Kodak’s Surprisingly Long Journey towards Strategic Renewal:
A Half Century of Exploring Digital Transformation in the Face of Uncertainty and Inertia

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ABSTRACT
Kodak’s failure to transition from film to digital technology has become a canonical example of an established, industry-dominant firm failing in the face of an industry transition. Our analysis of the decisions made by Kodak managers in anticipation of the industry transition to digital technology points to the need for greater consideration of the role played by feedback, uncertainty, adjustment costs, and luck in technological transitions. Far from being locked into Kodak’s identity as a film manufacturer or a photography company, its managers anticipated technological change and invested broadly in a range of strategic alternatives that could have allowed Kodak to weather the technological transition. Understanding why these efforts fell short of staving off the company’s demise is critical for informing future decision-making.
Why do incumbents fail in technological transitions? In answering this question, scholars have focused on the role of organizational inertia in incumbent failure, arguing that an incumbent’s success in an existing business can hinder its transition to a new technology. In unpacking the implications of inertia for incumbent failure, scholars have documented economic, organizational, and cognitive antecedents of inertia. The economic antecedents include a disincentive to invest in a potentially cannibalizing new technology (e.g., Arrow, 1962; Henderson, 1993; Reinganum, 1983, 1989). The organizational antecedents include resource allocation processes and R&D routines that favor existing technologies (e.g., Ahuja, Lampel and Tandon, 2008; Gilbert, 2005; Tushman and Anderson, 1986). The cognitive antecedents include continuing to apply mental models rooted in the firm’s competencies, identity, and business model to the new technology (e.g., Henderson and Clark, 1990; Tripsas and Gavetti, 2000).

Kodak’s failure to transition from film to digital technology has become a canonical example of an established, industry-dominant firm failing in the face of an industry transition with both practitioner and academic accounts attributing Kodak’s failure to organizational inertia (e.g., Ansari and Krop, 2012; Benner, 2010; Binns et al., 2014; Josephy et al. 2017; Kaplan and Henderson, 2005). In this view, Kodak underestimated the likelihood of digital photography replacing film, underinvested in digital technology, and failed to develop relevant new competencies. However, this understanding emerged in absence of a systematic analysis of Kodak’s experience with digital transformation that would explicitly consider to what extent organizational inertia characterized Kodak’s behavior in the lead up to the industry transition. Yet, such analysis is essential for learning from the experience of one of the largest firms to have ever failed in a digital transformation of a knowledge-intensive industry. A close examination of Kodak’s experience could further the understanding of incumbent failure in industry transitions.
In this paper, we undertake a systematic study of Kodak’s decision-making from its earliest efforts in digital technology in the 1960s and 1970s through its bankruptcy in 2012. Our extensive research draws on a comprehensive combination of primary and secondary sources that include the company’s internal documents such as organizational charts, speeches by the company executives, employee newspaper, and technical reports on individual technologies as well as letters to the shareholders, annual reports, and SEC filings. Our secondary sources include the coverage of Kodak in major newspapers, general interest business magazines, trade press, as well as financial analyst reports. We supplemented our analysis of these archival materials with semi-structured interviews with 23 executives and technologists, representing different functional perspectives and different levels in the organizational hierarchy whose work experiences with the company averaged 23.7 years. Our analysis of the archival sources and interviews allowed us to arrive at a rich nuanced contextual understanding of the contingencies that shaped the paths Kodak managers considered and pursued with respect to digital technology.

We find that instead of being blindsided by the impact of digital technology, Kodak began working with wireless transfer of images in the 1950s and by 1970 committed to incorporating electronics in its cameras. As early as 1978, Kodak forecasts anticipated the replacement of film by digital technology in the 2000s. Kodak leadership addressed the threat of such replacement with a combination of actions aimed at participating in the digital future. These actions included early and significant investment in R&D and development of digital capabilities while extending the economic viability of the film franchise and grappling with the timing of the digital transformation. We find that Kodak developed and commercialized multiple products that bridged the film and digital technologies before the demand for digital photography emerged starting with a 1976 Ektaprint copier, which was the first product in the industry to incorporate a
The letters to the shareholders in Kodak’s annual reports describe dozens of digital products commercialized in the 1980s, 1990s and 2000s. Top managers’ discussion of these products in the annual reports attests to the products’ prominence in managerial decision-making. Moreover, in addition to investing in the development of new products based on digital technologies, Kodak managers also attempted a range of corporate development initiatives, that included incubating start-ups, pursuing diversification (e.g., acquiring a pharmaceutical company), divestitures of non-imaging businesses (e.g., Eastman Chemical), strategic alliances and even actively soliciting acquisition bids for Kodak itself.

Our systematic study of Kodak’s half a century evolution into a digital enterprise points to a theoretical puzzle in as much as over the period we consider, Kodak managers engaged in purposeful transformation efforts that are consistent with the guidance in the academic literature on incumbent adaptation to technological change and strategic renewal. Specifically, scholars in this tradition have argued that surviving industry transitions requires incumbents to balance their efforts to exploit existing technologies with the need to explore emerging technological developments (e.g., O’Reilly and Tushman, 2003; Taylor and Helfat, 2009) by engaging in strategic renewal to navigate emerging industry discontinuities (e.g., Agarwal and Helfat, 2007). Such renewal can take the form of investing in R&D (e.g., Madsen and Leiblein, 2010), regular introduction of new products (e.g., Dougherty, 1992b; Helfat and Winter, 2011; Turner, Bettis and Mitchell, 2010), and innovation through acquisitions (e.g., Karim and Mitchell, 2000; Vermeulen and Barkema, 2003; Zhao, 2009). Scholars have also argued that senior leadership changes can facilitate incumbent firm adaptation to environmental changes (e.g., Henderson, Miller, and Hambrick, 2006; Tushman and Rosenkopf, 1996). In the decades leading-up to the industry transition, Kodak invested heavily into R&D of digital technologies, commercialized
numerous new products, pursued multiple acquisitions to move the company away from its reliance on film and acquire new digital capabilities, and even hired two outsider CEOs with proven track records in electronics.

So why did these efforts fall short of staving off Kodak’s demise? Despite recognizing the shift to digital technology, investing over multiple years in developing the relevant capabilities, and successfully commercializing digital products, why did Kodak succumb to the “inevitable”? Kodak’s strategic renewal efforts constituted an elaborate process that unfolded over decades, involved multiple leadership teams, and a broad array of strategic initiatives that explicitly recognized the limited shelf life of Kodak’s core film photography business and embraced the opportunities presented by digital technologies.

Our in-depth analysis of this process offers an opportunity to consider ambiguous feedback, the uncertain timing of the environmental change, adjustment costs, and luck as factors beyond inertia that may impact incumbents’ chances of surviving a technological transition. For much of the period we study, Kodak invested in digital photography while the demand for digital photography was yet to materialize. This meant that Kodak’s digital product development was met with negative feedback in the form of financial losses associated with lack of demand for digital technology, compared to the positive feedback in the form of profits and growing sales for photographic film. Another factor was adjustment costs inherent in transitioning from a business model in which high-margin consumables played an important role to one in which the extent of their role was uncertain. Finally, luck played a role in undermining Kodak’s renewal efforts. For instance, Kodak’s acquisition of Sterling Drug set off a consolidation wave in the pharmaceutical industry, rendering Kodak’s efforts to leverage R&D scale more challenging.
Kodak’s experience with technological transition has important implications for the challenges faced by other large firms because the emergence of new technologies continues to upend today’s industries. Moreover, as in Kodak’s case, the impact of a new technology on an established industry might be hard to predict ex-ante. For instance, the use of teleconferencing technologies is transforming industries ranging from real estate (e.g., King, Ruiz, and Putzier, 2022) to healthcare (e.g., Schwamm, 2014). Furthermore, surviving one wave of technological transformation does not guarantee surviving the next as attested by the experience of the newspaper industry in the United States that was transformed first by the arrival of television stations in the 1950s (e.g., Park, Seamans and Zhu, 2021) and then the Internet in the late 1990s-early 2000s (e.g., Seamans and Zhu, 2014). Similarly to the challenge Kodak faced in anticipating and responding to the impact of digital technology on its business, today’s large firms are challenged to anticipate and respond to the changes in their industry stemming from technologies that include 3D printing, artificial intelligence, big data, blockchain, and self-driving cars to name a few examples.

By offering a novel account of how managers at Kodak pursued strategic renewal in anticipation of the transition to digital technology, the study sheds new light on an important yet overlooked aspect of technological transitions. In so doing, it broadens the imagery of Kodak’s efforts from one in which the firm’s managers were blindsided by the onset of the digital transformation due to inertial forces to one in which the environmental feedback associated with a delayed materialization of demand for digital photography together with a realistic assessment of the adjustment costs necessary to transition to a new, less profitable, business model triggered an ongoing search for viable alternatives. This search was made more difficult by the digital
photography business model requiring the development of radically different capabilities and the uncertainty with respect to the timing of the new technology’s adoption.

**INERTIA, STRATEGIC RENEWAL, AND UNCERTAINTY**

Incumbent failure in technological transitions is a phenomenon of long-standing interest to organizational scholars. In exploring this phenomenon, scholars have considered how different aspects of incumbents’ success can hinder the incumbent adaptation to technological change. Economists have considered the role played by incentives in inhibiting incumbents’ response to emerging technological threats (e.g., Kaplan and Henderson, 2005). This perspective explores the conditions under which incumbent firms reaping monopoly profits from products based on an existing technology might lack the incentives to invest in a new technology (e.g., Arrow, 1962). These conditions include the extent to which the new technology poses a threat of cannibalizing the incumbent’s existing business, the likelihood of incumbents’ investment enabling the replacement of the existing technology by the new technology and hastening such replacement. Theoretical work has suggested that uncertainty with respect to the likelihood of new technology adoption may attenuate the incumbents’ disincentive to invest in the new technology (e.g., Reinganum, 1983, 1989).

