Persistence and shift in analysts' categories following technological change

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April 30, 2013

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ABSTRACT

We examine whether and how securities analysts' stock categories - which are used to classify and evaluate organizations - shift following radical technological change in the wireline telecom industry. Using a novel dataset comprising the transcripts of quarterly earnings conference calls and the texts from analyst reports, we uncover the interplay between two incumbent organizations' responses to the technological shift, analysts' assessments of these responses and firms' subsequent actions. Three dominant themes emerge from our inductive analysis. As incumbents embark on strategic change that is category-deviant, existing analyst categories work as constraints and firms are exhorted to reverse such changes in order to realign with categorical expectations. However, categorical constraints begin to weaken with the unfolding of technological change, the persistence of deviating strategies and their spirited defense by firms' managers. Eventually, the stock category shifts, as analysts support and even recommend previously deviant strategic changes. We integrate these themes to construct a process model of category change, highlighting the discontinuous nature of such change following environmental shifts. We identify temporal sequences and causal structures that may be attributable to institutional entrepreneurship in settings where we would expect institutional considerations to be less prominent, such as intermediated financial markets.

Keywords: Technological change, securities analysts, categories, institutional theory, institutional change

Institutional pressures for legitimacy enable and constrain organizations (DiMaggio and Powell, 1983; Meyer and Rowan, 1977). In several industrial settings, legitimacy is conferred upon organizations by external constituents, such as industry media and analysts (e.g. Lounsbury and Rao, 2004; Zuckerman, 2000), who assess the fit of an organization's actions through a categorical lens (e.g. Porac, Wade, & Pollock, 1999; Zuckerman, 1999). Legitimacy considerations arise even in "efficient" stock markets, where researchers have found that investor behavior is influenced by the prevailing institutional logic that legitimates or penalizes organizational actions (Zajac and Westphal, 2004; Westphal & Zajac, 1998).

Extensions to this research stream have focused on institutional pressures from securities analysts who intermediate stock markets (e.g. Zuckerman, 2000; Rao and Sivakumar, 1999; Westphal and Clement, 2008; Rao, Greve, and Davis, 2001). Analysts' evaluate organizational actions through industry categories used to organize coverage of their stocks (e.g. Zuckerman, 1999; 2000; Benner, 2007). Analysts group together a set of comparison organizations within these categories and use common heuristics and metrics to evaluate their performance (cf. Schipper, 1991; Bradshaw, 2004). Organizational actions that deviate from categorical expectations get penalized with measurable economic consequences. For example, when organizations diversified beyond their categories, their stock price fell (Zuckerman, 1999) and they consequently faced pressures to de-diversify to be more category coherent (Zuckerman, 2000). Along these lines, recent research has also shown how analyst categories constrain established organizations' responses following a major technological change (Benner, 2010; Benner and Ranganathan, 2012; Benner and Ranganathan, 2013).

However, prior work has generally viewed analysts' categories, once formed, as relatively stable (Zuckerman, 1999; Benner, 2010; Tripsas, 2009). We know little about whether

and how these categories may change, in particular with major environmental changes that necessitate dramatic shifts in firms' strategies. Radical technological change represents an unforeseen environmental jolt likely to trigger such institutional shifts (Sine and David, 2003; Munir, 2005; Battilana et al, 2009). Prior strategy research suggests that organizations can and do successfully transform themselves when confronted with technological change, frequently redefining traditional notions of 'industry' or 'category' (e.g. Rothaermel, 2001; Agarwal and Helfat, 2008). For instance, IBM's successful transformations from 'electromechanical' to 'electronic business machines', then to 'computer hardware', and recently to 'business services'.

Underlying instances of successful organizational transformation is the automatic implication that the institutional categories also transform in order to accommodate divergent organizational change. However, several aspects of this inference are not immediately obvious. For instance, it is unclear whether categories transform *concomitant* with the radical technological change, or, whether they continue to be rigid, with intermediaries enforcing traditional categorical boundaries. If categories *automatically* shift to appropriately reward organizational actions that account for the altered technological landscape, then the notion of 'loose' or 'fluid' categories poses a challenge for institutional theorists. On the other hand, if categories are in fact inertial at the onset of technological and organizational change, then we still lack understanding about whether and how these categories eventually 'loosen' and shift, and what factors drive this shift. Prior research has suggested that category editing is likely to be a socio-political process (e.g. Lounsbury and Rao, 2004), with intermediaries susceptible to impression management, favor rendering and other tactics by organizational actors (Westphal and Graebner, 2010; Westphal and Clement, 2008). Thus, a closer examination of the interactions between organizational and institutional actors in a radical technological change

setting is likely to yield important insights into the nature of the category change process, the associated institutional pressures (or lack of), and the drivers of category change. We undertake that task in this paper.

Our empirical setting is the wireline telephone industry in the face of a radical technological shift from traditional copper 'wireline' technology to Voice-over-Internet-protocol (VoIP) technology between 2002 and 2008. Our objective is to understand whether and how analysts' categories change following the discontinuous technological change (cf. Anderson and Tushman, 1990), as incumbent telecom organizations make important strategic changes to respond to the new technology. We focus in-depth on two organizations in this setting, using two novel and complementary data sources – earnings call transcripts and analyst reports - that capture the rich interaction between top management teams and securities analysts as well as communication from analysts to investors. Our data allow us to carefully trace out persistence and change in the components of the analysts' categories, and elucidate how changes in these categories result in changes in how analysts legitimate or penalize organizational actions.

Three dominant themes emerge from our inductive analysis. As incumbents embark on strategic change that is category-deviant, existing analyst categories work as constraints and firms are exhorted to reverse such changes in order to realign with categorical expectations. However, categorical constraints begin to weaken with the unfolding of technological change, the persistence of deviating strategies and their spirited defense by firms' managers. Eventually, as these forces persist, the stock category shifts, as analysts support and even recommend previously deviant strategic change. We integrate these themes to construct a process model of category change, highlighting the discontinuous nature of such change following environmental shifts and elucidate the forces that lead to these changes.

This study makes several contributions. First, we contribute to research on the challenges of technological change. Research has shown that responding to new technologies is particularly difficult for established firms, as they are constrained by how external constituents such as analysts view and evaluate them (Benner and Ranganathan, 2012; Benner and Ranganathan, 2013; Tripsas, 2009). At the same time, organizational transformation and renewal have been at the forefront of research in innovation and technological change (Romanelli and Tushman, 1994; Agarwal and Helfat, 2009; Teece et al, 1997). This underscores the need for more insight into the ways firms proactively change how external audiences categorize them, to better understand how firms can respond to these major environmental shifts. In addition, by uncovering the specific mechanisms that constitute the categorical change, this work also contributes to research in institutional entrepreneurship in the context of radical technological change (Garud, Jain, and Kumaraswamy, 2002). We show both how inertial analysts' categories may constrain and penalize organizational actions to respond to a new technology, but also highlight the window of opportunity for institutional change that opens up during the periods of high uncertainty that characterize radical technological change. Our study is consistent with recent calls in organization theory for more research that moves away from assuming that firms are constrained by institutions, to studying how institutions are changed (e.g. Lounsbury and Rao, 2004). We contribute to the growing literature on how institutions are changed by organizations, even as organizations are embedded in – and constrained by – institutional rules (e.g. Oliver, 1991; Lounsbury and Rao, 2004; Sine and David, 2003). This work also contributes to management practice. It is important for managers to be aware that analysts and investors may question strategic changes undertaken to respond to the threat of technological obsolescence (Benner &

Ranganathan, 2012). Our study highlights how firms can seize the window of opportunity to redefine categorical dimensions to their future advantage.

TECHNOLOGICAL CHANGE AND INSTITUTIONAL CHANGE

Following a rich body of research, we focus on the significant challenges posed for incumbent organizations by major changes in technology (e.g. Tushman and Anderson, 1986; Christensen and Rosenbloom, 1995; Christensen and Bower, 1996; Tripsas & Gavetti, 2000; Garud & Rappa, 1994; Henderson & Clark, 1990). Radical technological change has been defined as a discontinuous shift to a new base of knowledge underlying the products in an industry, for example, from analog and film technology in photography to digital (e.g. Tripsas & Gavetti, 2000), or from mechanical escapement watch technology to quartz (e.g. Glasmeier, 1984). The new technological trajectory offers the promise of improved price and performance for products in the industry, and often substitutes for the existing technology, challenging incumbents with developing new technological knowledge and capabilities, and eroding their market positions (e.g. Tushman and Anderson 1986; Cooper and Schendel, 1976; Utterback, 1994). The era of ferment following a major technological discontinuity is characterized by increased technological and competitive uncertainty, marked both by high variation in the technological designs and product configurations as well as the possible business models that will emerge following the technological change. Changes in business models and strategies that are triggered by the need to respond to the new technology are likely to further necessitate changes in how intermediaries, such as analysts, evaluate these actions.

Specifically, we focus on how the categories and associated metrics analysts use to evaluate organizational actions change during these periods of technological change. Although

research has highlighted the potential constraints and pressures on firms arising from analysts' evaluations and recommendations (e.g. Litov et al, 2011; Zuckerman, 2000; Benner and Ranganathan, 2012), in contrast, a growing stream of research in institutional theory has focused on how organizations can resist pressures for conformance and change the institutions that embed them (Oliver, 1991; Lounsbury and Rao, 2004). Researchers have shown that firms pursue divergent rather than isomorphic strategies (D'Aunno, Succi and Alexander, 2000), or respond to technical pressures that outweigh institutional pressures (Kraatz and Zajac, 1996), and decouple symbolic and substitutive actions (Meyer and Rowan, 1977; Westphal and Zajac, 1994; cf. Lounsbury, 2008). In a similar vein, firms might also attempt to change the how they are evaluated by analysts in ways that enhance the perceived legitimacy of their actions.

More specifically, research has begun to explore how firms try to influence securities analysts (e.g. Westphal and Clement, 2008). This is consistent with recent research more broadly on how managers frame strategic changes for external constituencies (Fiss and Zajac, 2006). Beunza & Garud (2007) study the rise of an entirely new category and the role of analysts in creating the frames that constitute the new category. Tripsas (2009) shows in a case study of identity change in a technology firm, how a firm's efforts to change its identity coincided with a change in the set of analysts covering the firm. Her study does not uncover how the existing analysts' categories changed - rather, it highlights how new analysts, covering the firms in a different industry category, began initiating coverage of the identity-changed firm. The pre-existing analysts continued to view the firm as a member of the original category despite the marked changes in the firm's strategy and identity.

Thus, existing theory offers limited understanding of category change – specifically as firms try to reorient their strategies to respond to the threats and opportunities created by radical

technological change, we are yet to understand both the process of change and the associated factors that either accelerate or hinder this change. This is an important question, given the critical importance of technological change in organizational adaptation and survival, and the strong pressures analysts and shareholders exert on established firms. We address this gap through an inductive study of how change in analysts' categories unfolds within a context of a radical technological change and how managers of the incumbent firms attempt to influence shifts in these categories.

METHODOLOGY

Data

Our primary data source is earnings conference call texts, available through Thomson One/Investext. These texts capture the discourse between the top management of the organizations we study, and the analysts that cover their stocks. Earnings calls, which are held every three months, are a dedicated forum for analysts and investors to question organizational actions and results, and for managers to respond to these questions.[1] Studying these interactions over time allows us to identify both the temporal structure and causal factors underlying shifts in analysts' categories. Furthermore, we also analyze the content of the reports that analysts publish for the larger investor community following their interactions with firm management[2]. This allows us to isolate particular discussions and management responses from the call that are instrumental in the analysts' assessments of organizational actions. In our analyses, we pay particular attention to discussions of firms' strategic initiatives that are a direct consequence of

[1] There is evidence in finance and accounting research of the importance of earnings conference calls. For example, firms that hold conference calls more frequently have lower costs of capital (Brown, Hillegeist & Lo, 2004), may be rewarded with increased analyst coverage (Francis, Hanna & Philbrick, 1997), and may achieve better earnings forecasts and lower dispersion among analysts (Bowen, Davis and Matsumoto, 2001). Thus, earnings conference calls are a critical forum of interaction between managers and analysts.
[2] Also sourced from Thomson One/Investext

the radical technological change, focusing on both firms' portrayal of these initiatives and analysts' views, assessments and concerns surrounding these initiatives.

