

C&D 개념과 발전 전략

January 24, 2007

成昌模 공학박사

President



HYOSUNG R&D Business Labs.

집중분석 / 경영트렌드 변천사



경부고속도로 개통(1970.7)



중화학공업 육성계획(1973.1.12)



포항제철 준공(1973.7.3)

경영 화두로 풀어본 경영트렌드 변천사
2010년, 어떻게 먹고 살 것인가?

1960년대와 2005년 성과지표 비교:

1. 수출: 8.4억불 (1970) → 2,844억불 (2005)
2. 교역규모: 19억불 (1970) → 5,500억불 (2005)
3. 1인당 GNI: 254불 (1970) → 16,300불 (2005)

1964년 수출은 1억불로 이디오피아, 모잠비크 수준

*이디오피아: 1.1억불('64) → 7억불 ('04)

*모잠비크: 1.1억불('64) → 15억불 ('04)

우리 수출규모는 2005년 기준으로 남미 38개국 전체 수출규모 (2,763억불), 아프리카 전체 53개국 수출규모 (2,317억불) 초과

< 연도별 수출품목의 변천 >

| | 1위 | 2위 | 3위 | 4위 | 5위 |
|------|------|------|------|------|--------|
| 1961 | 철광석 | 중석 | 생사 | 무연탄 | 오징어 |
| 1970 | 섬유 | 합판 | 가발 | 철광석 | 전자제품 |
| 1975 | 섬유 | 전자제품 | 철강제품 | 합판 | 신발 |
| 1980 | 섬유 | 전자제품 | 철강제품 | 신발 | 합판 |
| 1985 | 섬유 | 선박 | 전자제품 | 철강제품 | 신발 |
| 1990 | 전자전기 | 섬유 | 철강제품 | 선박 | 화공품 |
| 1995 | 전자전기 | 섬유 | 화공품 | 자동차 | 선박 |
| 2000 | 반도체 | 자동차 | 컴퓨터 | 선박 | 무선통신기기 |

새로운 변화

- ❖ 지식 경제 (Knowledge Economy) -> 창의력 경제 (Creativity Economy)
- ❖ 미래 핵심 경쟁요인 -> 창의력
- ❖ 디자인전략이 혁신적인 제품과 매출을 창출
- ❖ 기술 중심 (technology-centric) 보다 소비자 중심 (customer-centric) 의 혁신
- ❖ 제품이 어떻게 작동할 것인가 보다 그 제품을 소비자가 어떻게 느끼는가가 더 중요

❖ GE's CENCOR

- Calibrate, Explore, Create, Organize, Realize
- 식스 시그마를 대체할 접근법

❖ P&G

- 디자인과 R&D를 통합

❖ 비즈니스 스쿨 -> 디자인 스쿨

선도기업의 디자인 경영

- 애플 스티브 잡스: 디자인을 핵심 경영아젠다로 설정:
매출 \$8 billion (2000) → \$19.3 billion (2006)
- P&G Lafley 회장: 2000년 디자인 경영 선포.
디자인 전문인력을 4배 늘림
매출 \$40 billion (2000) → \$68.2 billion (2006)
- 삼성전자 보르도 TV, Anycall Ultra edition
- LG 전자 초콜릿폰

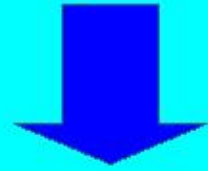
80/20 법칙에서 Long Tail 경제 패러다임으로....

디지털 시대의 무한한 선택가능 환경에서 그동안 무시되었던 틈새상품이 중요해지는 경제 패러다임.

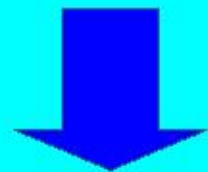
1. Amazon
2. eBay
3. Google
4. iTunes 등



과학기술 기반 사회,



문화/서비스 융합, 글로벌,
창의적 기술개발



“New Business Model”

New Strategies of R&D

P&G's Billion-Dollar Brands

P&G currently produces 16 brands with global sales in excess of \$1 billion each.