In addition to incentives, organization scholars have also sought to understand the difficulties of large firms dealing with external changes, arguing that the survival of large organizations is predicated on their ability to deliver consistent results to their stakeholders. This ability is grounded in developing replicable processes and routines which both help the organization meet the needs of the existent customers and make it difficult for the organization to change in response to environmental changes: “individual organizations are subject to strong
inertial forces, that is, that they seldom succeeded in making radical changes in strategy and structure in the face of environmental threats” (Hannan and Freeman, 1984, p. 149). Specifically, these inertial forces slow down organizational response to environmental change:

Learning and structural inertia must be considered in a dynamic context. Can organizations learn about their environments and change strategies and structures as quickly as their environments change? … In particular, structures of organizations have high inertia when the speed of reorganization is much lower than the rate at which environmental conditions change. Thus the concept of inertia, like fitness, refers to a correspondence between the behavioral capabilities of a class of organizations and their environments. (Hannan and Freeman, 1984, p. 151)

Examining these forces at the organizational level, strategy scholars have considered how a range of incumbents’ strengths in their existing market can hinder their adaptation to the new technology. A firm’s core competencies that enable its success in existing technologies can become core rigidities preventing the firm from developing capabilities in new technologies (e.g., Ahuja and Lampert, 2001; Danneels, 2010; Dougherty, 1992a; Leonard-Barton, 1984). Evaluating the new technology using existing financial metrics can lead to an underappreciation of the technology’s potential (e.g., Baldwin and Clark, 1994; Christensen, Kaufman and Shih, 2008) with the firm’s established resource allocation routines limiting investment in new technologies (e.g., Gilbert, 2005). This underinvestment can be further exacerbated by financial analysts penalizing a firm’s efforts to experiment with new technologies (e.g., Benner, 2010, Noda and Bower, 1996). Finally, even if the new technologies are developed, the focus on the needs of existing customers (e.g., Christensen, 1993; Christensen and Bower, 1996; Rosenbloom, 2000) and lack of access to complementary assets relevant to the new technology (e.g., Teece, 1986; Tripsas, 1997) can hinder the commercialization of new technologies.

Strategy scholars have also unpacked the cognitive antecedents of organizational inertia, suggesting that managers’ mental models rooted in existing technology may hinder their ability
to anticipate the impact of the new technology on the firm’s existing business (e.g., Henderson and Clark, 1990). Scholars have also argued that fixed ideas about the firm’s identity (e.g., Tripsas and Gavetti, 2000), managerial commitment to the existing business model (e.g., Chesbrough, 2002; Gilbert, 2006; Kapoor and Klueter, 2015) and access to complementary assets compatible with the existing technology (e.g., Wu, Wan, Levinthal, 2014) can translate into challenges in commercializing innovations based on the new technology.

In parallel with the studies of the challenges faced by incumbents in technological transitions, the research on exploration and strategic renewal points to investments in incremental renewal efforts as helping companies survive and thrive through large discontinuous changes (e.g., Agarwal and Helfat, 2009). Such investments can take the form of R&D activities (e.g., Madsen and Leiblein, 2010), regular introduction of new product generations (e.g., Dougherty, 1992b; Helfat and Winter, 2011; Turner, Bettis and Mitchell, 2010), and innovation through acquisitions (e.g., Karim and Mitchell, 2000; Vermeulen and Barkema, 2003; Zhao, 2009). To protect the emergent technology development from competition for resources within large firms, organizational ambidexterity scholars have advocated for the establishment of separate organizational units dedicated to the experimentation with new technology (e.g., Andriopoulos and Lewis, 2009; Danneels, Verona, and Provera, 2018; Westerman, McFarlan, and Iansiti, 2006). Taken together, the studies of organizations that successfully navigated technological transition by pursuing strategic renewal point to the importance of combining the management of a firm’s existing business (i.e., exploration activities) with purposive continued investment in new technologies (i.e., exploration activities).

The few scholarly accounts that have considered Kodak’s digital transformation have done so by focusing on a specific mechanism such as the role of securities analysts (Benner,
2010) or viewing the transformation from a perspective of a single theoretical lens such as institutional theory (Munir, 2005). These accounts while informative, have offered a somewhat limited depiction of the rich context around decision-making by Kodak’s managers in the face of significant uncertainty. The limited scope of existing scholarship on Kodak is puzzling given that in the 1980s, the company accounted for 2% of all industrial R&D performed in the United States, employed more than 145,000 people, and even in decline, led the U.S. in the number of patents generated and held top market share in digital cameras in the mid-2000s.

Moreover, as compared to other companies of similar size facing industry transitions, Kodak’s efforts to make the transition to digital technology received surprisingly limited scholarly attention. For instance, the difficulties Nokia faced in its transition from feature phones to smartphones have been covered in more than 80 articles and books including articles in top management and business history journals as well as peer-reviewed books (e.g., Aspara et al., 2013; Doz and Wilson, 2017; Laamanen et al., 2016; Lamberg et al., 2021; Van Rooij, 2015; Vuori and Huy, 2016, 2022). By contrast, management and business history scholars have provided only a somewhat cursory view of Kodak’s attempts to grapple with the industry transition. In this article we address the gap in the literature’s understanding of Kodak’s experience with digital transformation.

**SOURCES AND METHODS**

Historical case study is a method well-suited for documenting the nuanced patterns of causality in firms’ innovation processes (e.g., Cattani, Dunbar, and Shapira, 2017; Graham and Shuldiner, 2001). We began our research by interviewing key decision-makers at Kodak from R&D

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2 Peak employment at Smith Corona was 5,300 people; Polaroid—21,000 people, Fujifilm—81,000 people; and Nokia—132,000 people.
scientists who developed digital technology to middle managers who championed the commercialization of the developed technologies and senior managers who sought to balance the stewardship of the existent film franchise and the need to invest in the future. We used theoretical sampling to ensure that our interviews represented a variety of functional backgrounds, e.g., R&D, demand forecasting, finance, and legal as well as levels in organizational hierarchy that ranged from project manager to President and CEO.

As we were interested in covering managerial decision-making over a multidecade period, we sought to interview decision-makers whose tenure at Kodak spanned overlapping but different time periods. Figure 1 displays the interviewees collective experience with Kodak.

[Insert Figure 1 about here]

We followed a semi-structured interview protocol. The interviews took place on Zoom or via phone. We recorded and transcribed the interviews and shared our transcripts with the interviewees to resolve any ambiguities. Altogether, we interviewed 23 key decision-makers whose tenure at Kodak averaged 23.7 years and exchanged emails with several others. Table 1 displays the names and last three positions at Kodak our interviewees held.

[Insert Table 1 about here]

The interviews offer a glimpse of the world-class talent Kodak employed. For instance, the R&D scientists we interviewed included a number of digital technology pioneers—Steve Sasson, the inventor of the first portable digital camera, Ken Parulski—architect of Kodak’s first and second generation consumer digital still cameras: Apple QuickTake 100, Apple QuickTake 150, and the Kodak Digital Science DC40 camera; Majid Rabbani—developer of digital image compression algorithms and one of the founders of the JPEG standard, Edward Giorgianni—expert in digital color image management; and Scott Brownstein—the inventor of the Photo CD and photo kiosk
technology. Our interviewees shared details of decisions and meetings that related to Kodak’s approach to digital transformation.

To address the possibility of retrospective bias or omissions in the interviewees’ recollections, we complemented the interviews with extensive research of the archival materials available about Kodak. In analyzing the available primary sources, we started by collecting the annual reports for 1958-2006 (the last year the reports were available) as well as the annual 10K filings Kodak submitted to the Securities and Exchange Commission for 1968-2012 (the year of Kodak’s bankruptcy)\(^3\). Annual reports and letters to the shareholders have long been used in the management scholarship to understand top managers’ beliefs, priorities, and interpretations of current events (e.g., Bowman, 1984; Eggers and Kaplan, 2009; Fiol, 1995; Kiss and Barr, 2015).

We have also accessed collections of executives’ speeches, organizational charts, and the employee newspaper from the Kodak archives in the special collections at the University of Rochester Library and the George Eastman Museum in Rochester, NY. We further supplemented our collection of primary sources by asking each of the interviewees to share with us any reports or documents from their time at Kodak relevant to our research project. The materials our interviewees shared included technical and marketing reports on specific technologies, the interviewees’ contemporaneous and ex-post notes on their work at Kodak, including forecasting models of digital technology adoption, as well as the interviewees’ and their colleagues’ reflections on Kodak’s experience with digital transformation.

Our analysis of the secondary sources included financial analyst reports obtained from Thomson Reuters, articles in major newspapers, (e.g., Wall Street Journal, New York Times); business magazines (e.g., Business Week, the Economist, Forbes, Fortune), trade press (e.g.,

\(^3\) We were unable to locate copies of 10-K reports for years prior to 1968 from either government or private archives.
Modern Photography, Popular Photography) and articles in academic journals. We supplemented these sources with books about the history of Kodak (e.g., Ackerman, 1930; Brayer, 1996; Collins, 1990; Swasy, 1997; West, 2000) as well as more recent self-published accounts of Kodak watchers and employees (e.g., Larish, 2012; Paxton, 2020; Snyder, 2013). To compare Kodak’s experience with that of its competitors, we also analyzed annual reports, trade press articles and books on the history of Fujifilm, Polaroid, and Xerox (e.g., Fierstein, 2015; Kearns and Nadler, 1992; Komori, 2015).

Our analysis of these sources reflects three key aspects of an historical approach: source criticism, triangulation, and hermeneutics (Kipping, Wadhwani, and Bucheli, 2014). Source criticism entails the need to establish both the authenticity (time and source of production) and validity (the reliability of the informants producing the documents) of the sources. Triangulation requires drawing on multiple written sources to establish a more accurate understanding of the relevant context, overcoming the biases in the individual sources. Finally, hermeneutics necessitates interpreting the sources with an understanding of how the production of the source material fit into the historical context.

Following these guidelines, we started by carefully establishing the provenance of each document and contacting the documents’ authors to resolve any ambiguities, such as acronyms, we encountered in the archival documents. We triangulated the reports about the focal events of interest across multiple sources. We then read the available materials about Kodak’s history before the digital transformation and contemporary business press to understand the broader context for the Kodak managerial decision-making processes. Finally, in developing the historical case study, we iterated between the narrative emerging from the case and the source
materials to inductively derive the main factors that shaped managerial decision-making with respect to industry transition.

In analyzing the source materials, we followed the methods of historical analysis seeking to develop a narrative that most closely fit the facts. In this process, we started by developing a timeline of the key decisions in Kodak’s recent history. Altogether we identified 24 decisions between 1972 and 2007 that included leadership changes (5), key product introductions (10), and corporate development initiatives (9). Figure 2 contains a timeline of the decisions.

[Figure 2 about here]

In developing this timeline, we drew on the letters to the shareholders between 1958 and 2006 as an important source of information about the senior managers’ priorities selecting decisions that were highlighted in the letters. We selected this time period because Kodak did not publicly discuss its work on electronics until the 1960s and 2006 was the last year for which the company produced an annual report featuring a letter to the shareholders.

