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INFORMS is located in Maryland, USA

Organization Science

Publication details, including instructions for authors and subscription information:
http://pubsonline.informs.org

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To cite this article:
http://orcid.org/0000-0002-3813-9150Mary J. Benner, Ram Ranganathan (2017) Measuring Up? Persistence and Change in Analysts' Evaluative Schemas Following Technological Change. Organization Science 28(4):760-780. https://doi.org/10.1287/orsc.2017.1140

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ORGANIZATION SCIENCE
Vol. 28, No. 4, July–August 2017, pp. 760–780
ISSN 1047-7039 (print), ISSN 1526-5455 (online)

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Measuring Up? Persistence and Change in Analysts' Evaluative Schemas Following Technological Change

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Received: June 13, 2014
Revised: November 22, 2015; November 2, 2016; January 14, 2017; March 6, 2017
Accepted: March 21, 2017
Published Online in Articles in Advance: August 14, 2017

https://doi.org/10.1287/orsc.2017.1140

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Abstract. We examine shifts in how analysts assess the strategies of incumbent firms following a radical technological change. Specifically, we use an inductive study of earnings conference call transcripts and analyst reports to study how analysts' evaluative schemas change with technological change in the wireline telecommunications industry. We find three temporal themes. At first, analysts pressure firms to reverse strategic changes that are at odds with the existing "income"-focused metrics and logic that constitute the evaluative schema. Next, schema change unfolds with the ongoing technological change, as firm performance declines when measured with traditional metrics, and as managers frame strategic changes using new "growth"-focused metrics and logic. Finally, a distinct shift in the schema is apparent as analysts' increasing attention to growth spurs a more positive view of strategic changes that they previously opposed, a less positive view of previously supported strategies that conformed to an income logic, and the application of the growth logic even to a firm not pursuing growth-oriented strategic changes. Results from a supplementary content analysis support these results, showing a temporal shift toward "growth" words in analyst reports and conference calls. Our process model emphasizes the gradual shifts in analysts' evaluative schemas that ultimately support firm responses to a new technology. We highlight the importance of managerial framing as firms facing technological change pursue strategic responses that initially diverge from stakeholders' expectations, as well as the possibility that as schemas shift, actions that initially conform to analysts' expectations may be questioned.

Supplemental Material: The online appendix is available at https://doi.org/10.1287/orsc.2017.1140.

Keywords: technological change • cognition • behavioral strategy • securities analysts • categories • evaluative schemas • institutional entrepreneurship • institutional change

Introduction

Radical technological change is often challenging for established incumbent firms, as it threatens to substitute for the existing technology and erode firms' associated competencies and sources of revenue (Tushman and Anderson 1986, Tripsas and Gavetti 2000). Prior research has documented the *internal* challenges for incumbent firms faced with new technologies (Henderson and Clark 1990, Christensen and Bower 1996) that inhibit firms' responses. Research has further explored how managerial cognition shapes firms' responses to new technologies (Tripsas and Gavetti 2000, Kaplan and Tripsas 2008, Benner and Tripsas 2012). Recent research has begun to show that external audiences—such as securities analysts—can also constrain firms' attempts to respond to radical technological change (e.g., Benner 2010, Benner and Ranganathan 2012). Securities analysts are influential intermediaries in equity markets (Hsu et al. 2012, Zuckerman 1999), covering firms classified within stock market categories,[1] critically evaluating firms' strategies for investors, and providing recommendations that influence investors' stock purchases.

Analysts' assessments create pressures for firms to adopt strategies that conform to expectations about the appropriate actions for firms within the category (Benner and Ranganathan 2012, Zuckerman 2000). Research suggests these pressures may be particularly strong in settings of radical technological change, as incumbents attempt to respond with strategies that, while critical for adaptation and long-term survival, are cognitively distant from the status quo (Benner and Ranganathan 2013, Gavetti 2012). Analysts' assessments of firms arise from their use of evaluative schemas[2] (Hsu et al. 2012), i.e., the mental representations that provide default assumptions and expectations that underpin assessments of firms within the particular category (DiMaggio 1997, Hsu et al. 2012). Once a firm has been classified as a member of a particular stock category, analysts apply the evaluative schema specific to the category and expect the firm to continue to conform through its ongoing actions

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(Hsu and Hannan 2005). Evaluative schemas form a unified set of expectations for evaluating the performance of different firms within the category (Hsu et al. 2012), and, once established, they tend to endure and are resistant to change (Labianca et al. 2000). From a technology selection standpoint, analysts' schemas reinforce the collective technological frame that represents the dominant design in the industry (Kaplan and Tripsas 2008, Anderson and Tushman 1990). Thus, analysts' inertial evaluative schemas may underpin pressure on incumbent firms to conform to prior expectations, even as radical technological change threatens existing ways of doing business and necessitates exploratory "long jumps" to more distant courses of action (Benner 2007, 2010; Levinthal 1997; Gavetti and Levinthal 2000).

The idea that analysts' evaluative schemas are inertial is at odds with examples of successful organizational change. For instance, IBM's transformations from "electromechanical" to "electronic business machines," then to "computer hardware," and more recently to "business services" suggest that it was able to repeatedly overcome constraints imposed by external audiences (Tripsas 2009, Agarwal and Helfat 2009). However, we know little about how such transformations in the evaluations of external audiences occur. Careful examination of the interactions between firms and analysts following a radical technological change is likely to yield important insights into the process of change in the evaluative schemas, the corresponding changes in how analysts assess firms' strategies, and the underlying factors that might drive these shifts. Although researchers have studied schema emergence in new market categories (Bingham and Kahl 2013, Beunza and Garud 2007), they have not studied whether or how analysts' evaluative schemas change for established firms covered in existing analyst categories, and whether such changes legitimate firms' strategic changes. We undertake that task in this study.

Specifically, we focus on the changes in analysts' evaluative schemas in the wireline telecommunications industry (i.e., the traditional phone companies) as the industry faces a radical technological shift from traditional copper ("wireline") technology to voice over Internet protocol (VoIP) technology. We find, importantly, that analysts' schemas gradually shift toward a focus on "growth" and increasing acceptance of firms' strategies to respond to the new technology. We employ two complementary methods: First, we use an in-depth inductive analysis of two firms in the industry, drawing on two novel sources of discourse—quarterly earnings conference call transcripts and analyst reports—that capture the rich interaction between firms' management and securities analysts, as well as communication from securities analysts to investors. Our premise is that the language in these discourses reflects the cognitive representations that constitute analysts' evaluative schemas (Hsu 2006, Hsu et al. 2012). Our focus is on using the transcripts and reports to uncover analysts' evaluative schemas and shifts in the schemas as firms respond to the technological change. Second, we supplement our inductive analysis with a content analysis of the discourse texts to quantitatively illustrate change in the schemas over time. Our content analysis uses specific keywords and word stems that we identified as linguistic markers of the schemas during the inductive analysis.

We uncover the evaluative schemas as consisting of metrics that analysts use to track and evaluate firms' strategies, and a "logic," i.e., the rationale analysts provide to support their assessment of the firms' strategies. We identify two distinct groups of metrics and logics that analysts employ in their assessments: old technology metrics accompanied by an "income" logic and new technology metrics accompanied by a "growth" logic. We find that the old technology metrics and income logic are more salient during the initial period of the study, when analysts are positive toward actions that increase current investor income (e.g., reducing costs to increase profit margins and returning cash to shareholders via dividends or share buybacks) and negative toward actions that decrease current investor income (e.g., using cash for longer-horizon investments). In contrast, we find that as the new technology metrics and growth logic are increasingly used, analysts become positive about firms' investments aimed at future growth and more negative about firms' use of cash for dividends and buybacks. The temporal trends in these metrics and logics emerge in three themes. First, as incumbent firms pursue strategies to adapt to the technological change that are viewed negatively through the existing evaluative schemas, analysts discourage such actions and pressure firms to reverse their strategies. This is reflected in an extensive use of metrics corresponding to the old technology combined with an almost exclusive application of the income logic to assess firms' actions. Second, we identify factors that appear to weaken these pressures on firms—the continued unfolding of the technological change, one incumbent firm persisting in its strategies to respond despite analyst opposition, efforts by managers to reframe their actions and propose novel metrics, and the appearance of success of the incumbent firm's strategy but only when measured using newer growth metrics. Finally, we reveal shifting evaluative schemas, as analysts adopt new metrics and incorporate elements of the growth logic, supporting and even recommending strategies that they previously challenged. Schema change is further revealed as analysts even question the second incumbent firm that generally adheres to the constraints and expectations of the traditional income–oriented schema by not

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aggressively pursuing strategic changes; it is ultimately reclassified with a different group of peer firms. We integrate these themes in a model that underscores the relatively gradual nature of such change following radical technological change. Our content analysis of keywords further supports our induced themes, showing analysts' increasing attention to the growth logic and new technology metrics relative to the income logic and old technology metrics over time.

Our study makes several contributions. We contribute to research on the challenges of technological change by illuminating how firms respond to major environmental shifts, in part, by facilitating shifts in the evaluative schemas external audiences use to assess their strategies and actions. We also contribute to the growing body of work in behavioral strategy by highlighting ways that managers might translate their "cognitive map" or vision of how their strategies will create long-term value, facilitating strategic long jumps or long-horizon investments (Gavetti 2012). Whether and how incumbent firms facing technological change can shift the focus away from a frame that emphasizes immediate profit—toward one that highlights growth—as they make long-horizon investments is an important gap in our understanding of firm strategy in such contexts. Our work also contributes more broadly to research on cognition in interpretations of new technologies and markets (Kahl and Grodal 2016, Pontikes 2012, Rosa et al. 1999, Kennedy 2008, Kaplan and Tripsas 2008, Benner and Tripsas 2012, Tripsas and Gavetti 2000). Prior research has considered how new categories are created and constituted with new markets and technologies. Our work extends this to understanding how changes in audience evaluations can occur for firms even when the categories themselves are largely unchanged. By uncovering the specific factors that influence shifts in evaluative schemas, our work also contributes to research in institutional entrepreneurship in the context of radical technological change. We show how inertial analysts' schemas may constrain and penalize organizational actions to respond to a new technology, but also highlight the window of opportunity for institutional shifts during the periods of high uncertainty that characterize radical technological change. We also contribute to the growing literature on how organizations change institutions even as they are embedded in—and constrained by—institutional rules (e.g., Oliver 1991, Lounsbury and Rao 2004, Westphal and Zajac 1994).

