

Economics of Innovation

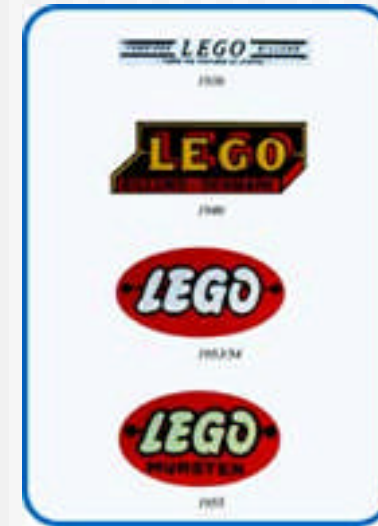
**IP in the Digital Economy
- CASE STUDY -**



"At LEGO®, IP is not a toy"

The LEGO Group

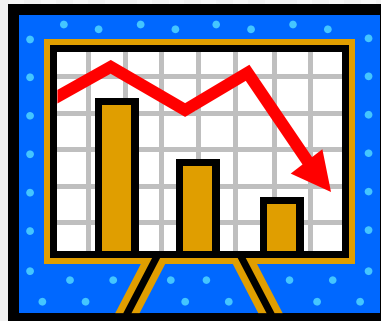
- The name 'LEGO' is an abbreviation of the two Danish words "leg godt", meaning "play well". It's our name and it's our ideal.
- The LEGO Group was founded in 1932 by Ole Kirk Christiansen. The Company has passed from father to son and is now owned by Kjeld Kirk Kristiansen, a grandchild of the founder.
- It has come a long way over the past 70 years - from a small carpenter's workshop to a modern, global enterprise that is now, in terms of sales, the world's sixth-largest manufacturer of toys.
- Our head office is in Billund, Denmark but we have subsidiaries and branches throughout the world, and LEGO products are sold in more than 130 countries. (Taken from www.lego.com)



The purpose and vision of the LEGO Group is to inspire children to explore and challenge their own creative potential.

LEGO's current difficulties

- After growing rapidly for more than 50 years, LEGO has been in trouble in recent years...
 - It posted its first loss ever in 1998.
 - It has cut almost 1/3 of its work force in Billund (its home town, where it produces 90% of its bricks), a loss of 1,000 jobs.
 - In 2004, the company's net loss more than doubled from 2003, to \$309 million, as revenue fell 6% to \$1.3 billion.
 - The newly appointed CEO is planning to sell assets - most notably the 4 Legoland amusement parks around the world.



LEGO's current difficulties (2)

■ Causes?

■ Computerization of children's playtime

- "Kids are replacing toys with electronics"
- The American market for building sets shrank from \$820 million in 2001 to \$630 million in 2004.

■ More pressure on prices and lead times

- from the growth of discount retailers like Wal-Mart and the decline of specialized toy sellers

■ New competitors

- Mega Bloks, Tyco Toys (acquired by Mattel), Best-Lock

■ IP issues

- Piracy of software
- Expiration of its patents

Very different reactions:
LEGO looks like Dr. Jekyll and
Mr Hyde



Dr. Jekyll: LEGO Factory

■ LEGO Factory

- Launched in 2005
- Service through which users can create their own unique and customized Lego models
- Powered by *Lego Digital Designer*, a free downloadable 3D software.
- Once the designs are created and uploaded through Lego Factory, the company manufactures the bricks necessary for the model and ships them to users so they can assemble their models.



■ Lego's "permissive attitude"

- **Before:** Lego users were discouraged to propose new designs
 - A father and his son sent new designs to Lego with the hopes, not of money, but of the satisfaction of making a contribution to the company they had loved for so long. And the reply: a legal letter asserting Lego's intellectual property over all such things and the aggressive response they could expect if they ever tried to profit from these designs.

Dr. Jekyll: LEGO Factory (2)

■ Lego's "permissive attitude"

- **After**: organization of a Lego Factory contest; 8 customers have their designs selected for actual production as Lego sets; each received 5% of the revenue from sales of the sets.
- Example of "**user-based innovation**" (manufacturers look to users for product development ideas)

■ Lego's "even more permissive attitude"

- Adult Lego fans quickly hacked the 3D software... **and Lego cheered!**
 - The digital "palettes" of bricks users had to choose from often contained far more pieces than users really needed.
 - To cut down on the costs of making models, the hackers modified the actual digital files that lists the palettes users would see in Lego Digital Designer so that they were broken down in smaller bags.
 - Lego's reaction was largely positive, even though the company was caught off guard.



Competitions and Winners



Still doing great things with LEGO Factory!



A year has passed since eight LEGO enthusiasts were selected as the winners of the first LEGO Factory Design Competition. We recently talked to these designers and found that they're still big on building - and proud to see their models being sold as real LEGO sets. Check out the designer profiles and their great models below!