P&G's New Innovation Model: From R&D to C&D



For decades, Procter & Gamble fueled its consumer products engine from R&D inside its own walls. But as its markets have matured, P&G has directed its search outward. *(Harvard Business Review, March 2006)*

CEO **A. G. Lafley** decided to broaden the horizon by looking at external sources for innovation. P&G's new strategy, connect and develop, uses technology and networks to seek out new ideas for future products. "**Connect and develop will become the dominant innovation model in the twenty-first century,**"

P&G's Innovation Network Includes:

- Companies
- Individuals
- Independent entrepreneurs
- Government laboratories
- Contract laboratories
- Research institutes
- Communities of practice
- Subject matter experts
- Suppliers
- Academia
- Members of e-R&D networks
InnoCentive.com
NineSigma.com
Yet2.com
yourEncore.com

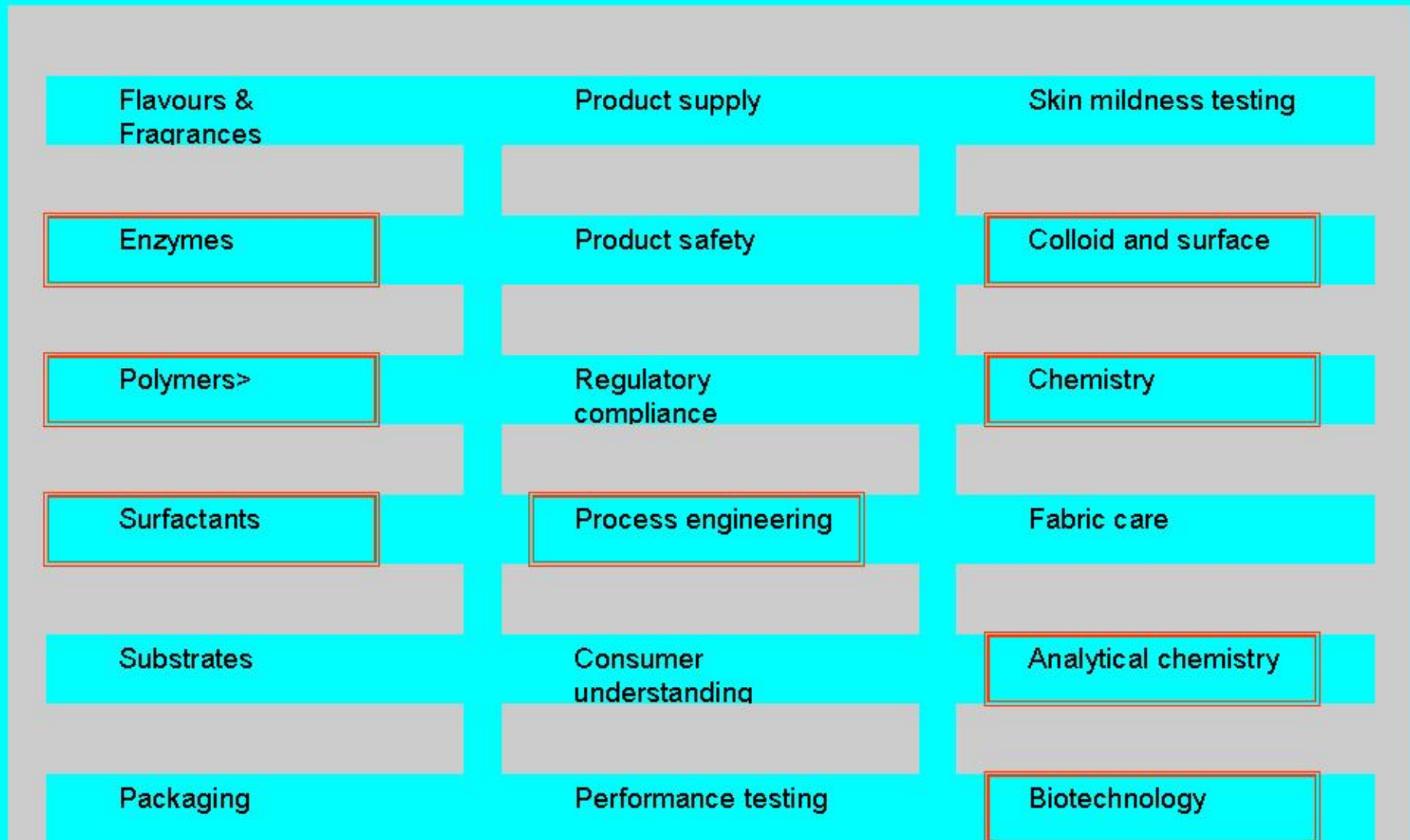


First...