Methodology

Empirical Setting

Our setting is radical technological change in the wireline telecommunications industry: the advent of VoIP technology. VoIP technology enables Internet-based phone calls, potentially substituting for the incumbent telephone companies' wireline networks and threatening their revenues and profits from wireline technology. An important event marking the process of technological substitution in this industry was Vonage's entry with VoIP-based telephone services in March 2002.[3] Subsequently, echoing prior research in technological change, and further suggesting the promise of VoIP as a substitute, many news articles predicted the demise of wireline telecommunications in the face of Internet telephony.[4] After 2002, there were continued improvements in VoIP technology, and entry by start-ups and established firms from other industries (e.g., cable TV) into telephone services. Thus, our study period begins in 2002 and ends in 2010, following the changes we observed in how analysts evaluated the focal firms. We focus on two incumbent firms that provided telephone services using wireline technology prior to the advent of VoIP—Verizon and Qwest.[5]

Data

We use earnings conference call texts, available through Thomson One/Investext, that capture the discourse between the top management of the firms we study and the analysts who cover their stocks. Conference calls are a forum for managers to respond to analysts' and investors' questions concerning firm actions and results. We further analyze the texts of the analysts' reports for investors,[6] allowing us to understand analysts' assessments of firms' actions in their communications to investors. Studying these texts over time allows us to identify the metrics and logics that constitute the analysts' evaluative schemas, as analysts discuss firms' strategies, and then capture the temporal unfolding of changing schemas as well as the possible factors underlying these shifts. In our analyses, we focus specifically on analysts' evaluations of the changing strategies to respond to the technological change, focusing on firms' portrayal of their strategies and analysts' views, assessments, and concerns surrounding these strategies. Our analysis spans a total of 65 conference call transcripts—33 for Verizon and 32 for Qwest.[7] In our analysis of the analysts' reports to investors, we focused on three brokerage firms that offered consistent coverage of both Verizon and Qwest for the majority of our study period—Morgan Stanley, Deutsche Bank, and Credit Suisse.[8] We analyzed a total of 676 reports.[9]

Method

We use two complementary methods in our analysis: an inductive study of the conference calls and analyst reports to uncover the evaluative schema and trace its evolution, and a content analysis of specific words used by management and analysts that we identified as linguistic markers of the evaluative schema.

We structured our inductive study as a 2×3 multiple-case design (two firms $\times$ three analysts) with

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literal replication logic (Yin 2003, Eisenhardt 1989). We adopted an iterative approach, where the themes emerged from the qualitative data rather than being shaped by existing theory. To align the inductive process with our research question, we specifically focused on the discussion of firm strategies that were relevant to the response to radical technological change. Thus, using company websites and other archival news sources, we discovered that Verizon and Qwest both initially launched stand-alone products using the new VoIP technology,[10] and later—as a response to competitive threats from cable TV firms—both announced plans to build fiber infrastructure to offer product bundles including video, Internet, and telephone. Although the strategies of these firms started out similarly, they differed in timing and magnitude: Qwest's major strategic investments in response to the technological change occurred two years after Verizon's, and they were markedly smaller.[11] Our objective in inductively analyzing the conference call and analyst report texts was to identify the evaluative schemas associated with analysts' assessments of the two firms' strategic changes, and to identify whether and how these schemas changed as technology evolved and firms changed (or attempted to change) their strategies. Each author carefully read each conference call transcript and documented the main concepts and themes that emerged in both the management presentation section of the conference call and the question and answer (Q&A) session with the analysts. We also compiled a list of words that were consistently associated with these themes.

In the management presentation sections of the conference calls, management teams presented financial results and discussed strategic changes. We documented the different reasons (rationale) within which the management embedded these strategic changes (e.g., to achieve cost reductions versus to achieve growth), tracking whether the rationale changed as the firms persisted with (or reversed) these actions over time. Similarly, in the Q&A sections, we uncovered concerns underlying analysts' questions about the strategies (e.g., impact of new investments on reducing cash to return to shareholders), as well as comments that indicated approval or acknowledgment (e.g., providing possible future growth in revenues). We then repeated the process for the analyst reports and iterated between the two sets of texts over time to trace out evidence for consistent themes in both the earnings conference calls and reports to investors. The richness of the language used in the conference calls and analyst reports lent itself to the generation of in vivo thematic codes (Corbin and Strauss 2008). For example, our first theme includes "access lines"—the name of a metric used by analysts that emerged directly from the texts.

Following our in-depth inductive analysis, we conducted a supplementary content analysis of the text of the conference calls and analysts' reports. Our objective was to illustrate measureable quantitative trends in the evaluative schemas that we identified as part of the inductive study. As we describe in our findings, we uncovered two distinct groups of metrics and logics that analysts used to evaluate the firms' strategies—old technology metrics that co-occur with an income logic (Group 1) and new technology metrics that are invoked with a growth logic (Group 2). We compiled word stems that corresponded to the characteristic linguistic markers of each of these two groups shown in Table 1.[12] We then assessed how the keywords associated with the evaluative schemas changed over the study period.

Findings

Table 1 summarizes elements of the shift in the wireline telecommunications category, highlighting change in the technologies, strategies, and evaluative schemas following the radical technological change in the industry. We first trace out these shifts over three themes that emerged from our inductive study, using representative quotes from our data. Tables 2–4 illustrate quotes that exemplify these themes. Following that, we discuss the findings from our supplementary content analysis.

Theme 1: Pressures from Inertial Evaluative Schemas

Our first theme describes the metrics and logic that correspond to the existing evaluative schemas underlying analysts' assessments of the two firms in our study. Our findings show that analysts consistently use metrics that are specific to wireline technology and an income logic that reflects a focus on returning cash to shareholders when evaluating firms' strategies. Analysts are more negative toward strategies that involve investments to respond to the technological change, and more positive toward strategies that increase current profit margins and cash returns to shareholders (share buybacks and dividends). Furthermore, despite the irrelevance of old technology metrics for assessing firms' responses to the technological change, analysts' attention to them persists.

Inertial Old-Technology Metric: "Access Lines." Our analysis revealed a specific metric—"access lines"—a core metric that analysts used to evaluate firm performance. Access lines are the physical copper wire connections for telephone customers, and are therefore specific to wireline technology. Analysts frequently highlight access line trends in their reports at the start of our study:

> Verizon: 4Q02 Preview and '03 Outlook . . . Key Points. . . . We estimate switched access lines will decline by 3.7% with retail lines declining by 4.4%.
>
> (Morgan Stanley, January 2003)

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Table 1. The Shifting of "Wireline Telecommunications"

	Prior to radical technological change	After radical technological change
	Shifting of firms' technology and strategies	
Technology	Wireline—copper wires	Optical fiber network based on technologies such as fiber to the home (FTTH)
Product-market strategies	Local and long-distance voice, digital subscriber line (DSL) Internet Bundles of voice and Internet	New products introduced, including Voice-over-IP products Broadband high-speed Internet Video (television, pay per view) Bundles of voice, video, and Internet
	Shifting of analysts' evaluative schemas	
Metrics	Focus on performance of the old wireline technology; other performance metrics defined in terms of the old technology	Focus on new fiber technology; measures introduced to capture prospective growth from the new technology
Examples of metrics keywords in the language analysts use	Switched access line(s) Line loss(es), Access line growth forecast Residential line(s), consumer line(s), dial-up, DSL	Revenue generating unit (RGU), average revenue per user (ARPU), penetration, wallet per household, homes passed, fiber, FTTH, triple-play
Logic	More current income focused, e.g., increase in dividends or buybacks is viewed positively, dilution of margin is viewed negatively, cost savings are salient in discussion	Increasingly future growth focused, e.g., strategies that have the potential to increase future revenues are viewed positively, greater attention paid to growth and initiatives that expand the topline
Examples of word stems reflecting this logic in the language analysts use	Accretive to earnings Bottom line Cost saving(s) Dividend(s) Margin dilution Repurchase Returning cash Return of capital	Growth initiative Growth potential Future expansion Investing for the future Return to growth Revenue expansion Revenue generation Top line

The salience of access lines is evident as analysts discuss other performance measures on a per-access line basis:

> 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.
> (Deutsche Bank, November 2002; emphasis added)

> [T]he 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, November 2002; emphasis added)

Despite (and in some sense, because of) firms' strategies to respond to the technological change, access line counts decrease for both firms. The technological change spurs increasing competition in telephone services from cable companies such as Comcast and start-ups like Vonage and Skype, and these firms use VoIP-based phone services, shifting customers away from traditional wireline phone services. Moreover, as wireline firms themselves respond to the technological change with Internet-based phone services, the access line metric not only declines further, but also becomes *increasingly irrelevant* for assessing performance. Although there are still new customers for telephone services, new customers are generally not using telephony based on access lines. Yet analysts' focus on access lines persists:

> Could you give us a little more color on the Access Line growth? It seems to remain fairly weak.
> (Verizon earnings call, January 2004)

> [A]ccess 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?
> (Verizon earnings call, October 2005)

> [O]n the access line losses, the losses continue to accelerate . . . . Could you comment?
> (Verizon earnings call, October 2005)

Correspondingly, analysts continue to request updates on access lines, revealing their continued focus on the existing technology. This is particularly evident when management does not discuss this metric:

> Access line growth has [been] conspicuously absent from any discussion, we believe because the company has accepted that secular issues will continue.
> (Morgan Stanley, January 2004)

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Table 2. Representative Evidence for Theme 1—Pressures from Inertial Evaluative Schemas

