

**"STRANGE AND WONDERFUL!
The bizarre at its best."**

—Janet Maslin, **THE NEW YORK TIMES**



Fast, Cheap & Out of Control

a film by **Errol Morris**

From the director of "The Thin Blue Line" and "A Brief History of Time"

A VONY PICTURES CLASSIC RELEASE. AMERICAN PLAYHOUSE. THEATRICAL FILM PRESENTE. In association with FOURTH FLOOR PRODUCTIONS, INC.
An ERROL MORRIS film "FAST, CHEAP & OUT OF CONTROL"
Original music composed by DAVID CAMPBELL. Executive producer LINDSEY LAW. Director of photography ROBERT RICHARDSON, A.C.S. Production designer TED BAKALANOFF.
Co-producers ALAN ZELLMAN, MARK LIPSON, KATHY TRUSTMAN. Editors CAROL SCHMIDT and SHONDA MUELLER. Produced and directed by ERROL MORRIS.
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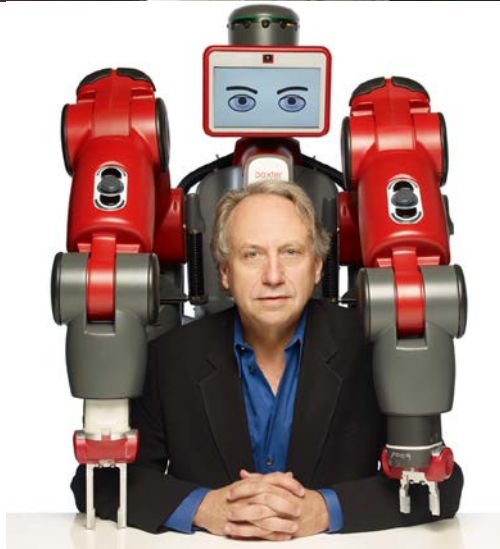
Errol Morris

Fast, Cheap & Out of Control, 1997



Rodney Brooks Robotics Expert

Fast, Cheap & Out of Control



FAST, CHEAP AND OUT OF CONTROL: A ROBOT INVASION OF THE SOLAR SYSTEM

RODNEY A. BROOKS and ANITA M. FLYNN
MIT Artificial Intelligence Lab*, Cambridge, MA, USA.

Complex systems and complex missions take years of planning and force launches to become incredibly expensive. The longer the planning and the more expensive the mission, the more catastrophic if it fails. The solution has always been to plan better, add redundancy, test thoroughly and use high quality components. Based on our experience in building ground based mobile robots (legged and wheeled) we argue here for cheap, fast missions using large numbers of mass produced simple autonomous robots that are small by today's standards (1 to 2 Kg). We argue that the time between mission conception and implementation can be radically reduced, that launch mass can be slashed, that totally autonomous robots can be more reliable than ground controlled robots, and that large numbers of robots can change the tradeoff between reliability of individual components and overall mission success. Lastly, we suggest that within a few years it will be possible at modest cost to invade a planet with millions of tiny robots.

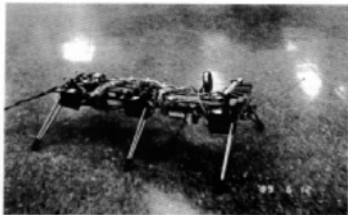


Fig. 1 Genghis is a 1 Kg six legged robot. It can walk and climb over rough terrain. It has four onboard processors, twelve actuators with force feedback, six piezoelectric sensors two whiskers, and pitch and roll inclinometers. Total time for the project between initial conception and completion of the robot was twelve weeks.



Fast, Cheap, and Out of Control Is the name of an essay written by Brooks in 1989.

1. INTRODUCTION

Over the last four and a half years the MIT Mobile Robot Group has pursued the goal of building totally autonomous mobile robots for a variety of tasks. We have refined hardware and software tools so that we can quickly build robust interesting robots. For instance Genghis, a six legged walking robot shown in Fig. 1 was completed 12 weeks after initial conception, in response to a JPL workshop on micro spacecraft [1]. The robot [2,3] was principally built and debugged by two people, with occasional supporting help from about half a dozen others. The robot weighs less than a kilogram and can scramble over very rough terrain. A follow-on vehicle [4] will be able to climb metre high rocks, and travel at around three kilometres per hour. Such easy to build high performance robots suggest some new ways of thinking about planetary exploration.