We identified a leadership change decision if the event was unexpected or if multiple contenders for the CEO or President position were identifiable from the annual reports. For instance, we classified the promotion of Walter Fallon to CEO in 1972 as a decision because it broke with Kodak’s tradition of promoting the person in the President position (at the time it was Gerald Zornow) to CEO. We did not classify the promotion of Colby Chandler to CEO in 1983 as a leadership change decision because Chandler had been the heir apparent to Fallon since 1976 when he was appointed Kodak’s President with no other obvious contenders in the running. For leadership change decisions, we supplemented our reading of the letters to the shareholders with contemporaneous business press to get a richer description of the decision-making process within Kodak than what the annual reports offered.
For key product introductions, we looked for products that were featured at the top of the management’s discussion of new product development in the letters to the shareholders and were described as innovative, leading, or revolutionary, e.g., “In February 1982, we announced a new era in amateur photography: the coming of the Kodak disc camera and Kodacolor HR disc film” (Eastman Kodak Company, 1982, p. 1). Our goal was to identify products that were not just innovative from a technological perspective, but were highlighted by the managers as important signifiers of Kodak’s overall direction as exemplified by Kay Whitmore’s discussion of the Photo CD product below:

From my perspective as the company’s new Chief Executive Officer, the most significant development of the past year was to declare in no uncertain terms our strategic intention to be the world leader in imaging and then, with the announcement of Photo CD and new digital copier-duplicators, to show the world that Kodak has the technology, the will and the reach to realize its vision. Photo CD firmly establishes new standards of electronic image quality for television display, transmission and printing. Images captured on film and transferred to Photo CD provide quality superior to even the most advanced electronic still photography systems, while giving both consumers and professionals the convenience of digital storage, display and manipulation. In commercial applications the system’s potential is equally large” (Eastman Kodak Company, 1990, p. 2).

We did not include product introductions that did not introduce new technology, such as Kodak’s introduction of disposable cameras in 1987.

For corporate development decisions, we included major acquisitions and divestitures (larger than $1 billion) as well as organizational restructurings discussed in the letters to the shareholders.4

We used the interviews to help us make sense of sequences of decisions in the timeline and to supplement the decisions we identified from the letters to the shareholders by asking each interviewee to identify the managerial decisions that were critical to Kodak’s engagement with

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4 Appendix A contains quotes from the letters to the shareholders and supplementary sources describing each decision.
digital technology. These questions helped us identify a managerial search process not covered in the annual reports—namely the CEO’s and CFO’s efforts to identify a strategic buyer for Kodak that took place in the mid-1990s. The interviewees involved with the process shared with us the names of the potential buyers, the terms discussed, as well as their contemporaneous notes from the search process. Since the search process did not ultimately lead to an acquisition, we describe it separately from our decision timeline. After developing the timeline, we investigated how Kodak’s identity claims as expressed in the letters to the shareholders and the business descriptions in the annual SEC 10-K filings evolved over time by tracking changes in the 10-K filings descriptions of Kodak’s business.

In presenting our findings, we start with a historical background on the origins of the Eastman Kodak Company. We then describe the company’s efforts at developing digital technologies, the alternative pathways Kodak managers explored in addressing the digital transformation, and, finally, how Kodak’s identity evolved in addressing the digital technology.

**FINDINGS**

**Historical Background**

Kodak’s founder George Eastman filed for his first patent in 1879 and saw his Rochester, NY business evolve from making gelatin coated glass plates for the then prevalent camera design to developing and manufacturing photographic film and more user-friendly cameras, thus helping grow the market for amateur photography in the United States and around the world. In the 1870s, the then prevalent photographic technology entailed the use of wet glass plates for capturing images. In order to take photographs, amateur photographers relied on bulky equipment which included a camera (the size of today’s microwave oven), a tripod necessary to
support the camera, a set of glass plates, and multiple bottles of chemicals. Besides procuring the equipment, would-be photographers also had to acquire the chemical expertise necessary to sensitize, coat, and develop the glass plates. Eastman’s first invention—a machine to mass-produce dry glass plates coated with a gelatin emulsion—eliminated the need for amateur photographers to carry corrosive sensitizing chemicals and acquire the knowledge necessary to sensitize and coat the glass plates. However, the number of pictures photographers could take was still limited by the number of glass plates they were willing to carry.

In 1888, Eastman marketed a camera that used film instead of glass plates to capture photographic images. Introduced under the name Kodak, Eastman’s first commercially successful camera was equipped with enough film for 100 exposures. The camera was priced at $25 and could be sent back to Rochester, for developing and printing the pictures. For $10, the company would reload the camera with another 100 exposures worth of film. The introduction of the Kodak camera reduced the bulk of an amateur photographer’s equipment from a packhorse load to a box camera measuring 3 ¾ x 3 ¼ x 6 ½ inches and allowed the photographers to outsource the previously required chemical expertise to Kodak. Eastman’s advertising highlighted the ease of using the camera with the slogan: “You press the button—We do the rest.” First to market the cameras in popular press, Eastman sold more than thirteen thousand Kodak cameras in the first year following the camera’s introduction with one hundred thousandth Kodak manufactured in 1896.

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5 Another important technological advance of film vis-à-vis glass plate photography was exposure timing. While glass plate technology required subjects to pose for 30 minutes for each exposure, the film cameras eliminated the wait, enabling in-the-moment snapshots and raising privacy concerns. An early legal treatise concerning the right to privacy, published two years after the introduction of the Kodak camera, expressed concern that “instantaneous photography” would enable picture taking without the subject’s consent (Warren and Brandeis, 1890, p. 195).
Reflecting the box camera’s success, in 1892, George Eastman changed the name of his company from Eastman Dry Plate and Film Company to Eastman Kodak Company. Expanding beyond consumer photography, Kodak introduced X-ray film in 1896 and motion picture film in 1929, establishing a dominant position in both markets. Kodak went public in 1905 and became part of the Dow Jones Industrial Average in July of 1930.

In addition to his technological innovations in photography, Eastman also developed a novel business model—one in which the sales of a low-margin hardware product (i.e., cameras) built a customer base and, subsequently, drove the sales of a compatible high-margin consumable (i.e., film). This camera-film business model became more popularly known as razor-blade following the introduction of Gillette razors at the beginning of the 20th century. Eastman articulated his understanding of the role played by camera sales in driving demand for film and the role played by film sales in shaping the company’s profitability:

If the cameras were the only thing that produced a profit, it would be no object to sell double the number and make only the same net profit; but before the camera is dead, we ought to make at least as much from the film used in it as from the camera itself, probably more. I believe that every camera is good for at least twenty spools of film. (Eastman quoted in Ackerman, 1930, p. 116)

The insight into film’s contribution to profits drove the marketing of more affordable cameras in order to drive sales of film. In 1895, Kodak introduced its $5 pocket camera. In 1900, Eastman introduced the $1 dollar Brownie camera. The price included a camera loaded with six exposures worth of film which could be developed, printed, and mounted for 40 cents with a new roll of film costing 15 cents. In the first year, almost 250,000 Brownie cameras were sold. The camera in its different forms remained in production for nearly 80 years.

Rather than using its scale to raise prices, Kodak focused on offering low-cost easy-to-use cameras which expanded demand for the company’s film products that included film-
processing equipment.6 Kodak distributed its cameras through drugstores and other mass-market outlets, making its products easily accessible. From the 1890s onwards, Kodak invested in international distribution of its products, forming subsidiaries in the U.K., Germany, France, and Australia.

To encourage more film sales, Eastman Kodak advertised new uses for photography that allowed consumers to take advantage of the compact size and the ease of use of the cameras. These included taking cameras on vacation, photographing memorable occasions as well as creating photo albums to document family histories. Kodak’s advertising sought to convince the public that no happy occasion was complete without a photographic camera (West, 2000). For decades before the arrival of Instagram and Facebook, events worth photographing were known as “Kodak moments.”

Eastman expressed his vision of the company as follows:

The manifest destiny of the Eastman Kodak Company is to be the largest manufacturer of photographic materials in the world, or else go to pot. As long as we can pay for all our improvements and also some dividends, I think we can keep on the upper road. We have never yet started a new department that we have not made it pay for itself very quickly. (Eastman, quoted in Ackerman, 1930, p. 109)

From the company’s early days, George Eastman emphasized investment in innovation as critical to the company’s success:

I have come to think that the maintenance of a lead in the apparatus trade will depend greatly upon a rapid succession of changes and improvements…If we can get out improved goods every year nobody will be able to follow us and compete with us. (Eastman 1896, quoted in Brayer, 1996, p. 34)

Cognizant of the role science would play in the development of photography, Eastman hired the first research chemist in 1896 and in 1912 founded Kodak Research Laboratories and funded the

6 Starting with the 1895 pocket cameras, the camera design allowed the customers to load the film into the camera in daylight which meant that customers no longer had to send the camera back to the factory for processing. This change in camera design facilitated the emergence of the photofinishing industry which processed the film locally.
work of 20 people with an annual budget of $53,797 (Eastman Kodak, 1977, p. 18). Eastman
expressed his expectations of the research laboratories as “Your mission is the future of
photography” (Collins, 1990, p. 117). Over the decades that followed, the company invested
heavily in R&D regularly introducing new products for amateur and professional photography.

**Leading Development of Digital Technology**

Beyond products targeted at amateur and professional photographers, from WWII onwards
Kodak also worked on federal government projects which involved supplying the photographic
equipment to surveillance satellites and space missions. Kodak’s work with surveillance
satellites in the 1950s introduced the possibility of filmless transfer of images. Rather than
sending film to earth to be processed, the E-1 Camera system, invented for the SAMOS satellite
program in 1956, developed the film in space and scanned in the images in analog form for
subsequent transmission to Earth using radio signal.

While in today’s world we take the wireless and filmless transfer of images for granted,
the design of the E-1 Camera represented a non-trivial increase in problem complexity for Kodak
scientists as attested to by a recently declassified history of the satellite program:

> Exposing the film, transporting it, and processing it presented few difficulties compared
to the enormously complex and time-consuming tasks of electronically scanning each
negative frame, transforming its photographic content into analog signals, transmitting
those signals to ground stations, and reforming the images in those stations. (Perry, 1973,
p. 11)

The work with the space programs offered Kodak early exposure to the evolving field of
electronics including the “manufacture of miniaturized electronic circuits that can withstand
shock 20,000 times the force of gravity” and “the design of systems that combine the capabilities
of photography, optics, mechanics, and electronics” (Eastman Kodak, 1967, p. 14). Kodak also
gained experience with the manufacture of integrated circuits which would be incorporated in a range of Kodak’s product ranging from cameras to photocopiers.

