



3D Printing and the Future (or Demise) of Intellectual Property

John Hornick

October 2017

"A lucid and comprehensive account of the burgeoning field of 3D printing—the technologies, and their implications. Hornick makes a compelling case for why this technology can't be ignored. A must-read for anyone who wants to see beyond the horizon."

—Hod Lipson, coauthor, *Fabricated: The New World of 3D Printing*

"Hornick explores an exciting possible future where 3D printing has changed the way we design, make, and interact with the world. This book is a great compendium of 3D printing as it is today and what it may become tomorrow."

—Michael Weinberg, former Vice President,
Public Knowledge/General Counsel, Shapeways

"Hornick has written a terrific and much needed guide and explanation on the uses and possibilities of 3D Printing."

—Alan Meckler, Meckler Media, producer of Inside
3D Printing Conferences and Trade Shows

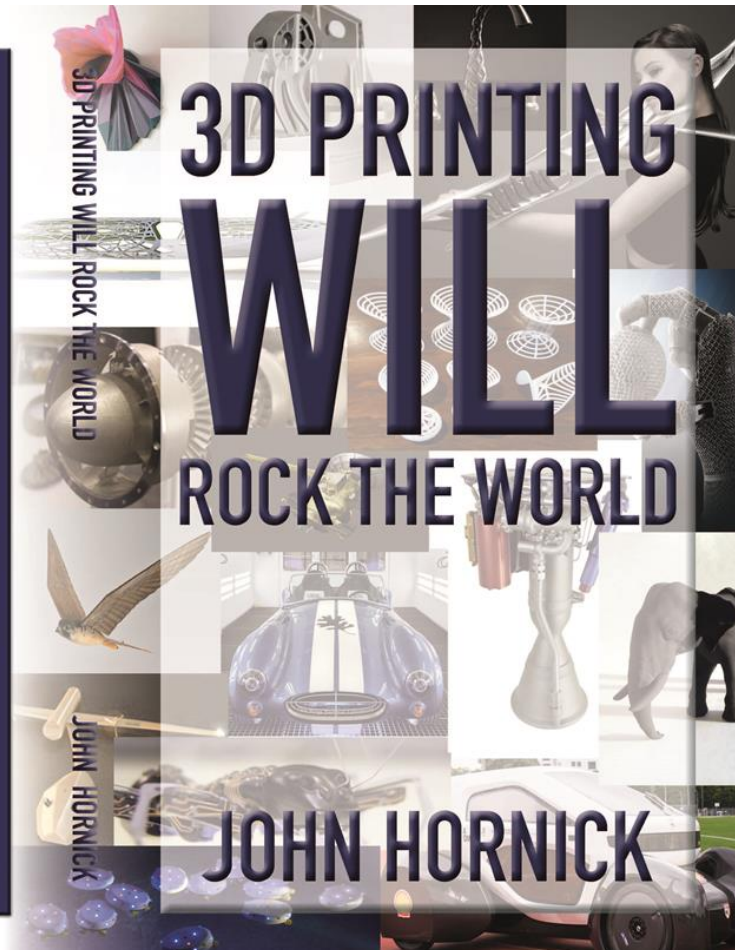
"John has assembled a comprehensive assessment of this rapidly growing technology and offers rare insight into how 3D printing is redefining what can be designed and manufactured, spawning new products and markets that we have yet to imagine."

—Ed Morris, Vice President and Director, America Makes—The National
Additive Manufacturing Innovation Institute

In *3D Printing Will Rock the World*, John Hornick takes a deep look into the world of 3D printing and its potential future impact on business, manufacturing, science, crime, law, education, and, basically, life as we know it.



John Hornick is a partner with the Finnegan IP law firm. He is a frequent writer and speaker, and advises businesses and policy makers on 3D printing and its potential effects on IP law and the world.



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First, a Disclaimer

“Are these the shadows of the things that Will be, or are they the shadows of things that May be?”