Two of the principal costs in planetary surface exploration missions arise from the mass of the planetary rover upon launch, and hand construction of the unique vehicle itself. In this paper, we demonstrate that technology has progressed to the stage where we can tackle both of these problems simultaneously by creating swarms of totally autonomous microrovers in the 1 to 2 Kg range. This way, total mass delivered to the planetary surface is minimised and in addition, the multiple copies of the rovers increase the chance of the mission's success. Cost savings in terms of construction dollar per Kg result, due to the opportunity to apply mass production techniques to the roved manufacture.

Total autonomy actually increases mission reliability. Out of control of ground based operators, the robots can use force control with tight sensing feedback loops. This is in contrast to the minutes to hours long position control feedback loops of long delay teleoperation. Force control is the key to reliable performance in the face of any uncertainty. By completely removing all ground based control of the rovers, their complexity goes down drastically as there is no need for much of the communications equipment, and no need for the ground support maintaining communications. Simplicity increases reliability. In fact, the resulting reduced complexity of the overall mission will allow complete programs to be conceived, researched, developed and launched on time scales more reminiscent of the sixties than those of today.

In the last part of this paper we present some radical ideas on how to scale down the size of planetary rovers even further, to the milligram range inspiring missions which will capitalise on thousands or even millions of rovers roaming a planetary surface.

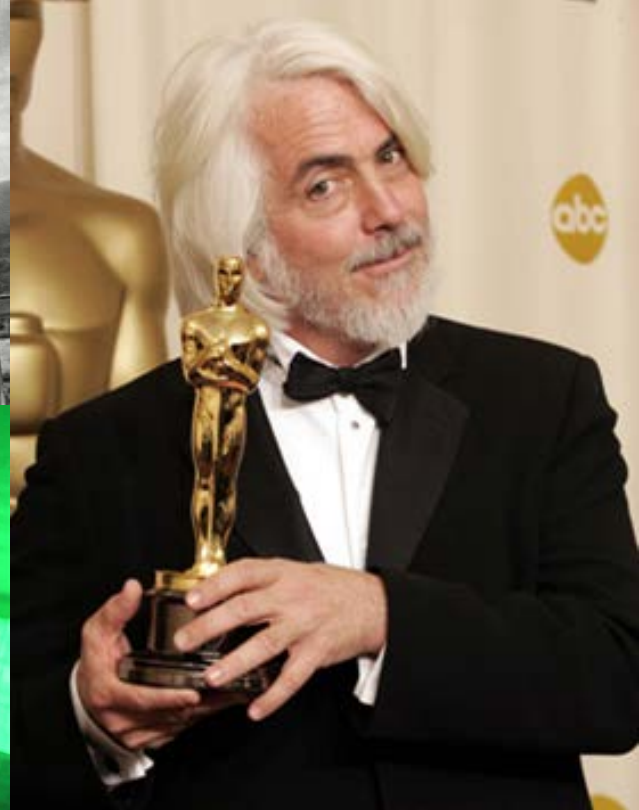
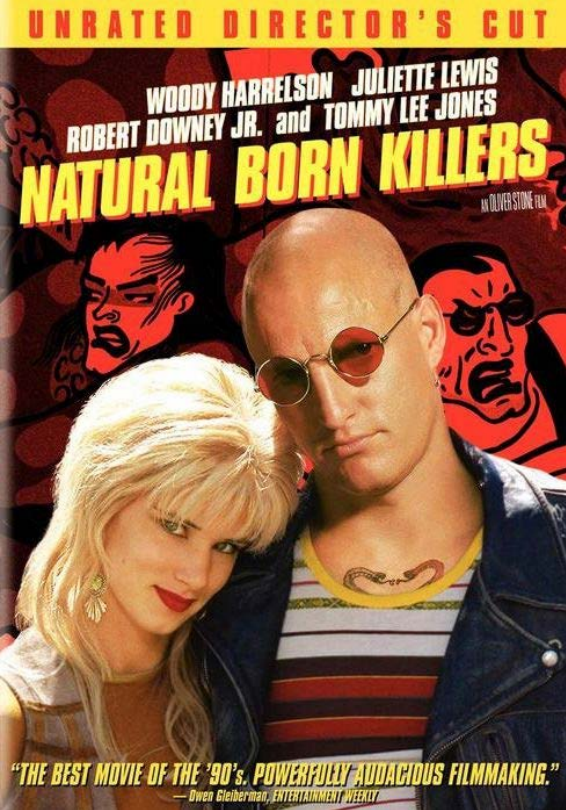
2. CREATING INTELLIGENCE

The general problem we set out to solve 4 1/2 years ago was how to build a brain, or, to answer the question of what it would take to build something that we would consider clever. What were the essential components



Fast, Cheap, and Out of Control

Is a non-linear, experimental essay on humanity's relationship with animal and machine, *Fast, Cheap* is Morris' most ambitious, charming, and unclassifiable film. It is also his most personal.