In 1975, Steve Sasson, an electrical engineer in Kodak Apparatus Division research laboratory completed the prototype of the first portable electronic digital camera that was based on the coupled charger device (CCD) technology developed by Bell Labs. In a technical report describing his invention, Sasson addressed the potential of the new technology:

The camera described in this report represents a first attempt at demonstrating a photographic system which may, with improvements in technology, substantially impact the way pictures will be taken in the future. A future camera for the consumer may be envisioned as a small device capable of taking color pictures under very low light conditions. The pictures will be stored in a magnetic medium on a nonvolatile solid state memory which will be removable from the camera for playback. The picture will have a resolution at least comparable to today’s 110 film. Sound will be recorded along with the image to aid in a picture’s description. The picture, existing in electronic form, could be sent over conventional communication channels with little or no modification. Infrared, as well as visible photography would be possible with the same camera by changing optical filters. The pictures will be saved on film, tape or video disk and the camera storage medium will be reused. (Sasson, 1976, pp. 5–6)

After multiple presentations to senior management, Sasson and his manager Gareth Lloyd filed for a patent which was granted, but Kodak did not commercialize the technology due to concerns about lack of customer interest in seeing the photos on screen, the relatively low resolution of the images, and the high cost of the cameras. Figure 3 shows the differences between the resolution produced by Sasson’s 10,000-pixel camera and film-based photography.

[Insert Figure 3 about here]

The development of electronic technology at Kodak proceeded despite senior management concerns about potential cannibalization of film-based photography. The concern that the technology developed in Kodak’s labs would facilitate the cannibalization of film photography by other technologies predated Kodak’s investment in digital. In commenting on Kodak’s research on photocopiers in the 1960s, C.E.K. Mees, the founding director of Kodak’s
research laboratories, commented: “While I find the work interesting, I hate to see you doing it, since it will only help make it easier for others eventually to displace silver-halide photography” (Collins, 1990, pp. 342-343). These comments echoed the feedback Sasson’s immediate supervisor Gareth Lloyd got from the head of the Kodak Apparatus Division—Douglass Harvey. When asked whether Sasson should continue developing the digital camera prototype in the late 1970s, Harvey replied with “Yes, and I hope you will fail.” Thus, Kodak managers encouraged the research and development of electronic products while expressing misgivings about the implications of such products’ success for the company’s existing product lines.

The first digital product that Kodak brought to market was Kodak’s 1976 Ektaprint copier—the first plain paper copier that used a microprocessor (Xerox executives feared that a copier with a microprocessor would come from IBM which entered the plain paper-copying market in 1970). David Kearns who subsequently became Xerox’s CEO described his impression of the technology behind Kodak’s copier as:

> Much to our chagrin, in April 1976 Kodak introduced a recirculating document handler for its Ektaprint copier, and it looked like a first-rate product. It had a document handler that was restricted to twenty-pound paper, not anything like what Moses [Xerox’s multimillion dollar internal development effort] was trying to do, but it appeared reliable and of high quality. And it was as if the atomic bomb had been dropped at Xerox. We were dumbstruck. The Kodak machine was simpler and much less costly than Moses, and it didn’t break down much. At the time, I was on the marketing side of the company, and when I saw the Kodak machine, I realized for the first time that you could make a more reliable copier than ours. Up until then, I thought our engineers were doing as well as possible with a complex technology. (Kearns and Nadler, 1992, p. 82)

Despite having the superior technology, Kodak managers hesitated to aggressively pursue the copier market in part due to the mismatch between its business model in photography of selling

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7 The 8008 Intel chip used in the Ektaprint copier was the predecessor to the 8088 chip IBM used in the personal computer it introduced in 1981.
low-cost products to dealers and the prevalent business models in copiers of renting expensive equipment directly to customers and charging by the copy.

Absent a clear plan for how the company would make money on its digital products, Kodak managers sought to postpone the transition to digital technology in their most profitable markets: amateur photography and motion picture film. In 1981, Sony introduced MAVICA—the first prototype of an electronic still camera—widely regarded by industry observers to herald the arrival of digital age in amateur photography. One year later, Kodak responded to Sony’s introduction by demonstrating a film-to-digital photo viewer which allowed the consumers to see their photos on a TV screen. Arguably, the demonstration of Kodak’s technological prowess forestalled other manufacturers’ entry into the electronic camera market the first products in which would not be marketed until 1986.

In 1984, Fuji marketed its TV-Video System—a product that used the same idea as Kodak’s 1982 prototype. For Kodak, the film-to-digital photo viewer prototype would eventually become the basis for Kodak’s Photo CD product announced in 1990 and introduced in 1992.

While the development of the Photo CD has been retrospectively characterized as an incremental innovation (e.g., Wu, Wan, and Levinthal, 2014), contemporaries saw the introduction of the Photo CD as a major move by Kodak signaling the end of film photography:

The big blow [to film photography] came last year when eastman Kodak Co., a behemoth that can occupy just about any position in the industry it wants, introduced the Photo CD. This system, which puts a pro’s portfolio or a consumer’s snapshots on a CD-ROM, is a sure sign that yet another medium has fallen under the computer’s spell and someday will be subsumed by it (Callahan, 1993, p. 57).

In the motion picture arena, when Sony aggressively marketed its NTSC digital standard in the motion film markets, Kodak responded by developing Cineon—a product that allowed the users to scan in and edit motion-picture film using digital technology. Kodak’s product enabled
the motion picture directors and cinematographers to continue using their analog equipment and consuming analog film while getting the convenience of digital editing. Cineon also enabled the digital remastering of animation classics such as Disney’s 1937 Snow White. The introduction of Cineon allowed Kodak to extend the life of its motion picture film franchise both in the sales of negative film (i.e., the film on which the movies were originally recorded) and the positive or print film (i.e., the film, that was distributed to movie theaters to be exhibited to moviegoers). This extension was important inasmuch as motion picture film manufacturing accounted for a large percent of Kodak’s film manufacturing volume—allowing the company to spread its factory overhead over larger volumes and thus maintain lower costs (Shih, 2016).

In 1993, George Fisher, the former CEO of Motorola became the first outside CEO to lead Kodak in the company’s history. With Fisher at the helm, Kodak moved aggressively to enter the digital camera market in the 1990s, commercializing numerous award-winning products that showcased Kodak’s imaging expertise. In 1999, the first year when the worldwide sales of digital cameras crossed a million-unit threshold, Business Week compared Kodak’s DC240 digital camera to Fujifilm’s MX-1700 and Sony’s Cybershot DCS-F505, writing: “They’re all impressive examples of digital imaging technology, but the standout on pure picture quality is the Kodak” (Smith, 1999, p. 138). In explaining Kodak’s success with digital cameras, observers attributed its success to making digital photography easier for the consumers:

The Kodak digital cameras—there are five in the product line, ranging from about $200 to $400—are a hit because they help resolve significant problems that have plagued digital camera owners. These include difficulty downloading images and short battery life.” (Smith and Keenan, 2002, p. 39)

8 Prior to joining Motorola, Fisher worked at Bell Labs and completed a PhD in applied mathematics at Brown University.
As Figure 4 indicates, Kodak was successful in pioneering many digital technologies and developing dozens of products using electronic technology many of which it commercialized before the demand for digital cameras materialized.

During 2004 and 2005, Kodak held the leading market share of digital cameras sold in the U.S.—an outcome observers saw as surprising:

Its bottom-line difficulties aside, Kodak under [Fisher’s successor Dan] Carp has built a leading brand in digital cameras. Kodak’s EasyShare models rank No. 1 in U.S. market share and are believed to rank No. 3 worldwide—something few anticipated a half-decade ago. Most experts pooh-poohed Kodak’s chances against rivals Sony Corp., Hewlett-Packard Co. and others. Market research firms say Kodak now trails only Canon Inc. and Sony in the global digital camera market. (Dickinson, 2005, p. 1)

However, despite the technological and marketing success in commercializing digital products, Kodak struggled to make money in digital photography. To help finance the digital transition, Kodak managers turned to licensing Kodak’s patents in digital camera development as source of income for the digital business, requiring other entrants into the digital camera market to acquire licenses for Kodak’s fundamental patents in the digital technology arena. This strategy became an important source of revenue for Kodak when its revenues from its film business declined.

**Uncertainty with Respect to Digital Technology Adoption**

Kodak’s struggles in generating profits from its digital products were attributable in part to the uncertainty with respect to the timing of the digital photography adoption. As early as 1978 Kodak managers had forecasted the replacement of film by digital technology at some point in the 2000s; however, the exact timing of the replacement remained uncertain in mid and late 1990s. In reflecting on the challenges Kodak faced in its foray into digital technology, Fisher commented on how the uncertainty of the exact timing of the transition affected Kodak’s approach to digital photography: “We thought that digital would come fast, and when it did not,
we had to come up with an interim strategy.” Overestimating the speed with which digital photography would be adopted led to large losses for Kodak’s digital imaging division.

Kodak’s competitors shared the perception of uncertainty with respect to the timing of digital photography also affected understanding of the market. For instance, Polaroid’s CEO Gary DiCamillo articulated this uncertainty as follows: “the consumer [digital imaging] market will be slower to evolve. I don’t think we’ll see something major next year or the year after, or maybe even by the year 2000” (Rosenbloom, 1997). Tripsas and Gavetti (2000) cite a 1997 *Future Image Report*’s description of the market for digital photography:

> There is also a great deal of uncertainty about the digital imaging competitive landscape with firms from the photography, consumer electronics, computer and graphic arts industries all converging on the industry. While the first digital cameras arrived on the market in the late 1980s, only recently has consumer demand for digital imaging skyrocketed. As of the end of 1998 there were over 70 firms that had entered the digital camera market with over 250 models available. The industry is growing rapidly, and the worldwide digital camera market is expected to reach $10 billion by the year 2000. (p. 1148)

Another aspect of the uncertainty that shaped Kodak’s decision-making was with respect to the business model digital photography would follow. While Kodak traditionally saw camera manufacturing as a low profit-margin business, for the duration of Kodak’s history the low margins of its camera products were supplemented by the sales of high profit-margin consumables, including film and paper. Before the demand for digital photography materialized, there Kodak managers had no way of testing their assumptions about the future structure of the market. Kodak managers were not alone in grappling with the implications of the digital transition for the photography business profitability. Polaroid’s CEO, Gary Camillo expressed similar skepticism of the profit margins in digital photography: “I think there’s revenue there, but I am not sure about profit” (Rosenbloom, 1997, p. 1). Like Kodak executives, Polaroid also searched for a higher-margin consumable to supplement the margins from hardware sales:
In the digital world, we believe that hard copy is required. And without hard copy we’re in deep trouble. And so is Kodak. And so is Hewlett-Packard. Unless there is a consumable component, the business model falls apart. (Gary DiCamillo, Polaroid CEO, quoted in Rosenbloom, 1997)

Kodak’s managers had trouble reconciling the lean margins of the consumer electronics business—their worst-case scenario estimate for digital photography—with Kodak’s cost structure derived from decades of manufacturing high margin film. Consequently, they investigated the possibility of higher margin consumables that would similarly make the manufacture of digital cameras more profitable by acquiring multiple smaller companies that developed promising new technologies and ran an in-house incubation program for new ventures (e.g., Chandler, 1986; Kanter et al., 1991).