Analysts (to management)	Management framing	Analysts (reports to investors)
Focusing on old technology metrics "[A]ccess line losses in the consumer area, could you give us some idea regarding kind of the source of those losses?" (Verizon conference call, October 2005) "[O]n the access line losses, the losses continue to accelerate. . . . Could you comment?" (Verizon conference call, October 2005) *Evaluating new technology investments using traditional income logic* "[W]e got the 16% EBIT premargin. . . . What kind of dilution from FiOS and potentially from the, you know, video rollouts are included in that number?" (Verizon conference call, January 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 . . . ?" (Verizon conference call, October 2005) "[T]wo of your largest peers have talked about cash or stock buybacks that they're going to do . . . could [you] just give us a little insight into your views?" (Verizon conference call, October 2005) "[M]aybe you could discuss some of the areas of operational efficiency that you're also seeing." (Verizon conference call, May 2006)	*Framing new technology as reducing old technology decline* "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." (Verizon conference call, October 2004) "[W]e 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 conference call, November 2004) *Framing new technology investments within existing income logic* "I also believe that as we continue to deploy more and more FiOS, we'll start to see more and more productivity gains from that." (Verizon conference call, October 2005) "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." (Verizon conference call, January 2004) "[C]ash generation . . . I know all the other calls have discussed share buybacks . . . the uses of cash, to the extent that we were in a position to do share buybacks we would, but it's important that you understand sort of the pecking order." (Verizon call, October 2005)	*Evaluating new technology investments using traditional income logic* (Positive views in 2002–2003, before FiOS) "We anticipate that VZ [Verizon] should also be able to maintain its annual free cash flow generation (prior to dividends and share buybacks). . . . As is the case with the other RBOCs, this remains VZ's key investment thesis." (Deutsche Bank, April 2003) "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." (Morgan Stanley reports on Verizon, April 9, 2002, and April 24, 2002) (Negative views in 2005–2006, after FiOS) "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 report on Verizon, October 2005) "The negative sentiment towards the FiOS investment . . . 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 . . . Verizon's shares declined 3% on the day as a reaction." (Credit Suisse, November 2006) "A closer look raised some concerns for investors. . . . [B]uybacks are likely to be modest. What we did not like: Cautious statements around return of cash to shareholders. . . . [T]he company indicated that they were not planning a massive return of cash to shareholders." (Morgan Stanley, October 2006)

Thus, evidence of inertial metrics is apparent from analysts' continued attention to access lines, even as these are no longer credible measures of firm performance in light of the technological change.

Evidence of an Inertial Income Logic. Our next step in understanding analysts' evaluative schemas was to uncover the rationale for their positive or negative reactions to the firms' strategies. Our analysis revealed that analysts apply a consistent logic wherein investment value in the wireline firms is directly associated with steady levels of current income (cash flow) achieved by sustained profit margins and cash returned to investors via dividends or stock buybacks. This logic appears consistently in all three analysts' reports on both of our focal firms:

> 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.[13]
>
> (Morgan Stanley reports on Verizon, April 9, 2002, and April 24, 2002)

> Qwest is a reasonably attractive recovery story, and we believe that as free cash flow expands, so will value attributable to equity.
>
> (Deutsche Bank, April 2003)

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

> 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.
>
> (Credit Suisse, January 2003)

Furthermore, analysts view strategic changes through this income logic, with positive and negative assessments hinging on increases or decreases in dividends and buybacks, supported by underlying margins and cash flow. In particular, when firms cut costs, analysts positively evaluate these actions as boosting

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shareholder value via increased cash for dividends or share buybacks. Conversely, analysts negatively evaluate a strategy that increases capital expenditures and reduces free cash flow:

> As the wireline business faces intensified competition ... we believe earnings growth will likely be driven through cost controls and free cash flow generation to drive delevering, share buyback programs, and potential dividend increases.
> (Morgan Stanley report on Verizon, July 2002)

> [W]e continue to believe that the only viable strategy is a continued focus on organic FCF [free cash flow] expansion through cost-cutting.
> (Deutsche Bank analyst report on Qwest, May 2005)

> Wireline Cash Flow Down 36% y/y as Cap-ex Rises.
> (Morgan Stanley report on Verizon, July 2005a)

> 2Q05 Negatives: VZ [Verizon] raised 2005 capex guidance. (Morgan Stanley report on Verizon, July 2005b)

However, the radical technological change in 2002 threatened wireline technology, suggesting that wireline telecommunications firms would need to respond, and generally challenging the assumption that they would be able to limit investments, reduce costs, and return cash to shareholders. Specifically, Verizon invests in a new fiber optic network called FiOS, shifting focus away from the existing wireline technology. While FiOS offers potential for new revenue growth through product bundles,[14] the texts show that analysts continue to favor cost reductions, further showing that their beliefs about the appropriateness of Verizon's actions continue to be shaped by an income logic:

> Our fundamental assumption is that secular changes and technological forces will cause the number of access lines to continue to decline .... [W]e are combating this challenge ... by moving aggressively to build FiOS.[15]
> (Verizon announcement during earnings call, July 2005)

Analysts ask the following questions during earnings conference calls:

> [H]ow much of a cost savings will this be for Verizon?
> (Referring to FiOS, Verizon conference call, October 2004)

> [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.
> (Verizon earnings call, October 2005)

> [W]hen you overbuild with fiber, do you have any sense of what your savings look like on the capital side there?
> (Verizon earnings call, October 2005)

> [O]n FiOS, you ... gave a lot more incremental detail on your deployment and the penetration levels you're seeing. I was hoping maybe you could discuss some of the areas of operational efficiency.
> (Verizon earnings call, May 2006)

Analysts' growing negativity toward FiOS provides further evidence of the income logic, underpinning a belief that Verizon should focus on returning cash to shareholders, thus spurring pressures to retreat:

> 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, October 2005)

> [H]igher capital spending in 2006 and beyond remains a risk as Verizon ramps its fiber-to-the-premise effort.
> (Credit Suisse, January 2006)

> 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 report on Verizon, October 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 report on Verizon, October 2006)

In contrast, although Qwest does not immediately announce plans to invest in a new fiber network, analysts' income-oriented evaluative schemas are revealed in their comments about the mere *possibility* that Qwest would also use cash flow to increase capital expenditures:

> [We] are concerned Qwest's current capex run-rate is not sustainable given an eventual need for increased fiber spend. (Credit Suisse report, February 2005)

> [Downgrade to] Sell ... we continue to highlight that Q's [Qwest's] ability to support \$1.3bn-\$1.4bn FCF is contingent on two issues: (a) the ability to maintain ... margins at a 45%+ level ... and (b) avoidance of any further "blow-out" in capex commitments. In our view, these two objectives are on a collision course ... little doubt that over the next two years, the core business will continue to come under pressure ... should result in ... rising pressure to re-build both infrastructure and the product suite. This in turn will inevitably lead to higher capex commitments.
> (Deutsche Bank analyst report, February 2006)

> We are reiterating 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.
> (Credit Suisse, July 2006)

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When Qwest's retiring CEO denies any intent to increase investments, analysts are positive, consistent with their evaluative schemas anchored in an income logic:

> [O]ne 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 g[o]t a guaranteed margin with no CapEx.
> (Qwest conference call, August 2007)

> Mr. Notebaert stressed that he did not believe Qwest would need to [spend] capital on a video build (like FiOS ...) ... 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.
> (Credit Suisse, August 2007)

However, two months later, the new CEO announces a fiber investment, reversing the prior CEO's assurances. Analysts react negatively, again showing the income-focused logic:

> [T]here'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)

Thus, analysts' reactions support actions that appear positive for performance in light of the metrics and income logic that constitutes the schema (e.g., reduced access line losses, increased cash returned to investors) but disapprove of actions that appear negative for performance through this schema (e.g., increased capital investments, reduced dividends or buybacks, increased access line losses).

Theme 2: Gradual Shifts in the Evaluative Schemas

In our second theme, we find that analysts' evaluative schemas begin to shift. Preceding this shift, Verizon persists with its FiOS strategy and changes its framing in communicating to analysts, proposing new metrics and a growth logic to measure performance, even as FiOS investments continue to dampen Verizon's cash flow and access lines continue to decline. However, there is a considerable lag between firms proposing the new growth logic and metrics and analysts' subsequent adoption of these. Moreover, even as analysts begin to adopt the new metrics in their evaluations, we find that they do not completely abandon the traditional metrics and income logic.

Verizon's Management Frames Strategic Changes as Growth and Proposes New Metrics. Both firms initially frame their strategic changes around the traditional technology and metric, consistent with an income logic. For instance, products based on VoIP technology are framed as actions to *offset* access line losses, and to achieve cost savings:

> [W]e 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.
> (Verizon management presentation, October 2004)

> [Discussing VoIP services] [W]e think entry into VoIP ... provid[es] customers the services they want, services that they are asking for at savings of up to 20 to 25 and possibly even 30%.
> (Management presentation, Qwest conference call, November 2003)

> I want to give you an update on Qwest voice-over-IP .... The service ... reliability and call quality is similar to traditional wireline.
> (Qwest management presentation, February 2005)

Later, however, Verizon's management alters the way they frame the strategic change. Instead of linking the rationale for strategic changes to the traditional technology, they now link the strategic change to growth—highlighting areas that are distinct from wireline technology and access lines:

> Clearly the relationship of ... access lines to consumer revenues has changed. ... [W]e get revenues from sources that are no longer part of traditional line count.
> (Verizon management presentation, October 2005)

> 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.
> (Management presentation, Verizon conference call, January 2006)

Thus, Verizon's management now highlights both the potential for revenue growth and the irrelevance of the access line metric, proposing new metrics, e.g., "revenue generating units" (RGUs), "average revenue per user" (ARPU), "penetration," and "wallet per household," all focused on top-line revenue.

