Unit	1/23/2002
1794	New York Times	Technology Briefing Hardware: Countersuit In Video Battle	2/6/2002
1791	New York Times	Technology Briefing Hardware: DirecTV To Incorporate Digital Recorder	2/22/2002
2888	Wall Street Journal	Technology (A Special Report) --- VCRs: Still Standing: Videocassette recorders have plenty of drawbacks; So, why haven't any of the new digital devices supplanted them?	3/5/2002
2889	Wall Street Journal	Technology (A Special Report) --- Ask and You Shall Receive: Video on demand is an idea whose time has come -- almost	3/5/2002
1789	New York Times	NBC Discloses TiVo Stake	3/22/2002
1783	New York Times	Technology Briefing Hardware: TiVo In Software Deal With AOL	5/2/2002
2882	Wall Street Journal	AOL Cancels Plans With TiVo to Build A TV Set-Top Box	5/2/2002
1782	New York Times	Mission Control for the Living Room	5/9/2002
2879	Wall Street Journal	Business Brief -- Sonicblue Inc.: Court Grants Company a Stay On Ruling Over ReplayTV	5/16/2002
1778	New York Times	Skip-the-Ads TV Has Madison Ave. Upset	5/23/2002
1775	New York Times	DirecTV To Test Video-On-Demand Services	5/24/2002
1771	New York Times	Finally, the Couch Potato Rules	5/28/2002
1767	New York Times	Technology Briefing Internet: Judge Overturns Ruling On Customer Data	6/4/2002
2878	Wall Street Journal	SonicBlue Released From a Court Order To Monitor Viewers	6/4/2002
2260	USA Today	Hollywood, high-tech cross swords over digital content	6/25/2002
2263	USA Today	Gadgets go way beyond VCRs, CDs	6/25/2002
1761	New York Times	TiVo Mixes Ads With Entertainment	7/22/2002
2876	Wall Street Journal	Intel Develops Gadget to Store Hours of Video	7/25/2002

1755	New York Times	The Desktop Computer As Live-TV Recorder	8/1/2002
1756	New York Times	STATE OF THE ART; ;TV Magic, Made More Magical Still	8/1/2002
2256	USA Today	PVRs change the broadcast picture	8/13/2002
1754	New York Times	Technology Briefing Hardware: PVR Sales Slower Than First Expected	8/14/2002
1743	New York Times	STATE OF THE ART: Changing Channels, On the PC	10/10/2002
2252	USA Today	Companies vie to put TV at your service	10/15/2002
1740	New York Times	A TV House Divided: A Debate on Skipping Ads at AOL Time Warner	10/28/2002
1733	New York Times	Movie Studios Provide Link For Internet Downloading	11/11/2002
2866	Wall Street Journal	Couch Potato Crisis: Is It Time to Get TiVo? -- - To Attract Technophobes, Toshiba Plans to Package Cult Device with DVD Players	11/13/2002
1732	New York Times	STATE OF THE ART: TiVo Rivals Add DVD To the Mix	11/14/2002
1730	New York Times	No Time for TiVo	11/21/2002
2863	Wall Street Journal	If Viewers Zap Ads, So Will Buyers	11/25/2002
2862	Wall Street Journal	If TiVo Thinks You Are Gay, Here's How To Set It Straight --- Amazon.com Knows You, Too, Based on What You Buy; Why All the Cartoons?	11/26/2002
2249	USA Today	Video recorders getting personal	12/4/2002
1726	New York Times	STATE OF THE ART: Cheat Sheet: Digital Gifts At 11th Hour	12/19/2002
1725	New York Times	MEDIA: Gazing Into 2003: The Balance of Media Power Is Poised to Change -- TV Technology; ;Networks Fear Spread Of Recording Devices	12/30/2002
1721	New York Times	NEWS WATCH: VIDEO; ;Plug and Replay: Cardless Kit Turns a PC Into a TV Recorder	1/9/2003
1720	New York Times	THE MEDIA BUSINESS: Skipping Ads? TV Gets Ready To Fight Back	1/10/2003
1719	New York Times	At Big Consumer Electronics Show, the Buzz Is All About Connections	1/13/2003
1718	New York Times	Compelling Commercials? I'm Game	1/15/2003
2856	Wall Street Journal	Business Brief -- TiVo Inc.: President Morgan P. Guenther Will Resign at End of January	1/22/2003
1709	New York Times	For PC Buying, a New Picture	3/6/2003
1708	New York Times	AOL Is Planning a Fast-Forward Answer to TiVo	3/10/2003
2243	USA Today	Taking a DVR for a spin	3/31/2003