Figure 5 offers a graphical representation of the challenge uncertainty imposed for Kodak by depicting the worldwide sales of cameras by technology between 1977 and 2012. Figure 5a (depicted on the left) plots camera sales as percentage of total and the Figure 5b (depicted on the right) plots the same data series in millions of units sold.

[Insert Figure 5 about here]

Figure 5a indicates that the technological transition was hard because each new technology generation fully replaced the previous one with digital cameras fully displacing film cameras and smartphones fully displacing digital cameras. Figure 5b showcases the promise of the technological transition in the steep growth of number of cameras acquired (and, consequently) images generated, offering rewards to any firm that could monetize a small fraction of the growing number of images.

In 2005, Antonio Perez, a Hewlett Packard veteran, became the second outsider CEO in the company’s history. Perez sought to leverage Kodak’s expertise in chemistry to make ink for inkjet printers more affordable, thus allowing Kodak to undercut the profit generated by the
Kodak’s Journey to Strategic Renewal

inkjet printer manufacturers like Hewlett Packard. The entry was motivated in part by industry forecasts of growth in the number of digital images being printed (Lee, 2004). Moreover, other industry participants including, for instance, Polaroid executives shared Perez’s view of inkjet printers offering a more likely path to profitability than digital cameras:

I think we can predict digital cameras will follow the more traditional electronics high volume, low profitability model. Digital printers have the chance of running more like the razor and blade model where you break even on the razors, but make money on the blades. While it could change, I don’t think there’s going to be a lot of money made on hardware... The big winners might be in the consumables arena, such as Hewlett-Packard has done in inkjet printers where they have a preemptive and proprietary position. And then, again, it trails off dramatically even in consumables to those that can provide specific application-sensitive types of products. This may be a very conventional view, but it’s how I see digital evolving. (Gary DiCamillo, CEO of Polaroid, quoted in Rosenbloom, 1997, pp. 20-21)

In a twist on the traditional razor-blade business model, Kodak offered higher priced hardware (pricing its printers ~$50 above competition), with lower-priced consumables (pricing its ink cartridges 50% below competition).9 This strategy sought to attract customers with high printing volumes who would use twice as much ink as the median customer. Financial analysts expressed skepticism both about Kodak’s ability to succeed with a niche strategy in a business that required scale and about the consumers’ willingness to pay upfront for the eventual savings on ink (e.g., Shope, Borbella and Rom, 2007).

**Strategic Renewal through Corporate Development**

A challenge Kodak experienced in achieving commercial success with its digital products was the difference in business models between the company’s traditional business and its forays into digital. From George Eastman’s time onwards, Kodak made its money following a camera-film

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9 The difference in the printer cost reflected the fact that unlike most of its inkjet printer competitors, Kodak’s printers used heads (Perez, 2008).
model in which the sales of low-margin cameras promoted the sales of high-margin film and other consumables. This model did not apply to its digital products.

In case of copiers, the prevalent business model for copiers developed by Xerox entailed renting the machines out to business customers for $95 month and charging extra for any copies above a set number (rather than selling the expensive machines for $30,000 each). While the business model was successfully used by Xerox for more than 15 years by the time Kodak entered the market, Kodak senior managers hesitated to adopt this model for their own product, first insisting on selling the machines outright and then limiting the production runs lest they be stuck with expensive inventory. The hesitation prevented Kodak from rapidly growing the business to minimum efficient scale. While Kodak invested some resources in making its copier business a success, including buying IBM’s copier business in 1989, the company’s management did not match the quality of its technology with building a sales force necessary to challenge Xerox on its home turf (Jacobson and Hillkirk, 1986). In 1997, Kodak sold off its copier business to a copier servicing firm.

As they struggled to arrive at a viable business model in digital photography, Kodak’s managers experimented with two other routes by which Kodak could survive the digital transformation.

1. Diversifying into pharmaceuticals. In 1988, Kodak acquired Sterling Drug—a pharmaceutical company. At the time, the purchase price of $5.1 billion dollars was the highest amount paid for a pharmaceutical company in an M&A transaction.

In characterizing the rationale behind the acquisition, observers suggested that

A main reason Kodak acquired Sterling and its experienced drug approval system, for example, is to make better use of the 500,000 chemical compounds Kodak has registered in relation to its photography work but has never considered, until recently, for other applications (Jacobson, 1988, p. 34)
Kodak managers believed that the Sterling acquisition would provide the company with the product development and marketing capabilities necessary to turn the chemicals it developed in support of its film business into pharmaceuticals.

While some financial analysts were concerned about Kodak overpaying for its acquisition and taking on debt in the process, others saw a good strategic fit between Kodak and Sterling:

As far as the Sterling acquisition goes, I think there’s a good chance it will turn out to be a resounding success, but it’s going to take a long time, maybe 10 years. The basic thesis of combining Sterling’s downstream capabilities of clinical trials and FDA approvals with greater R&D resources and Kodak’s expertise in organic chemistry is still valid. It’s a business which is very compatible with Kodak’s other businesses and its corporate position as a producer of high-technology, chemically-based products. They have a lot of familiarity with the health care market already and the distribution channels. Assuming they can generate a reasonable flow of significant new drugs—which is very difficult to have any visibility on at this point, but I think that’s a fairly good bet on a long-term basis—Sterling will turn out ultimately to be an excellent avenue of diversification for the company. But it’s going to take longer than the market is willing to give the company at this point. [emphasis added] (Peter Enderlin, Smith Barney, quoted in Ellman et al., 1989, p. 55)

Adding to the appeal of leveraging Kodak’s expertise in chemistry, Kodak executives saw the pharmaceutical industry’s profit margins, while lower than those in photographic film as significantly higher than those in consumer electronics—the industry closest to manufacture of digital cameras. Following similar rationale in its desire to find a non-film application for its capabilities in chemistry, Kodak’s smaller competitor Fujifilm pursued diversification into both pharmaceuticals and cosmetics.

However, in a development that Kodak executives did not anticipate, Kodak’s purchase of Sterling Drug triggered a wave of consolidation in the pharmaceutical industry. In 1989, Beecham paid $7.9 for Glaxosmithkline Beckham and Bristol Myers paid $12B for Squibb. These developments both made the purchase price for Sterling look less excessive, but also made it harder for Kodak’s pharmaceutical efforts to leverage the advantage of scale.
As for the strategic success or failure of Sterling, I think Kodak realizes it depends on current and future R&D efforts. There is not enough in the product offering now or in the visible pipeline to rest easy. Kodak’s timing on the Sterling purchase was in hindsight very good. In hindsight the price paid was not as expensive as some thought. But the pharmaceuticals consolidation binge which followed Sterling’s takeout makes the combined Kodak-Sterling R&D effort seem even smaller relative to the industry giants than it was two years ago (David Nelson quoted in Ellman et al., 1989, p. 54).

Ultimately, success in pharmaceuticals required more of an R&D investment than what Kodak, saddled with the debt from the acquisition, could afford to make and in 1994 Kodak divested of the Sterling acquisition to focus more closely on digital imaging.

2. Searching for a Strategic Buyer. As the decline of photographic film loomed and Kodak was yet to arrive at a viable business model in digital photography, Kodak’s executive team attempted to find a company willing to acquire Kodak. The company’s then CEO George Fisher and CFO Harry Kavetas held merger discussions with companies ranging from cross-town and Silicon Valley rivals including Xerox, Intel, Adobe, and Hewlett Packard to stalwart consumer-packaging giants like Procter & Gamble. At one point during this search, Kodak executives considered acquiring Apple Computer—Kodak flush with cash could have capitalized on Apple’s then flailing fortunes, but Kodak’s managers anticipated a culture clash between the two companies and did not pursue that option. Unable to find a strategic buyer for Kodak George Fisher stepped down to be replaced in 2000 by Dan Carp, a Kodak veteran. Faced with a deterioration in the film market, Carp’s replacement Antonio Perez sought to pivot Kodak to consumer inkjet printers. In attempting to balance the needs of the inkjet business with the shutting down of the legacy film factories, the pivot attempt ran into cash shortfalls, forcing Kodak to seek bankruptcy protection in 2012.

Evolution of Kodak’s Identity
An important explanation for incumbents’ failure in the face of industry transitions are managerial commitments to the organization’s identity (e.g., Tripsas and Gavetti, 2000). The Kodak case offers a rich source of data in considering the relationship between changes in identity and technological transitions. Specifically, Kodak managers’ efforts at arriving at a different identity are reflected in the company’s business descriptions in its 10K filings to the SEC. The 10K reports are financial reporting documents which require the company’s executives to provide the most accurate description of their business with any misstatements potentially triggering financial and legal penalties. From 1971 onwards, these documents required company executives to provide “a brief description of the business done or intended to be done by the registrant and its subsidiaries” (Securities and Exchange Commission, 1969, p. 23). The requirement remained virtually unchanged since 1971 (Securities and Exchange Commission, 2013). We analyzed Kodak’s business descriptions from the financial reports between 1971, the first year the requirement was in place through 2012, the year the company filed for bankruptcy. The changes in the language of business descriptions are notable in as much as they reflect Kodak managers’ experimentation with and search for a new identity for the company.

[Insert Figure 6 about here]

Figure 6 charts the changes in word count in the business description section of the company’s 10-K reports submitted to the Securities and Exchange Commission for 1971-2012. As the graph indicates, the description remained steady between 1971 and 1987 with only two minor changes in the wording. The 1976 description of Kodak as engaged in “the development, manufacture and marketing of photographic and related products, man-made fibers, plastics and industrial and other chemicals” was shortened in 1977, changing to “the development,
manufacture, and marketing of photographic and chemicals products.” In 1984, the word “photographic” in the above description was replaced with “imaging.” The changes in the business description field reflect the events in Kodak’s corporate strategy described in Table 1. In 1988, with the Sterling acquisition the business description changed to include “health products” and in 1989, with the acquisition of IBM’s copier business, “information systems” were also added to the description.

From 1993 onwards, the changes in the company’s business descriptions coincided with the tenures of the last three CEOs. In 1993, George Fisher’s first year as a CEO, the word chemical was dropped from the business description—a change that reflects the spin-off of Eastman Chemical as a stand-alone company. The 1994 jump in the business description wordcount coincided with the spin-off of the non-imaging businesses, including Sterling, with the business description template updated to describe Kodak as engaged in “developing, manufacturing, and marketing consumer and commercial imaging products” with the remainder of the word count allocated to a justification of this change in strategy. In 1998, the word “commercial” in the business description was replaced with the word “professional” and the words health and other imaging were added to the business description. 1999 saw the addition of the word “services” to the business description.

