

MICROECONOMICS FOR MAKERS

Chris Anderson







Sunday, October 7, 12

Make:

technology on your time

Build
Makey
the Robot!
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**FLYING
DRONES »**
Build the
world's cheapest,
funnest, most
hackable autopilot.
BY CHRIS ANDERSON

AND ROBOTS, ROVERS, DRONES

STARTING ON PAGE 45 »

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Make your own
lounge chair

**ROBOTIC
FLIES** PAGE 58 »

**MIDI CAMERA
CONTROL**
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**GREEN
SURFBOARD**
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O'REILLY

makezine.com

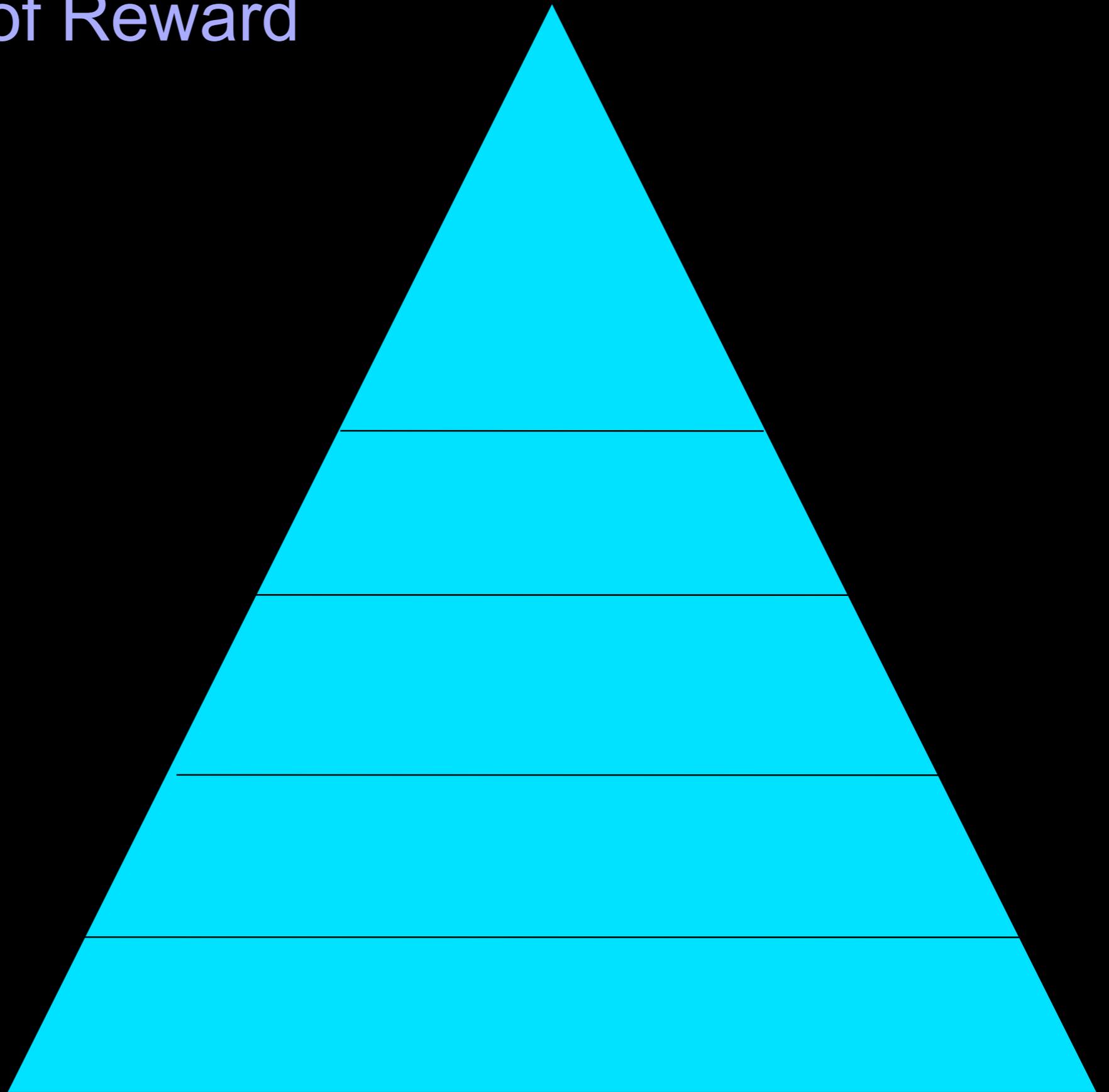


DIY
AMATEUR USA
DIY

Open Hardware Business Model

- “Give away the bits, sell the atoms”
- Charge 2.6x BOM
- Keep ahead of cloners by innovating faster, supporting better
- “90-10” Rule: 90% the performance of commercial products at 10% the price
- Democratize the technology: low prices = high volume = high innovation.