Empirical Setting

Our setting is radical technological change in the wireline telecommunications industry: the advent of Voice-Over-Internet-Protocol (VoIP) technology. VoIP technology allows an Internet based method for making phone calls, bypassing the incumbent telecom companies' telecommunications networks and consequently their sources of profit from traditional wireline communication technology. Thus, it is a potential technological substitute, as well as competence-destroying for the incumbent firms in the wireline telecommunications industry (cf. Tushman and Anderson, 1986). An important event underlying VoIP's technological price/performance improvement as well as diffusion and increasing substitution was Vonage's entry into telephony with VoIP-based services in March 2002.[3] Subsequently, echoing prior research in technological change, and further suggesting that industry observers viewed the new technology as a likely substitute, many news articles predicted the eventual demise of wireline telecommunications in the face of Internet telephony.[4] The post-2002 period was marked by continued technological improvements in VoIP and the entry of both startups and established organizations from other industries such as cable TV, into telephone services. Thus, our study period begins from 2002, the first year of major commercial impact of VoIP, and ends in 2008, following the changes we observe in how analysts evaluate the focal firms. We focus on two organizations that provided telephone services using the old technology prior to the advent of

[3] The Financial Times notes in December, 2002: "Vonage service has redefined the quality and ease of use of digital Internet telephony…it could pose the first real threat from this quarter to traditional phone companies."
[4] The Wall Street Journal notes in 2003: "Internet Phone Service Threatens Industry's Giants", and in August 2004: "Heavy Toll: Phone Industry Faces Upheaval as Ways of Calling Change Fast --- Cable, Internet, Wireless Hurt the Value of Old Networks, Threaten a Business Model --- Echoes of Railroad's Ordeal."

VoIP - Verizon and Qwest[5]. Our analysis spans a total of 62 conference call transcripts – 26 for Verizon and 36 for Qwest.[6] For our follow-on analyst report analysis, we focused only on the three brokerage firms that offered consistent coverage on Verizon and Qwest for the majority of our study period - Morgan Stanley, Deutsche Bank and Credit Suisse First Boston.[7] We analyzed a total of 320 reports from these brokerage firms.

Method

We structured our study as a 2 X 3 multiple-case design (two organizations X three analysts) with literal replication logic (Yin, 2003; Eisenhardt, 1989), as Verizon & Qwest pursued similar strategies to respond to technological change during this period. Initially, both organizations launched standalone products using the new VoIP technology (Qwest announced a standalone VoIP product called 'OneFlex' in November 2003 and Verizon launched a product called "VoiceWing" in July 2004). Subsequently, as a direct response to competitive threats from cable TV companies, both organizations began to build fiber optic infrastructure to offer product bundles that included video, internet and telephone (Verizon launched Verizon FiOS in August 2005 and Qwest launched a fiber initiative in August 2007).

To analyze the content of the conference call and the analyst report texts, we adopted an iterative approach where the themes emerge from the data rather than from existing theory.

The two authors separately and carefully read in detail each conference call transcript and documented the main concepts and themes that emerged in both the management presentation

[5] Although in the early part of the period there were five wireline telecommunications incumbents – the four Regional Bell Operating Companies (RBOCs or better known as Baby Bells) - Verizon Communications, Qwest, Bellsouth, and SBC, and AT&T Corporation, by 2006, three of the incumbents had merged into a new AT&T entity. To avoid management biases in strategies and analyst biases in reactions to technological change arising from acquisition events, we focused on the other two incumbent telecom firms - Verizon and Qwest.

[6] These transcripts were mainly from earnings calls although a few conference calls were special meetings to discuss specific events, such as acquisitions or product introductions.

[7] CSFB or Morgan Stanley were consistently ranked first in the Institutional Investor analyst rankings for the telecom sector during this period and Morgan Stanley, CSFB, and Deutsche Bank were consistently in the top ten for the overall Institutional Investor rankings during these years.

section of the conference call and the ensuing question and answer session with the analyst community. Our objective in inducing these themes across the conference call transcripts and the analyst reports was to identify the underlying dimensions of the categories that analysts and investors used to evaluate the performance of the telecoms and how these dimensions both changed in value and in salience as technology and strategies changed. We iterated between the two sets of texts, allowing us to see the themes in both the earnings conference calls and in reports to investors.

In the management presentation section of the conference call, the incumbent firms' management teams presented the earnings results, highlighted specific aspects of operational performance and discussed major strategic initiatives. We focused specifically on the two strategies – standalone VoIP and product bundles – which the organizations pursued in response to the radical technological change. We endeavored to understand the context in which the management embedded the explanation of these strategies (e.g. cost containment, growth or churn reduction), whether and how the context and tone of this presentation changed over time, and also how the emphasis or attention given to these strategies shifted. Similarly, in the analyst question and answer section, we uncovered the major themes behind the analysts' questions and related the questions back to the parts of the management presentation that they paid differential attention to. We also analyzed how these themes shifted over time as analysts focused on different issues with the unfolding of the technological change and the incumbents' responses to it. In most cases, the richness of the language and the associated terms used in the conference call texts and the analyst reports lent itself to the generation of in-vivo codes (Corbin and Strauss, 2008) to codify the themes. For example, our first theme 'access lines' is the specific name of a measure used by analysts to evaluate the incumbent firms. This theme emerged

directly from the texts, where there were frequent discussions of access lines in analysts' evaluations of firm performance and in interactions between management and analysts.

FINDINGS

We trace out the induction of three emergent themes from our qualitative analysis of the earnings conference call transcripts and analyst reports - Table 2 shows representative quotes that characterize the interaction between managers and analysts and illustrate our themes over time. Together these themes capture how the changes in institutional categories co-evolve with the technological change and firms' changes in strategies.

Emergent theme 1: Inertial theories of value from the old technology regime

In our first inducted theme, we find that analysts continue to rely on traditional operational indicators and historically derived notions of stock value to assess the firms' actions and performance. Although the incumbent firms pursue strategic changes in the face of technological substitution, and propose new metrics to gauge their performance, analysts continue to assess performance using metrics and indicators of stock value which correspond to performance in the old technology, but that are becoming increasingly irrelevant for assessing incumbents' performance in the new technology.

Operational metric – access lines

"Access lines", the metric that analysts continue to focus on, corresponds to the physical copper lines that connect telephone customers with an incumbent telephone company's switching exchange. In the conventional wireline technology, access lines indicate customer share and have therefore been historically used by analysts and industry observers as metrics to assess and predict performance in the industry. At the beginning of our study, securities analysts and other

industry analysts discuss access line metrics, which are in decline as customers shift from the switched access lines to VoIP-based phone services. For example:

> Access Line Count Evaporating: In the waning days of October, the Bell operating companies and most of the larger incumbent carriers will report third-quarter numbers that are expected to be near the low end of analysts' already dampened expectations. One of the main culprits for the results is the deterioration of access lines.
>
> *Telephony magazine, October 2002*

> Verizon: 4Q02 Preview and '03 Outlook… Key Points… We expect pressure at the core to continue, but to remain somewhat stable sequentially with total switched access lines falling 3.7%. We estimate switched access lines will decline by 3.7% with retail lines declining by 4.4%....
>
> *Morgan Stanley analyst report, Prior to fourth quarter 2002 earnings call*

> We believe Verizon, like the other RBOCs, is well positioned in the long run to leverage its existing customer base (approx. 51M retail access lines or 1/3 of US lines) into strong cash flows… *CSFB analyst report, fourth quarter 2002*

The importance of the access line metric as part of the evaluative framework used by analysts is evident as other performance metrics such as headcount, expenses and margin are also evaluated on a per-access line basis. For example:

> We estimate that operating expenses per access line in 2002 declined from $385 to $380 vs. $393 in 2000. This enabled Verizon to maintain its wireline operating margins, despite declining core wireline revenue.
>
> *Deutsche Bank analyst report, third quarter2002*

> …the RBOCs have no choice but to become some of the world's most efficient operators. If one were to move Verizon's line per employee ratio to 400-450…we estimate that its wireline headcount would need to decline by another 30,000-40,000 employees.
>
> *Deutsche Bank analyst report, third quarter2002*

Additionally, analysts consistently track access lines in their reports. For example, the Morgan Stanley analyst frequently publishes an exhibit in investor reports titled: ‘Key Stats to Watch,’ including access lines. Similarly the Deutsche Bank analyst regularly tracks ‘Switched Access Lines’ (see Exhibit 1).

However, the advent of the Voice-over-IP telephony not only triggers the decline of access lines, but also makes the metric increasingly obsolete for assessing performance. Even though consumers still have access to telephone services as part of the ‘bundle,’ there simply are

not ‘access lines’ with the new technology, since calls are routed through the Internet. Nonetheless, the access line metric continues to be a focal evaluative metric used by the securities analysts throughout the study period. This emergent theme is demonstrated in our subsequent discussion of each of our two cases – Verizon and Qwest.

Exemplar case: Verizon

Analysts continue to be concerned about decline in access lines even with the advent of VoIP and internet based competition, as demonstrated by several examples of below, where they seek repeated clarifications and reasons underlying continuing access line losses.

> **2004**----------
> “Could you give us a little more color on the Access Line growth? It seems to remain fairly weak…”
> **2005**----------
> “…access line losses in the consumer area, could you give us some idea regarding kind of the source of those losses, in particular the impact of cable competition?”
> **2006**----------
> “…on the access line losses, the losses continue to accelerate... Could you comment on like a negative note increasing competition you're seeing…”

Verizon’s management responds by repeatedly noting that access line losses are expected to continue, and proposes evaluating this metric in the context of others.

> “…If you look at the access line question, you have asked a lot about that… we still should expect access line losses. That's not a surprise… everything we're doing around that to create growth revenue units is geared to continue to build value long-term...”
>
> “…we are where we expected to be. We've mentioned to you that we were going to be continuing to lose. I would suggest that, once again, this isn't a single metric. And you have to look at it more holistically…
>
> *Management responses*

When Verizon first discusses the introduction of its residential VoIP product – VoiceWing - in the management presentation in the January 2004 (Q4 2003) earnings call, the VoIP launch is framed as a strategy to offset access line losses. A similar theme is echoed in October 2004 as management mentions upgrades to the VoIP product.

> “…we expect to see a continuation of residential retail lines lost … …We will continue to be active in the area of retention, being sure that we maintain a competitive value

> proposition in the market. For example, this quarter we introduced some new service offerings like…VoiceWing"
>
> *Management presentation, October 2004*

As the rollout of VoIP progresses, Verizon's management shifts the positioning of VoiceWing slightly from a focus on reducing access line loss to a focus on investing in growth areas. Management increasingly discusses alternate metrics for analysts and investors.