2848	Wall Street Journal	Technology (A Special Report): PVRS --- A Shift in Time: Personal video recorders have won rave reviews; Now they're winning a critical mass of users	3/31/2003
2845	Wall Street Journal	The Cable Guy Takes On TiVo	4/9/2003
2846	Wall Street Journal	Gadgets Not to Get (Yet) --- More Devices Hit Shelves, But Many Are Half-Baked; A Guide to Waiting It Out	4/9/2003
1701	New York Times	For EchoStar, the Real Challenge From DirecTV Begins	4/11/2003
2241	USA Today	Weighing DirecTV's possibilities	4/14/2003
1700	New York Times	TECHNOLOGY: Trying to Close Technology Divide As Satellite Operators Battle Cable	4/15/2003
1699	New York Times	Friend Or Foe? The Cult Of TiVo Cometh	4/20/2003
2240	USA Today	No one does it like TiVo, at least not yet	4/23/2003
2843	Wall Street Journal	Media Brief -- TiVo Inc.: NBC-TV Executive Yudkovitz To Be Appointed as President	4/30/2003
1697	New York Times	COMPANY NEWS; ;TIVO NAMES FORMER NBC EXECUTIVE AS PRESIDENT	5/1/2003
2842	Wall Street Journal	Armed With a New President, TiVo Will Court TV Industry;	5/1/2003
2239	USA Today	How digital video recorders work	5/7/2003
2237	USA Today	Comcast to test DVRs that use cable lines	5/12/2003
2841	Wall Street Journal	Will an Ads-Only Channel Click? U.K. Television Service Hopes So	5/14/2003
1691	New York Times	TiVo Exceeds Estimates as Loss Narrows	5/23/2003
1688	New York Times	NEWS WATCH: VIDEO: Software Anoints the PC As an Alternative to TiVo	5/29/2003
1689	New York Times	STATE OF THE ART: For TiVo And Replay, New Reach	5/29/2003
1685	New York Times	TiVo Plans to Sell Information On Customers' Viewing Habits	6/2/2003
1684	New York Times	Who Needs a DVR?	6/5/2003
1683	New York Times	Technology Briefing Software: Gemstar And TiVo Settle Suit	6/10/2003
2236	USA Today	Gemstar, TiVo resolve TV listings clash	6/10/2003
2840	Wall Street Journal	Entertainment Brief -- TiVo Inc.: Licensing Pact Is Set to Use Patent by Gemstar-TV Guide	6/10/2003
1682	New York Times	Technology Briefing Deals: Pioneer To Use TiVo Technology	6/13/2003
1678	New York Times	The Laptop as Recorder, Remote Control Included	7/3/2003
1677	New York Times	ReplayTV's New Owners Drop Features That Riled Hollywood	7/21/2003