The Hierarchy of Reward



The Hierarchy of Reward



First accepted commit

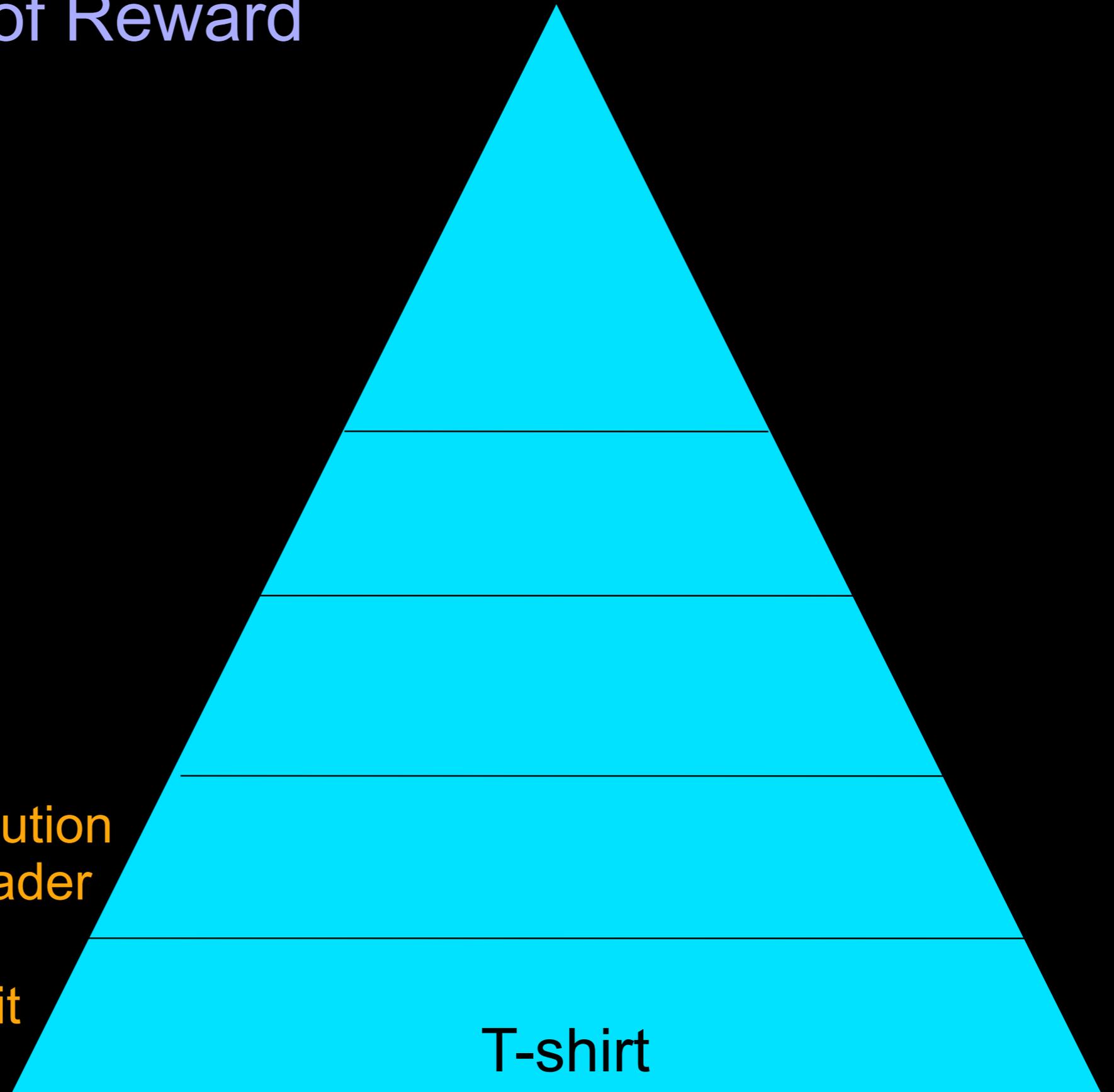
The Hierarchy of Reward



First accepted commit

T-shirt

The Hierarchy of Reward



“Sustained Contribution Award” by team leader

First accepted commit

T-shirt

The Hierarchy of Reward



“Sustained Contribution Award” by team leader

Coffee mug & hardware discount

First accepted commit

T-shirt

The Hierarchy of Reward



First accepted commit

“Sustained Contribution Award” by team leader

Accepts role as a project leader

Coffee mug & hardware discount

T-shirt

The Hierarchy of Reward



The Hierarchy of Reward



The Hierarchy of Reward



The Hierarchy of Reward

Team leaders who
have shipped a
major project

Core Team leaders

Accepts role as a
project leader

“Sustained Contribution
Award” by team leader

First accepted commit

Trip to dev
meeting

Dev team member
& free hardware

Coffee mug & hardware
discount

T-shirt

The Hierarchy of Reward

Team leaders who
have shipped a
major project

Equity

Core Team leaders

Trip to dev
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Accepts role as a
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Dev team member
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“Sustained Contribution
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Coffee mug & hardware
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First accepted commit

T-shirt

OSH advantages

- Free and fast R&D. Unbeatable economics.
- Lower regulatory barriers
- Natural business model
- Product development done by customers

But with a few exceptions (RepRap, Arduino, etc) most of the "derivative innovation" advantages have been on the

software side

THE PRINCIPLE POLITICAL
CONFLICT OF THE 20TH CENTURY
WAS LEFT VERSUS RIGHT.

IN THE 21ST CENTURY IT IS OPEN