New Interviews!



**Neal
McClatchey**



**Nathanael
Kuipers**



**Joseph
Martin**



**Michael
Cozine**



**Philip
Hedlesky**

Glenn Nissen | 38 | Toronto, ON



Nickname:
glennnissen

Motto:
The robot guy
As a 3D graphics guy
of movies of them
model simulator so



Zoom

Whoouum...

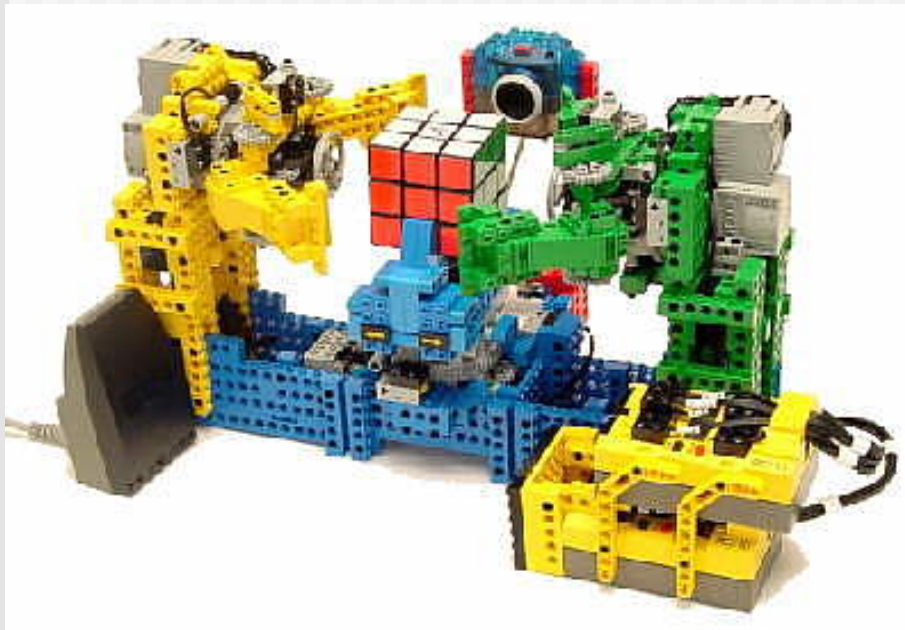
LEGO Racers are a
many little pieces
red, orange and b



The return of Dr. Jekyll: Mindstorms

■ Mindstorms Robotics Invention System

- Released in 1998.
- Allows users to actually program behavior into the bricks, creating intelligent beings that can do almost anything.
- Example: [Cube solver](#)



The return of Dr. Jekyll: Mindstorms (2)

■ Success despite wrong targeting

- Mindstorms was designed for 12-year-olds, but the toy quickly created an enormous buzz among grown-up geeks.
 - In its first year alone, it sold 100,000 kits (despite a stiff \$199 price tag), far beyond the 12,000 units the company had projected.
 - To Lego's surprise, some 70% of Mindstorms customers in the heady early months following its launch were old enough to vote.

■ Hacking

- Markus Noga teamed up via e-mail with other Mindstorms groupies who wanted to make the software more flexible, more powerful.
- The hackers deciphered part of Mindstorms's proprietary code, posted it on the Internet, and begun writing advanced new software for their robots.
- They gave their software away, not creating competing products.
- Noga even created an entire new operating system for the toy.

The return of Dr. Jekyll: Mindstorms (3)

- **Lego's reaction? Don't sue, embrace and control!**
 - It all happened so fast, Lego couldn't figure out what to do. So it did nothing.
 - Lego even became more “hacker-cool”: it released a software developer's kit that lets users do their own company-approved adjustments (and post photos and details about it on the Mindstorms website).
 - Lego has even worked many of the hackers' best ideas into version 2.0 of the robotics kit.



The return of Dr. Jekyll: Mindstorms (4)

- The software became open-source

Open Source Firmware Developer Kits for LEGO® MINDSTORMS® NXT Released!

Hackers get Ready!

Software, Hardware, and Bluetooth Developer Kits are now available for download in the [NXTreme](#) section of MINDSTORMS.com.

The Software Developer Kit includes the NXT driver interface specification and necessary tools for creating third-party programming environments. The Hardware Developer Kit provides schematics and details for the NXT 6-wire digital connector system, enabling users to design and develop third-party sensors that can interact with and control the NXT motors and intelligent brick. The Bluetooth Developer Kit details the Bluetooth protocol embedded in the NXT microprocessor, allowing users to create applications for any Bluetooth device to communicate with MINDSTORMS robots.



