

DON'T TAKE MY KODACHROME AWAY!
EASTMAN KODAK AND THE LOSS OF SYSTEM CONTROL
IN THE DIGITAL ERA

by

Joseph J. Kestel

Thesis submitted to the Faculty of the Virginia Polytechnic Institute and State University

in partial fulfillment of the requirement for the degree of

MASTER OF SCIENCE

IN

SCIENCE AND TECHNOLOGY STUDIES

APPROVED:

Richard Hirsh, Chair

Gary Downey

Albert E. Moyer

March 19, 1999

Blacksburg, Virginia

Keywords: Eastman Kodak Company, Photography, Computers, History, Business

Don't Take My Kodachrome Away!
Eastman Kodak and the Loss of System Control in the Digital Era

Joseph J. Kestel

ABSTRACT

Photography is inherently technological, based as it is on intricate chemical processes. George Eastman famously created the conventional photographic system, making the technology widely available to a mass market. Using the systems approach, I show how the Eastman Kodak Company consolidated critical photographic technologies through acquisition and research in the beginning of the twentieth century. Once the company achieved predominance in the industry, it set about expanding its markets. However, as the non-chemical elements of the technology advanced in the 1970s and beyond, the market changed. At the same time, foreign competitors matched and even surpassed Kodak's production efficiencies, threatening the company as never before.

Just as Kodak began facing serious price competition in the 1980s for the first time in decades, electronics manufacturers introduced video camcorders and, later, digital still cameras. Dismissed by Kodak managers as inferior, the radical technology advanced far more rapidly than Kodak's chemical research. Computers in particular guided consumers to embrace new values, emphasizing a means of imaging that the conventional system could not match. Eastman Kodak's success with the older system created a protective mindset that led its managers to focus very narrowly on the survival of film. They viewed the new competitive landscape skeptically, and as a result they stifled innovation and prevented the company from aggressively competing in emerging technologies.

ACKNOWLEDGMENTS

So many people contributed to this thesis, that I often felt like a facilitator rather than an author. I owe the original kernel on which this project was based to Richard Hirsh, to whose classroom queries I mistakenly responded that “there has not been significant change in the photographic industry since 1925.” Over the next year, this incident seeped into my subconscious and I began to consider again the case of Kodak. It is amusing now to think of how countless hours in the library, on the Internet, and in consultation with colleagues was so adroitly put to good use by a couple of pointed comments. Professor Hirsh also pointed me towards works that prevented the reinvention of *too* much of the wheel. His patient, dispassionate (and perhaps brave) reviews of my drafts improved the end product greatly, although I am of course solely responsible for every flaw and error.

My sincerest gratitude goes to Gary Downey, who more than anyone encouraged me to contribute to STS by making STS work for me; and who also forced me to “engage” constructively the reading list for 5106. I also thank Bert Moyer, who taught me so much about American science. Those class discussions started me thinking about a longer view of industrialized science, leading ultimately to this project. I only hope that I have successfully heeded his admonishment about undefined STS jargon.

I would also like to thank the rest of those who have touched my life at Virginia Tech. Thank you Dick and Anne, for hosting my first visit to campus. Thank you Donna and Kevin for the tailgate parties and everything else, and fondest thanks to the potluck alumni (with individual kudos to Cecile, Carl, Aasha, Michael, Mary, Barbara, Andy, Megan, Anne, Jill, Frank, and the others I am certain to have forgotten). I must also recognize the always understanding staff of the graduate school, Carolyn Furrow most of all. The reader can only imagine the help I received from the staffs at the Newman, Harold Washington, and Nichols Libraries. And I shall never forget the faculty and my ‘mates in the STS program. Without them, Blacksburg would be nothing but the Blue Ridge Mountains to me.

Above all, I thank my family for their support during this period of my life. A wink must go to Abby, whose canine devotion in the wee hours was most welcome. I cannot fathom the debt I owe to Pamela, who reminded me countless times that I was “almost done,” and who aided me greatly with the production of the color figures. That I will always be there for you, you can be sure. Finally, I thank my Mother and Father, whose support is too often left unacknowledged. Were there space to do so, I could fill another volume listing every contribution they have made.

TABLE OF CONTENTS

ABSTRACT	ii
ACKNOWLEDGEMENT	iii
Introduction	
Statement of the Problem.....	1
Thematic Framework and Literature Review.....	3
Overview	11
ONE: The Conventional System	
Introduction	12
Consolidation: The 35mm Standard and Management.....	13
Innovation and Momentum: Pocket Zooms, T-grains, and Minilabs	17
The One Best Way: Managing Technical and Production Dominance	23
Old Problems, New Stresses	28
TWO: The Digital System	
Introduction	33
Challenges to Film: Out of One, Many	34
Beyond Control: Digital Hardware Outpaces Film	39
Imaging Inventions: Digital Darkrooms, Digital Delivery, and Hybridization	46
What Best Way? Kodak's Competency Dilemma	56
Old Burdens, New Values	62
THREE: Conclusion	68
APPENDIX A: Figures	77
APPENDIX B: Timelines	88
BIBLIOGRAPHY	92
VITA	95