VERSUS CLOSED

--ALEC ROSS

SEVEN OSH LIMITATIONS:

1) CLONING IS UNSTOPPABLE

What's Cloning?

- Not respecting Trademarks
- Not adhering to share-alike license terms
- Shameless copying of copyrighted marketing material
- No effort to give back to the community



When the cloners use your brand and the product doesn't work, it's *your* reputation that suffers.

#2 INVESTORS AREN'T SURE

- They get the power of open source, but want to see some barriers to commercial copying
- Open software, closed hardware?

#3 IT'S HARD TO KEEP UP

In real-world production, hardware designs can change weekly to reflect component supplies.

It's too hard to publish and document design files every time, thus open hardware designs are often out of date and misleading, creating confusion and suspicions.

#4 IT DOESN'T EXTEND MUCH BEYOND ELECTRONICS AND LASER- CUT MATERIALS

THINGS WE DON'T OPEN SOURCE:

- Injection molded parts
- Extruded parts
- CNC'd parts
- Custom cables
- Packaging

#5 IT CAN CONFUSE THE MARKETPLACE

- Incompatible versions
- Outmoded designs still sold
- Misleading product descriptions
- No documentation

#6 IT TENDS TO DRIVES PRICES DOWN, PUNISHING INNOVATORS MOST

Race to the bottom of
pricing leaves little time
to recoup R&D
investment

#7 UNLIKE SOFTWARE, MECHANISMS FOR "GIVING BACK" ARE CRUDE.

Until we have a "version control for stuff" as effective as GitHub, much of the value of the return cycle will be lost.

Real community collaboration in hardware is still too hard.

ALTERNATIVES?

- Conditional license. Ask and we'll give you the files with some restrictions on commercial use
- Schematics, not full design files.
- Open source software, closed source hardware (Raspberry Pi?)



MAKERS

**THE NEW
INDUSTRIAL
REVOLUTION**

CHRIS ANDERSON

Author of the bestseller [The Long Tail](#)