Determine if your product, packaging, technology, process or commercial connection is in the interest of P&G and our global consumers.

- My innovation addresses a big, unmet consumer need.
- My innovation offers a new benefit to an existing P&G category or brand.
- My packaging solution has been demonstrated.
- My technology is proven and can be quickly applied to a P&G consumer need.
- My product is in use and has evidence of consumer interest.
- I have a game-changing technology or approach.

What's Possible? Our Core Competencies

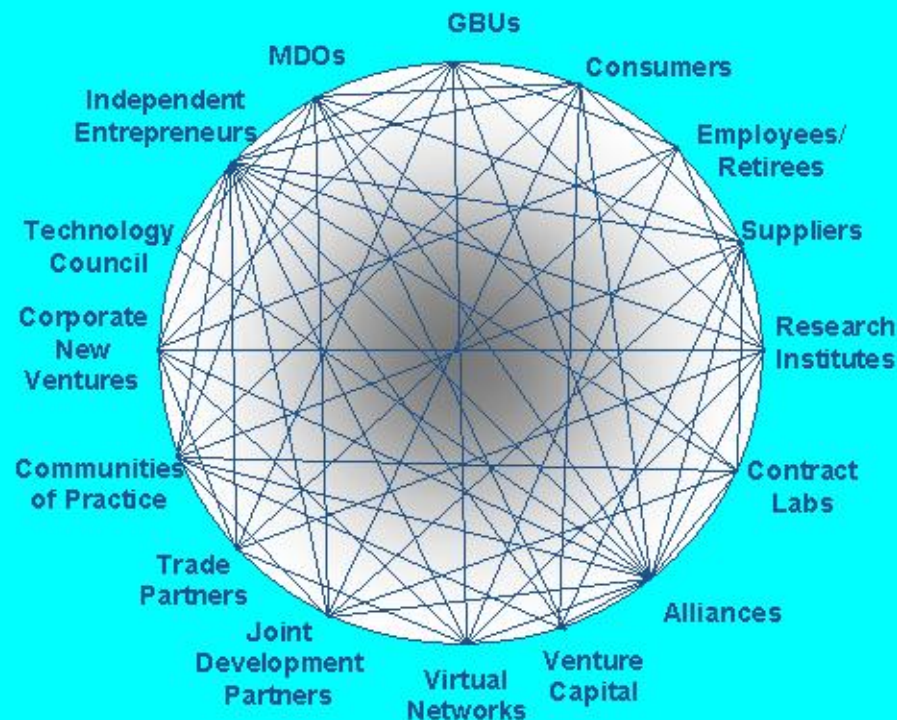


To maximize the possibilities, Procter & Gamble has developed what we call our "core competencies."

Vision



“We will acquire 50% of our technologies and products from outside P&G.” – A.G. Lafley



P&G has turbo charged its innovation capability by leveraging **external** and **internal** innovation assets with key partnerships to deliver superior P&G products and services at greater value to consumers.