> We have taken each of these consumer services and calculated a metric called revenue generating unit. As you can see from the graph on chart 17, this metric tracks much better with revenue performance.
> (Management presentation, Verizon conference call, October 2005)

> [R]evenue generating units, RGUs, which we introduced last quarter, track much more closely with revenue performance than do access lines.
> (Management presentation, Verizon conference call, January 2006)

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Table 3. Representative Evidence for Theme 2—Gradual Shifts in the Evaluative Schemas

Analysts (to management)	Management responses	Analysts (reports to investors)
Interest in new metrics and models	*Reducing emphasis on old technology metrics*	*Introducing new metrics to investors*
"[Y]ou 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?" (Verizon conference call, January 2008)	"[A]s 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 conference call, October 2004)	"We define RGUs as the sum of total switched access lines, DSL subscribers, FiOS data subscribers and video subscribers." (Morgan Stanley report on Verizon, November 2007)
"[I]f I can just follow-up on the residential business, if you could talk a little bit more about the ARPU trends" (Qwest conference call, February 2008)	"Clearly 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 [access] line count." (Verizon conference call, October 2005)	"We define Connections as the sum of total switched access lines, DSL subscribers and FiOS data subscribers." (Morgan Stanley report on Verizon, October 2008)
	"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 conference call, January 2006)	*Changing logics*
	Introducing new metrics aligned with new tech	"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." (Credit Suisse, November 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." (Verizon conference call, October 2004)	"[W]e 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. . . . Therefore, we reiterate our Buy rating." (Deutsche Bank, April 2007)
	"[R]evenue generating units, RGUs, which we introduced last quarter, track much more closely with revenue performance than do access lines." (Verizon conference call, January 2006)	
	"[O]ur goal here is to capture market, ARPU, and wallet per household." (Qwest call, May 2008)	

> We calculate penetration based on the number of customers divided by the number of homes open for sale.
> (Management presentation, Verizon conference call, August 2006)

They further use these metrics to illustrate the improving performance of their changed strategy:

> In the third quarter, average monthly revenue per customer was $51.61, up 4.6% versus the year-ago quarter and up 1.4% sequentially. *We have increased this key metric for six quarters in a row*.
> (Management presentation, Verizon conference call, October 2005; emphasis added)

> When you look at the trend of Revenue Generating Units, or RGUs, that is the combination of retail, residential access lines, broadband connections, and video subscribers, *we have seen improvement over the last two quarters*.
> (Management presentation, Verizon conference call, May 2006; emphasis added)

> Let's turn now to Telecom and start with a look at some customer metrics. As I said earlier, *we continue to make great progress in broadband*. With 440,000 net new broadband customers in this quarter, we now exceed 6.1 million broadband connections with 1.6 million being added over the last three quarters which is *industry-leading*.
> (Management presentation, Verizon conference call, August 2006; emphasis added)

Shifts in Analysts' Logic, Adoption of New Metrics. Verizon persists with its FiOS strategy despite negative analyst reactions, and its CEO repeatedly emphasizes commitment to a changed growth strategy while de-emphasizing profit margins:

> 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, January 2004)

> Here's the issue . . . here's what I believe. I think our [c]ompany 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 . . . .

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> 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 conference call, October 2004)

These emphases coincide with the start of a shift in analysts' evaluative schemas. In the following comment, although the analyst persists in raising concerns about FiOS, he acknowledges that Verizon is likely to persist in its strategic changes. This underscores a shift in analysts' communication about Verizon, from pressuring it to retreat from FiOS to noting that it is likely to persist:

> 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 [fiber to the premises] 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 [provides additional details on cost].
> (Morgan Stanley, October 2004)

A year after Verizon's management begins introducing new metrics, analysts shift to discussing the importance of focusing on "growth" to evaluate its strategy, marking a change in evaluative schema:

> [W]e 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.
> (Credit Suisse, November 2006; emphasis added)

Similarly, analysts' comments further reveal their shifting evaluative schemas, as they began to apply a growth logic even to Qwest's conservative strategy of low investment and high cash flow:

> [I]nvestors 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 [fiber to the premises/fiber to the node] upgrade cycle.
> (Deutsche Bank, 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. (Credit Suisse, October 2006)

Although concerns about increased investments continue, analysts now also stress the importance of investing cash in new technologies rather than returning it to shareholders. This further appears as an attempt to shift investors' perceptions of Qwest. Although they are initially concerned when Qwest announces an investment in October 2007, six months later, one analyst concludes that the response is in line with increasing "longer-term" shareholder value, again, evidence of a shift toward a growth logic:

> 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, February 2008)

As analysts begin to assess Verizon through a changed evaluative schema, they also begin to note that investors are still attending to the old metrics (i.e., access line losses). Analysts begin to educate investors about the firm's strategic change and corresponding performance, presenting detailed financial models that show the positive return Verizon could earn on its investment in FiOS:

> [M]any investors . . . 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, April 2007)

> 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. (Credit Suisse, September 2008)

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We emphasize that these shifts occur *without* evidence the new strategy is profitable, since costs continue to outweigh revenues. Yet it is clear that how analysts perceive FiOS is changing: from treating the new strategy as an unwelcome capital expense that reduces cash flow and returns to shareholders, to predicting future revenue growth based on estimates of *potential* success. Analysts' beliefs about the relationship between firm strategies and shareholder value are shifting—away from the view that investments simply reduce shareholder value toward the potential for growth and future success.

Moreover, these shifts appear to follow persistent management communication that incorporates new metrics and logic—also shifting toward viewing Verizon's response to the technological change as a growth opportunity. As their schemas shift, analysts become optimistic about the same strategy they had earlier questioned, illustrating emerging legitimacy for Verizon's actions in light of a new logic. By the end of 2007, analysts are discussing new metrics in their reports to investors:

> RGU growth driven by FiOS and wireless. . . . 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, November 2007)

Their questions to management during conference calls also show increased attention to these metrics:

> [I]f I can just follow-up on the residential business, if you could talk a little bit more about the ARPU trends.
>
> (Analyst question, Qwest conference call, February 2008)

Analysts also start including projections for growth (i.e., not just access lines, but now increases in customers on the new technology) in all their models, further indicating a shift in the metrics that constitute the evaluative schemas.

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

Despite increased attention to the new metrics, analysts continue to track traditional metrics, suggesting gradual rather than discontinuous change in the evaluative schemas and corresponding assessments of firms. Changes in the analysts' metrics and logic (starting in 2007) lag both the technological shift (in 2002) and firms' strategic changes to respond (starting in 2003). Furthermore, although all the analysts appear to be aware of the new metrics and become less skeptical about Verizon's strategic changes, they vary in the extent to which they are positive. Throughout 2007, the Morgan Stanley analyst notes Verizon's FiOS costs and continues to be concerned about capital expenditures, although he includes FiOS forecasts. In contrast, the Credit Suisse and Deutsche Bank analysts are more clearly positive about FiOS. This variation suggests that the schema transition is underway but incomplete:

> Investment Thesis: Overall, solid execution but . . . key questions linger on . . . the company's ability to deliver a return on the FiOS business.
>
> (Morgan Stanley, November 2007)

> With the second quarter of solid FiOS Internet and video subscriber additions . . . we believe the fear that Verizon has embarked upon a massively expensive and yet highly ineffective network retrofit will continue to subside. Accordingly, we believe the consolidated outlook for Verizon will continue to improve over time.
>
> (Deutsche Bank, April 2007)

> Verizon would be incurring incremental dilution today to win subscribers and generate increased revenues tomorrow. We think Verizon has a unique opportunity in the coming years to win subscribers as a robust HDTV service becomes a valuable differentiator.
>
> (Credit Suisse, January 2007)

Theme 3: Divergent Implications of the Altered Evaluative Schema for the Two Firms

Our last theme highlights divergence between our two cases that further illuminates the shift in the schema. Analysts are now positive about Verizon's strategy, as it increasingly aligns with expectations arising from employing a growth schema. Conversely, as analysts apply the growth schema to assess other incumbent firms in the category, they initially raise questions about Qwest's lack of response to the new technology, later exhort Qwest to increase investments, and ultimately reclassify it with a new set of income-focused peer firms, as its low investment approach is increasingly misaligned with the new growth-oriented metrics and logic.

The Emergence of Consistently Positive Assessments of Verizon's Strategic Change. As the schemas shift, analysts react positively to FiOS. These reactions occur even as performance worsens against the traditional income logic and metrics. Analysts even begin to *exclude* the costs of FiOS from assessments of performance, illuminating further their shift away from focusing on the costs and cash flow implications of the strategy, toward a growth logic:

> Results Review: Buy . . . . [W]e estimate that *excluding FiOS related costs*, pro forma wireline EBITDA would have only been down 6.8% rather than the reported 12.7%. Importantly, the company has reported that excluding consumer results related to the MCI acquisition, consumer wireline revenues advanced sequentially for the first time since 2Q05, implying that Verizon is starting to see the positive impact of its FiOS initiative.
>
> (Deutsche Bank, October 2006; emphasis added)

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Table 4. Representative Evidence for Theme 3—Divergent Implications of the Altered Evaluative Schemas for the Two Firms

Analysts (to management)	Analysts (in reports to investors)
Recommending faster adoption of new technology	*Shift in logics (toward "growth")*
"[A]re 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, Verizon conference call, October 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." (Credit Suisse, January 2007)
"[W]ould you consider accelerating your fiber build . . . [e]specially to capture share now while there are still more voice subs left?" (Qwest conference call, May 2008)	"Although we had previously discounted the potential impact on the share price from FiOS . . . we believe it will increasingly become a meaningful contributor to overall consumer ARPU while helping lower access line declines and eventually contributing more meaningfully to consumer wireline revenue growth." (Deutsche Bank report on Verizon, January 2008)"
Focus on new technology metrics, optimism on new technology	"Solid 1Q07 results; FiOS continues to ramp: Verizon reported solid 1Q07 results with a strong top-line offsetting slightly lower than expected margins." (Deutsche Bank, April 2007)
"The FiOS video numbers are a little bit below our expectations. Can you give us a sense of how you expect that to trend in the second half and maybe '09 versus '08, given the new promotions and new markets you guys are opening up?" (Verizon conference call, July 2008)	"Despite the soft wireline margins, there are some encouraging signs on FiOS. Net add and penetration stats continue to impress." (Morgan Stanley report on Verizon, April 2008)
Questioning lack of new technology investment	*New logic: Questioning the slower pace of new technology investment for Qwest*
"[O]n 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." (Verizon conference call, April 2009)	"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, November 2006)
	"[W]e 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 report on Qwest, February 2007)
	"Risks [to valuation] include . . . if the video roll-out is slow, the ability to mitigate losses to cable will be constrained." (Deutsche Bank reports on Verizon, April and October 2008)
	New rules: New technology metrics of peers pressure Qwest
	"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." (Credit Suisse, October 2008)