1675	New York Times	Cable or Satellite? Please Stay Tuned	7/31/2003
1671	New York Times	MEDIA: KEEPING EYES GLUED	8/10/2003
1668	New York Times	NEWS WATCH: ENTERTAINMENT: From PC to TV Screen, A Stream of Multimedia	8/21/2003
1665	New York Times	NEWS WATCH: VIDEO: A Bigger Hard Drive Says 'Hold Everything	8/28/2003
1659	New York Times	THE WAY WE LIVE NOW: 9-21-03: QUESTIONS FOR MICHAEL POWELL: King of All Media	9/21/2003
1654	New York Times	THE MEDIA BUSINESS: ADVERTISING – ADDENDA: Group Criticizes Product Placement	10/1/2003
1653	New York Times	Software For Media Moguls	10/2/2003
1651	New York Times	THE MEDIA BUSINESS: ADVERTISING – ADDENDA: Two TiVo Agreements Are Untraditional Kind	10/6/2003
2813	Wall Street Journal	AOL Venture Arm Avoids the Turmoil	10/8/2003
1649	New York Times	A TiVo Giveaway Aims to Sow Doubts About TV	10/13/2003
1648	New York Times	Can Cable Fast-Forward Past TiVo?	10/20/2003
1646	New York Times	THE MEDIA BUSINESS: ADVERTISING; ;Time Warner Reports Modest Gains for 3rd Quarter	10/23/2003
1647	New York Times	Drawing PC, TV and Stereo Into an Entertainment Loop	10/23/2003
1639	New York Times	STATE OF THE ART: Swiss Army Recorder: TiVo/DVD	11/13/2003
1640	New York Times	NEWS WATCH: TELEVISION; ;Monitoring Broadcast News From Your Desk or Laptop	11/13/2003
1636	New York Times	STYLE: THE WAY WE NEST NOW	11/16/2003
2798	Wall Street Journal	Business Brief -- TiVo Inc.: Third-Quarter Loss Narrowed On Strong Subscriber Growth	11/21/2003
1627	New York Times	MEDIA: In Search of a Way to Get Viewers More Involved With Their TV's	12/8/2003
2788	Wall Street Journal	Is TiVo Really All That Great? New Competitors Offer Many Of Same Features for Less; Recording Two Shows at Once	12/23/2003
1620	New York Times	MEDIA: The Year Ahead: Giving an Audience What It Wants, but Not Giving It Away -- Video Recorders; ;Commercial Skippers, Networks' Enemy No.1	12/29/2003
2783	Wall Street Journal	TiVo Inc. Lawsuit Alleges EchoStar Violates Patent	1/6/2004
1615	New York Times	Beam Your Favorite Shows To an Expandable Cache	1/8/2004

1613	New York Times	TECHNOLOGY: Tired of Late Fees? Got Room Atop the TV?	1/19/2004
1610	New York Times	Disk Won't Come Clean? Diagnosing the Problem	1/29/2004
2775	Wall Street Journal	EchoStar Plans A Portable Device For Digital Video	2/4/2004
1608	New York Times	STATE OF THE ART: Recording The VCR's Swan Song	2/5/2004
2774	Wall Street Journal	Nielsen to Market Data Gathered by TiVo	2/5/2004
1606	New York Times	THE MEDIA BUSINESS: ADVERTISING – ADDENDA	2/6/2004
2769	Wall Street Journal	TiVo Tunes In To Its Users' Viewing Habits	2/9/2004
2770	Wall Street Journal	Though a Trailblazer, Is TiVo Overreaching In Its Patent Claims?	2/9/2004
1602	New York Times	Tightening of Media Knots	2/13/2004
1599	New York Times	Now Preening On the Coffee Table	2/19/2004
1594	New York Times	After TiVo, Radio Rewound	2/26/2004
1592	New York Times	For TiVo, More Hours and Lower Prices	3/4/2004
1588	New York Times	How Do I Love Thee, TiVo?	3/18/2004
1581	New York Times	The TiVo Bandwagon	3/25/2004
2746	Wall Street Journal	Hot-Button Topic: In Embracing Digital Recorders, Cable Companies Take Big Risk; Viewers Flock to the Devices, But Advertisers May Flee; Debating Ad-Skip Feature; Time Warner's 'Meteorite	4/26/2004
2751	Wall Street Journal	The Mossberg Solution: Cheaper Than TiVo: Souping Up Your Computer; Beyond TV 3 Turns PCs Into Digital Video Recorders; The Installation Nightmare	5/14/2004
2748	Wall Street Journal	Motorola Gets a Digital-Video Black Eye	5/15/2004
2192	USA Today	Choosy TV watchers often opt for digital video recorders	5/17/2004
1567	New York Times	Technology Briefing Hardware: TiVo First-Quarter Loss Widens	5/26/2004
1561	New York Times	New Service by TiVo Will Build Bridges From Internet to the TV	6/9/2004
2732	Wall Street Journal	DirecTV Sells 4% Stake in TiVo; Concern Over Relationship Rises	6/9/2004
1556	New York Times	A DIGITAL STEP TOWARD THE FUTURE	6/13/2004
2727	Wall Street Journal	Digits	7/1/2004
2180	USA Today	NBC no longer target	7/20/2004
2179	USA Today	Will DVR rivals outrun TiVo?	7/28/2004
2176	USA Today	FCC lets TiVo users send shows 'anywhere they go'	8/5/2004