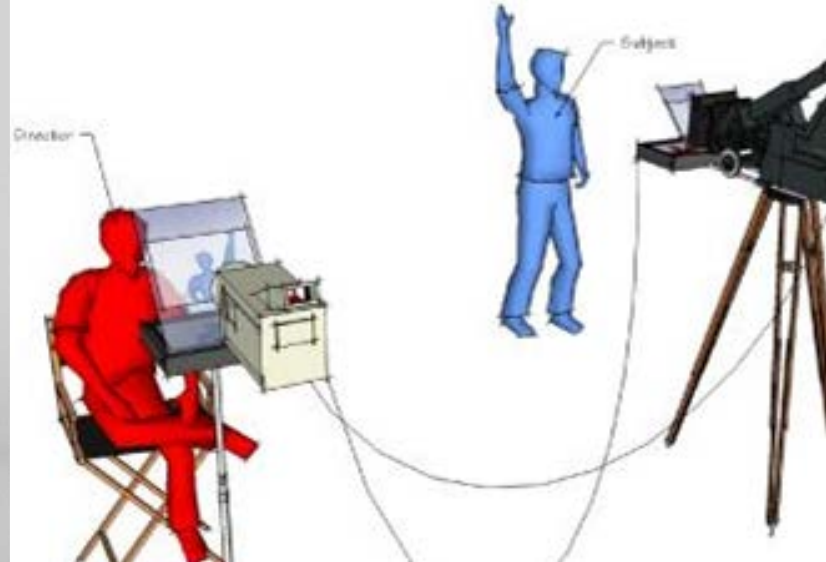
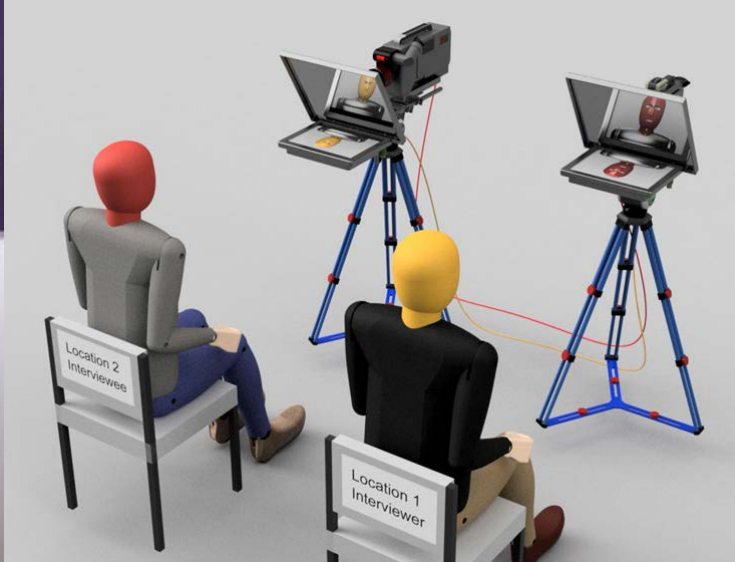
Richard Richardson - Cinematographer

In *Fast, Cheap, and Out of Control* Robert Richardson, uses many of the same camera techniques he used in his other films, *JFK* and *Natural Born Killers*. In addition to 35 mm cameras, he also uses Super 8 mm film. The film is extensively cut with scenes from older films and television shows.