> 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.[16]
> (Credit Suisse, January 2007)

> Solid 1Q07 results; FiOS continues to ramp: Verizon reported solid 1Q07 results with a strong top-line offsetting slightly lower than expected margins.
> (Deutsche Bank, April 2007)

> Positive Notables: FiOS penetration is increasing faster.
> (Credit Suisse, 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.
> (Credit Suisse, July 2008)

The increasing convergence in the analysts' positive views of FiOS are also apparent as even Morgan Stanley (the most negative of the three analysts in our previous theme) becomes more optimistic:

> Despite the soft wireline margins, there are some encouraging signs on FiOS. Net add and penetration stats continue to impress. (Morgan Stanley, April 2008)

Analysts' comments during conference calls similarly suggest that they have begun to evaluate Verizon's strategy to respond to the technological change as a growth opportunity, consistent with management's reframing. Their focus shifts to how Verizon might roll out FiOS even faster, despite the costs:

> [A]re 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)

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> The FiOS video numbers are a little bit below our expectations. Can you give us a sense of how you expect that to trend . . . given the new promotions and new markets you guys are opening up?
> (Analyst comment, Verizon conference call, July 2008)

> There's been a lot of talk about your FiOS build plans here, and I note that Wireline CapEx was down about 22% year-over-year . . . . Perhaps you could . . . clarify your . . . build year-to-date and your build plans for the rest of the year and what's going on there? And then, on the FiOS ARPU, up about 5%, what's driving that? Is that changes in the mix, is that price increases? And where do you see that going?
> (Analyst comment, Verizon conference call, April 2010)

Negative Reactions to Qwest's Persistence with a Conservative New Technology Strategy. As analysts' evaluative schemas shift to an increasing focus on growth metrics and logic, there are now even greater concerns about Qwest. While Qwest's lack of large investment in fiber technology is aligned with the traditional income-oriented schema illustrated in our initial themes, and was previously lauded by analysts, one analyst now cautions *against* buying Quest's stock, noting concerns that Qwest is not responding effectively to the technological change. This analyst's shift in preference for incumbents that are investing *more* further reveals a change in the evaluative schema of the category:

> [W]e 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. (Deutsche Bank report on Qwest, February 2007)

Toward the end of 2008, analysts further speculate on whether Qwest could pursue a strategy similar to Verizon's. Qwest's potential investments are no longer questioned, possibly as Verizon's actions have spurred the legitimacy of Qwest's subsequent actions. The analysts even appear to be "ahead" of Qwest, making recommendations and suggestions that go beyond the firm's stated or intended strategies. Moreover, the assumptions that analysts use for justifying these recommendations are derived from Verizon's and AT&T's growth strategies and now appear to create pressure for Qwest to pursue growth:

> 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 . . . . [W]e 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.
> (Credit Suisse, October 2008)

Additionally, rather than questioning the firm's investments to respond to the technology, analysts now question Qwest's *slow* introduction. Similarly, rather than questioning the bundled strategy that includes video, analysts become more concerned about the *absence* of a video strategy:

> [W]ould you consider accelerating your fiber build . . . [e]specially to capture share now while there are still more voice subs left?
> (Analyst question, Qwest conference call, May 2008)

> [O]n 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 conference call, April 2009)

Even as Qwest continues its cautious introduction of a fiber network, one analyst models a scenario under the heading "Bull Case" where he assesses the potential for growing revenue:

> Scenario Summaries: Bull Case . . . Top Line Decline Moderates. . . . Qwest's successful fiber to the node (FTTN) rollout allows it to be more competitive vis-à-vis cable competition, helping improve retention and stabilizing RGU losses. (Morgan Stanley, February 2010)

Further evidence of a changed evaluative schema now applied to Qwest appears as analysts highlight the importance of revenue growth. Again, this contrasts with earlier reactions, when analysts were negative toward using cash for investments and positive toward returning cash to shareholders.

> Where we differ: Although we find recent cost cutting admirable (cash opex fell 12% Y/Y in the first nine months of 2009), we continue to believe that replicating this will be very difficult in 2010 and beyond. We believe that reversing the current revenue trends is key; we expect telecom revenue to fall 6.9% Y/Y in 4Q and 6.2% in 2010.
> (Morgan Stanley report on Qwest, February 2010)

> Investment Conclusion. . . . For us, Revenue Generating Unit (RGU) growth, and its impact on revenue growth, is the bigger obstacle for the stock. Without the stabilization in RGU trends, it may be harder to attract longer-term investors.
> (Morgan Stanley report on Qwest, February 2010)

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By 2009, the income-oriented framing of Qwest's strategy no longer aligns with analysts' expectations. While Qwest's management continues to stress its success in keeping costs low, analysts—in a marked change from back in 2004—now highlight their expectations of increased investments for growth.

> *Management's statements show a focus on lowering costs and capital investments:*
>
> Our results this quarter reflect our priority of managing the business for free cash flow, including disciplined margin.
>
> (Management presentation, Qwest conference call, April 2009)
>
> The company will continue offsetting revenue pressures with productivity and other cost saving initiatives.
>
> (Management presentation, Qwest conference call, April 2009)
>
> We have maintained profitability in the face of challenging top line conditions through diligent cost management, and we will continue to improve productivity and attack the cost drivers of the business.... Adjusted free cash flow for the quarter was $657 million, nearly a $200 million improvement from prior year levels. The biggest contributor to these results were lower capital spending where we remain disciplined.
>
> (Management presentation, Qwest conference call, July 2009)
>
> [I]n keeping with our philosophy of providing tangible returns to shareholders, we paid nearly $275 million in dividends in the first half of the year. On slide 18, you can see that adjusted free cash flow for the quarter was $657 million, up from $460 million in the same period last year. The majority of the improvement was the result of lower capital investment in the current quarter.
>
> (Management presentation, Qwest conference call, July 2009)
>
> *Analysts' questions show an interest in accelerating growth through higher capital investments:*
>
> [A]bout the FTTN deployment...Is this something you can roll out to a substantial portion...over the next couple of years? And is there an argument to actually take the CapEx and accelerate it rather than take it down $100 million as you have done?
>
> (Analyst question, Qwest conference call, July 2009)
>
> [O]n the cash and CapEx question, obviously, we are running ahead on the cash relative because we're running behind on CapEx this year. It sounds like there's a continued interest in the fiber to the node strategy....Is there a desire to maybe redirect some of that cash, if not to buybacks to the capital side of the equation to try to influence the top line?...So does that cash potentially get reinvested in the CapEx line in 2010?
>
> (Analyst question, Qwest conference call, October 2009)
>
> [G]ive us an idea, looking at some of the video ads and broadband ads, a little weaker than we were looking for, was there—do you plan to market those a little more heavily? ...What are your thoughts on starting to get those businesses ramped up a little bit more?
>
> (Analyst question, Qwest conference call, October 2009)

Rather than advising firms to abandon investments and return cash to shareholders, analysts now advise firms to pursue those investments while reducing the return of cash to shareholders (consistent with a new growth logic). Importantly, this change does not arise from changes in the profitability of the investments.

The Reclassification of Qwest. As Qwest persists with its more conservative response to the technological change, analysts start comparing Qwest with companies classified as rural local exchange carriers (RLECs). The analysts note that the RLECs are focused only on wireline "access line" services and have steady short-term cash flows and no long-term growth products. As analysts do not compare Verizon with the RLECs, this marks the start of a divergence between the two companies:

> Qwest's [stock] currently trades at a 2010E free cash flow yield of 20% vs. yields of 15%–17% for *major RLECs* and 7%–9% for AT&T and Verizon.... [W]e believe the company will be able to maintain annual free cash flow of ~$1.5 billion for the next several years. ...[T]his outlook implies a 2010 FCF yield of 20%, which is among the highest in the US telecom services sector. For example, this compares to FCF yields of roughly 15%–17% for *major RLECs such as CenturyLink and Windstream* and 7%–9% for AT&T and Verizon.
>
> (Deutsche Bank, December 2009; emphasis added)
>
> [I]ts [Qwest's] dividend represents ~30% of the company's free cash flow. This *compares to dividend payout ratios of 50%+at RLECs*.
>
> (Deutsche Bank, December 2009; emphasis added)

Another analyst notes that Qwest is a hybrid between an RLEC and RBOC (see Endnote 4), suggesting that Qwest's categorization is moving away from AT&T and Verizon, toward an alternate set of firms:

> KEY POINTS: Qwest is a hybrid of RLEC and RBOC. It is more rural than AT&T and Verizon, but less so than RLECs. ...The company...[has]...assets that fall somewhere between the RLECs and the other RBOCs.... Qwest's free cash flow yield is not as attractive as some RLECs and it lacks the asset diversity and advanced network that helps the RBOCs offset declining wireline rev[enue]s.
>
> (Christopher Larsen, report on Qwest, April 2009)

Although the analysts' comments suggest that Qwest is *not* a perfect fit with the RLEC peer group, analysts

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reclassify it into this category.[17] This suggests further that the divergence between Qwest and its prior category was *even greater*, again providing evidence that the underlying evaluative schema in the prior category had changed:

> We prefer to use *a relatively high FCF yield vs. these rural peers* due to Qwest's relatively high exposure to urban areas which have a higher degree of access line erosion... we estimate that Qwest would have one of the highest FCF yields within its peer group.
>
> (Deutsche Bank, December 2009; emphasis added)

Within the new peer group, analysts' assessments of Qwest also now become more optimistic:

> Upgrading Qwest To Neutral: We are upgrading Qwest Communications from Underweight to Neutral on valuation. Since June 30, Qwest has underperformed the market by over 27%, despite reporting generally in-line results. During this same period, Qwest underperformed RLECs CenturyTel by 25%, Windstream by 29% and Frontier by 14%. Given the valuation divergence and the fact that the company is looking more attractive compared to its peers, we no longer recommend being underweight [*sic*] the stock.
>
> (Christopher Larsen, report on Qwest, November 2009)

> Updated Price Target: Our new 12-month price target of \$5.70 is a blend of three equally weighted methodologies. Our FCF-based target of \$5.11 is based on a targeted yield of 17%, which we view as conservative as it is at the low-end of the mid/high teens FCF yields among comparable RLECs.
>
> (Deutsche Bank report on Qwest, February 2010)

The same analysts who were concerned about Qwest's lack of focus on growth now view the absence of such initiatives as appropriate for the RLEC category, illuminating the divergent evaluative schema:

> Given the lack of high growth initiatives at Qwest (e.g., faster FTTN builds, video, or wireless), we are decreasing our long-term growth rate to −0.5% (from 0%), which is in-line with our view of the RLECs.
>
> (Christopher Larsen, report on Qwest, October 2009)

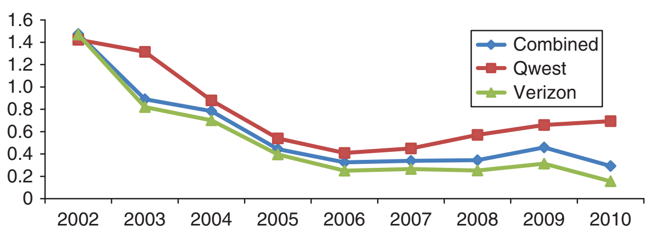
Thus, whereas the findings in our second theme highlight the shifting evaluative schemas, away from short-term income and cash flow and toward revenue growth, the findings in our third theme suggest that these new schemas, based on a logic of growth, now underpin new rules. Analysts now question the firm that fails to pursue growth, pressure it to change course, and ultimately reclassify it into a category where the evaluative schema still emphasizes income.