2720	Wall Street Journal	TiVo Inc.: U.S. Approves Transmission Of Recorded Shows Via the Net	8/5/2004
1543	New York Times	Stop Me If You've Seen This One Before	8/9/2004
1533	New York Times	TiVo, Cable or Satellite? Choose That Smart TV Wisely	9/5/2004
2710	Wall Street Journal	WEEKEND JOURNAL; Television: TiVo Tales	9/10/2004
1527	New York Times	Recording, if Not Watching	9/19/2004
2160	USA Today	TiVo, Netflix team to deliver Internet video-on-demand	10/1/2004
2699	Wall Street Journal	TiVo Strikes Deal With Netflix for Online Films	10/1/2004
2687	Wall Street Journal	TiVo Users Think Outside the Box	10/21/2004
2684	Wall Street Journal	Advertisers Sharpen Their Targeting	10/27/2004
1509	New York Times	TiVo to Offer Ads That Can't Be Skipped	11/18/2004
2143	USA Today	Ads to pop up when TiVo users scan past commercials	11/18/2004
2138	USA Today	More viewers buy TiVo	11/23/2004
2139	USA Today	Disabilities don't stop 'extraordinary' boys	11/23/2004
2677	Wall Street Journal	TiVo Inc.: Loss Widens to \$26.4 Million Despite Increase in Subscribers	11/23/2004
2135	USA Today	New DVR may have video on demand	11/29/2004
2130	USA Today	Parsons: Time Warner accounting scrutiny 'getting close' to resolution	12/7/2004
2670	Wall Street Journal	Setting a TiVo From Afar	12/7/2004
2127	USA Today	How to score with the latest TV technology	12/10/2004
1488	New York Times	A Noun? A Verb? TiVo Says It's Neither	12/13/2004
1483	New York Times	In the Bay Area, TiVo Supplies DVR's at a Terrific Price: Nothing	12/20/2004
1482	New York Times	Do You TiVo or Are You Nielsen?	12/26/2004
1478	New York Times	Technology Briefing Hardware: TiVo Introduces Mobile System	1/4/2005
1472	New York Times	Breaking Free of Cable's Stranglehold	1/6/2005
1474	New York Times	TiVo Adds Portability To the Mix	1/6/2005
2656	Wall Street Journal	A Gadget Guide, From Small Phones to Big TVs; Coming Array of Gizmos Includes Souped-Up TiVo And Wi-Fi Digital Cameras;	1/6/2005
1471	New York Times	DirecTV Machine Will Compete With TiVo	1/7/2005
1468	New York Times	Chairman of TiVo Decides To Let Someone Else Be Chief	1/13/2005
2113	USA Today	TiVo co-founder to step down as CEO	1/13/2005
2651	Wall Street Journal	TiVo Founder to Quit CEO Post	1/13/2005
1463	New York Times	TiVo Struggles to Find Its Niche After Quitting a Deal with Cable	1/17/2005