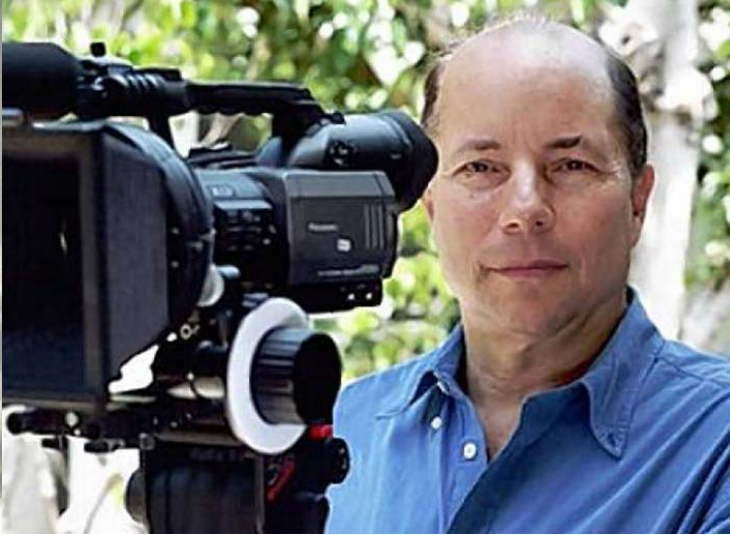
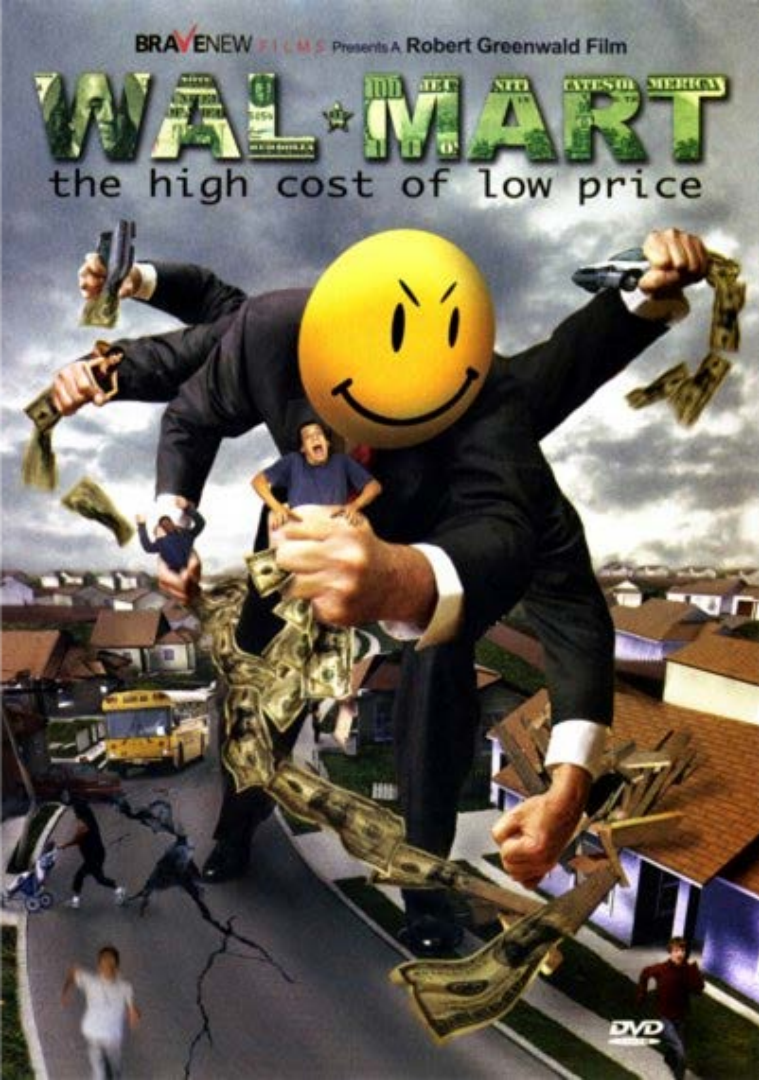


Errol Morris- **Eye Contact**

- A major difference between *Fast, Cheap* and Morris' previous works is the **Interrotron**.
- The subject, in responding to a virtual filmmaker, is always looking into the camera. Morris admits the Interrotron is a gimmick, but said it was a "gimmick with metaphysical content."



The **Interrotron** is a modified TelePrompter that, using video and a one-way mirror, projects the face of an interviewer onto the lens of a camera. The interviewee, while watching this video image of the interviewer, creates direct "**eye contact**" with the camera.



