Appropriate Technology &
Disruptive Technology

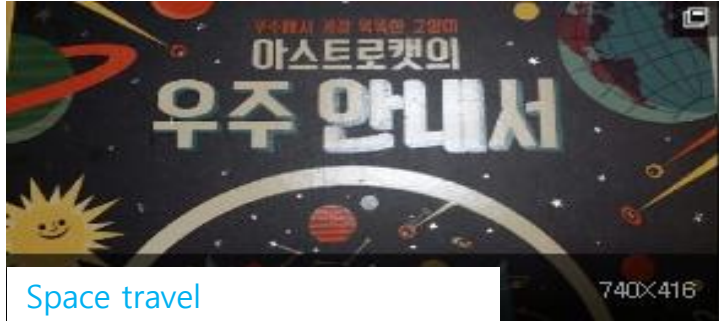**2020.12.27**

EUN SEON KIM

Appropriate Technology

One side...

Advanced or High Technology...

Video telephone   *Computer*   *Solar energy*
Robot   *Hyperloop system*   *Space travel*
AI   *Virtual reality*   *Genetic engineering*

Space travel

Robot

Virtual reality

Genetic engineering

Hyperloop system

3

The other side...

Hunger, Unclean water, Disease...

Appropriate Technology?

- Started with the term "intermediate technology"
  coined by economist E. F. Schumacher (1911-1977) in the 1960s

- Schumacher was contemplating the polarization of the rich and poor in developed countries and
  in the third world.
  He Claimed **"medium-sized technology"** is needed to achieve correct development

- This concept is even more famous through Schumacher's book 『**Small is Beautiful**』

- Activists preferred the term **"appropriate technology"** because they thought that the term
  "intermediate" could mean technically incomplete or inferior to advanced technology.
  That why It became more used.

[Source] Necessity and meaning of appropriate technology, examples

Success Story 1) I want to survive

Bayar's Stove

Mongolia where the cold of -50 degrees Celsius and 9 months in a year are winter

Mongolia's outskirts where poor people live,
11-year-old Bayar lives in Ching Gil-Tae Ger village .
Bayar makes a living by picking up trash with his cute 9-year-old brother.
This year, a harsh winter has come without fail .
Will Bayar be able to spend this winter safely?

- Spending on fuel for about 70 percent of the monthly average wage for 15 million won spent on.
- using the bituminous coal, wood for fuel and more use of heating and cooking stove
- serious pollution and severe respiratory problems(especially children under 5)

[Source] https://donghun.kr/816

G-Saver

- Reducing soot Thermal Storage Heating System.

- 40 percent reduction in fuel consumption
- Reducing urban air pollution.
- Reducing respiratory problems

- Inexpensive Price
- Products, distribution to local social enterprise by running the sustainable development to realize.

Success Story 2) I want to go to school, too

Joseph's day routine

- It takes more than 5 hour to deliver some water
  There's no time to go to school

The Hippo Water Roller
: **Technology for improved access to water**

- Very simple idea

- Easy to deliver
- Not heavy
- Save time
- Escape from the injury

- I can go to the school

[Source] http://blog.naver.com/gp3project/220054940987

Success story 3) I am thirsty

Life Straw

"Did you know that the majority of malnutrition is due to vomiting and diarrhea caused by drinking dirty water rather than due to lack of food?
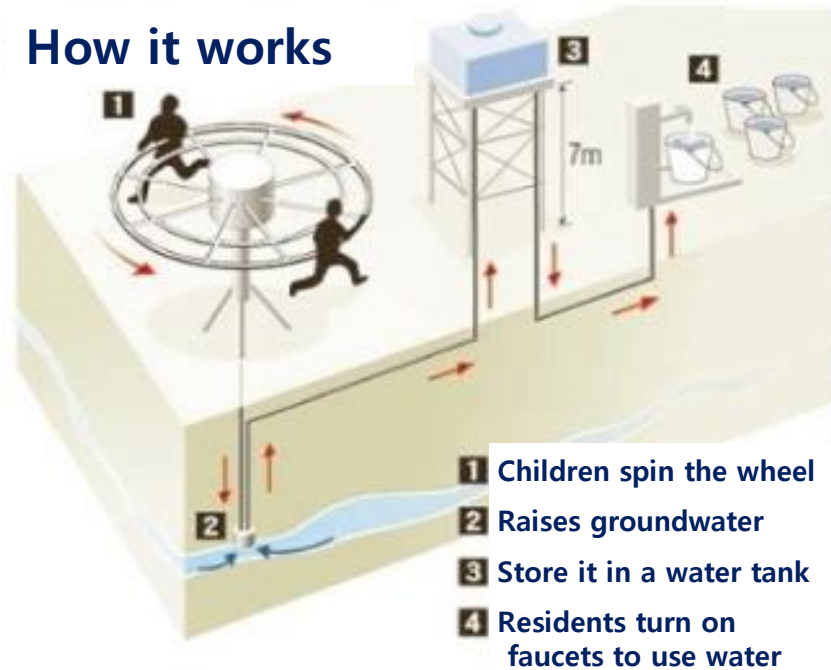
"portable water purification straw"
Vestergaard Frandsen created 'Life Straw' for those who cannot afford clean water and have no choice but to drink contaminated water.
➔ **It effectively filters out microorganisms that are fatal to humans,**
➔ **and removes 99.9% of bacteria to transform contaminated water into drinking water.**