Vice President Mark Peterson

April, 2004

Innovation Examples

Ready-to-go Technologies

Procter & Gamble introduced Bounce, the world's first dryer added softener, after acquiring the product technology from the independent inventor who developed the innovative fabric-care solution.

Ready-to-go Products

A great example of this is the Crest Spin Brush. The invention came from Dr. John's - an SME (Small and Medium-Sized Enterprise) in the USA that was active in the toy industry. But what Dr. John's was the first to see was the potential to transform a battery - operated, spinning toy into a powered toothbrush.

In this instance, the deal was struck when Procter & Gamble acquired Dr. John's Spin brush business and added the Crest brand name to the innovation.

Ready-to-go Packaging

Several of our Olay Skin Care products now utilize new consumer-preferred pump dispensers originally developed by a European packaging products company.

Commercial Partnerships

Procter & Gamble found the perfect complement to the Swiffer brand in a hand-held duster developed by a Japanese competitor.

See examples of new technologies and technology needs that are the results of mutually beneficial collaborations we have established through external connections. Go to [Connect + Develop](#) and click on "Search for Technology".

Use of networks.....from 7500 people inside to 7500 *plus* 1.5 million outside

- ❖ Proprietary networks, including technology entrepreneurs and suppliers.....
- ❖ Open networks, including NineSigma (RFPs), YourEncore (65plussers) and Yet2.com (IP market place)

P&G Osaka Connection

- ❖ When an *technology entrepreneur* discovered in an Osaka grocery store a stain removing sponge, he send it to Cincinnati. The resulting product MR Clean Magic Eraser is now in third generation development and has achieved double projected revenues
- ❖ BASF manufactures a melamine resin foam called Basotect for soundproofing and insulation in the construction & car industry; P&G's EBD negotiated its purchase
- ❖ LEC, a Tokyo based consumer-products company markets Basotect foam in Japan as a household sponge called Cleenpro; Adjacent Magic products *co-created* with BASF



P&G

Ebrahim Rezai, PhD

Associate Director
Global Baby Care - Raw Materials

The Procter & Gamble Company

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Meeting on April 19, 2007

The model works. Today, **more than 35 percent of our new products in market** have elements that originated from outside P&G, up from about 15 percent in 2000. And **45 percent of the initiatives in our product development portfolio** have key elements that were discovered externally.

Through connect and develop—along with improvements in other aspects of innovation related to product cost, design, and marketing—**our R&D productivity has increased by nearly 60 percent. Our innovation success rate has more than doubled, while the cost of innovation has fallen.**

R&D investment as a percentage of sales is down from 4.8 percent in 2000 to 3.4 percent today. And, in the last two years, **we've launched more than 100 new products** for which some aspect of execution came from outside the company.

FOREWORD BY JOHN SEELY BROWN

HENRY CHESBROUGH

OPEN INNOVATION

The New Imperative
for Creating and Profiting
from Technology

HARVARD BUSINESS SCHOOL PRESS

“... firms that can harness outside ideas to advance their own business while leveraging their internal ideas outside their current operations will likely thrive in this new era of open innovation”

Science and application

❖ 1900

- **Foundation of large industrial laboratories. Linear innovation model. Scientific research provides leads to Engineering Process and Product Development Laboratories**