After another period of relative stability in the late 1990s, business descriptions changed again. After George Fisher left, Dan Carp became the CEO in 2000. In 2001 and 2002, Kodak’s business description was supplemented with descriptions of the customers targeted by Kodak as well as forecasts of a bright future for the “infoimaging” industry that Kodak sought to enter. In 2003 and 2004, the opening line changed to emphasize Kodak’s leadership in the industry
“Kodak is the leader in helping people take, share, print and view images for information and for entertainment.”

After Antonio Perez became CEO in 2005, the 2005 and 2006 10Ks described Kodak as “world’s foremost imaging innovator, providing leading products and services to the photographic, graphic communications and healthcare markets.” These changes are notable for the first appearance of “graphic communications” in Kodak’s business description. The 2007 removal of healthcare markets from the business description reflected Kodak’s sale of the healthcare imaging business. From 2009 to 2011, Kodak was described as helping “consumers, businesses, and creative professionals unleash the power of pictures and printing to enrich their lives.” Finally, in 2012, the company’s bankruptcy year, the business description reflected the company’s exit from the consumer business: “Kodak is transforming into a B2B company focused on its commercial imaging business.”

The evolution of the business description field in Kodak’s financial reports speaks to the many efforts Kodak had undertaken to deal with the digital transition. Rather than depicting a company paralyzed by a stable identity, the correlation between the numerous changes in the business description suggest that Kodak’s identity evolved along with environmental changes.

**DISCUSSION AND CONCLUSIONS:**

Our detailed examination of the Kodak makes several contributions to the literature on strategic renewal and organizational ambidexterity (e.g., Agarwal and Helfat, 2009; Tushman and O’Reilly, 2004; Taylor, 2010; Taylor and Helfat, 2009) that consider the pathways available to established firms in overcoming the challenges of technological transitions. The existent
literature considers economic, organizational, and cognitive antecedents of organizational inertia (e.g., Kaplan and Henderson, 2005; Danneels, 2010; Tripsas and Gavetti, 2000).

In both practitioner accounts and academic literature, managers of incumbent firms are charged with underinvesting in radical innovation when such innovation cannibalizes the sales of the existing products and does not match the extant technical competencies. In these charges, the managers’ concerns about lower profitability of the proposed business are dismissed as indicating that managers do not have the open-mindedness or patience to wait for the margins to improve or results to materialize. For instance, in critiquing Xerox’s failure to commercialize the personal computer, Smith and Alexander argue that “tactics [to make the new technology profitable] often reveal themselves to businesspeople willing to bet on new technology” (1988, p. 175). Similarly, Chesbrough (2010, p. 358) uses the qualifier “initially” in addressing the possibility that the gross margins for a new technology might be initially lower than those for the established technology—thus, implying that patience could be one tactic for overcoming the profitability gap between the current and the emergent technology.

An important premise within the literature on incumbents’ experience with industry transitions has been that the introduction of new technology leads to the inevitable displacement of the old technology by the new in the foreseeable future. Despite this premise, we know little about how the uncertainty with respect to whether and when a new technology would replace the old affects the decision-making of the incumbent firms.

The existing scholarship has documented at least four sources of such uncertainty. First, incumbent firms may find it difficult to assess the implications of an emerging technology for the firm’s business (e.g., Henderson and Clark, 1990) as well as the firm’s ability absorb the new technology and incorporate it into their existing products (e.g., Bergek et al., 2013; Taylor,
2010). Second, established firms may find it difficult to anticipate the exact timing as to when the new technology would outperform the old (e.g., Henderson, 1995). Such difficulties are particularly salient due to the possibility that the emergence of a new technology may trigger notable performance improvements in the old technology (e.g., Adner and Snow, 2010; Ansari and Garud, 2009) and the new technology may require the emergence of an ecosystem of components and complements to achieve its full potential with the timing of such emergence being highly uncertain (e.g., Adner and Kapoor, 2016). Fourth, even if the incumbents fail to master the new technology and the new technology outperforms the old along a given set of dimensions, the incumbents may be buffered from the effects of the industry transition by their complementary assets which the new entrants may have difficulty replicating (Tripsas, 1997).

Understanding how and why this uncertainty affects the decision-making in incumbent firms has important theoretical implications for how we think about organizational adaptation to environmental change. Schumpeter described creative destruction as a “process whose every element takes considerable time in revealing its true features and ultimate effects” (2010/1950, 73). If the environment remains in flux for many years, how can we make sense of organizational change? Organizational scholars have considered the possibility that organizations may have difficulty keeping up with the changes in their environments (e.g., Hannan and Freeman, 1984, 1989), arguing that a slow pace of a transition should favor the incumbents (e.g., Baum, 1999). However, the uncertainty associated with the timing of environmental change introduces the twin hazard of organizations changing faster than their environments:

Where an environment changes quickly relative to the rate at which an organization adapts, a process can easily lose its claim to being sensible. It is also possible for an anticipatory process (e.g., problem solving) to result in changes that outrun the environment and thereby become unintelligent. (March, 1981, p. 566)

In absence of a clear understanding of how the environment is evolving, what can managers do?
Our analysis of the decisions made by Kodak managers over time points to the need for greater consideration of the role played by ambiguous feedback and uncertainty with respect to the timing of the new technology adoption in incumbents’ decision-making in the time of technological transitions. Kodak’s managers experimented with numerous approaches to strategic renewal which ranged from extensive investment in the development of digital products and incubating start-ups to diversifying away from their core film photography business into pharmaceuticals and seeking a strategic buyer for Kodak. Such experimentation points to the senior managers’ willingness to try on several different identities for Kodak, committing the company to several different non-silver-halide technologies which ranged from copiers to pharmaceuticals and inkjet printing. Such experimentation was necessary because even with the benefit of hindsight, it is not clear whether and how Kodak could have survived the technological transition.

Our research illustrates the value of considering decisions as situated in time to unpack the intertwining roles played by inertia and renewal in Kodak’s evolution. Only by observing decisions and learning about the contingencies, one could explicate inertial tendencies from attempts to strategically renew. This investigation of Kodak allows us to incorporate contingencies that shaped managerial decision-making that included ambiguous or delayed feedback with respect to technology efforts, adjustment costs associated with transitioning between different business models, as well as compare the inertial and renewal tendencies in the beliefs of the insider and outsider CEOs.

By offering a detailed and nuanced account of Kodak’s efforts at strategic renewal we enrich the strategy field’s understanding of the complexity of the problem faced by incumbent firms in technological transitions. In so doing, we hope to inform strategy scholars’
understanding of both inertia and strategic renewal. Far from being married to Kodak’s identity as a film manufacturer or a photography company, its managers anticipated technological change and invested in a broad range of strategic alternatives that could have allowed Kodak to weather the technological transition. Understanding why these efforts fell short of staving off the company’s demise is critical for informing future decision-making.
Figure 1: Interviewees’ tenure at Kodak
### Kodak’s Journey to Strategic Renewal

#### Figure 2: Timeline of decisions

<table>
<thead>
<tr>
<th>Leadership changes</th>
<th>Promote Fallon over Zornow to CEO</th>
<th>Promote Whitmore rather than Samper to CEO</th>
<th>Replace Whitmore with Fisher as CEO</th>
<th>Promote Carp rather than Kohrt to President</th>
<th>Replace Carp with Perez as CEO</th>
</tr>
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<tbody>
<tr>
<td>Product introductions</td>
<td>Photocopier with Intel 8008 chip</td>
<td>Disc camera system</td>
<td>Photo CD system</td>
<td>Consumer digital camera Advanced Photo System</td>
<td>First megapixel digital camera under $1,000; imaging kiosks</td>
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<tr>
<td>Pocket Instamatic camera system</td>
<td>Instant camera system</td>
<td>Acquire Sterling Drug; IBM Copier Business</td>
<td>Reorganize into 17 business units</td>
<td>Spin-off Eastman Chemical</td>
<td>Sell Drug</td>
</tr>
<tr>
<td>Corporate development</td>
<td>Reorganize into 3 business units</td>
<td>Sell Sterling</td>
<td>Sell copiers to Danka</td>
<td>Sell remote sensing to ITT</td>
<td>Sell health imaging to Onex</td>
</tr>
</tbody>
</table>

|------|------|------|------|------|------|------|------|------|

41
Figure 3: Comparison of resolution of film-based and digital camera images in 1976\textsuperscript{12}

\textsuperscript{12} Source: Sasson (1976), p. 3.
Figure 4: Digital photography developments\textsuperscript{13}

\textbf{Kodak’s Journey to Strategic Renewal}

\begin{tabular}{|c|c|}
\hline
\textbf{Competitors} & \textbf{Kodak} \\
\hline
Fuji completed its first digital camera prototype (46,360 pixels) & First portable digital camera prototype (10,000 pixels) \\
Fuji introduced Fujix TV-Photo Player & Prototype of a TV-photo display unit \\
Fuji introduced DS-1P the first consumer digital camera (400,000 pixels) & First megapixel CCD sensor (1.4 megapixel) \\
Canon announced RC-701, electronic analog camera (382,200 pixels) & Prototype of a digital camera (1.3 megapixel) \\
Dynax introduced Model 1, the first digital camera for sale in the U.S. (90,240 pixels) & First digital DSLR camera prototype; announced SV9600 first transceiver for transmitting high resolution images \\
Apple introduced Quicktake 100 designed by Kodak (307,200 pixels) & Announced Photo CD system for storing and displaying images on TVs and computer displays \\
Sharp introduced J-SH04, the first camera phone (110,000 pixels) & Opened Cinesite a digital editing center for motion picture film \\
Casio introduced QV-10, the first digital camera with LCD display. & Introduced DC100, first professional digital camera, $20,000 (1.3 megapixel) \\
Nokia introduced 7650, the first GSM camera phone (36,608 pixels) & Introduced DC40, point-and-shoot digital camera, $960 (375,984 pixels) \\
Apple introduced the iPhone (2 megapixels) & Introduced EasyShare V5700 Zoom, the first dual lens digital camera, Easy Share V610 Dual Lens, the smallest camera to feature 10x optical zoom, EasyShare V705 Dual Lens, the smallest ultra-wide-angle optical zoom camera \\
& Introduced EasyShare CS13 a 5 megapixel digital camera, <$1,000 \\
\hline
\hline
\end{tabular}