[Source] http://blog.naver.com/groove_yoon/70152258710

Fail Story) Play Pump – Big Start

How it works

7m

Play Pump – Big Start

1 Children spin the wheel
2 Raises groundwater
3 Store it in a water tank
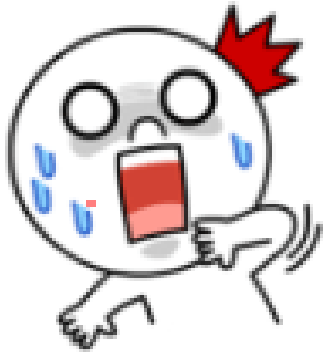4 Residents turn on faucets to use water

What a Good Idea !

- Combination of children's play equipment and manual pump.
  A simple principle of storing underground water in a water tank by turning a wheel.
- Jointly produced by South African Rounder Out Outdoors and the US private organization PlayPump International.
- Good idea, play pump advertisement, breakthrough appropriate technology
- Over 1,800 devices installed under US financial support

Fail Story) Working, not playing

➔ Each child lifts **only 2 liters** of water. **Less efficient** than conventional hand pump.

(Even if kids play without rest, they can't pump up the water they need)

➔ **Enormous repair costs** if it breaks

➔ The purpose of securing commerciality through advertising is also **only fame and no profit**,

and **no one is investing** in Play Pump anymore.

Lessoned Learned

Appropriate technology..

We have to Consider **designing for the other 90%.**

Appropriate technology..
We should not forget the concept of

1) Localized development
2) Sustainable development
3) Environment-friendly development.

What is the Difference Between...

Sustaining Innovation & Disruptive Innovation

- "Doing it Better"
- Way For Products to Change
- Does Not Create New Growth

- "Playing the Game Differently"
- Creates a New Market
- Transforms or Destroys Current Market
- Products Become Simpler/More Affordable/ More Accessible/Customizable
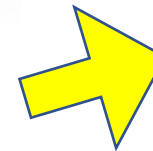- Drives Growth

CRT TV

LED Smart TV

PS3

Wii

Technology is …

Technology is… **Going to Advance**
No Stopping it,
Even if it Ruins an Industry…

The Good News is …
Often Creates a New Industry

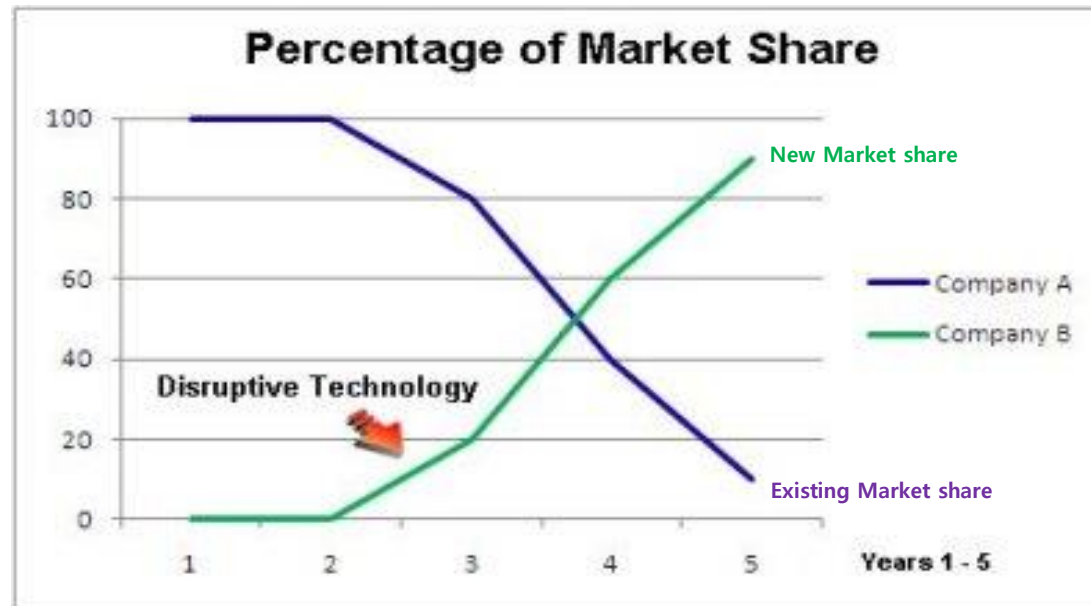**Companies Either Get on Board …Or Get Left Behind**