Content Analysis—Quantitative Trends from the Three Themes

We quantitatively illustrate how the metrics and logics shifted over time with a supplementary content analysis using two groups of keywords that we identified during our inductive analysis. Group 1 included keywords that indicated attention to old technology metrics (e.g., access lines, copper), and the income logic (e.g., repurchases, dividends, profit margins). Group 2 included keywords that indicated attention to the new technology and associated metrics (e.g., RGU, FiOS, homes passed) and the growth logic (e.g., revenue growth, penetration). We iterated through all the reports and call transcripts to determine these word stems as well as the context in which they were being used to categorize them as accurately as possible. Following prior research, we then used Linguistic Inquiry and Word Count (LIWC; e.g., Pollock et al. 2008) and added our two keyword groups to customize the existing dictionary of the software. Using LIWC, we generated the percentage of each group of keywords to the total word count, separately for the management presentation portion of the conference calls, the Q&A section of the same calls, and finally across all the analysts' reports for both firms for each calendar year. Since our objective was to illustrate how the evaluative schema shifted from income to growth over time, we then graphed how the relative proportion of Group 1 (income) keywords to Group 2 (growth) keywords varied year over year (2002 to 2010). We graphed these for both firms combined as well as individually for each firm.

Figures 1 and 2 depict these trends in the management presentation and Q&A section texts of the earnings calls, respectively, and Figure 3 illustrates the trend for the analyst reports.[18] The graph in Figure 1 illuminates management's shift in their discussion of strategies from words reflecting the traditional metrics and "income" to words reflecting new metrics and "growth," while Figure 2 shows the corresponding shifts in focus in the Q&As. These graphs display the decline in the relative use of income to growth logic keywords, generally supporting our qualitative

Figure 1. (Color online) Content Analysis of Earnings Call Transcripts—Management Presentation Section



Note. The graph displays the proportion of "income" to "growth" keywords over time.

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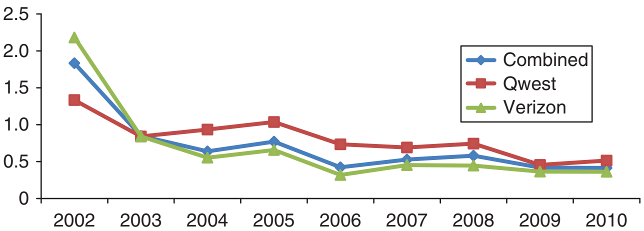
Figure 2. (Color online) Content Analysis of Earnings Call Transcripts—Question and Answer Section



Note. The graph displays the proportion of "income" to "growth" keywords over time.

induction on how the firms' management increasingly emphasized growth as they responded to technological change. By the end of the study period, the values are less than one—indicating a greater salience of growth versus income logic words. However, Figure 1 also shows differences between Qwest and Verizon: Qwest maintains a greater focus on income keywords toward the end of the study period. This is consistent with our finding that Qwest responds more conservatively to the new technology, conforming closely with the traditional schema. Figure 2 shows a similar trend in the Q&A sections of the earnings calls; however, the Qwest and Verizon graphs are closer together than in Figure 1, suggesting that despite different emphases in the two firms' presentations and framing analysts' questions reflect convergent logic. Similarly, in Figure 3, while there is increasing application of the growth logic in assessments of both firms, at the end of the study period, analysts are comparatively more focused on income in Qwest's case than in Verizon's. From our qualitative induction, it appears that this may be partly due to Qwest's continued emphasis on current income despite analysts' encouragement to pursue growth. Overall, these graphs support our induction that analysts' focus on growth versus income increases as technological change unfolds, and as incumbent firms respond with new technology strategies, accompanied by framing of those strategies. The charts also indicate that although analysts shift to a growth emphasis, they do not completely abandon income words. This suggests, consistent with our findings in Theme 2, a gradual rather than a discontinuous shift in evaluative schema.

Theorizing from Our Findings: A Model of Schema Change

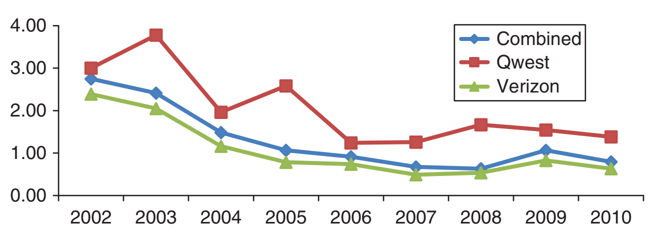
Taken together, our three themes highlight the gradual course by which firms' strategies change the institutions they are embedded in even as their strategies are shaped and constrained by those institutions. We uncover changes in analysts' evaluative schemas that constitute the lens through which incumbent behavior is viewed by analysts as more or less appropriate or legitimate. In our context, we can observe the strategies that trigger the start of the schema change as well as the pressures on firms, which persist. In Figure 4, we abstract from these themes to identify a stepwise model of schema change following technological change, highlighting the moderators which may influence the progression of the change. Thus, in our model, each step is a distinct and sequential state of the analysts' evaluative schemas with the likelihood of transition from one state to the next affected by the strength of the moderators.

In response to the technological change, some incumbent firms respond by making large investments in the new technology, while others respond more conservatively, attempting to conform to the existing schema. While performance declines for both types of firms because of technology substitution and competition, incumbent firms that respond more aggressively to new technologies are penalized as their actions cause greater deviations in performance when viewed through existing metrics and logic. Thus, to the extent that some firms respond in ways that conflict with the existing evaluative schema, analysts' reactions are negative. We capture this in the progression from Step 1 to Step 2 in Figure 4.

Next, the persistence of firms' responses that conflict with the schema and the continued decline in incumbent firms' performance are moderators that trigger analysts' search for alternative ways to evaluate the firms (transition from Step 2 to Step 3). These actions trigger the start of the change process, while also illuminating the continued constraints imposed on firms by the analysts' inertial schemas. Beyond the strategic changes undertaken by firms, the schema change is also influenced by management's framing of the firms' actions (Fiss and Zajac 2006). During this stage, management rhetoric shifts from explaining the changes as a way to respond to the performance declines from the technological change (e.g., "offsetting access line declines") to reframing strategies through a growth logic.

Persistence in strategic changes also gives rise to performance outcomes, in this case, increases in Verizon's revenue from new strategies, indicative of growth. But

Figure 3. (Color online) Content Analysis of Analyst Reports to Investors



Note. The graph displays the proportion of "income" to "growth" keywords over time.

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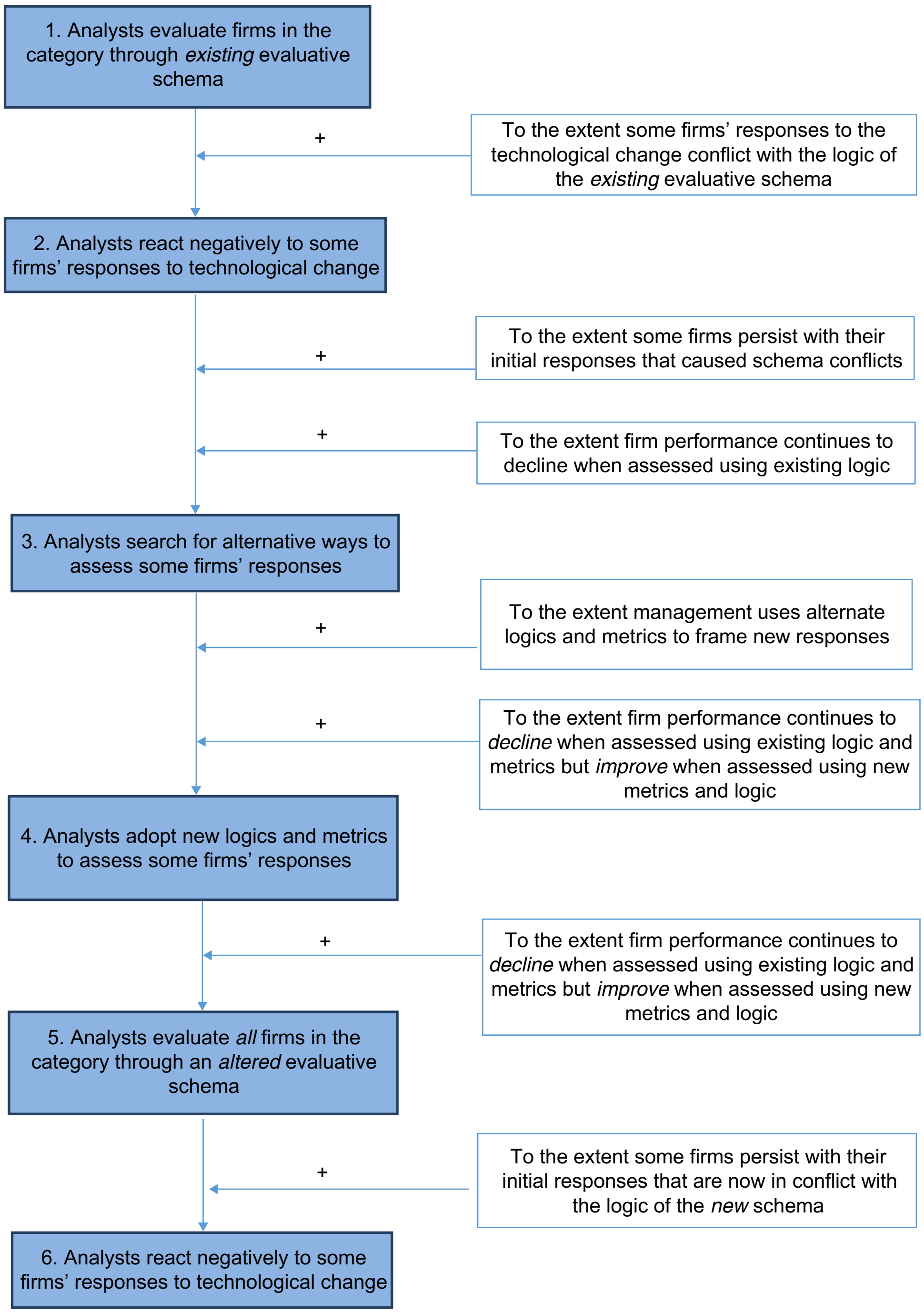
Figure 4. (Color online) A Model of Schema Change