❖ 1945

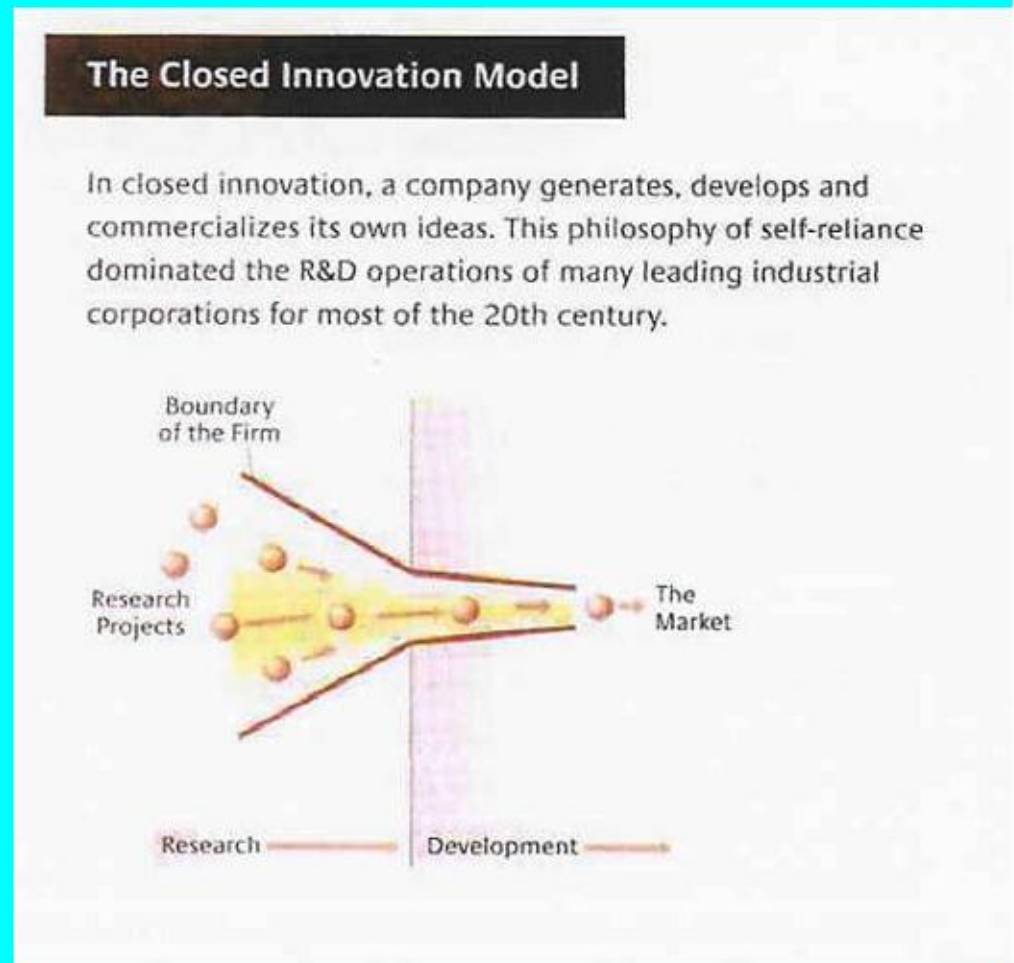
- **Vannevar Bush, Endless Frontier**
- **USA model: scientific (“free”) research in Universities, applied research in governmental laboratories**

❖ 1980

- **Open innovation model: outsourcing of research. Spinoffs from industry and university. Venture capital. Large mission oriented programs (USA)**
- **Science and Application unity**

The Closed Innovation Model

- ❖ Many innovative firms now spend little on R&D and yet they are able to successfully innovate by drawing in knowledge and expertise from wide range of external sources
- ❖ The decline in the strategic advantage of internal R&D is related to the increased mobility of knowledge workers, making it difficult for firms to appropriate and control their R&D investments



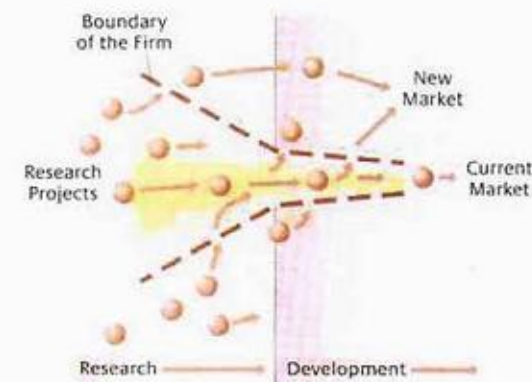
Source: Chesbrough, 2003

The Open Innovation Model

- ❖ Open innovators commercialise external ideas by deploying outside (as well as in-house) pathways to the market
- ❖ Firms become more porous and embedding it loosely-coupled networks of different actors, collectively and individual working toward commercialising the new knowledge
- ❖ Firms that are too focused internally are prone to miss a number of opportunities because many will fall outside the organization's current business or will need to be combined with external technologies to unlock their potential