Robert Greenwald is the founder of Brave New Films, a nonprofit film and advocacy organization whose work is distributed for free in concert with nonprofit partners and movements in order to educate and mobilize for progressive causes.



Wal-Mart: The High Cost of Low Price, 2005

Question: What year did Wal-Mart re-brand with a new logo?



1962 - 1964

Sam Walton names his new stores WALMART. The Walmart name was presented in just about any font/style available to the printer.



1981 - 1992

The logo was updated again in 1981.



1964 - 1981

Also known as the "Frontier Font Logo," this was the first official and consistently used logo.



1992 - 2008

The star was adopted as an update to the existing logo in early 1992.



1968-1981

The Discount City mark was used in print advertising, on the uniforms/smocks, in-store signing, and other things. However, it was never used as building signage or in an annual report.

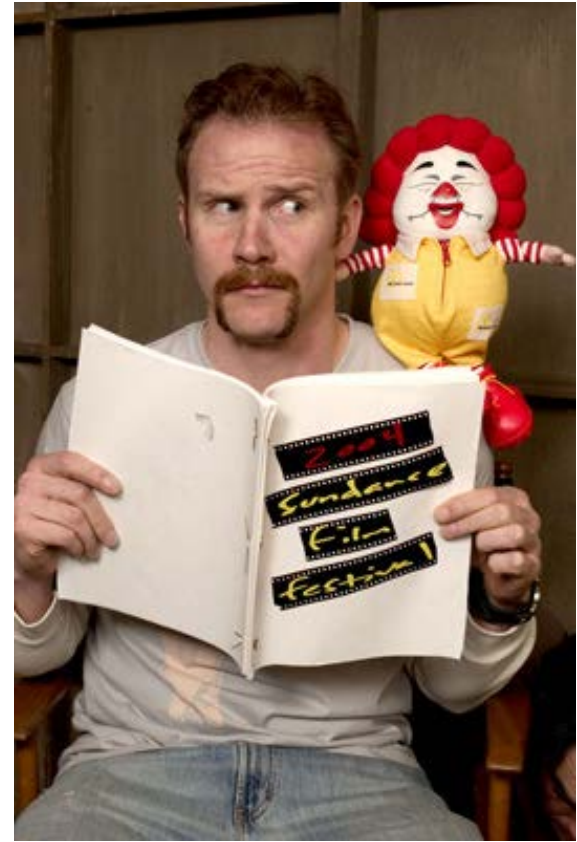
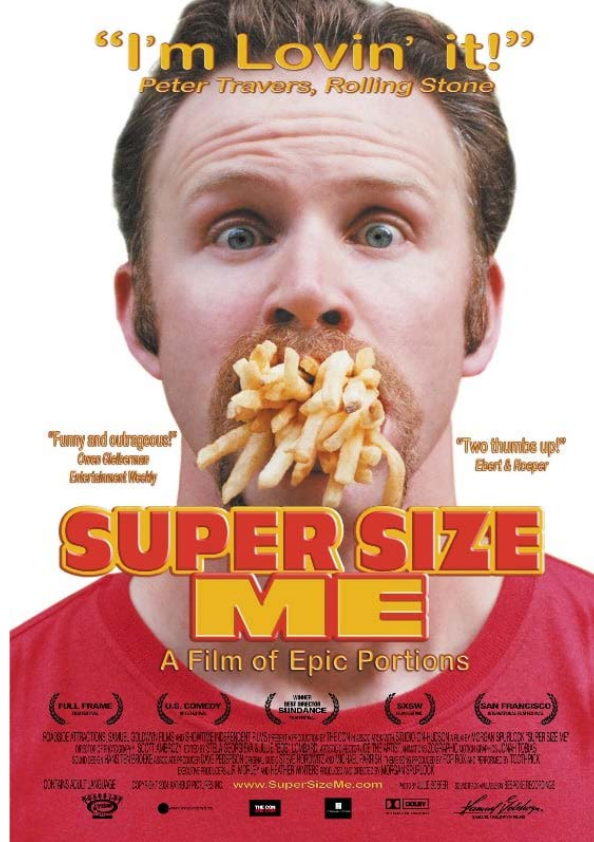
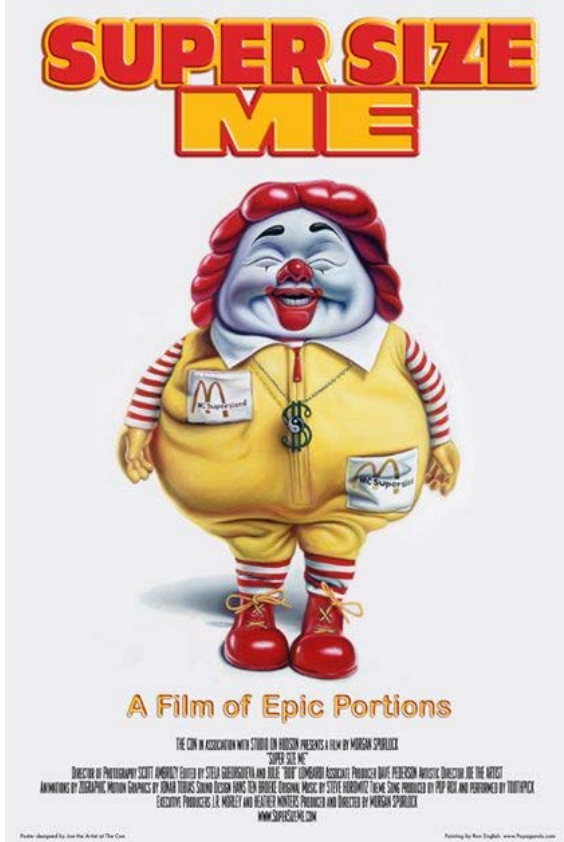