> "…the relationship of residential access lines to consumer revenues has changed. By selling local and long distance voice, broadband connections with either DSL or FiOS, VoiceWing, and DirecTV, we get revenues from sources that are no longer part of traditional line count…"
>
> *Verizon Management presentation, October 2005*

> "… I have said to audiences like this in the past, access lines are becoming less meaningful as time goes on, as an indicator of the health of the business."
>
> *Verizon Management presentation, October 2004*

> "Our emphasis on growth products is transforming the revenue mix…As we have said before, this makes the traditional access line metric much less important as a gauge of revenue growth than it used to be…
>
> *Verizon Management presentation, January 2006*

Separately, concerns that investors are over-emphasizing access lines appear in industry media:

> If access line losses or gains no longer easily translate to the effect competition is having, you have to wonder why we still make such a big deal out of the access line metric. Ever since telcos started losing access lines, they have been trying to get the media and investors to look elsewhere for ground-level indicators of their competitive and financial health. Maybe we should finally start paying more attention to average revenue per user.
>
> *Telephony Magazine, November 6, 2006*

However, analysts continue to focus on access lines. Across analyst reports we find that access lines remain influential in analysts' evaluation of Verizon's performance, even in evaluating new strategies. When line losses are greater than expected, analysts take a negative view of Verizon's performance, but when line losses are within estimates, the analysts often increase the stock's target price or upgrade the recommendation on the stock. The persistence of access lines as a performance metric also creates reporting expectations during the earnings conference calls. When management does not discuss access lines in their presentation, analysts become more skeptical, for instance:

> "…Access line growth has (been) conspicuously absent from any discussion, we believe because the company has accepted that secular issues will continue and lines will continue to migrate to wireless, broadband and VoIP…"
>
> *Morgan Stanley analyst report to investors, January 2004*

We also quantitatively compared (see Table 1) how much analysts attend to access line metrics compared to the new technology metrics. We found that the keywords 'line loss' or 'access line decline' were mentioned more than 1000 times, in more than 75% of the reports. In contrast, newer metrics (that are proposed by Verizon management and ultimately adopted by analysts) such as Average Revenue Per Unit (ARPU) and Revenue Generating Unit (RGU) were mentioned only 29 times, and these mentions don't begin until much later in 2007. There is also a marked difference between the mention of "wireline" and the mention of the VoIP product "VoiceWing" or mention of VoIP generally in the context of a product or a service offered by Verizon.

Replication case: Qwest

Our analysis of Qwest strongly reinforced this theme. In a strategy similar to Verizon's, Qwest's management frames OneFlex, the VoIP product, as a mechanism to retain customers, offset access line losses, and spur future growth.

> "…we are working to grow the top line by reducing access line loss and investing in growth product. Those include long-distance, DSL, wireless, VoIP and video."
>
> *Qwest management presentation, November 2004*

Analogous to the Verizon case, Qwest's management highlights the increasing misfit between the decline in the traditional metric and the growth in revenues from new demand.

> "…The underlying trends continue to support modest growth despite continuing access line losses as customer demand and a clear value proposition for our portfolio of growth products continue to drive volume …"
>
> *Qwest management presentation, May 2007*

However, the continuing focus of analysts on access lines emerges similar to the Verizon case:

> "There seems to be a number of puts and takes in terms of some of the trends you are seeing. AccessLine losses are accelerating…"

Analyst question, Qwest earnings call, October 2006

In reports to investors, analysts list several questions for Qwest's management during upcoming conference calls in a separate "Questions for management" section of the report. The question: "Line Loss – Any signs of stabilization…?" is a regular feature in this section, throughout our study period. Similar to Verizon, access lines are central to analysts' evaluations of Qwest. There are frequent discussions of access lines in the opening comments of their reports.

Theories of "utility" stock value – free cash flow, dividends and buybacks

Underlying theories of stock value emerge in the analysts' report texts in discussions of their "investment thesis," or as a list of the factors that they believe will increase or decrease the future stock price of the firm. The persistence of these theories associated with the old technology also echoes the persistence of the 'access line' metric.

Exemplar case: Verizon

Early in the study period, there are several discussions in analyst reports about the reasons to invest in Verizon stock, revealing analysts' beliefs about the drivers of stock value. The texts consistently reveal the view that the wireline telecommunications incumbents are valued for stable cash flows and recurring dividends:

> …We like the company's projected ability to generate solid free cash flow and delever the balance sheet, as well as the attractive 3.6% dividend yield...Our rating on Verizon reflects our belief that …the risk/reward profile is more attractive for carriers with the strongest balance sheets, a more defensive local presence, solid cash flow, and stable or improving return on invested capital. Verizon has a 4.4% dividend yield and an A+ rated balance sheet…
>
> *Morgan Stanley, multiple reports on Verizon in 2002 and 2003*

> We anticipate that VZ should also be able to maintain its annual free cash flow generation (prior to dividends and share buybacks) of around $9bn per annum through the duration of our forecasts. As is the case with the other RBOCs, this remains VZ's key investment thesis. *Deutsche Bank, April 2003 report on Verizon*

We labeled these occurrences 'theories of stock value.' These emerged from the analysts' report texts as justifications for the recommendations that analysts issued to investors about whether to purchase the firm's stock. As Verizon's management discusses the new strategies to respond to the new technology and increasing competition, analysts' perceptions of the appropriateness of the new strategies is shaped by their beliefs about whether strategies will create value in the stock price. Verizon's FiOS initiative was a strategic response that involved replacing the existing telephony network with optical fiber, allowing the company to compete against the bundled strategies of cable firms entering the telephone services market with VoIP technology. Verizon announced its FiOS plans to investors during a special conference call in July 2003. Throughout the study period, we find that Verizon's management emphasizes that FiOS will offset the declines in the traditional wireline business triggered by the radical technological change. They also project FiOS as an opportunity for new customers and revenue growth:

> "...(we) announced our fiber-to-the-premises, or FTTP plan….these platforms…position us for driving new revenue and new growth opportunities." (Q1, 2003)
>
> ----------
>
> "…Our goal with FIOS is not just to be another provider of voice and another provider of video, and another provider of data, it's to be ***the*** provider of those services in the home…" (Q3, 2004)
>
> ----------
>
> "I just want to quote a line from a movie that I think is really what we will hear from our customers. And it's one of my favorites, Top Gun, where Tom Cruise says, "I think I have a need for speed." My sense is that all of our customers are going to be saying that as we…turn on our FTTP network" (Q3, 2004)
>
> ----------
>
> "Our fundamental assumption is that secular changes and technological forces will cause the number of access lines to continue to decline... …we are combating this challenge…by moving aggressively to build FiOS, our broadband growth platform for the future..." (Q1 and Q2, 2005)
>
> ----------

However, while discussions of the strategy Verizon is pursuing increasingly emerge from these texts, analysts' skepticism of FiOS also emerges. Despite management's emphasis on the 'top-line' (future opportunity, growth, revenue, penetration, customer acquisition), analysts' questions

reveal an emphasis on the 'bottom-line' (costs, margins, capital expenditures), that are consistent with their theories of value focused on cash flows and dividends.

> ------2004----------
> …how much of a cost savings will this be for Verizon? (referring to FiOS)
>
> ------2005----------
> "…a little bit of an update on the operating expense savings you anticipate for FiOS…if you could talk a little bit about capital efficiencies...?"
>
> "… when you overbuild with fiber do you have any sense of what your savings look like on the capital side there?"
>
> ------2006----------
> "…about FiOS...Can you talk a little bit about how you anticipate the cost, the CapEx to connect customers looking in '07"

Iterating again to the analysts' reports to investors, there appears to be a misfit between analysts' theories of valuation focused on cash flow and the firm's strategies requiring investments. This appears to lead analysts to urge Verizon to discontinue its response:

> …we are concerned about the economics of the FiOs initiative, but a pull-back on this could make us more constructive on the stock…
>
> *Morgan Stanley, multiple reports on Verizon between Oct 05 and Jan 06*

The analysts' negative reactions also reflect investor sentiments:

> From a valuation standpoint Verizon looks inexpensive…However…(they) do not take into account the higher capex levels at Verizon from fiber…Thus, if we were to look at Verizon from a free cash flow standpoint, we see that the company is actually trading at a premium to its peers…
>
> *CSFB, report on Verizon, January 2006*

> The negative sentiment towards the FiOS investment is been evidenced by the fact that FiOS dilution has been a central topic of Verizon's conference calls for several quarters. In fact, when management raised the 2006 FiOS dilution guidance by $0.02 to $0.31-$0.32 per share on the 3Q call, Verizon's shares declined 3% on the day as a reaction…
>
> *CSFB, report on Verizon, November 2006*

Analysts' expectations, arising from a theory of stock value for the telecommunications industry category - that Verizon should focus on short term cash flow and returning cash to shareholders - acts as a potential categorical constraint, increasing the pressure on Verizon's management:

> We believe that if the Fios project fails to achieve meaningful penetration rates, the rate of erosion of both revenue and EBITDA could be even steeper, and will confirm skeptics' claims that the company and its shareholders would have been better-off

> adopting a CZN-type structure (i.e. severely cutting back investments, maximizing short-to-medium term FCF and…returning cash to shareholders)
>
> *Deutsche Bank, Verizon, Oct 2005*

> A closer look raised some concerns for investors...buybacks are likely to be modest...What we did not like: Cautious statements around return of cash to shareholders... the company indicated that they were not planning a massive return of cash to shareholders…
>
> *Morgan Stanley analyst report, October 2006*

Replication case: Qwest

Similar theories of value emerge in the Qwest case. Although Qwest doesn't announce plans to invest in a fiber network similar to Verizon's until late 2007, the analysts' theories of value are highlighted in discussions about the mere possibility that Qwest will follow a similar path to respond to the technological change. Based on their experience with Verizon, analysts are concerned that Qwest will adopt a similar strategy that will increase its capital expenditures and decrease cash flow. Two of the three analysts downgrade the stock just on this expectation.

> (Downgrade to) Sell… the core business will continue to come under pressure from …cable telephony…and…non facilities-based VoIP operators. This should result in continuing acceleration in access line losses…and rising pressure to re-build both infrastructure and the product suite. This in turn will inevitably lead to higher capex commitments… We therefore continue to believe that …capex …will quickly rise…This in turn is likely to dramatically reduce…longer-term FCF. …If the investment is not made, it is doubtful that …longer-term margin will be…higher than 35% on a smaller revenue base….
>
> *Deutsche Bank analyst report, Feb 2006*

> We are re-iterating our Underperform rating on Qwest…we believe the bulls are overestimating free cash flow…the company is likely to spend a sizeable amount of capital on a video strategy…
>
> *CSFB analyst report, July 2006*

When Qwest's management begins to discuss the possibility of an investment in fiber, analysts' focus on cost and cash flow is similar to the theories that emerge in the Verizon case.

> "…whether or not you believe you can execute whatever strategy…within the constraints of the spending levels that we are currently seeing on CapEx…?"
>
> *Analyst question, Qwest conference call, May 2006*

Analysts' concerns about Qwest's capital expenditure continue through 2006 and 2007, and they pay close attention to how management responds to their questions about likely investments to

enable a bundled video strategy. In response, Qwest's retiring CEO denies an intention to spend more on fiber, and in turn, analysts subsequently upgrade the stock:

> …one of the things that…come up is a discussion of FiOS or IPTV. Quite candidly…why in the world would you go do that and incur all that expense when you have got YouTube…So that is about the only thing that would not be -- as I look at the CapEx, it is the only thing I can see -- and I can't find any logic for us doing it …We're doing really well with that we have get a guaranteed margin with no CapEx…
>
> *Management comment denying an increase in capex, Qwest conference call*

> Mr. Notebaert stressed that he did not believe Qwest would need to [spend] capital on a video to the home build (like FiOS or UVerse)…and that he would impress upon a new CEO those sentiments. By not embarking on such a venture, Qwest would retain its strong free cash flow…
>
> *CSFB analyst report, August 2007*

Following this set of interactions, more evidence about the nature of these categorical dimensions as constraints emerged in Qwest's case, resulting from a change in CEO and a corresponding shift in the firm's strategy. In his first earnings call with analysts in 2007, the new CEO announces a $300 million investment in fiber, reversing the category-conforming assurances of the previous CEO. Analysts react negatively to the change, and their discussions further illuminate the underlying theories of Qwest's stock value.