» Ebenezer Scrooge, to the Third Spirit





Disruptive Game Changers

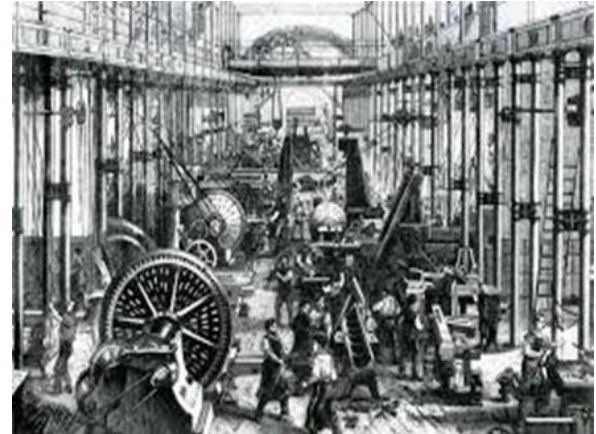
Disruptive Game Changers



Disruptive Game Changers



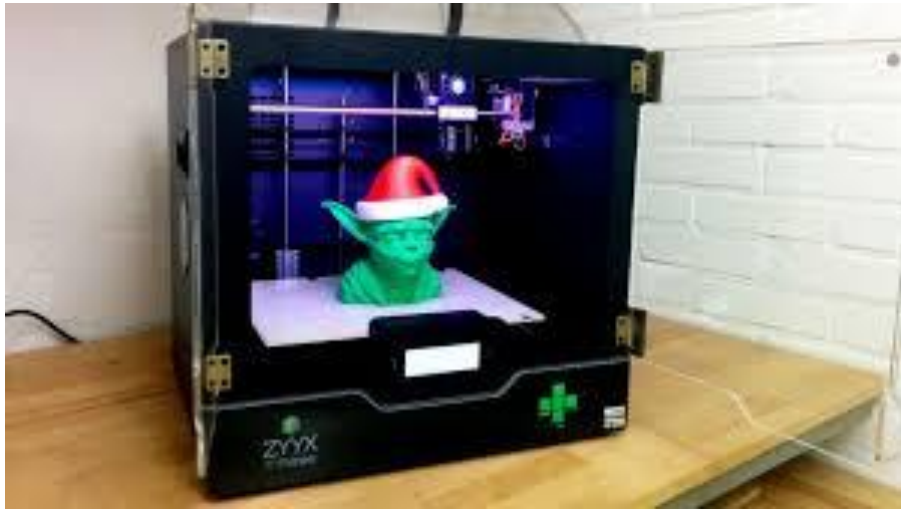
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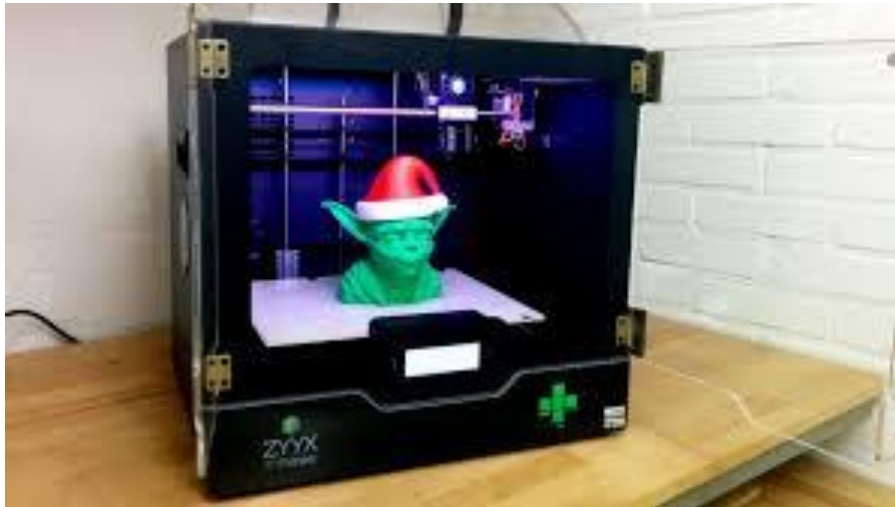