The Open Innovation Model

In the new model of open innovation, a company commercializes both its own ideas as well as innovations from other firms and seeks ways to bring its in-house ideas to market by deploying pathways outside its current businesses. Note that the boundary between the company and its surrounding environment is porous (represented by a dashed line), enabling innovations to move more easily between the two.



Source: Chesbrough 2003

Contrasting closed and open models

| Closed innovation | Open innovation |
|---|--|
| The smart people in our field work for us | Not <i>all</i> smart people work for us. We need to work with smart people inside and outside the company |
| To profit from R&D, we must discover it, develop it and ship it ourselves | External R&D can create significant value. Internal R&D is needed to claim some portion of that value |
| The company that gets innovation to market first will win | Building a better business model is more important than getting to market first |
| If we create the most and the best ideas in the industry, we will win. | If we make the best use of internal and external ideas, we will win. |
| We should control our IP, so that our competitors cannot profit from it. | We should profit from other's use of our IP (license out) and we should license in other's IP whenever it advances our business model. |
| We will <u>own</u> all results from contract research with universities | We will partner with universities to create knowledge and encourage use outside our field |

Adapted from Chesbrough

Closed vs. Open Innovation (2)

| Closed Innovation | Open Innovation |
|--|--|
| Examples of industries: nuclear reactors, mainframe computers | Examples of industries: PCs, movies |
| Largely internal ideas | Many external ideas |
| Low labor mobility | High labor mobility |
| Little VC | Active VC |
| Few, weak start-ups | Numerous start-ups |
| Universities unimportant | Universities important |

Source: Chesbrough (2003)

New role(s) for universities

- ❖ Long term investment in excellence in scientific disciplines (*industry will not do it any more*)
- ❖ Efficient knowledge transfer with industry in a sustainable way (*building bridges*)= the Responsible Partnering initiative
- ❖ Enormous need for training of knowledge transfer professionals, both in university and industry
- ❖ Help develop new business models (support of spin-out creation)
- ❖ Support entrepreneurship, incubator services, training, education, mostly at regional level.

❖ **International Review of Technopoles and Science Cities around the world:**

Sophia-Antipolis (France),

Tsukuba-Kansai (Japan),

Daedeok Valley (South Korea)

❖ **Current Evaluation of North-East (Newcastle City-Region) on it's Innovation Performance (Both Firm Level & Regional Level)**

❖ **Learning Lessons from Daedeok**

- Forced relocation but good catching up
- Very Strong Collaborative work that has functioned between research institutions and industry
- Universities have formed alliances with some of the other best universities and research institutions around the world.

← **University of New Castle, UK**

This is globalization 3.0

Globalization 1.0 1492–1800
Nations globalize for resources & imperial conquest

Globalization 2.0 1800–2000
Companies globalize for markets & labor

Globalization 3.0 2000–??
Individuals & small groups globalize: connecting all of the
world's knowledge pools together

Thomas Friedman *The World is Flat: A Brief History of
the Twenty-First Century* NY: 2005: Farrar, Straus and
Giroux

The World is Flat:

- ❖ **Out-sourcing – 인도 (India)**
- ❖ **Off-shoring – 중국 (China)**
- ❖ **Open-Sourcing – 리눅스 (Linux)**
- ❖ **In-Sourcing -- UPS**
- ❖ **Supply Chain Management – Wal Mart**
- ❖ **In-forming– Google (접근 수단)**

Conclusions

- ❖ **Research and Innovation**
- ❖ **Branding and Awareness**
- ❖ **Strategic Partnerships**
- ❖ **Global Marketplace**
- ❖ **Expansion: Digital & Analog Jump!**