2112	USA Today	TiVo CEO insists innovation can win loyal users willing to pay top dollar	1/19/2005
1453	New York Times	Technology Briefing Software: TiVo Will Let Developers Make Its Software	2/1/2005
2644	Wall Street Journal	TiVo Setbacks Raise Doubts About Its Future	2/2/2005
2108	USA Today	TiVo's holiday sales might let down investors	2/3/2005
2107	USA Today	TiVo chief optimistic about future	2/4/2005
2641	Wall Street Journal	WEEKEND JOURNAL: Sports: Penalty for Holding ... the Remote! At Football Parties, TiVo Puts Some Hosts on the Defensive; Will Dad Ruin Game Again?	2/4/2005
2103	USA Today	TiVoToGo: Take shows with you	2/10/2005

Table 13: Word Count per Article

Article ID	Publication Name	Publication Date	Relevant Word Count
2327	USA Today	3/3/1999	1235
3012	Wall Street Journal	3/22/1999	2045
1911	New York Times	3/29/1999	421
3011	Wall Street Journal	3/29/1999	233
3010	Wall Street Journal	4/8/1999	897
1910	New York Times	4/22/1999	1420
1906	New York Times	6/9/1999	449
3008	Wall Street Journal	6/9/1999	562
1904	New York Times	7/5/1999	2100
3007	Wall Street Journal	7/28/1999	137
3005	Wall Street Journal	8/12/1999	636
1902	New York Times	8/16/1999	448
2322	USA Today	8/18/1999	295
3004	Wall Street Journal	8/18/1999	348
1900	New York Times	8/19/1999	196
2321	USA Today	8/20/1999	796
1898	New York Times	9/9/1999	681
3002	Wall Street Journal	9/9/1999	970
2320	USA Today	9/15/1999	868
1896	New York Times	9/16/1999	731
2318	USA Today	9/21/1999	388
2994	Wall Street Journal	10/1/1999	385
1889	New York Times	12/20/1999	492
1888	New York Times	12/30/1999	1295
1887	New York Times	1/8/2000	110
2983	Wall Street Journal	1/10/2000	135
1886	New York Times	1/13/2000	327
1883	New York Times	6/15/2000	124
2964	Wall Street Journal	6/15/2000	1153
2303	USA Today	6/19/2000	430
2961	Wall Street Journal	6/26/2000	1550
2959	Wall Street Journal	7/5/2000	825
1878	New York Times	8/4/2000	366
1877	New York Times	8/10/2000	199
1876	New York Times	8/13/2000	4827
2296	USA Today	8/17/2000	227
2956	Wall Street Journal	8/22/2000	264
1872	New York Times	8/24/2000	291

1874	New York Times	8/24/2000	2522
2955	Wall Street Journal	8/29/2000	624
1868	New York Times	9/3/2000	48
1869	New York Times	9/3/2000	67
1870	New York Times	9/3/2000	57
1866	New York Times	9/11/2000	184
1863	New York Times	9/20/2000	57
2953	Wall Street Journal	9/28/2000	628
1861	New York Times	10/13/2000	786
2947	Wall Street Journal	11/13/2000	379
1855	New York Times	11/28/2000	379
2945	Wall Street Journal	11/28/2000	537
2943	Wall Street Journal	1/5/2001	239
1849	New York Times	2/2/2001	537
2937	Wall Street Journal	2/2/2001	507
2936	Wall Street Journal	2/7/2001	1164
2935	Wall Street Journal	2/22/2001	924
2283	USA Today	3/26/2001	282
2282	USA Today	3/29/2001	432
1845	New York Times	4/5/2001	1379
2279	USA Today	4/17/2001	808
2280	USA Today	4/17/2001	289
1835	New York Times	5/18/2001	77
1834	New York Times	5/25/2001	114
2912	Wall Street Journal	8/30/2001	150
2911	Wall Street Journal	8/31/2001	649
1818	New York Times	10/3/2001	127
1817	New York Times	10/19/2001	113
2906	Wall Street Journal	10/19/2001	368
1816	New York Times	11/1/2001	145
2904	Wall Street Journal	11/1/2001	426
1813	New York Times	11/5/2001	1159
2903	Wall Street Journal	11/8/2001	103
1812	New York Times	11/9/2001	112
1808	New York Times	11/21/2001	133
2901	Wall Street Journal	11/29/2001	276
2902	Wall Street Journal	11/29/2001	255
2899	Wall Street Journal	12/4/2001	166
1806	New York Times	12/12/2001	95
2898	Wall Street Journal	12/13/2001	285
2896	Wall Street Journal	12/17/2001	1132