\textsuperscript{13} Sources: Chesher, 2012; Digitalkamera Museum; Paxton, 2020; CIPA.
Figure 5: Worldwide camera unit sales by technology

a) As % of total sales

b) In millions of units sold

Figure 6: Wordcounts of business description in Kodak’s 10Ks
<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laura Quatel</td>
<td>President (2012-2014); General Counsel (2011-2012); Chief Intellectual</td>
</tr>
<tr>
<td></td>
<td>Property Officer (2008-2010)</td>
</tr>
<tr>
<td>Ann McCorvey</td>
<td>CFO (2010-2012); Director of Investor Relations (2010-2007); Vice President,</td>
</tr>
<tr>
<td></td>
<td>Corporate Financial Planning and Analysis (2004-2007)</td>
</tr>
<tr>
<td>Tim Lynch</td>
<td>Chief Intellectual Property Officer (2011-2014); Deputy General Counsel</td>
</tr>
<tr>
<td></td>
<td>(2010-2014); Managing Director, Intellectual Property Transactions (2008-</td>
</tr>
<tr>
<td></td>
<td>2010)</td>
</tr>
<tr>
<td>Willy Shih</td>
<td>President, Digital and Applied Imaging (1997-2003); President, Display and</td>
</tr>
<tr>
<td></td>
<td>Components Group (2003-2005)</td>
</tr>
<tr>
<td>Joerg Agin</td>
<td>President, Entertainment Imaging (1995-2001)</td>
</tr>
<tr>
<td>Myron Kassaraba</td>
<td>Director, Corporate Strategic Alliances &amp; Developer Relations, Corporate</td>
</tr>
<tr>
<td></td>
<td>Marketing (1996-1998); Director, Sales &amp; Marketing, Color Management</td>
</tr>
<tr>
<td></td>
<td>Systems Group (1993-1996), Director of Marketing, Advanced Technology &amp;</td>
</tr>
<tr>
<td>Michael Martino</td>
<td>Director and VP of Strategy and Business Planning, Chief Operating Office</td>
</tr>
<tr>
<td></td>
<td>(2007-2009); Director of Strategy and Business Planning, Graphics</td>
</tr>
<tr>
<td></td>
<td>Communication Group (2003-2007); Director of Corporate Strategy and</td>
</tr>
<tr>
<td>Majid Rabbani</td>
<td>Distinguished Kodak Fellow and Head of Intelligent Systems Department</td>
</tr>
<tr>
<td></td>
<td>(2011-2016); Kodak Fellow and Head of Intelligent Systems Department</td>
</tr>
<tr>
<td></td>
<td>(2007-2011); Kodak Fellow (2000-2007)</td>
</tr>
<tr>
<td>Ken Parulski</td>
<td>Research Fellow and Chief Scientist, Digital Cameras and Devices (2010-</td>
</tr>
<tr>
<td></td>
<td>2012); Research Fellow and Director, IP &amp; Standards, Consumer Digital Group</td>
</tr>
<tr>
<td>Glenn Kennel</td>
<td>Program Manager, Digital Cinema (2000-2003); Category Manager, Cineon</td>
</tr>
<tr>
<td></td>
<td>Conversion Products (1994-1998); Director of Technology, Cinesite, a Kodak</td>
</tr>
<tr>
<td></td>
<td>Company (1998-1999)</td>
</tr>
<tr>
<td>Brad Hunt</td>
<td>Director of Operations, Digital Motion Imaging Division (1995-1996);</td>
</tr>
<tr>
<td></td>
<td>European Region Sales and Business Development Manager, Digital Motion</td>
</tr>
<tr>
<td></td>
<td>Imaging Division (1991-1995); Director of Advanced Technologies Strategic</td>
</tr>
<tr>
<td></td>
<td>Planning, Motion Picture &amp; Television Imaging Division (1989-1991)</td>
</tr>
<tr>
<td>Steven Sasson</td>
<td>Project Manager, Patent Litigation, Corporate Commercial Affairs (2004-</td>
</tr>
<tr>
<td></td>
<td>2009); Research and Development Manager, Retail Photofinishing Platform</td>
</tr>
<tr>
<td></td>
<td>(2001-2004); Development Manager of Output Systems, Professional Products</td>
</tr>
<tr>
<td></td>
<td>(1996-2001)</td>
</tr>
<tr>
<td>Tone Kelly</td>
<td>Senior Consultant, Corporate Strategy Office (2002-2007); Associate</td>
</tr>
<tr>
<td></td>
<td>Technical Intelligence Advisor, Strategic Planning (1998-2002); Technical</td>
</tr>
<tr>
<td></td>
<td>Intelligence Advisor, Strategic Planning (1985-1998)</td>
</tr>
<tr>
<td>Bob LaPerle</td>
<td>General Manager, kodak.com (2000-2005); Director of Digitization Strategy</td>
</tr>
<tr>
<td>Name</td>
<td>Position and Years</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Carl Kohrt</td>
<td>Chief Technological Officer (1998-2001); Executive Vice President and Assistant Chief Operating Officer (1995-1997); General Manager, Health Sciences (1991-1995)</td>
</tr>
<tr>
<td>Terry Faulkner</td>
<td>Director and Vice President of Strategic Initiatives (1993-1998); Director Technology Planning (1992-1993); Technical Assistant to the Director of Research (1986-1992)</td>
</tr>
<tr>
<td>Earnest Deavenport</td>
<td>CEO Eastman Chemical Company (1994-2012); President, Eastman Chemical Company (1989-1993); Assistant General Manager, Eastman Chemical Company (1985-1989)</td>
</tr>
</tbody>
</table>

**References:**


Doz, Y., & Wilson, K. *Ringtone: Exploring the rise and fall of Nokia in mobile phones.* Oxford University Press, Oxford, UK, 2018


Snyder, P. (2013). *Is this something George Eastman would have done? The decline and fall of Eastman Kodak Company.* CreateSpace Independent Publishing Platform.