analysts' existing metrics and logic are ineffective in evaluating these outcomes. If firms simply abandoned the new strategies in the face of conformance pressures, analysts' evaluative schemas would continue to be relevant even as performance declined relative to those frames. As evidence accumulates that the old metrics and logic are increasingly irrelevant for evaluating new strategies, analysts appear to search for new metrics, and our study captures their eventual adoption of these metrics. We propose the shift from Step 3 to Step 4 arises both with efforts by the incumbent firms to frame change favorably using new metrics and logic, and with performance improvements as analysts evaluate the outcomes through the new schema (i.e., as revenue increases but profits do not). Analysts begin to evaluate both types of firms with the new growth logic and metrics (e.g., "Is Qwest a Growth Stock?") (Step 4 to Step 5). Analysts become more positive, no

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longer questioning the new strategy and investments, as adopting new metrics appears to enhance legitimacy of the new strategy.

As the evaluative schema changes (Step 5 to Step 6), analysts pressure nonresponding firms to undertake investments to respond to the technological change. This illuminates the change in the evaluative schema associated with the category. In our study, analysts initially discourage Verizon's investments in fiber and video, but by the end of the study period, they question Qwest's lag in pursuing these investments. Analysts ultimately reclassify Qwest with a category of firms not pursuing growth strategies, evaluated using an income logic.

Discussion

We examine how analysts' evaluative schemas—and their assessments of firms' strategies—change as a radical technological change unfolds. Technological change is often challenging for firms, and past research documents why some firms fail to respond successfully (Tripsas and Gavetti 2000, Christensen and Bower 1996, Kahl and Grodal 2016). Prior work has further shown that pressures from analysts can constrain firms' responses to new technologies (Benner and Ranganathan 2012). But major technological changes often do spur important changes in firms' strategies and performance outcomes. In such settings, particularly if firms adopt new technologies and enter new businesses, we would expect corresponding changes in how they are evaluated by external audiences. While we know little about how technological change causes shifts in analysts' evaluations of firms, prior research implies that technological change will trigger immediate changes in how firms are assessed as they change to respond to a new technology (Munir 2005). In contrast, we find that technological change and firms' strategic changes do not immediately usher in changes in the evaluative schemas used by analysts. Although the schema through which analysts evaluate firms in the wireline telecommunications category *eventually* shifts, incorporating new metrics consistent with a growth logic, analysts continue to assess firms negatively using old technology metrics and an income logic for several years. While firms' initial responses to the technological change occur within a year after the technological discontinuity, the process of analyst schema change spans seven additional years, ending with analysts applying the new growth-oriented schema to Qwest, despite its persistence with a conservative low-investment strategy, and ultimately reclassifying it. Changes in the analysts' schemas are revealed in the shifts toward positive discussions of the top-line revenue growth possible from firms' new technology investments, and away from pressures on firms to abandon investments, arising from a focus on short-term income, dividends, and stock buybacks.

Our induction allows us to propose several factors that may moderate the schema change: the continued unfolding of technological change, persistence in firms' strategies to respond, management's reframing of the new strategies with growth metrics and logics, and improved performance specifically when measured with the new metrics. As the old logic and metrics are increasingly misaligned with firms' actions in the new technology, analysts begin to search for new logics and metrics, marking the start of the change in schema. As analysts adopt growth metrics and logics (and as the revenue performance tracked with these metrics improves), there is a clear shift in the acceptance of incumbent efforts to respond to the new technology. The analysts who adopt the new metrics sooner become positive about the changed strategies more quickly. Thus, strategies that were earlier questioned are increasingly viewed as appropriate as the schema shifts—analysts change from being clearly negative to being clearly positive about the same strategies, even as the performance of the strategies measured by traditional metrics continues to decline. Conversely, Qwest's conforming actions, viewed as legitimate early in the timeframe, are subsequently questioned. Analysts first encourage Qwest to pursue more aggressive growth investments, and then ultimately recategorize it with a different set of low-growth firms. Thus, we are able to trace schema change and associated reversals in legitimacy as both agency and environmental changes spur change in institutions.

Contributions

Our work makes several contributions to research. First, understanding how the evaluation of incumbents' strategies to respond to a new technology can shift from an income logic to a growth logic adds important insights to understanding how firms respond to new technologies and, moreover, how constraints from external audiences might be overcome. As firms are evaluated for growth rather than profit, they may have leeway to make the longer-horizon investments and strategic changes that are necessary to respond to a new technology (Gavetti 2012). Technological discontinuities usher in "eras of ferment," characterized by rapid innovation (e.g., Tushman and Anderson 1986); the activities that unfold within eras of ferment are more consistent with a growth logic focused on longer-horizon investments to establish new customers and revenue than with an income logic focused on profitability and returning cash to shareholders. Our study shows that the perceived legitimacy of Verizon's activities shifted not because Verizon improved performance against the traditional metrics and logics, but because analysts actually shifted how they evaluated these activities.

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Second, this research joins a growing body of work showing the importance of cognition in interpretations of new technologies and markets (Kahl and Grodal 2016, Benner and Tripsas 2012, Kaplan and Tripsas 2008). We extend prior research that has examined how categories are constituted for new industries or new technologies (Kahl and Grodal 2016, Pontikes 2012) by showing how analysts' evaluative schemas change with major environmental and strategic changes, and, relatedly, how the assessments of category members may change independent of changes in category membership. The perceived legitimacy of firms' strategic changes shifted without any improvement in the traditional dimensions of performance from the new strategies.

We also contribute to institutional entrepreneurship research that shows how agents change institutions even as they are embedded in and constrained by them. We extend this work by taking an organization-centric view, focusing on the interactions between a specific organization and the institutional agents in its environment. We show the roles of both agency and environmental change as forces that gradually create new fits and misfits and shift the evaluative dimensions of categories. Although prior research suggests firms are indeed often constrained by institutions, and research has documented the general tendency for pressures from analysts to affect firms' actions in technological change settings as well (Benner and Ranganathan 2012), we uncover factors that prevent these pressures from fully determining firms' strategic responses. Verizon successfully launched the FiOS initiative and recovered market share that it lost to cable companies, even under analyst pressure to abandon its new strategy. This seems partly due to educating analysts about the technological change and providing new metrics and logics for evaluating the strategies more favorably. Thus, firms may be able to respond to competing pressures of technological adaptation and inertial institutions by framing their strategies using alternate logics and metrics (Rhee and Fiss 2014).

Finally, our work also expands on existing research 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). There has been a growing appreciation for the differences that arise from these contrasting approaches to framing and evaluating organizational actions.

Our work also has implications for management practice. Our findings suggest that when firms are faced with radical new technologies, changing strategy to respond successfully to the new technology may be necessary but not sufficient. Firms must also change the way analysts frame and evaluate their activities, allowing them to make strategic changes while preserving legitimacy with important external audiences. Our findings suggest the ways in which managers, as institutional entrepreneurs, might proactively influence analysts' evaluations. The era of ferment following a technological discontinuity presents a window of opportunity for firms to manage selection processes to their advantage. Our findings indicate that this opportunity extends beyond influencing alliance partners and orchestrating networks, to managing the process by which analysts as important external stakeholders perceive the responses to the new technology as legitimate.

Limitations and Future Research

Some limitations of our study provide opportunities for future research. First, our study is focused on established incumbents that have been viewed as income stocks shifting toward analysts evaluating them using a growth logic. It is not clear whether our findings and model apply to firms evaluated predominantly with a growth logic schema attempting to execute strategies that are more consistent with an income logic. Future research could examine whether such effects are symmetric. An example is Apple's continued exploitation strategies in smartphones, even as investors and analysts persist with expectations that Apple, behaving like a growth stock, will achieve revenue growth from breakthrough innovations. Relatedly, the schema shifts that we observe occur with measurable performance improvements on the new metrics proposed by the firms. Future research could test whether measureable improvements are necessary, or whether framing alone can shift perceptions.

Second, while we focus on established incumbent firms, entirely new categories might also arise with the advent of new technologies (Beunza and Garud 2007, Bingham and Kahl 2013). Future research could explore the forces that influence changes in the dimensions of existing categories versus the emergence of new categories, as well as the differences for established firms versus nascent firms. We focus on technological change; future research could extend these ideas to other environmental changes that affect firms.

Third, an important factor is whether the evaluative schema for incumbent firms is affected by the entry of new firms in the industry. We do observe de novo organizations such as Vonage and Skype (Vonage became a public firm only by May 2006, five years into our study), but they are covered by different analysts. Future research could investigate whether our process model continues to be valid in contexts where new entrants are categorized and evaluated within existing analyst categories.