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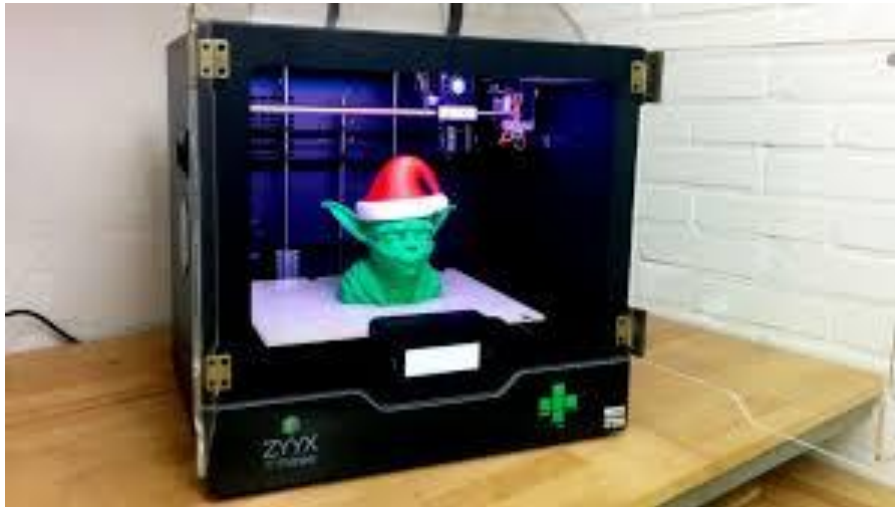
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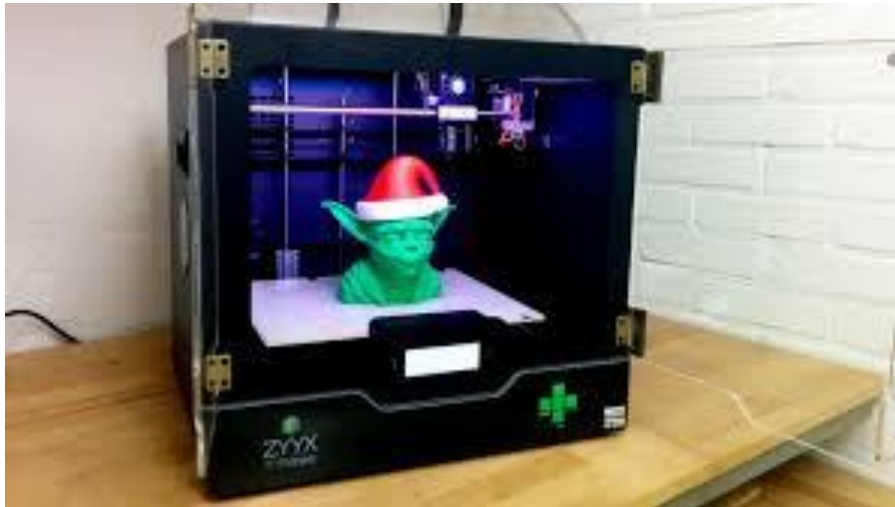
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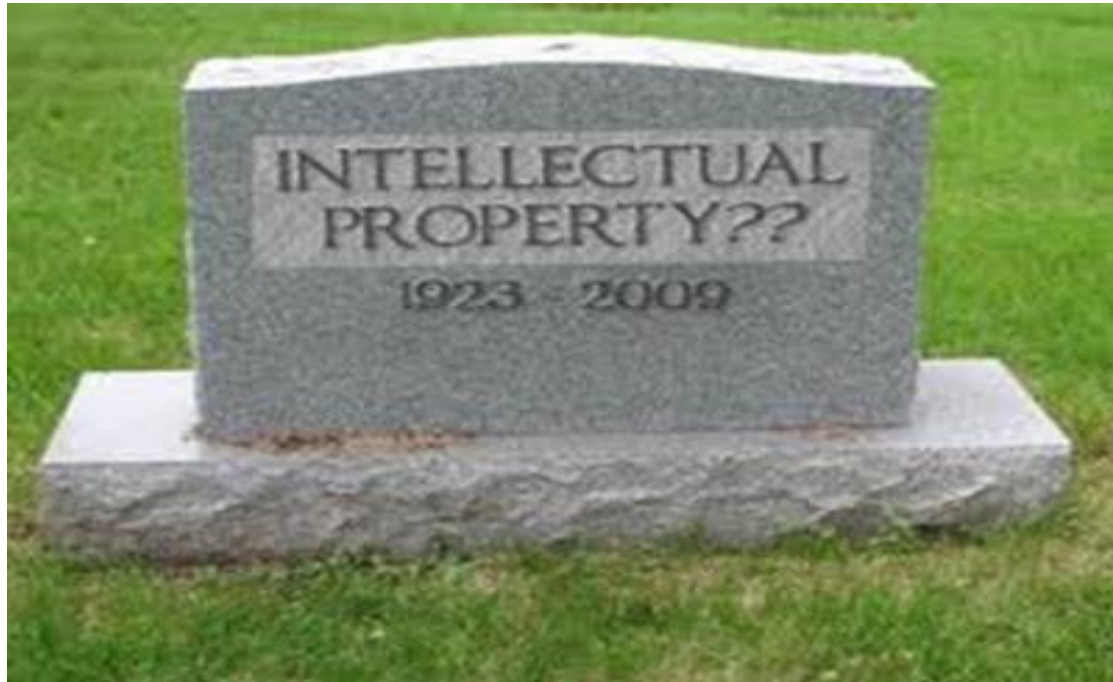