Appendix A: Identifying key decisions

<table>
<thead>
<tr>
<th>Key Decision</th>
<th>Description</th>
</tr>
</thead>
</table>
| Promote Walter Fallon (over Gerald Zornow) to CEO | “Gerald B. Zornow became chairman of the board of directors in May of 1972; he continues to serve as chairman of the Executive Committee. Walter A. Fallon, formerly general manager of the U.S. and Canadian Photographic Division, succeeded Zornow as president of the company and was named chief executive officer” (Eastman Kodak Company, 1972, p. 1)  
“[Zornow] was named president after a superbly successful seven years as vice president in charge of selling Kodak’s Instamatic camera with the fool-proof, drop-in film cartridge. (Over 60 million of them have been sold.) For the first time, a salesman seemed a sure bet to step up to chief executive officer. But then, last spring, Louis Eilers retired as chairman and chief executive, and shocked employees were told that while Gerry Zornow was indeed being named chairman, one Walter Fallon, a low-key scientist, was becoming chief executive and president. Kodak people are still talking about “the Zornow affair.” (Mr. Zornow isn’t talking about anything, at least not to a reporter.) Some believe the directors couldn’t stand the thought of a nonscientist in charge. Others say directors couldn’t stand the thought of a nonconformist in charge. (Brand, 1972, p. 18) |
<p>| Introduce Pocket Instamatic Cameras              | “The year 1972 saw the introduction of pocket Instamatic® cameras which produce big pictures from Kodacolor II film” (Eastman Kodak Company, 1973, p. 3)                                                        |
| Introduce copiers                                | “As outlined elsewhere in this report (pages 30-31), technical achievements in the field of electrophotography led to the introduction of the Ektaprint 100 copier-duplicator, for plain paper copies of high fidelity produced at high speed and with great reliability” (Eastman Kodak Company, 1975, p. 3) |
| Introduce instant photography                    | “Heading the list were two Kodak instant cameras and a litter-free film for self-developing pictures of outstanding color quality” (Eastman Kodak Company, 1976, p. 2).                                                   |
| Introduce disc cameras                           | “In February 1982, we announced a new era in amateur photography: the coming of the Kodak disc camera and Kodacolor HR disc film” (Eastman Kodak Company, 1982, p. 1).                                                  |
| Reorganize into 17 business units                 | “Individual involvement and accountability were stressed in our drive to reduce the bureaucratic tendencies that exist to some degree in every large organization. A process was put into place to encourage innovation and provide a supportive home for ideas that can lead to business ventures. Decision-making levels were set at the organizational point where all the appropriate action elements come together. Near the year end came a major change in which a new Photographic and Information Management Division was formed around 17 independent business units” (Eastman Kodak Company, 1984, p. 2). |</p>
<table>
<thead>
<tr>
<th>Event Description</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquire Sterling Drug and IBM Copier division</td>
<td>“The events of 1988 were momentous in another sense. The purchase of Sterling Drug Inc. fulfilled a long-term strategy, acquisition of IBM’s copier service business was a significant step, the formation of the Software Systems Business Division established a key asset, and creation of the Qualex joint venture has turned a problematical situation into a promising opportunity. With these building blocks in place, Kodak’s strong base in allied technology can be focused even more sharply in its four principal business sectors—photographic and consumer products, information systems, industrial materials, and health.” (Eastman Kodak Company, 1988, p. 1).</td>
</tr>
<tr>
<td>Promote Kay Whitmore (Rather than Phil Samper to CEO)</td>
<td>“During 1989, it was announced that Chairman and Chief Executive Officer Colby H. Chandler would retire in June, 1990, after 40 years of Kodak service. Kay R. Whitmore, president of the company since 1983, has been designated Mr. Chandler’s successor by the Board of Directors” (Eastman Kodak Company, 1989, p. 2).</td>
</tr>
<tr>
<td>“In an unusually blunt shoot-out at the top, the Eastman Kodak Company announced yesterday that Kay R. Whitmore, the company’s president, will succeed Colby H. Chandler as chief executive next year and that his chief rival for Mr. Chandler’s job, J. Phillip Samper, will retire as vice-chairman by the end of the year at the age of 55… In choosing Mr. Whitmore over Mr. Samper, the Kodak board picked an executive with a technical background and extensive experience in manufacturing over one largely identified with marketing. Mr. Whitmore said he would make sure Kodak stayed closer to its core businesses in film and photographic chemicals, where analysts have said most of Kodak’s earnings problems are concentrated” (Holusha, 1989, p. 1).</td>
<td></td>
</tr>
<tr>
<td>Introduce the Photo CD System</td>
<td>“From my perspective as the company’s new Chief Executive Officer, the most significant development of the past year was to declare in no uncertain terms our strategic intention to be the world leader in imaging and then, with the announcement of Photo CD and new digital copier-duplicators, to show the world that Kodak has the technology, the will and the reach to realize its vision. Photo CD firmly establishes new standards of electronic image quality for television display, transmission and printing. Images captured on film and transferred to Photo CD provide quality superior to even the most advanced electronic still photography systems, while giving both consumers and professionals the convenience of digital storage, display and manipulation. In commercial applications the system’s potential is equally large” (Eastman Kodak Company, 1990, p. 2).</td>
</tr>
<tr>
<td>Reorganize into three business units</td>
<td>“In 1984, we had formed 17 autonomous business units, largely within the Imaging and Information segments of our business. We encouraged unit managers to compete aggressively, and they did—not only for incremental business but also for finite resources. Those units drove us to record earnings in 1988. Thereafter, the costs of decentralization...” (Eastman Kodak Company, 1989, p. 2).</td>
</tr>
<tr>
<td>Event</td>
<td>Description</td>
</tr>
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<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Replace Kay Whitmore with George Fisher</td>
<td>&quot;The atmosphere of change extended to a year-end report of strong cash flow and operating results, and the announcement in February 1994 of Harry L. Kavetas as Kodak’s new CFO. Through all of these changes, the stock price reflected investors’ reactions. Opening 1993 at 40½ on January 4, it rose to its highest point of the year-64¾-on October 28, the day it became known that Kodak’s new leader would be George M. C. Fisher of Motorola Inc” (Eastman Kodak Company, 1993, p. 7).</td>
</tr>
<tr>
<td>Spin off Eastman Chemical</td>
<td>“Eastman Chemical Company became an independent, publicly held company, ending a relationship with Kodak that began in 1920. Each shareowner received one share of Eastman stock for every four shares of Kodak stock held” (Eastman Kodak Company, 1993, p. 24).</td>
</tr>
<tr>
<td>Sell non-imaging businesses: Sterling Drug and L&amp;F Products to Sanofi and Smithkline Beecham; Clinical Diagnostics to Johnson &amp; Johnson</td>
<td>“On May 3, 1994, Kodak Chairman, President and CEO George M. C. Fisher announced that Kodak would divest its non-imaging businesses. By year’s end, Kodak had completed the sales of its Clinical Diagnostics Division and its Sterling Winthrop and L&amp;F Products subsidiaries, generating $7.9 billion in gross proceeds and making it easier for the company to eliminate over $7 billion in debt and financial instruments. The company’s focus now is on being the World Leader in Imaging” (Eastman Kodak Company, 1994, inside cover).</td>
</tr>
<tr>
<td>Introduce a consumer digital camera under Apple’s logo.</td>
<td>“We’re also manufacturing an innovative digital camera for Apple” (Eastman Kodak Company, 1994, p. 4). “Kodak is striving to adapt more sophisticated technology to less expensive applications. Kodak’s advanced digital camera technology is now available in the form of the lower-cost Apple QuickTake camera—75,000 of which were shipped in 1994.” (Eastman Kodak Company, 1994, p. 12)</td>
</tr>
<tr>
<td>Introduce the Advanced Photo System (APS) camera system</td>
<td>“A key step in our transformation is a new photographic system that we believe will revolutionize the way we take, make, store and use pictures. In fact, through applied technology and traditional expertise, we are taking pictures to a whole new place in people’s lives. The excitement and enthusiasm for these efforts extend throughout and beyond our company. It is verified by consumers’ reactions in more than 22,000 survey interviews throughout eleven different countries. The 1996 introduction of the Advanced Photo System dramatically signals our ability to lead and innovate. We developed the brains for this new system, the magnetics on film, as well as new films that are frankly the best we have ever made. Marketed by Kodak under the Advantix brand name, the Advanced Photo System is the most impressive, far-reaching</td>
</tr>
<tr>
<td>Event</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Sell copier business to Danka</td>
<td>“We completed the repositioning of our Office Imaging business, selling the sales, marketing, service and facilities management operations to Danka Business Systems PLC for $688 million, taking an after-tax loss of $252 million on the transaction” (Eastman Kodak Company, 1996, p. 7).</td>
</tr>
<tr>
<td>Introduce the first megapixel digital camera under $1,000</td>
<td>“Our Kodak Digital Science DC210 zoom camera is leading the way in the under-$1,000, 1-megapixel digital camera world” (Eastman Kodak Company, 1997, p. 5).</td>
</tr>
<tr>
<td>Introduce imaging kiosks</td>
<td>“In the U.S., Consumer Imaging, our largest business unit, continued its strong momentum in the marketplace, creating a new category of imaging kiosks. This category was supported by Kodak Image Magic picture maker placements in major retailers, mass merchandisers, and photo specialty stores, bringing total placements to over 7,000 units” (Eastman Kodak Company, 1997, p. 5).</td>
</tr>
<tr>
<td>Promote Dan Carp (rather than Carl Kohrt) to President</td>
<td>“The promotion of Mr. Carp, 48 years old, ends what people inside and outside Kodak considered a horse race between Mr. Carp and Carl F. Kohrt, two Kodak lifers who were named joint assistant chief operating officers just a little over a year ago. By elevating Mr. Carp, Kodak appears to be giving preference to the candidate with international and marketing experience, people close to the company say. Mr. Carp has spent more than half of his career working in businesses outside the U.S. for Kodak, while Mr. Kohrt, with a doctorate in chemistry, has spent his career in Rochester, N.Y., where Kodak is based. The choice of Mr. Carp also may signal that Kodak intends to stick to the course set by Mr. Fisher when he arrived at the company in December 1993” (Nelson, 1996, p. B1).</td>
</tr>
<tr>
<td>Sell remote sensing business to ITT</td>
<td>“We have also exited some businesses. Our Remote Sensing Systems unit, which primarily served the government, aerospace and defense industries, was sold for $725 million.” (Eastman Kodak Company, 2004, p. 3).</td>
</tr>
<tr>
<td>Replace CEO Dan Carp with Antonio Perez</td>
<td>“Making a surprisingly early departure, Daniel Carp, who belatedly began Eastman Kodak Co.’s painful transition to digital technology, will turn over the top jobs to Antonio Perez, his No. 2, whom Mr. Carp recruited in 2003 to help craft the film giant's transformation. The sudden exit plan comes as the 57-year-old Mr. Carp, a 35-year Kodak veteran who has been the company’s chief executive since 2000, said Kodak was completing the first phase of its digital overhaul. He will leave the CEO post on June 1 and retire as chairman at year end. Perez, 59, will fill both CEO and chairman roles. Mr. Perez, who led the buildup or Hewlett-Packard Co.’s highly profitable printer business, had long been considered a likely CEO, but Kodak hadn’t publicly discussed succession plans” (Bulkeley, 2005, A3).</td>
</tr>
<tr>
<td>Introduce a line of consumer inkjet printers</td>
<td>“One of those new products is a revolutionary approach to inkjet printing. The innovative Kodak EasyShare all-in-one inkjet printers, featuring premium pigment-based inks at half the price of competing inks, offers customers quality, ease-of-use and value that’s unprecedented in the industry” (Eastman Kodak Company, 2006, p. 4). “In February 2007, Kodak introduced the Kodak All-in-One Inkjet Printing System as a major initiative to drive future revenue growth and earnings. Four key components enable an expected breakthrough market entry: 1) a proprietary high-speed inkjet printing system; 2) nanoparticle pigment-based inks; 3) instant-dry, porous papers; and 4) Kodak’s unique Image Science technologies. Additionally, the system is designed with a permanent print head. This unique offering is targeting the high-volume document and photo printer market with a breakthrough value proposition delivering lower cost per printed page as compared with competitive products. The inkjet operating model leverages Kodak technology and the efficiency of the current industry infrastructure to achieve an “asset light” approach to deliver this unmatched value proposition to the marketplace” (Eastman Kodak Company, 2007, pp. 6-7).</td>
</tr>
<tr>
<td>Sell health imaging business to Onex</td>
<td>“As this Annual Report goes to print, we have announced that Onex Corporation has agreed to purchase our Health business for up to $2.55 billion” (Eastman Kodak Company, 2006, p. 5). “On April 30, 2007, the Company closed on the sale of its Health Group to Onex Healthcare Holdings, Inc., a subsidiary of Onex Corporation. Approximately 8,100 employees of the Company associated with the Health Group transitioned to Carestream Health Inc. as part of the transaction. Also included in the sale were manufacturing operations focused on the production of health imaging products, as well as an office building in Rochester, NY.” (Eastman Kodak Company, 2007, p. 8).</td>
</tr>
</tbody>
</table>

References:
Kodak’s Journey to Strategic Renewal


Appendix B: Kodak Camera Systems\(^{14}\)

<table>
<thead>
<tr>
<th>Years made</th>
<th>Camera system</th>
<th>Use case</th>
<th>Film format</th>
<th>Camera size</th>
<th>Frame size</th>
<th>Introductory price</th>
<th>Units sold</th>
<th>35mm Camera price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1963-1966</td>
<td>Instamatic</td>
<td>Easy to load film-cartridge</td>
<td>126</td>
<td>10.5 x 6.2 x 5 cm</td>
<td>28 x 28 mm</td>
<td>$16</td>
<td>50 million in 7 years</td>
<td>$109.50 Kodak Motormatic(^{15}) $186 Nikon F SLR(^{16})</td>
</tr>
<tr>
<td>1972-1976</td>
<td>Pocket Instamatic</td>
<td>More compact</td>
<td>110</td>
<td>11.4 x 5.6 x 2.7 cm</td>
<td>13 x 17 mm</td>
<td>$23</td>
<td>25 million in 3 years</td>
<td>$289.50 Canon F-1(^{17})</td>
</tr>
<tr>
<td>1982-1988</td>
<td>Disc camera</td>
<td>Easy to use</td>
<td>Disc</td>
<td>12 x 7.9 x 3.2 cm</td>
<td>8 x 10 mm</td>
<td>$67.95</td>
<td>25 million in 6 years</td>
<td>$173 Canon Sure Shot(^{18}) $481 Canon AE-1</td>
</tr>
<tr>
<td>1996-2004</td>
<td>Advantix (Advanced Photo System)</td>
<td>Offers LCD preview and date stamps</td>
<td>APS</td>
<td>11.5 x 5.8 x 3.5</td>
<td>36 x 24 mm</td>
<td>$195</td>
<td>Not available</td>
<td>$82 Olympus Trip AF30(^{19})</td>
</tr>
</tbody>
</table>


\(^{15}\) 1960 price [https://camerapedia.fandom.com/wiki/Kodak_Automatic_35/Motormatic_35](https://camerapedia.fandom.com/wiki/Kodak_Automatic_35/Motormatic_35)

\(^{16}\) [https://en.wikipedia.org/wiki/Nikon_F](https://en.wikipedia.org/wiki/Nikon_F)

\(^{17}\) [http://www.jollinger.com/photo/cam-coll/cameras/Canon_F1.html](http://www.jollinger.com/photo/cam-coll/cameras/Canon_F1.html)


\(^{19}\) [Popular Photography](https://www.popularphotography.net), May 1996, p. 74