Finally, while our study suggests that framing and communication during periods of technological change may be crucial factors that allow firms to undertake longer-term investments, our study period and

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sample limit us from systematically examining their longer-term effects on firms' performance and competitive advantage. Future research could test whether heterogeneity in framing is further reflected in firm survival differences following radical technological change (Gavetti 2012, Adner and Helfat 2003, Helfat and Peteraf 2015). Our use of earnings conference calls and analysts' reports also limits us to studying the role of analysts as the focal external audience involved in these shifts. It may be that other actors, such as the media, also have important influences on changes in the evaluations of firms faced with radical technological change.

Acknowledgments

The authors are very grateful to Senior Editor Giovanni Gavetti for his guidance throughout the review process, and also to two anonymous reviewers whose constructive comments substantially improved this paper. They would also like to thank Paul DiMaggio, Peer Fiss, Melissa Graebner, Derek Harmon, Greta Hsu, Jiao Luo, Sarah Kaplan, Amanda Sharkey, and seminar audiences at the University of Michigan, the University of California, Davis, the 2015 Conference on Finance and Organization Theory at IESE Business School, and the 2013 Conference on Connecting Rigor and Relevance in Institutional Theory at Harvard Business School for their helpful comments on earlier versions of this paper. The authors contributed equally to this article and are listed in alphabetical order.

Endnotes

[1] The stock market categories are principally firms grouped by industry (Zuckerman 1999).

[2] Schemas comprise both classification schemas, applied to determine which firms belong in particular stock categories, and evaluative schemas, applied to adjudicate the performance of firms already classified. Our focus in this paper is specifically on *evaluative* schemas, distinguished from other types of schemas, although we refer to schemas and evaluative schemas interchangeably.

[3] The *Financial Times* noted in December 2002, "Since its launch in March, the 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" (Taylor 2002).

[4] The *Wall Street Journal* highlighted the challenges of the technological change in two articles (see Latour 2003, Brown and Latour 2004).

[5] In 2002, there were five wireline telecommunications incumbents—AT&T Corporation and the four Regional Bell Operating Companies (RBOCs or "Baby Bells")—Verizon Communications, Qwest, BellSouth, and SBC. By 2006, three of these 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 Verizon and Qwest.

[6] These reports were also sourced from Thomson One/Investext.

[7] 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.

[8] Credit Suisse is also known as Credit Suisse First Boston (CSFB). CSFB and 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 10 for the overall *Institutional Investor* rankings during these years.

[9] See Online Appendix A1 for description of these reports.

[10] Qwest announced a stand-alone VoIP product called OneFlex in November 2003, and Verizon launched VoiceWing in July 2004.

[11] Verizon launched Verizon FiOS in August 2005, and Qwest launched a fiber initiative in August 2007. Verizon's investment was approximately $20 billion, whereas Qwest's was $300 million.

[12] We streamlined this set of keywords by separating metrics that pertain to the financial method of evaluating stocks in general (e.g., free cash flow (FCF), earnings per share (EPS), etc.) and included words that clearly indicated attention to one of the two logics when analysts specifically evaluated firm strategy (e.g., access lines, dividends, copper, fiber, FiOS, revenue growth, etc.).

[13] "Delever" means to reduce leverage, i.e., pay off debt.

[14] New markets included video (as competition to cable TV) and product bundles included "triple-play" and "quadruple-play," which consisted of combinations of TV, internet, landline, and mobile phone services.

[15] Analysts use the phrase "secular changes" to refer to industry changes that generally affect all the firms in an industry.

[16] FiOS "dilution" refers to the decreased profit resulting from the cost of FiOS.

[17] See Online Appendix A2 for an excerpt from an analyst's report that shows how Qwest's classification changed over time.

[18] See the supplementary online appendix for robustness tests.

References

Adner R, Helfat CE (2003) Corporate effects and dynamic managerial capabilities. *Strategic Management J.* 24(10):1011–1025.

Agarwal R, Helfat CE (2009) Strategic renewal of organizations. *Organ. Sci.* 20(2):281–293.

Anderson P, Tushman M (1990) Technological discontinuities and dominant designs: A cyclical model of technological change. *Admin. Sci. Quart.* 35(1):604–633.

Benner MJ (2007) The incumbent discount: Stock market categories and response to radical technological change. *Acad. Management Rev.* 32(3):703–720.

Benner MJ (2010) Securities analysts and incumbent response to radical technological change: Evidence from digital photography and internet telephony. *Organ. Sci.* 21(1):42–62.

Benner MJ, Ranganathan R (2012) Offsetting illegitimacy? How pressures from securities analysts influence incumbents in the face of new technologies. *Acad. Management J.* 55(1):213–233.

Benner MJ, Ranganathan R (2013) Divergent reactions to convergent strategies: Investor beliefs and analyst reactions during technological change. *Organ. Sci.* 24(2):378–394.

Benner MJ, Tripsas M (2012) The influence of prior industry affiliation on framing in nascent industries: the evolution of digital cameras. *Strategic Management J.* 33(3):277–302.

Beunza D, Garud R (2007) Calculators, lemmings, or frame makers: The role of securities analysts. *Sociol. Rev.* 55(S2):13–29.

Bingham CB, Kahl SJ (2013) The process of schema emergence: Assimilation, deconstruction, unitization and the plurality of analogies. *Acad. Management J.* 56(1):14–34.

Brown K, Latour A (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. *Wall Street Journal* (August 25) A1.

Christensen CM, Bower JL (1996) Customer power, strategic investment, and the failure of leading firms. *Strategic Management J.* 17(3):197–218.

Corbin J, Strauss A (2008) *Basics of Qualitative Research*, 3rd ed. (SAGE Publications, New York).

DiMaggio P (1997) Culture and cognition. *Annual Rev. Sociol.* 23(1): 263–287.

Eisenhardt KM (1989) Building theories from case study research. *Acad. Management Rev.* 14(4):532–550.

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Fiss PC, Zajac EJ (2006) The symbolic management of strategic change: Sensegiving via framing and decoupling. *Acad. Management J.* 49(6):1173–1193.
Gavetti G (2012) Toward a behavioral theory of strategy. *Organ. Sci.* 23(1):267–285.
Gavetti G, Levinthal D (2000) Looking forward and looking backward: Cognitive and experiential search. *Admin. Sci. Quart.* 45(1):113–137.
Helfat CE, Peteraf MA (2015) Managerial cognitive capabilities and the microfoundations of dynamic capabilities. *Strategic Management J.* 36(6):831–850.
Henderson R, Clark K (1990) Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. *Admin. Sci. Quart.* 35(1):9–30.
Hsu G (2006) Evaluative schemas and the attention of critics in the US film industry. *Indust. Corporate Change* 15(3):467–496.
Hsu G, Hannan MT (2005) Identities, genres, and organizational forms. *Organ. Sci.* 16(5):474–490.
Hsu G, Roberts PW, Swaminathan A (2012) Evaluative schemas and the mediating role of critics. *Organ. Sci.* 23(1):83–97.
Kahl SJ, Grodal S (2016) Discursive strategies and radical technological change: Multilevel discourse analysis of the early computer (1947–1958). *Strategic Management J.* 37(1):149–166.
Kaplan S, Tripsas M (2008) Thinking about technology: Applying a cognitive lens to technical change. *Res. Policy* 37(5):790–805.
Kennedy MT (2008) Getting counted: Markets, media, and reality. *Amer. Sociol. Rev.* 73(2):270–295.
Labianca G, Gray B, Brass DJ (2000) A grounded model of organizational schema change during empowerment. *Organ. Sci.* 11(2):235–257.
Latour A (2003) Internet phone service threatens industry's giants. *Wall Street Journal* (November 28) B1.
Levinthal D (1997) Adaptation on rugged landscapes. *Management Sci.* 43(7):934–950.
Lounsbury M, Rao H (2004) Sources of durability and change in market classifications: A study of the reconstitution of product categories in the American mutual fund industry, 1944–1985. *Soc. Forces* 82(3):969–999.
Munir KA (2005) The social construction of events: A study of institutional change in the photographic field. *Organ. Stud.* 26(1): 93–112.
Oliver C (1991) Strategic responses to institutional processes. *Acad. Management Rev.* 16(1):145–179.
Pollock TG, Rindova VP, Maggitti PG (2008) Market watch: Information and availability cascades among the media and investors in the U.S. IPO market. *Acad. Management J.* 51(2):335–358.
Pontikes EG (2012) Two sides of the same coin: How ambiguous classification affects multiple audiences' evaluations. *Admin. Sci. Quart.* 57(1):81–118.
Rhee E, Fiss P (2014) Framing controversial actions: Regulatory focus, source credibility, and stock market reaction to poison pill adoption. *Acad. Management J.* 57(6):1734–1758.
Rosa JA, Porac JF, Runser-Spanjol J, Saxon MS (1999) Sociocognitive dynamics in a product market. *J. Marketing* 63(4):64–77.
Taylor P (2002) Get me a line online: Conventional phone services have remained unrivalled by net-based offerings—until now. *Financial Times* (December 24) 7.
Tripsas M (2009) Technology, identity, and inertia through the lens of "The Digital Photography Company." *Organ. Sci.* 20(2):441–460.
Tripsas M, Gavetti G (2000) Capabilities, cognition, and inertia: Evidence from digital imaging. *Strategic Management J.* 21(10/11): 1147–1161.
Tushman ML, Anderson P (1986) Technological discontinuities and organizational environments. *Admin. Sci. Quart.* 31(3):439–465.
Westphal JD, Zajac EJ (1994) Substance and symbolism in CEOs' long-term incentive plans. *Admin. Sci. Quart.* 39(3):367–390.
Yin RK (2003) *Case Study Research: Design and Methods*, 3rd ed. (Sage Publications, Thousand Oaks, CA).
Zuckerman E (1999) The categorical imperative: Securities analysts and the illegitimacy discount. *Amer. J. Sociol.* 104(5):1398–1438.
Zuckerman E (2000) Focusing the corporate product: Securities analysts and de-diversification. *Admin. Sci. Quart.* 45(3):591–619.

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