> (commenting on the capex increase to support the fiber plans)…it definitely makes me a little nervous that there is an expectation that there will be just in a very general sense new products and services that will help generate a return on this invested capital as opposed to a very clear and precise perspective of exactly how the return is going to be realized…
>
> *Analyst question, Qwest conference call, October 2007*

> …there's a real concern that the lack of a dividend and potential investments in fiber could amount to a total unwinding of the cash flow story that Qwest used to be. So I think that's the fear in the market …
>
> *Analyst question, Qwest conference call, October 2007*

> … we obviously didn't get a dividend…and then we hear today that the CapEx is going to be potentially higher next year. How should we relate those two data points? Is part of what's driving your decision not to pay a dividend – your outlook that capital spending has to go up next year?...
>
> *Analyst question, Qwest conference call, October 2007*

Viewed through beliefs that short term cash flow drives stock valuation, analysts view capital expenditures as in opposition to fulfilling investors' expectations, suggesting that Qwest's

proposed investment is misaligned with analysts' and investors' theories of Qwest's stock value. This idea is further supported by texts showing that analysts upgrade to a "Buy" rating when Qwest reverses its strategy and announces a dividend:

> Overweight (Buy)…Qwest Declares Quarterly Dividend (headline).… The $0.08 quarterly ($0.32 annual) dividend works out to an approximate 4.3% yield …We had previously estimated that…could easily support a $0.35 annual dividend… We think the company could modestly increase capex…
>
> Buy…Shareholder friendly posture: In addition to the near $600mm in dividends (5.7% yield) the company expects to pay in 2008, management expects to exhaust the remaining $500mm of its share buyback program resulting in $1.1bn (11% of market cap.) of capital returns to shareholders in 2008.
>
> *Deutsche Bank analyst report, February 2007*

Analysts' comments in reports to investors further reveal an understanding of the challenge managers face in balancing short term pressures for fit with theories of stock value with pressures to respond to the new technology, which are characterized by high uncertainty and longer-term rewards.

> …The announcement of higher spending on fiber deployment raises questions related to the company's future strategy… management announced this additional spending on FTTN without laying out how a return on investment will be realized…We believe these issues create uncertainty in the stock…While developing this strategy management must balance the likely short-term expectations of investors for returns of cash against the long-term competitiveness of the company, particularly on the consumer side.
>
> *CSFB analyst report, October 2007*

Thus, these theories of stock value serve as a lens through which analysts view incumbents' strategies, leading them to favor particular actions while questioning others. Like the reliance on the access line metrics, these theories of value are also relatively inertial. Analysts' reliance on them as incumbents' strategies change triggers misalignment between the strategies and analysts' beliefs about sources of value, and appears to trigger further skepticism toward the new strategies. At the same time, these theories of value give rise to more positive reactions to strategies that increase short term cash flow, that are aligned with these beliefs about value.

Emergent theme 2: Shifting categories and framing of the new technology responses

In our second theme, we find that the underlying categorical dimensions begin to shift. Verizon and Qwest management begin to propose that analysts use new metrics that are better aligned with the new technology and which more accurately measure performance. Although the focus on traditional metrics and theories of value persists (as discussed in our previous themes), analysts do begin to adopt new metrics towards the end of our study period.[8]

Shifting operational metrics

Both Verizon and Qwest management discuss the increasing irrelevance of access lines as a metric to gauge performance and propose alternate metrics in their presentations during the conference calls and in response to analysts' questions.

> "…revenue generating units, RGUs, which we introduced last quarter, track much more closely with revenue performance than do access lines…"
>
> *Verizon Management presentation, January 2006*

> "…our goal here is to capture market, ARPU, and wallet per household…."
>
> *Qwest management presentation, May 2008*

Similarly, the following quote illustrates the concerted effort by Qwest's management team to shift the analysts' views to the opportunities created by the new technology:

> "…the last point I would make is -- and I think this is important and I am retiring, so I can say this …People say, oh my gosh, it is an access line, but (what) we really ought to be looking at is…that is the first step.…where you're going with this is you're going to continue to move up that product chain, just like any other consumer product... So at some point the analyst community is going to shift from looking at how many high-speed Internet lines did you add to what really matters, which is what is your ARPU? What (is) your revenue? Are you selling higher speeds now and migrating customers? What are you doing to continue to add feature functionality like we used do with circuit switch - we used to say, okay, you got a line…Now let's add call waiting, let's add call forwarding, let's add call screening, let's add privacy manager. So that is what's going to happen whether you're a cable company -- whatever that means -- or a telephone company -- whoever they are. That is the way it is going to go…"
>
> *Qwest CEO comment, August 2007conference call*

[8] Alongside these changes, the names of the analysts' industry categories also change from 'Wireline' or 'Wireline Telecommunications Services,' reflecting the specific technology, to 'Telecommunications Services,' a category name suggesting a broader set of activities that do not rely on a specific technology. The timing of the change varies across the three analysts we study (Morgan Stanley changes in 2004, CSFB changes in 2005, and Deutsche Bank changes in 2006). These changes all occur well after the start of the technological discontinuity and the changes in firms' strategies.

Analysts begin to increasingly discuss & report other metrics in their reports beginning in 2007.

> Exhibit 4 RGU growth driven by FiOS and wireless…<chart>…<Text next to chart>…We define RGUs as the sum of total switched access lines, DSL subscribers, FiOS data subscribers and video subscribers and 55% of postpaid wireless subscribers…
>
> *Morgan Stanley analyst report, November 2007*

> We define Connections as the sum of total switched access lines, DSL subscribers and FiOS data subscribers.
>
> *Morgan Stanley analyst report, October 2008*

> "…if I can just follow-up on the residential business, if you could talk a little bit more about the ARPU trends"
>
> *Analyst question, Qwest, February 2008 conference call*

> "…you think there's an ability for the phone company to get a business model where there is an RPU lift beyond the basic price of the pipe?"
>
> *Analyst question, Qwest, April 2009 conference call*

Similarly, analysts start tracking metrics specifically related to the FiOS rollout and begin including projections for FiOS subscribers in their models (CSFB beginning in 2006, and Morgan Stanley in 2007), further indicating a shift in the facets of performance assessed by analysts. Although there is an increase in attention to the new metrics, the traditional metrics continue to be tracked by the analysts. This suggests a gradual co-evolution of the change in the category with the technological era of ferment and the firms' strategic changes, rather than a discontinuous change in the ways firms are evaluated. The metrics evolve later and lag both the technological shift and firms' pursuit of strategies to respond.

Shifting theories of stock value

Similarly, analysts' notions of stock value also begin to shift. As the theories of value associated with the category begin to change and focus more on investing for future growth and value creation, the analysts increasingly acknowledge that Verizon's FiOS strategy, which earlier was questioned, could be successful as a response to the competitive threat.

> Based on our conversations with investors, we believe Verizon's fiber-to-the-premises project (FiOS) has been thought of as a liability, not as an investment for future revenue growth…we believe that the time is coming when investors will begin to look past the costs of the project and begin to include the expected revenues and profits…

CSFB analyst report, November 2006

> …we note that the growth momentum [of FiOS] is greater than we initially anticipated…
> *Morgan Stanley analyst report, July 2007*

Similarly, analysts' theories of value for Qwest also begin to shift – although similar to Verizon, analysts continue to be concerned about the effects of capital expenditure on short term profitability, they also try to shift investors' perceptions of Qwest to a 'growth stock' that needs to invest cash flow into the business.

> …investors seem to have…concluded that Q (Qwest) is essentially a larger version of CZN, with… limited capex needs and significant FCF which the group is likely to utilize for dividend distributions or share buybacks… Do we agree with the above-outlined logic? ....The answer is definitely no… US West's (or Qwest Corp.) current capex runrate…is not sustainable. Although Q has not yet articulated its vision of the network configuration (certainly not to the same degree as either VZ or SBC), we believe some of the $2bn FCF generated by Qwest Corp. will need to be utilized in higher infrastructure spend as the group shortens loops and/or embarks on a more comprehensive FTTP/FTTN upgrade cycle.
> *Deutsche Bank analyst report, January 2006*

> Is Qwest a Growth Stock?...The company could invest in a video offering…The downside to investing in a video strategy is that it would decrease free cash flow in the short term and initially have a negative impact on profitability…
> *CSFB analyst report, October 2006*

Analysts also shift in their opinion on the feasibility of Qwest's fiber investment. Although they are initially concerned when Qwest announces a 200 million dollar fiber investment in October 2007, six months later they conclude that the response is in line with increasing 'longer-term' shareholder value, showing a clear shift from an earlier focus on shorter-term cash flow:

> Buy…Valuation is too compelling to ignore…We believe the expectation for a dividend created by the former management team attracted many investors who were focused solely on the potential for a dividend that might result in a near-term lift in the share price, and not on what would be best for the company in the long-term. We believe this became apparent when the company announced…that it would invest $200 million…to build out fiber…and the stock subsequently sold off sharply. With this segment of Qwest's investor base now largely gone….the new management team has additional freedom to explore opportunities to enhance shareholder value over the longer term that are not necessarily immediately accretive to free cash flow…
> *Deutsche Bank analyst report, February 2008*

As the technology unfolds in 2007 and 2008, Verizon begins to publish regular performance metrics that show success in gaining customers and new revenue with the new technology.

Analysts then begin to use these metrics and results in reports to investors. As analysts change how they value Verizon, they also begin to note that Verizon's lower than expected share price is driven by investors attending to the old metrics (i.e. access line losses). Analysts shift toward educating investors about the firm's strategy and corresponding performance.

> …we believe Verizon's first quarter earnings report is yet another solid indication that its mix of business will continue to evolve over time in such a way that weakness in any one division is more than offset by strength in others…This realization has been a surprise to many investors who appear to have made the simple assumption that the success of the consumer bundle for cable will adversely and disproportionately impact Verizon's future results…we believe that the fear that Verizon has embarked on a massively expensive yet highly ineffective network retrofit will continue to subside…we reiterate our Buy rating…
>
> *Deutsche Bank analyst report, April 2007*

> We have historically heard from investors that they are concerned about the amount of capital required to build the new networks compared to the projects' expected returns. Given the rather large amount of work required (in Verizon's case, essentially rewiring every neighborhood), it is not surprising that the costs are so high. However, as both Verizon and AT&T have been successful in acquiring customers, these concerns have somewhat diminished.
>
> *CSFB analyst report, September 2008*

> In order to examine the economics in detail, we have created an assumptions-based model that compares the cost required to deploy the fiber per sub and the expected value extracted per sub from new services, capex savings, and preserved legacy services. We have applied this model to both Verizon and AT&T, using our best knowledge of the inputs, to evaluate both firms' expected return. While the inputs can be altered to produce many different scenarios, the scenarios presented here are the ones we view as the most likely; the results indicated that both firms can earn positive returns on their investments.
>
> *CSFB analyst report, September 2008*

Thus, analysts adopt new metrics and theories of value, and further, turn to educating investors about the sources of value in incumbents' strategic changes. These changes appear to arise in part from increasing misalignment of the evaluative dimensions with firm performance, i.e. analysts are not able to forecast performance and stock price as accurately as they did in the past, and in part from direct efforts by management to shift the evaluative schema of the analysts in ways that favor the new strategies. In turn, these changes coincide with analysts' growing approval of the same incumbent strategies to respond to the new technology that earlier were

questioned. Thus, the shift in metrics and theories of value appears to increasingly legitimize firms' responses to the new technology.