2897	Wall Street Journal	12/17/2001	1068
2272	USA Today	12/26/2001	1137
1801	New York Times	12/31/2001	377
1797	New York Times	1/8/2002	135
1795	New York Times	1/23/2002	58
1794	New York Times	2/6/2002	123
1791	New York Times	2/22/2002	85
2888	Wall Street Journal	3/5/2002	436
2889	Wall Street Journal	3/5/2002	335
1789	New York Times	3/22/2002	98
1783	New York Times	5/2/2002	150
2882	Wall Street Journal	5/2/2002	251
1782	New York Times	5/9/2002	1839
2879	Wall Street Journal	5/16/2002	154
1778	New York Times	5/23/2002	1691
1775	New York Times	5/24/2002	103
1771	New York Times	5/28/2002	151
1767	New York Times	6/4/2002	125
2878	Wall Street Journal	6/4/2002	243
2260	USA Today	6/25/2002	1734
2263	USA Today	6/25/2002	778
1761	New York Times	7/22/2002	208
2876	Wall Street Journal	7/25/2002	389
1755	New York Times	8/1/2002	280
1756	New York Times	8/1/2002	1347
2256	USA Today	8/13/2002	1745
1754	New York Times	8/14/2002	122
1743	New York Times	10/10/2002	127
2252	USA Today	10/15/2002	1520
1740	New York Times	10/28/2002	1596
1733	New York Times	11/11/2002	77
2866	Wall Street Journal	11/13/2002	940
1732	New York Times	11/14/2002	1330
1730	New York Times	11/21/2002	103
2863	Wall Street Journal	11/25/2002	599
2862	Wall Street Journal	11/26/2002	1400
2249	USA Today	12/4/2002	644
1726	New York Times	12/19/2002	170
1725	New York Times	12/30/2002	365
1721	New York Times	1/9/2003	248
1720	New York Times	1/10/2003	1223

1719	New York Times	1/13/2003	318
1718	New York Times	1/15/2003	124
2856	Wall Street Journal	1/22/2003	138
1709	New York Times	3/6/2003	197
1708	New York Times	3/10/2003	1621
2243	USA Today	3/31/2003	908
2848	Wall Street Journal	3/31/2003	1486
2845	Wall Street Journal	4/9/2003	642
2846	Wall Street Journal	4/9/2003	214
1701	New York Times	4/11/2003	90
2241	USA Today	4/14/2003	277
1700	New York Times	4/15/2003	216
1699	New York Times	4/20/2003	1550
2240	USA Today	4/23/2003	1226
2843	Wall Street Journal	4/30/2003	164
1697	New York Times	5/1/2003	97
2842	Wall Street Journal	5/1/2003	389
2239	USA Today	5/7/2003	354
2237	USA Today	5/12/2003	321
2841	Wall Street Journal	5/14/2003	634
1691	New York Times	5/23/2003	227
1688	New York Times	5/29/2003	261
1689	New York Times	5/29/2003	1355
1685	New York Times	6/2/2003	440
1684	New York Times	6/5/2003	157
1683	New York Times	6/10/2003	153
2236	USA Today	6/10/2003	556
2840	Wall Street Journal	6/10/2003	99
1682	New York Times	6/13/2003	94
1678	New York Times	7/3/2003	196
1677	New York Times	7/21/2003	1188
1675	New York Times	7/31/2003	480
1671	New York Times	8/10/2003	216
1668	New York Times	8/21/2003	244
1665	New York Times	8/28/2003	193
1659	New York Times	9/21/2003	625
1654	New York Times	10/1/2003	173
1653	New York Times	10/2/2003	1402
1651	New York Times	10/6/2003	205
2813	Wall Street Journal	10/8/2003	85
1649	New York Times	10/13/2003	355