2008

New logo adopted by Walmart Stores U.S.

Greenwald's documentary came out in **2005**

Wal-Mart's current logo launched in **2008**



Super Size Me, 2004

Another Documentary that Influenced Corporate Change

Change in Package Design



FOAM CLAMSHELLS
1976 - 1991



WRAP AND COLLAR
1991 - 1993



CLAMSHELL,
SCRIPT GRAPHIC
1993 - 1995



CLAMSHELL
1995 - 2003



CLAMSHELL,
'IL' GRAPHIC
2003 - 2008



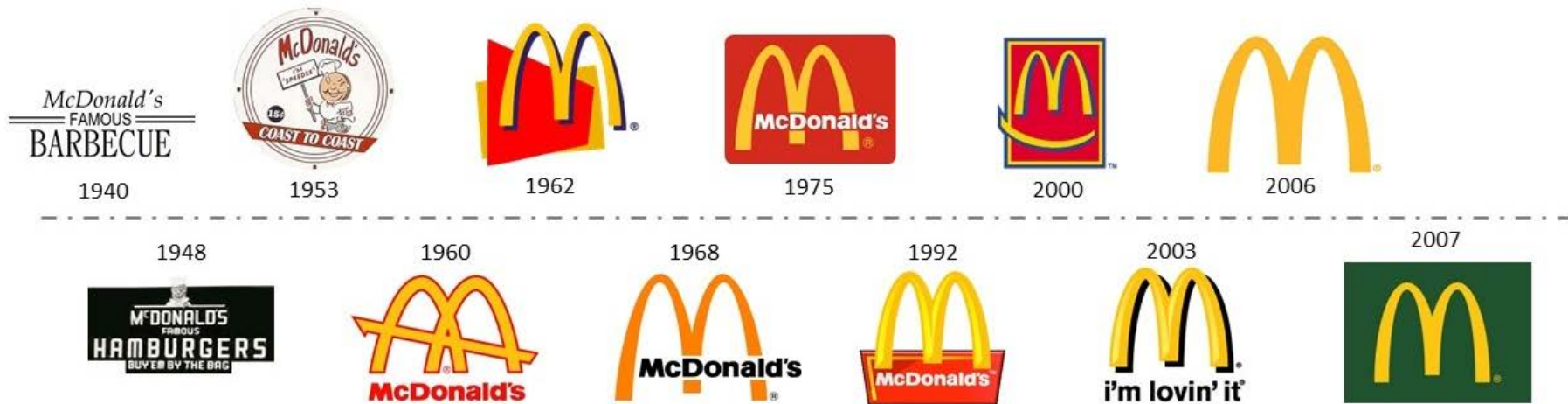
REDESIGN
2008

From Styrofoam to Paper Designs that look “healthy”.



Health Inspired
Package Design

Slogan & Logo Change



“I’m Lovin’ it!”
Peter Travers, Rolling Stone

**Detail of Doc
Poster, 2004**