Emergent theme 3: New rules - leader rewards, follower penalties

Our last theme begins with an instance of divergence between our cases, in particular, in the contrasts in how Verizon's and Qwest's management communicated about conformance (or non-conformance) to the expectations of analysts and shareholders. This theme captures the emergence of a new set of category dimensions and rules that co-evolve with technological and strategic changes. As Verizon persists in its strategic changes despite pressures for conformance during this era of ferment, these actions appear to be one factor that works to alter the evaluative dimensions of the analysts' category. This persistence in strategic change and attempts – by management – to change how Verizon's activities are framed helps to confer increased legitimacy on Verizon's actions. The emerging changes reward Verizon further by incorporating their adaptations into an altered framework of institutional rules which then creates constraints on other incumbent firms, like Qwest, that do not conform to the new evaluative structure.

Divergence in Qwest and Verizon

Although our replication case, Qwest, clearly reinforces the three previous emergent themes, there is an instance of divergence between the two cases, specifically, differences in the communication approaches undertaken by the CEOs. While Qwest's departing CEO focuses on illustrating how Qwest's strategy conforms to investor and analyst expectations that arise through prevailing theories of value, Verizon's CEO frequently emphasizes the uncertainty of the technological change, and the need to re-frame perceptions of Verizon's actions. Even

though the operational metrics and theories of stock value (elaborated in the two earlier themes) act as institutional rules that lead to continued questioning about investments in the new technologies, Verizon continues with its FiOS strategy and Verizon's CEO repeatedly emphasizes the importance of a strategy that responds to the technological and competitive opportunities.

> "Is it too radical of a notion to assume that five years out every access line that you have will either be over built with fiber, be spun out or sold…? In other words will (we) see any of this straight up copper line that you own five years out?..
>
> *Analyst question, Verizon earnings call, January 2004*

> "Okay, look…five years ago was it too radical to think that we would have 60% penetration in wireless…we would see 70% penetration of PCs in the house and almost 55% penetration of broadband connection? Here's the issue…here's what I believe. I think our Company cannot be afraid of you, and not be afraid of the market, in terms of reaching for growth opportunities. Now, we have to be smart and we have to be accountable, but what we don't want to do is start out by limiting what our vision of the market could be. So here's what I think, you know, it's funny when someone asked…what's the size of the market? I will never forget the answer that (the) CEO of Coca-Cola (gave). They asked him what's the size of the Coke market? And he stopped and he hesitated and he said. So I guess it's really -- how many people in the world drink water? So here's my answer to that. I don't know that we're going to get to 100% of anything. But it sure is going to be more than anybody projected to be today. And I think what we need to do is …build the capability to win, and not be afraid to win. That's where we are…"
>
> *Management response, Verizon earnings call, January 2004*

> "…the last four or five months, there's been so much panic in the industry, every time one person shows up with one product with five cents worth of revenues, somebody writes, "The industry is going out of business!" I think one of the reasons we wanted to get you here this morning is just to give you some grounding…that true, we have to deal…with all of these secular issues. Whether margins are up 40 basis points or down 30 or pretty stable, what we are building (is) an engine…for future expansion of our capacity to grow…"
>
> *Management comments, Verizon earnings call*

> "…your question on fiber because I think, in our mind, this comes up a core of what we believe as a company…we are a big believer in investing in our business…We don't believe that we are a business that just resells…someone else's IP nationwide enterprise network...So, this is not a blind leap into a pool, but this is absolutely, without question, a firm commitment…"
>
> *Management comments, Verizon earnings call*

> "…What we feel that we have done is maintain our head as high as we can...we believe we've tried to – best we can -- handicap the risk…and believe that our margins could be stable…"
>
> *Management comments, Verizon earnings call*

The management tone also appears to influence how analysts interpret the firms' strategies. The following comment by Morgan Stanley reveals a realization by the analyst that the firm is not likely to backtrack on the new technology even it means not conforming to immediate investor expectations. Although in this case the analyst continues to be focused on costs and remains uncertain about the viability of FiOS, it does demonstrate a shift in the way analysts begin to think about the initiative.

> One comment that gave some insight into management thinking was a comment around the fiber build: "I think our company cannot be afraid of you, and not be afraid of the market, in terms of reaching for growth opportunities. Now, we have to be smart and we have to be accountable, but what we don't want to do is start out by limiting what our vision of the market could be". We would interpret from this a view that if Verizon decides it needs to accelerate its FTTP build-out, then that is what management will do, even if it means a short term cost in terms of free cash flow or EPS. What are the economics of FTTP/FIOS? We did get some new data points on FTTP including cost per home passed of under $400 per home passed for aerial plant, and $900-950 per home passed for buried plant. There would be additional variable costs of $700-800 per home served, but Verizon believes taking copper completely out could cut opex by half. The early rollouts in Keller, TX and elsewhere should help prove out the economics. In the end much depends on the penetration rates the company can achieve, and the related issue of ARPU. The high speeds offered by fiber should be a big selling point (we have our checkbook ready if they come to our neighborhood)… (*Verizon, October 2004)*

In contrast, Qwest's endeavors to demonstrate conformance to analyst expectations by lowering its investment in responding to the technology, in turn translate into better stock recommendations by the analysts.

> Upgrading to neutral and raising target price…We are upgrading Qwest to NEUTRAL …and raising our target price… main takeaways from the quarter that prompted us to reevaluate the stock…we believe it is less likely that management will engage in a fiber video build…these developments have the effect of increasing Qwest's free cash flow over the next few years via less cash taxes and capex… management's tone on today's conference call caused us to reevaluate our view on this…As a result, we think the company warrants a higher valuation…
>
> *CSFB analyst report, May 2007*

Verizon's CEO also attempts to change the way in which analysts evaluate its strategic responses to the new technology. As analysts continue to publish reports that urge Verizon to reverse its commitment to the FTTP ('fiber to the premises') technology and adopt the more financially conservative FTTN ('fiber to the neighborhood') alternative that utilizes existing wireline

technology infrastructure (for the "last mile," from the neighborhood to the house), Verizon's CEO resists this pressure by questioning this logic. He argues for the superiority of FTTP to the FTTN alternative longer-term shifting the focus to top-line effects (i.e. growth in revenue for the future) instead of the sole focus on the bottom-line impact (i.e. the cost) that is emphasized by FTTN proponents.

> "…you have got to look at how much you spend initially versus how much you spend when you win the customer. So to me the investment that you really want to look at and focus on is how much does it cost to pass the home…the most important thing that you have to look at is not just going around the country, and compare what people are saying about the cost…because you will hear from us, well, it cost 350 here, $900 there, and then you will hear from other companies, that, you know, it only cost us [$200] or $300, if you do a fiber to the node or a fiber to the curb solution. The other part you better build in your model and I know you guys are smart enough to do this is the penetration that results -- that will result as the result of having more bandwidth. If it's cheaper, on a fiber to the node basis, and you get one-third or one quarter of the success, then it isn't cheaper anymore. Then it's more expensive. And I think you understand that math. And our goal is not to pass the home at the cheapest possible cost but to get the right mix of homes pass(ed), success in the market place and the right costs. And that I think is the best equation that we have got going here…"

The emergence of positive reactions to FiOS (Verizon)

At the same time that the evaluative dimensions of the category begin to shift, analysts begin to react positively to FiOS, and more importantly, do so even as performance worsens against the traditional access line metrics and prevailing theory of stock value.

> FiOS: Expect Strong Additions to Drive Higher Costs…FiOS dilution may trend higher in 2007 than our estimate…we would view this as a positive; Verizon would be incurring incremental dilution today to win subscribers and generate increased revenues tomorrow…We think with FiOS, Verizon is uniquely positioned to win new subscribers.
>
> *CSFB analyst report, January 2007*

> Although total access line losses were worse than expected, a large part of the incremental losses were less profitable…lines…Conversely, the company reported strong broadband and FiOS TV net adds…
>
> *CSFB analyst report, April 2007*

> …Is FiOS turning the corner on profitability?...Our take: Despite the soft wireline margins, there are some encouraging signs on FiOS. Net add and penetration stats continue to impress…
>
> *Morgan Stanley analyst report, April 2008*

> …Less FiOS promotions are a positive force for margins; however, given the higher promotional activity by the MSOs (i.e. cable companies) … we would expect Verizon to become more aggressive in the third quarter."

CSFB analyst report, April 2008

Analysts' statements reflect an increasingly positive reaction to the new technology investments, suggesting that they begin to reframe Verizon's response to the new technology as an opportunity. In conference calls, they begin to shift to focus on how Verizon management can roll out FiOS faster, in spite of the detrimental effects on traditional performance dimensions.

> "…are you tempted at all to sort of push back the dilution estimates such that you can take advantage of a product [analyst is referring to FiOS] that has got real momentum right now?
>
> *Analyst comment, Verizon conference call, October 2007*

Negative reactions to lower and slower fiber investments (Qwest)

Second, with respect to Qwest, evidence emerges from the texts that analysts' revised theories of value, now increasingly focused on the benefits of revenue growth for the future, become new rules that in turn, now serve as categorical constraints for Qwest. As Verizon launches FiOS (and AT&T launches UVerse), analysts begin to interpret the absence of a similar response from Qwest negatively. Although Qwest's decision not to make large investments in infrastructure, a decision consistent with relatively lower costs and better cash flow than its competitors (outcomes aligned with the traditional valuation metrics), one analyst cautions against buying the stock. This analyst's clear preference for the other incumbents that are investing in response to the new technology suggests an underlying shift in the evaluative dimensions of the category:

> …Unlike AT&T and Verizon, we do not believe Qwest is positioning itself for future levels of competition.…We believe at some point Qwest will be required to invest more capital to defend its business…
>
> *Deutsche Bank analyst report, August 2006*

> …Still prefer AT&T (T, $37.38, Buy) or Verizon (VZ, $37.95, Buy)…we believe investors would be better served investing in either AT&T or Verizon, which are both aggressively investing for the future…we are not convinced that the company is well positioned to defend itself against …VoIP competitors…even though it would appear that the company's level of free cash flow is currently sustainable, we would not recommend investors purchase stock at these levels…. without…a more robust video deployment strategy that its better positioned peers (Verizon and AT&T) are aggressively rolling-out…Qwest is overvalued relative to its peers….
>
> *Deutsche Bank analyst report, February 2007*

In the previous quote, the idea that "Qwest is overvalued relative to its peers" further suggests that Qwest's stock price is higher than analysts expect it to be given their changing performance metrics and theories of value. This comment suggests that the analyst believes investors are still focused on the traditional metrics and theories of value.

Later, as Qwest adopts the alternate FTTN (fiber to the node) technology with less investment than Verizon, analysts further discuss whether Qwest could adopt a video strategy similar to Verizon and AT&T. We find that on the one hand, Qwest's strategies to now invest in fiber are no longer questioned, raising the possibility that Verizon's actions spurred the legitimacy of Qwest's subsequent actions. However, the analysts also scrutinize the specifics of Qwest's strategy more closely, and appear to be 'ahead' of the firm in the case of Qwest, making recommendations and suggestions that go beyond the firm's intended strategies. Moreover, the assumptions that analysts use for evaluating the strategy are derived from Verizon's and AT&T's prior rollouts, appearing to create greater pressure for Qwest to conform to these models.