- Only negative reaction:
 - Noga dug deeper into the code and created his own OS, called “LegOS”.
 - As LegOS does look like Legos, the company planned a series of steps: from phone calls and letters to Noga to appeals to the U.S. Patent and Trademark Office.
 - If this didn’t work, Lego was threatening to sue (but this didn’t happen).

Mr Hyde, holding fast to his bricks

■ The origins

- Lego did not develop the idea of plastic blocks that lock together with small knobs. The blocks were invented and then patented in 1939 in England by Harry Fisher Page (founder of Kiddicraft).
- Kiddicraft bricks inspired Lego's founder and his son to make their first plastic blocks. But in 1958, Lego patented a subtle change in the bricks that even its competitors agree brought enormous improvement. The company introduced tiny tubes inside the bricks to give the knobs on top of other blocks more places to grip.

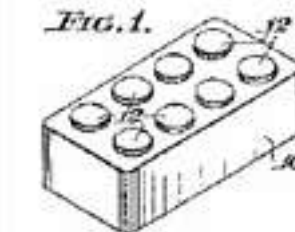
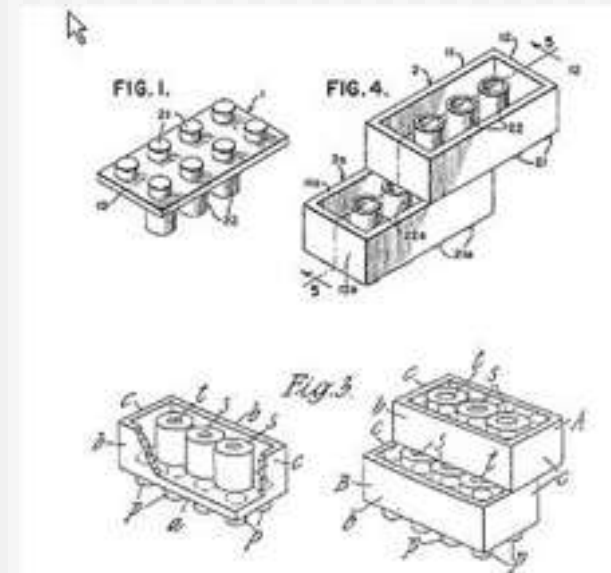


Fig. 1 of U.K. Patent
No. 587,206

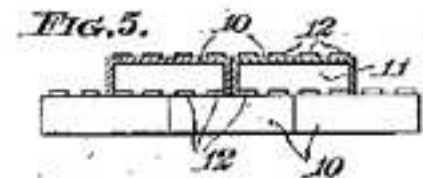


Fig. 5 of U.K. Patent
No. 587,206

The legal battle for the bricks

■ Overlapping IP rights

■ The Basic Lego Brick is in the borderzone between various forms of protection.

- The brick has been considered to be able to obtain exclusive rights as it provides a technical solution for a technical problem → [patents](#)
- Since its major patent on the Basic Lego Brick expired (1978), Lego has persistently tried to block its competitors by claiming that other forms of protection are available for the shape (design) of the bricks: [trademark](#) law, [copyright](#) law and [unfair competition](#) law.

■ The battles

- Lego each year handles hundreds of incidents relating to what the Group considers constitute infringements of its IPRs.
- Lego has won a lot of lawsuits but so has its competitors.
- Lego seems to have lost most of the lawsuits concerning trademark rights.



One up...

■ Victory in China

- In January 2003, the Beijing High People's Court issued a judgment in favor of Lego.
- The case involved the copying of Lego sets (groups of blocks that can be formed into something larger, like a rocket or a battleship) by a company called Coko Toy in China's Tianjin province. The Chinese company was selling them in China and exporting them, even to Denmark.
- When Lego sells the sets, as opposed to the blocks, distinct IPRs come into play: **industrial design (or applied art) copyright**
 - While it's basically legal for anyone to copy a basic Lego block, so long as you don't call it a Lego, it's illegal for anyone to copy a Lego Harry Potter castle set.
- The court ordered Coko Toy to turn over the molds it used to produce the ersatz Legos.

One down

■ Defeat in Canada

- Lego has failed in its attempt to enforce its trade mark for the design of its building blocks in the Canadian Supreme Court.
- The court found in favour of Lego's rival MegaBlocs.
- The court showed its displeasure at Lego's previous market dominance, saying
 - « The monopoly on the bricks is over, and Mega Bloks and Lego bricks may be interchangeable in the bins of the playrooms of the nation... Dragons, castles and knights may be designed with them, without any distinction. »
 - « (Lego) is no longer entitled to protection against competition in respect of its product. It must now face the rigors of a free market and its process of creative destruction. »
- **Main justification:** a company should not be able to extend the monopoly granted by a patent that has since expired by relying on trade mark rights.

Discussion