Why the Future (or Demise) of IP?

Three Reasons

- **Democratization of manufacturing**



Three Reasons

- “There is a persistent widespread belief that intellectual property law (and patents in particular) encourage innovation. This is intuitive, however, the evidence to the contrary is now overwhelming and the unavoidable conclusion is that intellectual property actually stifles innovation.”

Prof. Joshua Pearce, Materials Science, Mich Tech



Three Reasons

\$170K+



7200

Hila & Ethan Klein

“In my and many others' opinion this is an attempt to step on freedom of speech via a broken copyright system and most people's confusion over Fair Use.”

Philip DeFranco

Three Reasons

- **Away from Control**



Why 3DP Is Rocking Manufacturing

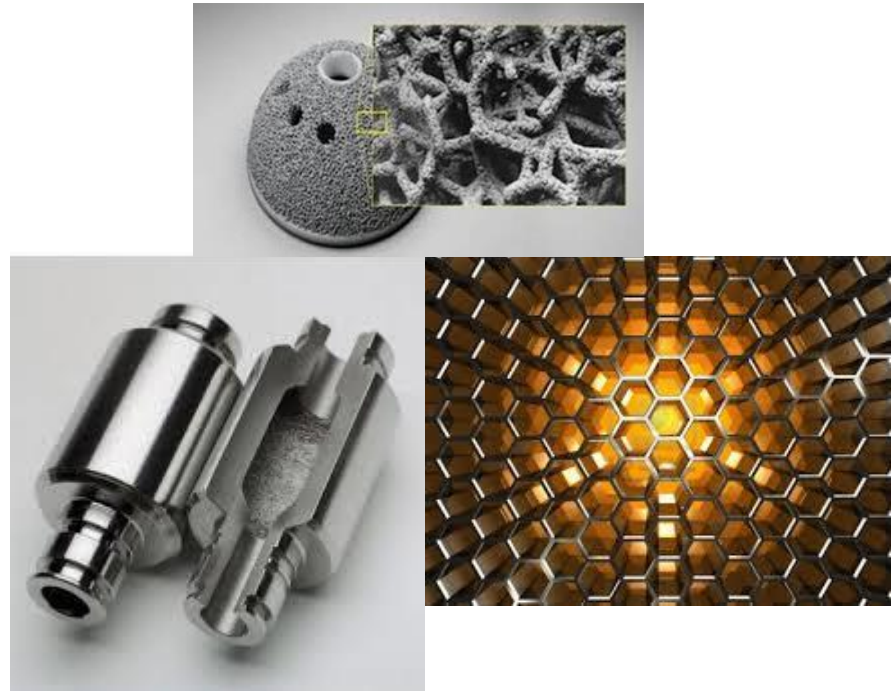
Rocking Manufacturing

- No assembly required



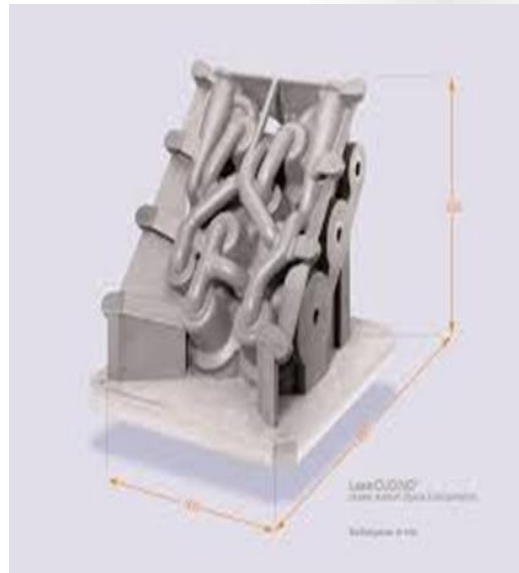
Rocking Manufacturing

- No assembly required
- Design freedom



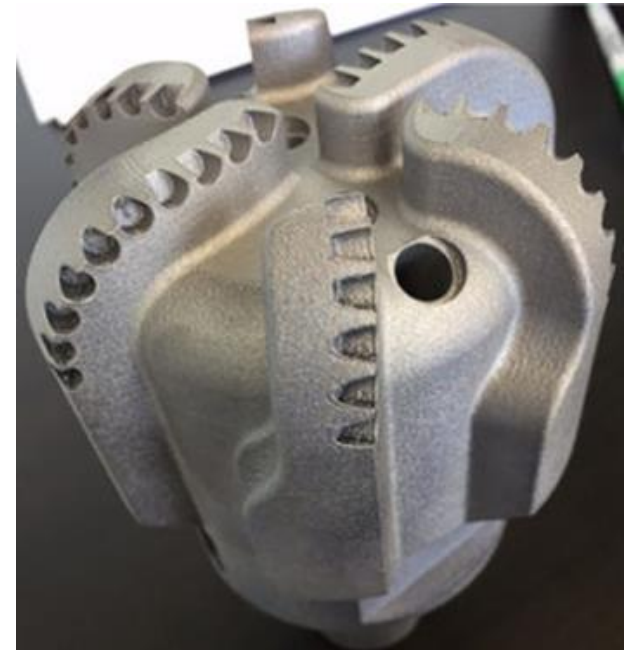
Rocking Manufacturing

- No assembly required
- Design freedom
- **Cost Neutral**
 - Complexity



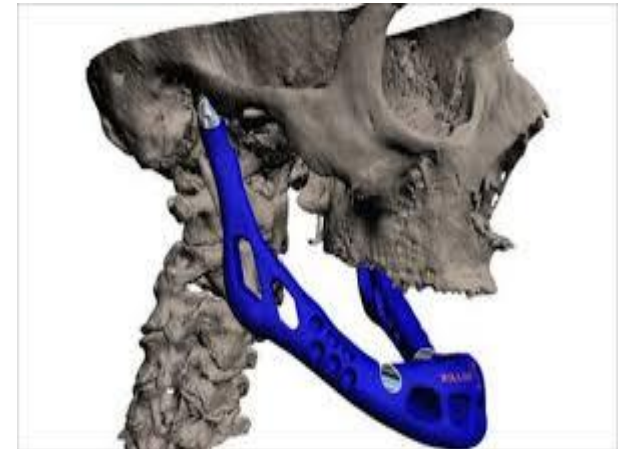
Rocking Manufacturing

- No assembly required
- Design freedom
- **Cost Neutral**
 - Complexity
 - **Batches of one**



Rocking Manufacturing

- No assembly required
- Design freedom
- **Cost Neutral**
 - Complexity
 - Batches of one
 - **Customization**