> Although we do not believe Qwest intends to build a video network anytime soon, we think the company could eventually earn its cost of capital from a video deployment….we have applied our proprietary return on video investment analysis to determine what penetration the company would have to achieve to earn its cost of capital. In this example, we used AT&T as a proxy…In Exhibit 1 below, we apply the same valuation analysis that we used for AT&T to determine a breakeven scenario for Qwest…Based on this analysis, we can see that if Qwest could build a video network at similar cost per home as AT&T and achieve 20% penetration, the company could earn its cost of capital…Net net…We do not believe Qwest will build a video network anytime soon, although at similar costs to AT&T, we think it could…earn its cost of capital…
>
> *CSFB analyst report, October 2008*

Finally, near the end of 2008, rather than questioning incumbents' investments to respond to the technology, as emerged in our earlier themes, analysts instead question Qwest's speed of introduction. Similarly, rather than questioning incumbents' pursuit of a bundled strategy that includes video, analysts become more concerned about the absence of a video strategy:

> "…would you consider accelerating your fiber build…Especially to capture share now while there are still more voice subs left…"
>
> *Analyst question, Second Quarter 2008 conference call*

> "…on the video question we continue to see Verizon and AT&T put up good numbers on their video platforms, but it sounds like you're not really focused on a me too there…if you could expand on that…"
>
> *Analyst question, Fourth Quarter 2008 conference call*

Thus, the change in metrics and theories of value away from short term cash flow and toward revenue growth appears to now underpin new rules that constrain firms the firms with actions not focused on future growth.

A model of category change

The three emergent themes provide a rich narrative of events and reveal novel insights about the nature of categorical change in the context of radical technological change. In this section we combine the themes with extant theory and research to build a process-based theory of category change.

First, in Figure 1, we provide a view of the co-evolution of technological change and categorical change. Prior research has argued that changes in institutional forces may be precipitated by technological jolts (Greenwood et al, 2002). We draw from prior research on technology cycles (e.g. Tushman and Anderson, 1986), outlining the progression of change from a technological discontinuity, to an era of ferment, followed by a shake-out in the form of the emergence of a dominant design, which ushers in a period of incremental change. We draw further from Greenwood, Suddaby and Hinings (2002) to highlight three stages underlying institutional change in our setting. The deinstitutionalization phase begins with the technological discontinuity and resulting era of ferment, and the unfolding effects on performance as measured by analysts (i.e. declining access lines). This period also spurs strategic responses from incumbents to respond to the new technology, and these responses are misaligned with the traditional metrics and valuation theories (i.e. investments that decrease cash flow). Despite

expectations suggested in prior research (Munir, 2005), that technological change will trigger changes in how firms are valued, the radical technological change occurring in the wireline telecommunications industry does not immediately usher in changes in how analysts value incumbents. However to the extent the technological change spurs strategic responses from incumbent firms that depart from traditional expectations of the incumbent stock category, and as these persist, it initiates the process of change in the dimensions of categories.

As the technological change continues to make traditional models of performance obsolete, as firms continue to resist conformance pressures and persist in strategic changes, and as management engages in sensegiving with analysts, analysts begin to question the ways that they assess incumbent performance, and begin a period of search for new explanatory models that depart from traditional thinking. This constitutes the theorization stage in Greenwood et al's (2002) model. Finally, new metrics and models are adopted by analysts and become taken for granted, and analysts in their role as institutional gatekeepers begin enforcing these norms in a phase of re-institutionalization. In our setting, investing in upgraded networks and bundled strategies was once questioned and discouraged by analysts, particularly against the backdrop of valuation models and access line metrics. By the end of the study period, this shifts to a norm and changed category dimensions that lead to questioning the firms that are not pursuing the newly-appropriate strategy.

Shifting categories

In Figure 2, we provide more detail about the processes of change that unfold through the themes from our setting. We highlight the context of radical technological change as the trigger both for firm responses to the threat of declining performance, and further, for the misfit between firms'

strategic changes and the traditional dimensions of the evaluative categories. These mark the start of the shift in the categorical dimensions.

As firms respond to the technological change and experienced the threat of reduced financial performance, their actions are viewed by analysts through the industry 'category' covered by the analysts (cf. Zuckerman, 1999). Categories represent a type of collective organizational identity that involves an abstraction from the distinctiveness of individual firms to a typification of commonality (cf. Hsu and Hannan, 2005). In our setting, the category comprises the evaluative schema of securities analysts used to assess a group of firms in one industry. Dimensions of categories emerged from the texts in our setting, in particular, the specific metrics used to evaluate firms and the theories of stock value held by analysts that were used to assess particular strategies. These dimensions are not exhaustive of all possible categorical dimensions but are the salient ones in our setting. More broadly, these dimensions constitute the lens through which incumbent behavior is viewed as more or less appropriate by analysts, and thus serve as a potential institutional constraint. Change in analysts' evaluative categories unfolds beginning with the uncertainty triggered by the technological change coupled with the competitive response from incumbent firms, and further, as those changed strategies fail to fit the category dimensions in use by analysts.

In addition, a growing stream of research has also explored how CEOs frame strategies and strategic changes for external constituents (Fiss and Zajac, 2006; Westphal and Clement, 2008). Echoing these ideas, during this period of high uncertainty, managers of incumbent firms have an opportunity to frame the change in advantageous ways that contribute to changing the metrics and theories of value that analysts use in evaluating the incumbents (e.g. Verizon versus Qwest, Qwest old CEO vs. Qwest new CEO), (cf. Elsbach, 1994; Fiss and Zajac, 2006). This

constitutes the second factor triggering change in our setting. Verizon's CEO works to shift the perception of Verizon's activities away from the initial view that they are misaligned with theories of value focused on cost cutting and increasing cash flow, and toward the idea that they are consistent with new theories of value focused on growth, future opportunity, and longer-term value creation. Prior research has established that the uncertainty (both technological and economic) in the era of ferment following a technological discontinuity presents a window of opportunity for firms to manage selection processes to their advantage (e.g. Rosenkopf and Tushman, 1998). Our qualitative findings indicate that this opportunity extends beyond reconstituting organizational alliances and influencing standards setting processes to managing whether analysts and the financial markets they mediate perceive the responses to the new technology as legitimate.

Finally in Figure 2, we distinguish between analysts who perform the role of institutional intermediaries and investors whose choices collectively produce the financial market as an institutional force on firms. Our results, reflected in the analyst-firm and analyst-investor links in this framework, indicate that analysts perform functions of both sensemaking and sensegiving (Gioia and Chittipeddi, 1991) in their roles as institutional intermediaries. In their sensemaking role, they not only interpret the firm responses to technological change through the dimensions of the category, but also interpret investor behavior and changes in stock price in response to company and context. The sensemaking role emerges both in conference call interactions and in explanations provided to investors in analyst reports. In their sensegiving role, analysts translate their interpretations of firm responses and technological shifts into both quantitative and qualitative recommendations for investors.

In Figure 3, we depict in greater detail a longitudinal view of how categorical change co-evolves with technological change. Prior research has explored the duality of structure and action – agents change institutions even as they are shaped by the institutional environments (Garud, Jain and Kumaraswamy, 2002; Garud and Jain, 1996). We outline the interaction between agency and structure as firms try to change the institutions even as they are constrained by those institutions. This grounded framework of categorical change echoes models in prior work that capture the evolution of structure and action over time (Barley, 1986). In our model, financial market forces that penalize or reward firm actions are mediated by the actions and reactions of securities analysts, in a context of radical technological change and resultant uncertainty.

The model in Figure 3 highlights over time the three distinct phases of deinstitutionalization, theorization, and reinstitutionalization summarized in Figure 1, that transpire during a technological era of ferment. During the deinstitutionalization phase, incumbent firms respond to the radical technological change by adopting strategies that depart from the category rules. Although firms attempt to justify their actions by framing them first as responding to the decreases in performance resulting from technological substitution, and then as responding to growth opportunities, for a time analysts continue to make sense of these actions using traditional categorical rules manifested in old technology metrics and historical theories of stock value. Investor behavior is predominantly aligned with analyst recommendations and analyses during this phase. Deinstitutionalization is triggered by changes in management framing of the continued strategic changes of the incumbent firms as well as the associated lack of fit of these strategies with the analysts' evaluative dimensions. The transition from deinstitutionalization to the theorization phase is marked by analysts' broader search for

understanding about both the nature of the technological change, and the firms' strategic changes. Theorization is also characterized by increasing communication and framing by the firms as they alter their justification logic from using an offsetting declines (in access lines) logic to portraying their strategies as essential for survival and for capturing future growth opportunities. The changes in performance outcomes coupled with CEO communication trigger a search by analysts for new models that incorporate new assumptions and metrics corresponding to the new technology. At the same time, analysts begin questioning established theories of stock value that had been historically applied in evaluating the incumbent firms' stocks (e.g. 'Is Qwest a growth stock'). Analysts' recommendations to investors, in their sensegiving role, become more informative and optimistic. However, there is a lag between these more positive recommendations and investor behaviors, reflected in analysts' comments. Investors appear to continue to react negatively to the firm responses that depart from the traditional category (e.g. "investors are questioning…").

In the case of investors it may be that change in the valuation models and behaviors arise from the sensegiving provided by analysts, but it may also result from the exit of investors whose investment objectives were aligned with the traditional theories of stock value pre-technological change. The incumbent responses to the technological change, involving capital investments in a new, uncertain technological trajectory deviated not only from analysts' expectations for firms in the category, but also from investors' expectations. Whereas analysts may downgrade stocks or drop coverage, the corresponding investor behavior is to sell the stock, dampening stock price but at the same time shifting the investor clienteles and potentially ushering in investors with different expectations about stock value. Finally, towards the end of our study period, a re-institutionalization phase begins, as analysts incorporate more detailed information on strategies

and technological change into their forecasting. These projections and metrics take the form of new categorical rules that are then used to evaluate other firms, spurring questioning and negative reactions (e.g. Qwest and questions around lower levels of investment and the lack of a video strategy).

DISCUSSION

We initiated this study to gain insight into how technological discontinuities and resultant changes in firms' strategies drive change in institutions, specifically, the evaluative dimensions of the industry categories that organize coverage of stocks by sell-side analysts. We use an inductive qualitative study relying on the texts of conference calls and analysts' reports to uncover the underlying dimensions of the category that form the basis for evaluation of firms within a particular industry category in the context of technological change. We find that metrics specific to an existing (old) technology become institutionalized and applied by institutional agents even as they are increasingly out of fit for evaluating performance in a new technology requiring new business models. These metrics are 'sticky' and shift slowly, in response to a sustained lack of fit between actual firm performance indicators and assessments using increasingly obsolete metrics and theories of value. Our study establishes further the ways in which these inertial categorical dimensions serve as constraints. Although a new technology often requires dramatic changes in firms' strategies, necessitating a different set of indicators to evaluate performance, persistent analysts' assessments based on traditional metrics and theories of value may spur critiques that constrain and limit some forms of response to the technological change. In our setting, the persistent execution of new strategies coupled with management efforts to frame actions in light of new theories of value (as in the case of Verizon) enables shifts in these dimensions. Strategies that were earlier questioned are increasingly viewed as

appropriate under new categorical dimensions such that they become new rules that in turn, constrain and pressure the firms that had previously conformed to the old categorical dimensions. Thus, we trace the change in perceptions of legitimacy as both agency and environmental changes spur change in institutions.

It is clear in our setting of technological change that the ways that firms are evaluated by analyst audiences, although changing during the study period, do not shift discontinuously to immediately account for the changes in strategies or business models ushered in with a new technology. Thus, in addition to the traditional sources of 'internal' firm inertia and rigidity, (e.g. Nelson and Winter, 1982; Levinthal and March, 1993; Leonard-Barton, 1992; Levitt and March, 1988), ‘external’ sources of inertia from institutional agents may influence and alter the direction and speed of response to technological change. In addition, although prior research in institutional theory suggests firms are indeed often constrained by institutions, and recent research has documented the general tendency for pressures from analysts to affect firms’ actions in this setting as well (Benner and Ranganathan, 2012), our study suggests that the pressures institutional agents exert do not fully determine the firms’ strategic responses. Verizon was able to successfully launch the FiOS initiative and recover much of the market share that it lost to cable companies. These findings echo recent research that suggests that organizational fields may be composed of multiple ‘logics’ thus allowing multiple forms of institutionally-based rationality to co-exist (Lounsbury, 2008). It may be that uncertainty arising from the technological flux and competing product designs during this period, as well as from competing business models and evaluative frames ultimately provides firms considerable agency in shaping strategies. However, we also find that the extent of these constraints and/or agency is not fixed

and is highly context dependent illustrated by differences in the reactions to investments in fiber for Verizon and for Qwest.