1648	New York Times	10/20/2003	1322
1646	New York Times	10/23/2003	161
1647	New York Times	10/23/2003	344
1639	New York Times	11/13/2003	1271
1640	New York Times	11/13/2003	222
1636	New York Times	11/16/2003	1495
2798	Wall Street Journal	11/21/2003	141
1627	New York Times	12/8/2003	943
2788	Wall Street Journal	12/23/2003	1078
1620	New York Times	12/29/2003	453
2783	Wall Street Journal	1/6/2004	407
1615	New York Times	1/8/2004	239
1613	New York Times	1/19/2004	59
1610	New York Times	1/29/2004	351
2775	Wall Street Journal	2/4/2004	578
1608	New York Times	2/5/2004	1229
2774	Wall Street Journal	2/5/2004	215
1606	New York Times	2/6/2004	52
2769	Wall Street Journal	2/9/2004	1018
2770	Wall Street Journal	2/9/2004	864
1602	New York Times	2/13/2004	1560
1599	New York Times	2/19/2004	1515
1594	New York Times	2/26/2004	1218
1592	New York Times	3/4/2004	340
1588	New York Times	3/18/2004	2062
1581	New York Times	3/25/2004	150
2746	Wall Street Journal	4/26/2004	2137
2751	Wall Street Journal	5/14/2004	951
2748	Wall Street Journal	5/15/2004	918
2192	USA Today	5/17/2004	327
1567	New York Times	5/26/2004	208
1561	New York Times	6/9/2004	534
2732	Wall Street Journal	6/9/2004	435
1556	New York Times	6/13/2004	116
2727	Wall Street Journal	7/1/2004	274
2180	USA Today	7/20/2004	152
2179	USA Today	7/28/2004	1678
2176	USA Today	8/5/2004	426
2720	Wall Street Journal	8/5/2004	119
1543	New York Times	8/9/2004	1655
1533	New York Times	9/5/2004	1472

2710	Wall Street Journal	9/10/2004	331
1527	New York Times	9/19/2004	98
2160	USA Today	10/1/2004	413
2699	Wall Street Journal	10/1/2004	427
2687	Wall Street Journal	10/21/2004	780
2684	Wall Street Journal	10/27/2004	978
1509	New York Times	11/18/2004	152
2143	USA Today	11/18/2004	470
2138	USA Today	11/23/2004	468
2139	USA Today	11/23/2004	104
2677	Wall Street Journal	11/23/2004	151
2135	USA Today	11/29/2004	562
2130	USA Today	12/7/2004	202
2670	Wall Street Journal	12/7/2004	158
2127	USA Today	12/10/2004	913
1488	New York Times	12/13/2004	299
1483	New York Times	12/20/2004	279
1482	New York Times	12/26/2004	327
1478	New York Times	1/4/2005	177
1472	New York Times	1/6/2005	1191
1474	New York Times	1/6/2005	1354
2656	Wall Street Journal	1/6/2005	516
1471	New York Times	1/7/2005	363
1468	New York Times	1/13/2005	490
2113	USA Today	1/13/2005	296
2651	Wall Street Journal	1/13/2005	471
1463	New York Times	1/17/2005	1428
2112	USA Today	1/19/2005	943
1453	New York Times	2/1/2005	107
2644	Wall Street Journal	2/2/2005	933
2108	USA Today	2/3/2005	439
2107	USA Today	2/4/2005	880
2641	Wall Street Journal	2/4/2005	1135
2103	USA Today	2/10/2005	1099