Disruptive Technology

- Create New Markets
  and Disrupts an Existing Market and Value Network

- Designed for a Different Set of Consumers
  in a New Market

- Lowers Prices in Existing Market

- Displaces an Earlier Technology

- Unpredictable

Creative Destruction

- Leads to Paradigm Shifts

- The Idea makes the Emergence of New Eras

Where There is Risk, There is Reward

Hype Cycle for Emerging Technologies, 2020

Right time is important

Early Adoption Risks

- Picking the **Wrong Technology**
  - HD-DVD vs. Blu-ray

    [Source] https://screenrant.com/why-blu-ray-beat-hd-dvd-sony-toshiba/

- Not Following **Real Consumer Trends**
  - GM's Hummer

- Further Technological Innovation

[Source] http://www.4x4.co.kr/print_paper.php?number=1837

- **upgraded the military vehicle humvee to civilian use.**

- **Not very fuel efficient/ too big/ not safe the last product produced in 2010**

- **Bankruptcy in 2012**

Late Adopters

• **Kodak**

이스트만 코닥
Kodak
2016년 10월까지 쓰던 로고

KODAK

현 로고. 과거의 'K'자 로고 모습으로써 회귀하였으므로 엠피엠에서 특이하게 세로쓰기를 적용한 로고이다

- 1892 American, multinational Company
- **symbolic company** of film and analog cameras
- **Kodak moment**: The moment you want
                           to leave as a photo

- dominated photography industry for 30 years
- slow to move to digital photography **despite inventing the technology(1st digital camera made,1975)**
  * In 1981, the internal report judged that digital cameras are a threat to the existing film market.
    Eventually, Sony unveiled the Mavica series and commercialized digital cameras for the first time in the world (1981)

- Finally transitioned but was playing wrong game and didn't adjust to low profit margin in new industry, could not compete

- In January 2012, declared bankruptcy
  * To be precise, it stepped out of the general film and digital camera market, but continues to reign as a giant in the print publishing industry.

- no vision for future and **wanted to delay move away from film** (still making lots of money)

Success Stories

→ **Search Algorithm
(No touch algorithm)**

→ **The Icon of innovation**

→ **Mobile game
(Angry Bird, Rovio in Finland)**

→ **Mobile game
(Pokémon GO, NIANTIC Inc.)**

Fail Stories

<사진출처=픽사베이>

→ **Obama Phone, qwerty keyboard (Black berry)**

→ **Kokia Phone (Nokia)**

Lessoned Learned

You don't know when the transition period will start.
The idea is to understand that it will…
and become prepared for it.

- Dr. Timothy Bishop (Future Studies, University of Houston)

There is no eternal empire.

Another new sun rises again.

Current technology can break through invisible niches.

[Sources]

- Necessity and meaning of appropriate technology, examples http://comwel2009.blog.me/220768580027

- Bayar's Stove http://donghun.kr/816

- The Hippo Water Roller http://blog.naver.com/gp3project/220054940987

- Life Straw http://blog.naver.com/groove_yoon/70152258710

- Appropriate technology, fail story http://blog.naver.com/kipa_ipsharing/220782294638

- Hype Cycle for Emerging Technologies, 2020 https://www.gartner.com/smarterwithgartner/

- HD-DVD vs. Blu-ray https://screenrant.com/why-blu-ray-beat-hd-dvd-sony-toshiba/

- GM's Hummer http://www.4x4.co.kr/print_paper.php?number=1837

- Kodak https://namu.wiki/w/%EC%9D%B4%EC%8A%A4%ED%8A%B8%EB%A7%8C%20%EC%BD%94%EB%8B%A5