This work has important implications for research at the intersection of strategy, institutional theory, and technological change. First, since a firm's stock market value is mediated and influenced by sell-side analysts, our setting allows us to study institutional forces that influence how firms create value from their strategies. This research joins a small body of work that shows the importance of institutional considerations even in a setting generally believed to be governed by market logics (Zuckerman, 1999; Zajac and Westphal, 2004). Prior research has explored the constraining pressures from analysts as firms' actions depart from taken-for-granted audience expectations associated with particular analyst categories (e.g. Zuckerman, 2000). However, prior research has not studied how these analysts' categories change with major environmental and strategic changes. This setting further allows us to study how firms change and adapt to changes in their environments, and the institutional forces that influence these processes. Doing so allows us to further understand temporally how firms are enabled or constrained as they pursue strategies to adapt to major changes in technology.

Our research also contributes to work in institutional entrepreneurship research that shows how agents can change institutions even as they are embedded in and constrained by them. We extend institutional theory by taking an organization-centric view, focusing on the interactions between a specific organization and the institutional agents in its environment. We are able to show the role of both agency and environmental change as forces that gradually create misfits and shift the evaluative dimensions of categories. Finally, our research also expands on existing work in both the finance and organization literature, that that has focused on opposing market logics – growth versus margins – and the influences of these logics on firms' behaviors

(e.g. Benner, 2007; Beunza and Garud, 2007; Aghion and Stein, 2008). There has been a growing appreciation for the differences that arise from these contrasting approaches to framing organizational actions and evaluating the results. Here, we show how the logic can shift for the same organization over time, and factors that influence the shift in analysts' assessments from a focus on margins to a focus on growth. However, in some cases, as documented in prior research (Beunza and Garud, 2007), entirely new categories might form with the advent of new technologies. For example, Beunza and Garud (2005) document how analyst framing leads to the selection of a particular evaluative frame about an organization. Future research could seek to better understand the forces that influence whether categories change or new categories arise. Future research could also expand on these ideas beyond our setting of technological change, to other environmental changes that affect firms.

Our work also has implications for management practice by suggesting the ways in which managers, as institutional entrepreneurs, can change the way analysts frame and evaluate their activities, allowing them to respond to environmental changes with major strategic changes while preserving legitimacy with important external audiences.

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Table 1: Comparison of traditional wireline and new technology mentions by analysts

Total number of analyst reports	320 reports
Period of reports	Jan 2002 to Oct 2008
Keyword	**Frequency of occurrence in analyst reports**
"line loss" or "access line decline"	514 mentions
"access lines"	937 mentions
"wireline"	1995 mentions
"VoiceWing"	12 mentions
"VoIP" as a product or service offered by VZ	19 mentions
"RGU" or "revenue generating unit"	29 mentions **(first mention in Nov 2007)**

Exhibit 1: Analysts using "access lines" in their models to evaluate Verizon's performance

Exhibit 1

2003 Estimate Changes - SBC and Verizon

	SBC		Verizon	
	New	Old	New	Old
EPS	$1.92	$2.16	$2.88	$2.96
Revenue Growth	(1.4%)	(1.3%)	0.8%	1.7%
EBITDA Growth	(8.8%)	(3.7%)	(2.9%)	(0.7%)
EBITDA Margins	37.8%	39.7%	41.7%	42.3%
Access Line Growth	(3.3%)	(3.3%)	(3.7%)	(3.6%)
Retail Line Growth	(7.1%)	(6.4%)	(4.6%)	(4.5%)
Core Rev Growth	(2.6%)	(2.5%)	(2.2%)	(1.2%)
Core EBITDA Margins	36.9%	39.5%	42.9%	44.2%

Source: Morgan Stanley Research estimates

Deutsche Bank Securities Inc. Deutsche Bank

Table 3: Summary operating statistics

	1Q03A	1Q03E	Variance	1Q02A	YoY
Wireline					
Switched Access Lines (000s)					
Residence	37,272	36,545	2%	39,347	-5%
Business	19,713	20,288	-3%	21,296	-7%
Public	497	517	-4%	584	-15%
Switched Access Lines (000s)	**57,482**	**57,220**	**0%**	**61,227**	**-6%**

Table 2: Representative quotes for each emergent theme

	Analysts (to Management)	*Management responses*	*Analysts (to Investors)*
Theme 1: **Inertial theories of value from the old technology regime**	"…access line losses in the consumer area, could you give us some idea regarding kind of the source of those losses, in particular the impact of cable competition?" (analyst, October 2005) "…on the access line losses, the losses continue to accelerate… could you comment?" (analyst, August 2006) "…a little bit of an update on the operating expense savings you anticipate for FiOS …if you could talk a little bit about capital efficiencies…?" (2005 analyst conference call question)	"We expect to see a continuation of residential retail lines lost…we will continue to be active in the area of retention…For example, this quarter we introduced some new service offerings like…Voicewing…" (VZ, October 2004) "We are working to grow the top line by reducing access line loss and investing in growth product…" (Qwest management, November 2004) "Whether margins are up 40 basis points or down 30 or pretty stable, what we are building (is) an engine…for future expansion of our capacity to grow…" (VZ, 2004 Q2) "Our fundamental assumption is that secular changes and technological forces will cause the number of access lines to continue to decline…we are combating this challenge… by moving aggressively to build FiOS, our broadband growth platform for the future" (Q1 and Q2, 2005) "We've mentioned to you that we were going to be continuing to lose [access lines]. I would suggest that, once again, this isn't a single metric…you have to look at it more holistically…" (VZ, October 2005)	"…raising target price… Verizon's 2Q results were solid and it appears the company is on track to achieve several milestone catalysts we highlighted when we upgraded the stock last year: recovering line losses…" (CSFB, 2007) "Key investment thesis is free cash flow generation – cash allows deleveraging balance sheet…focus on increased dividends …dividend yields and free cash flow…" (DB, 2003) "We are concerned about the economics of the FiOS initiative, but a pull-back on this could make us more constructive on the stock"(Morgan Stanley, 2005-2006) A closer look raised some concerns for investors…buybacks are likely to be modest. What we did not like: Cautious statements around return of cash to shareholders…the company indicated that they were not planning a massive return of cash to shareholders (October 2006)

	Analysts (to Management)	*Management responses*	*Analysts(to Investors)*
Theme 2: **Shifting categories and framing tactics**	"…you mentioned the economy and looking at numerous metrics. Can you review with us what those metrics are...How do you think about the response…in the future versus some of the historical measures?" (VZ, Jan 2008)	"Revenue generating units, RGUs, which we introduced last quarter, track much more closely with revenue performance than do access lines…" (VZ, January 2006) "The other part you better build in your model and I know you guys are smart enough to do this is the penetration that results -- that will result as the result of having more bandwidth."(VZ, Jan 2007?) "…our goal here is to capture market, ARPU, and wallet per household" (Qwest, May 2008)	"We define RGUs as the sum of total switched access lines, DSL subscribers, FiOS data subscribers and video subscribers… "(Morgan Stanley, November 2007) "We believe Verizon's fiber-to-the-premises project (FiOS) has been thought of as a liability, not as an investment for future revenue growth…we believe that the time is coming when investors will begin to look past the costs of the project and begin to include the expected revenues and profits…"(CSFB, November 2006) "…We believe that the fear that Verizon has embarked on a massively expensive yet highly ineffective network retrofit will continue to subside…we reiterate our buy rating…" (DB, April 2007)

	Analysts(to Management)	*Analysts(to Investors)*
Theme 3: **Altered category, new rules**	"…are you tempted at all to sort of push back the dilution estimates such that you can take advantage of a product [analyst is referring to FiOS] that has got real momentum right now?" (Analyst question, VZ, Oct 2007) "…would you consider accelerating your fiber build…Especially to capture share now while there are still more voice subs left…" (Analyst question, Qwest, 2Q 2008 conference call) "…on the video question we continue to see Verizon and AT&T put up good numbers on their video platforms, but it sounds like you're not really focused on a me too there…if you could expand on that…" (Analyst question, Qwest, 4Q 2008 conference call)	"…we believe investors would be better served investing in either AT&T or Verizon, which are both aggressively investing for the future…we are not convinced that the company [Qwest] is well positioned to defend itself against …VoIP competitors… even though it would appear that the company's level of free cash flow is currently sustainable… we would not recommend investors purchase stock at these levels." (DB analyst report on Qwest, February 2007) "FiOS dilution may trend higher in 2007 than our estimate…we would view this as a positive. Verizon would be incurring incremental dilution today to win subscribers and generate increased revenues tomorrow… We think with FiOS, Verizon is uniquely positioned to win new subscribers…" (CSFB, January 2007) "We do not believe Qwest will build a [fiber optic] video network anytime soon, although at similar costs to AT&T, we think it could…earn its cost of capital…" (CSFB on Qwest, October 2008)

Table 3: Comparison of analysts' ratings, views and theses over time for Verizon

Yr	Stock price High	Low	Morgan Stanley	Deutsche Bank	CSFB
2002	$46	$33 (Aug)	**Strong Buy until October.** Justified by dividend yield, solid balance sheet, drop in capital spending, ability to generate solid free cash flow. Many comparisons to the other Bells – Verizon is top pick. **Downgrade to Hold in October** Justification is that the stock has rallied and is too expensive, not that the future is bad	**Begins coverage in November with Sell** (initiates coverage of SBC at same time with a Buy rating) Comparison of Verizon and SBC and the gap in valuation (VZ trading at a premium) – believes Verizon is unlikely to make its targets. Anticipates a period of low cap ex - Belief that cap ex is tied to profitability – companies do not invest unless profits are visible.	**Buy rating through the year** Target price greater than current stock price, forecasts earnings multiple expansion to 80% of the market multiple from its current 73%
2003	$39 (Jun)	$32 (Sep)	**Upgrades to a Buy in January** – justification is that Verizon emerges from the pack operationally. Mention of new products (Veriations Freedom – local and LD) under the idea that new products reduce churn and line loss. First report of the year titled "Empire Strikes Back". Likes cost cutting. **Downgrades to Hold in April** "on valuation" Stock has rallied and is too expensive, expects reversion to the mean. Begins to focus on acceleration in access line losses	**Upgrades to Neutral in April** – negatives in wireline will be offset by performance in wireless. Investment thesis is free cash flow generation - allows deleveraging and increase in dividends which will support stock –prefers VZ vs. others **Upgrades to Buy in October** Share price correction brings it under target…in short-term, dividend yields and free cash flow provide support. Prefers Verizon's approach - economics are better than others; but says market will react to short term flows only	**Downgrades to Neutral in January** Taking a conservative view of the industry outlook. Believes Verizon is well positioned in the long run to leverage its existing customer base. However cautious view in the near term based on competition, substitution, economic recovery and margin pressures. **Upgrades to Buy in February** Raising rating due primarily to recent weakness in the stock.
2004	$41 (Nov)	$34 (May)	**Upgrades to Buy in February**, justified by cost-cutting. Likes dividend and free cash flow. Top stock among the Bells – constant comparisons. However, concerns about wireline accelerate – growth rate is slowing. Focus on line losses. Very skeptical/negative about FTTP/FiOS. Prefers FTTN because of the capital differences. Doesn't like investing for "growth" – wants dividends and buybacks. Questions economics of FiOS, concerns about cap ex and cash.	**Continues Buy rating until September** VZ is analyst's preferred choice amongst peers. Likes FTTP strategy - higher probability of sustaining earnings power… understands that management is rebuilding the core business around FTTP. Believes FTTP is the way to avoid even steeper erosion in a cash-harvesting strategy… **Downgrades to Hold in September –** Justification is that stock is too expensive after rally. Still prefers Verizon – but also notes long term long-term challenges likely to accelerate	**Continues Buy Rating** Following Verizon's announcements, notes the investment in VoIP and fiber to the home (FTTP). Viewed as protective/defensive of customer base "against cable's entry into VoIP". Argues that it takes away cable's long-term network advantage – analyst is convinced Verizon will beat cable in the long run. Views Verizon's strategy as differentiating. Investment case: "main reason to own the stock is management making investments to differentiate…for the long term."

