Shape-Shifting Robot

Movie Term Project

Imagine you have a program chip and you can change eve rything...

http://www.youtube.com/watch?v=u9HMhSvnbmk

http://newrisingmedia.com/all/2012/12/3/mit-invents-shape-shifting-robots-small-step-towards-real-li.html

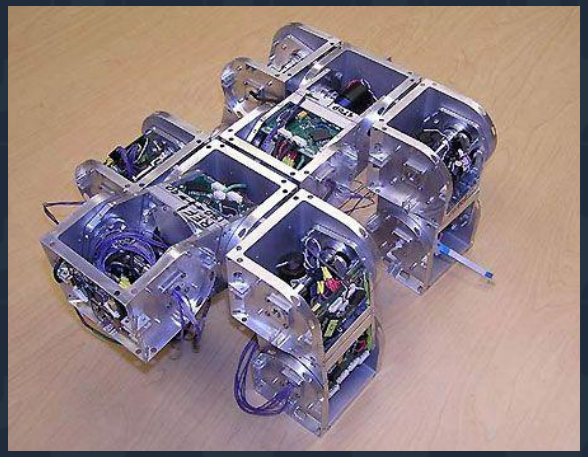
Technology

1. What:

- Atoms can slide over atoms, rearrange themselves
- If atoms are replaced by **chips**, chips that are so small they're smaller than the he ad of a pin and you can **change their electric charge**
- By changing the electric charge they bind and reform in different ways
- Intel is already leading the charge toward developing this kind of **programmab le matter.**
- In the future it could be used to build entire cities instantaneously.

Technology

2. **How:** with the technology, a table can transform to a chair or a bed can transform to a car.
3. **Requirement:** shape-changing material, program chip
4. **Movie:** **Transformer, Terminator**



Can this technology exist?

Example of shape-shifting robot

- http://www.youtube.com/watch?v=e44hA6IBtkA
- http://urbantimes.co/2012/11/the-shape-shifting-robots-of-the-future/

Example of shape-shifting mobile phone

- http://www.youtube.com/watch?v=QuI-7J59_Yw
- http://www.youtube.com/watch?v=oaZHj9SEzLQ

Example of shape-shifting material

- http://www.youtube.com/watch?v=RFuBX03GwqI
- http://www.youtube.com/watch?v=1SmTR_C_2wo

Why?

- People wants production that design is simple but provide various functions.
- This technology would make a hit in changing the li fe style of human (the way they drive, park, live, wor k, shop…)
- A product that can transform itself to anything that people want would help improve life standard and open new opportunities for new market.

Obstacles to develop

- **Finding the suitable material**
- **The material needs**
  - Electrical impulse
  - To be simple enough but yet be able to transfor m into any complex shape
  - To follow the instruction that were written by the program
  - To be flexible
  - To durable under any environment condition
- **A superior program**

- The possible **objects** that can be created **need to be similar** somehow in terms of function or design (ex: a car may transform into a ship but a desk may not be able to transform into a car)
- Things that **cannot be created (ex: food, money)**
- How to get the technology into a market?
- Different needs may exist due to different geography conditions. How to satisfy several needs?
- What kind of **energy** would be **required?** How much?

Advantages and Disadvantages

Pros	Cons
• Reduce the number of facilities (ex, parking lot is no more required because a table can transform into a car with this technology) • Reduce the size of houses since many things can be created from one product. • Convenient for use • New industry and new market • Creation of helpful robot •More efficient use of material	• Destroy many industries • People may transfer it into a weapon. When everyone has a weapon then the safety of society no longer exist • Costly • Require time to develop

Institutional Mechanism

- Robot laws aren't constantly legally discussed
- In 2011, the Engineering and Physical Sciences Research Council (EPRSC) and the Arts and Humanities Research Council (AHRC) of Great Britain
- **Five ethical "principles for designers, builders and users of robots"**
  - No to kill or harm humans.
  - Designed to achieve human goals.
  - Assure their safety and security.
  - Follow orders from human
  - Who is legally responsible for a robot.

People responsiveness

- **Many people like this technology because:**

- Simple design, various function
- Convenient
- Useful

- **Many people do not like this technology because:**

- According to a survey conducted by Public Policy Polling, 4 percent of Americans -- or more than 12 million of my nation-neighbors -- think "shape-shifting reptilian people control our world by taking on human form and gaining political power to manipulate our societies".
- Require changing usage habit
- Require different skills
- Many industries would be destroyed

Future vision

- **When:** around **50~ 80 years later**
- In near future, this technology will be used widely,
- It will require a strict rule of using. Otherwise, the benefits which the t echnologies bring to life would not be able to embrace the cost of in appropriate usages.