2005	$36 (Jan)	$30 (Oct)	**Downgrades to Neutral in January** – wireline performance lags peers, cost cutting is slowing, FTTP posing risks, concerned about cost and time to market, uncertainty Focuses on lack of data from company on FiOS – suggests investors need more specific info. Pressure on mgmt to keep capex within estimates. Reiterates would be more positive on the stock with FiOS curtailment and focus on cash generation, cost reduction.	**Upgrades to a Buy in January –** stock has underperformed but magnitude of decline not justified and VZ's price could appreciate. Disagrees with investors who believe FTTN is cheaper than FTTP and hence safer. FTTN might protect short term cash flow, but FTTP protects value. Question is whether there will be higher revenue to compensate for higher cap ex. Believes stock price lower than peers because of higher costs of FTTP in the short term. Believes Verizon is doing the right thing, but sees investors' skepticism. Less confident …stresses more info.	**Downgrades to Neutral in January** on "accelerating VoIP risk". Conservative view of traditional wireline, pressures from technological substitution. Believes returning cash to shareholders will boost stock price. Begins to present FTTP financial models but argues against initiative- payback many yrs out. Voicewing makes headlines. Focuses on a price change that undercuts cable. Notes that it shows RBOCs willingness to engage in price competition with cable, and this is a 'key reason' for his underweight rating.
2006	$31 (Jan)	$38 (Oct)	**Continues Neutral rating -** focus is on declining wireline business. Wants VZ to stop FiOS, focus on cash generation, and divest businesses. Concerns about wireline cash flow. Prefers SBC (AT&T) which is taking a cheaper FTTN approach with more cash flow. Likes the stock buyback announcement and the dividend policy. Pressure to achieve performance results from FiOS- negative about execution. Challenges ability to compete with cable. Calls for more data and detail on FiOS, "show me" story.	**Continues Buy rating** However reflects investors' concerns – BLS had better stock performance, is responding less aggressively to the threats… Strategic dilemma – whether RBOCs really need to sacrifice short-term earnings to invest in longer term. Title is "getting ready for battle and paying the price…"	**Continues Neutral rating** Negative on FiOS…concerns about FiOS reflected in VZ's 22% decline in stock price. Focused on FiOS costs, not opportunities from it. Analyst leaves firm; CSFB drops coverage. **Upgrade to Buy in November** New analyst more favorable – notes investors' concern cap ex but says investments will stave off declines in revenue and save on maintenance…Tries to educate investors – FiOS an asset not a liability, models FiOS
2007	$37 (Jan)	$44 (Oct)	**Continues Neutral rating** – value is unattractive given little free cash flow reflecting 'heavy cost' of FiOS. Concerns about CapEx, line losses and weak broadband adds but ignores that FiOS substitutes for all this. Adds FiOS forecasts to the model.	**Continues Buy rating** Ahead of estimates in FiOS adds. Says higher adds may drive up costs (dilution), but views this as a positive. Says with FiOS, Verizon is uniquely positioned to win new subscribers.	**Continues Buy rating** Thinking about FiOS as the future – valuable differentiator, Verizon uniquely positioned to win new subscribers. Also notes declining FiOS costs and notes strong FiOS adds
2008	$38 (Jan)	$25 (Jul)	**Continues Neutral rating** Acknowledges that there is success with FiOS, and execution is not an issue anymore ("solid execution") – concerns now shift to the return VZ can deliver on FiOS. Acknowledges that he is more negative than the street on FiOS. Thinks that FiOS should directly affect the access line loss measure	**Continues Buy rating** Improving wireline revenue trends and consolidated margin expansion…believes Verizon will continue to improve fundamentals. Expects FiOS effort to break the all important EBITDA break-even threshold later in the year. Select names in telecom attractive on a valuation basis alone. Strong FCF capabilities and attractive dividend yield (Buy for AT&T And Qwest as well)	**Downgrades to Neutral in February –** main reason is sector downgrade due to potential for wireless war and macroeconomic weakness Notes slower FiOS growth. Includes FiOS TV net additions in the metrics. Provides a special report comparing and analyzing the economics of the RBOC's fiber builds

FIGURE 1: Co-evolution of phases of technological change and categorical change

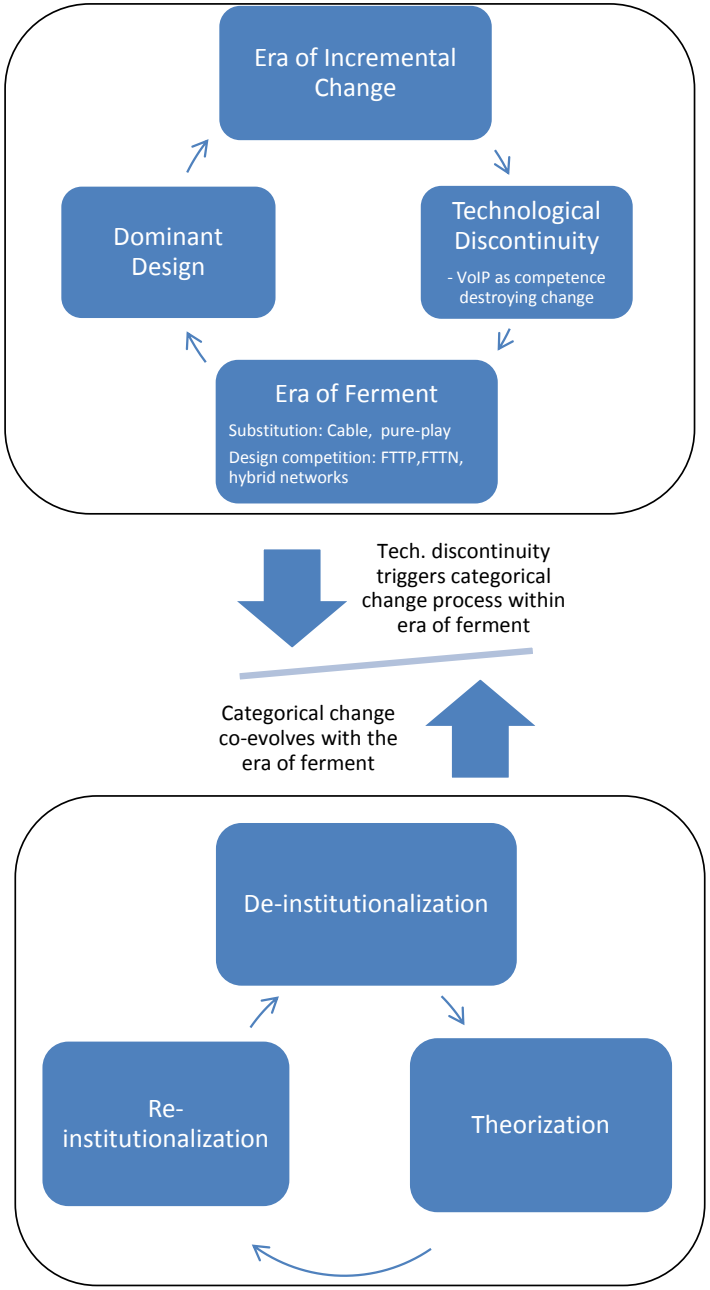

FIGURE 2: Cross sectional view of categories: Structure and relationships

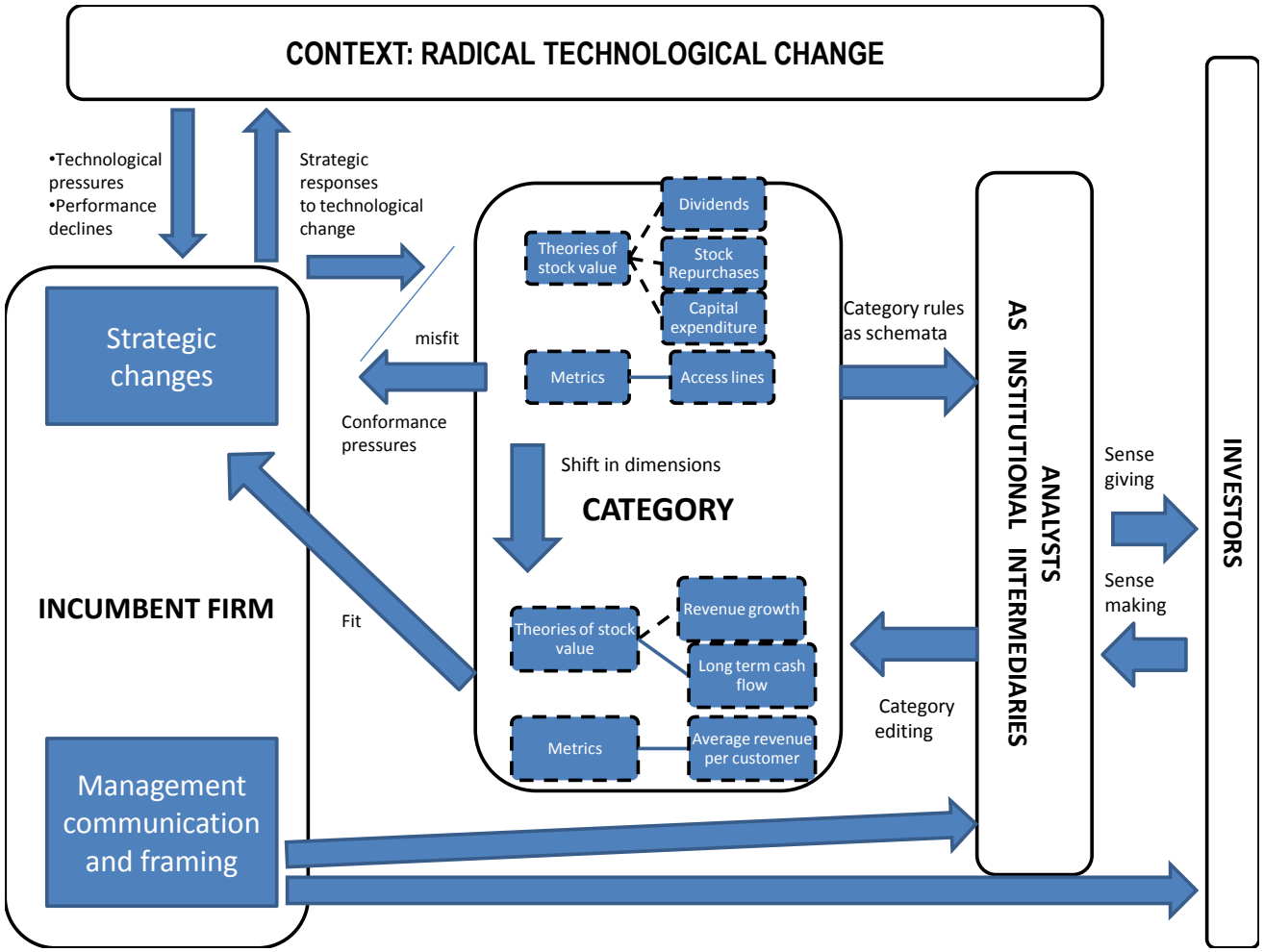

FIGURE 3: Longitudinal view: Categorical change - evolution of structure and action over time