Paradigm Shift

Paradigm Shift



Paradigm Shift



Paradigm Shift



Paradigm Shift





Consequences

Consequences

Lines blur



Consequences

Lines blur

Business models evolve

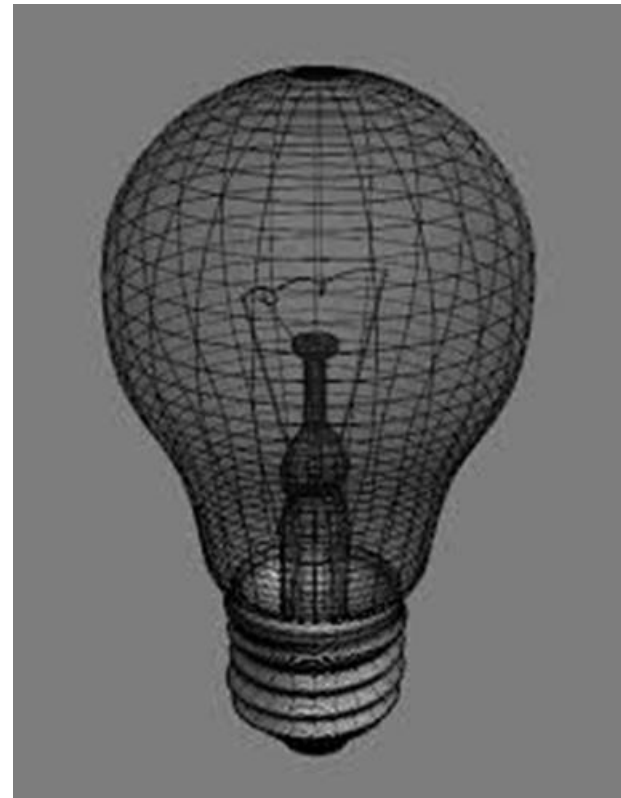


Consequences

Lines blur

Business models evolve

Designs, not Products



Consequences

Lines blur

Business models evolve

Designs, not Products

**Fundamentally different
products**



Consequences

Lines blur

Business models evolve

Designs, not Products

**Fundamentally different
products**



BACK TO making, not buying



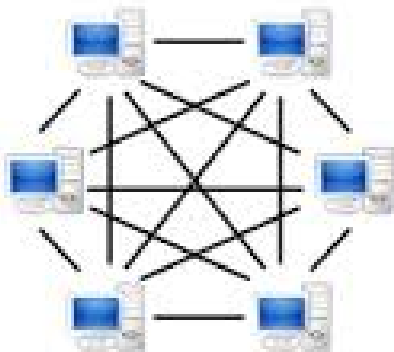
What Would Happen If . . .

What if . . .

**Anyone could make anything,
away from control?**

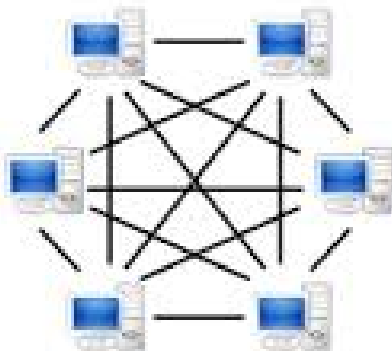
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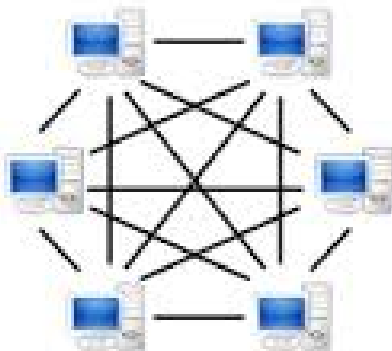
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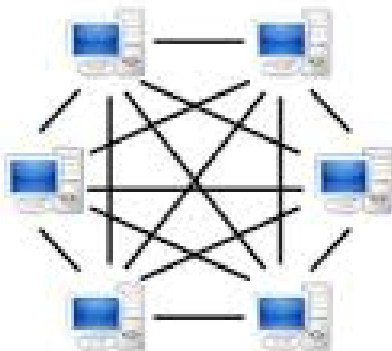
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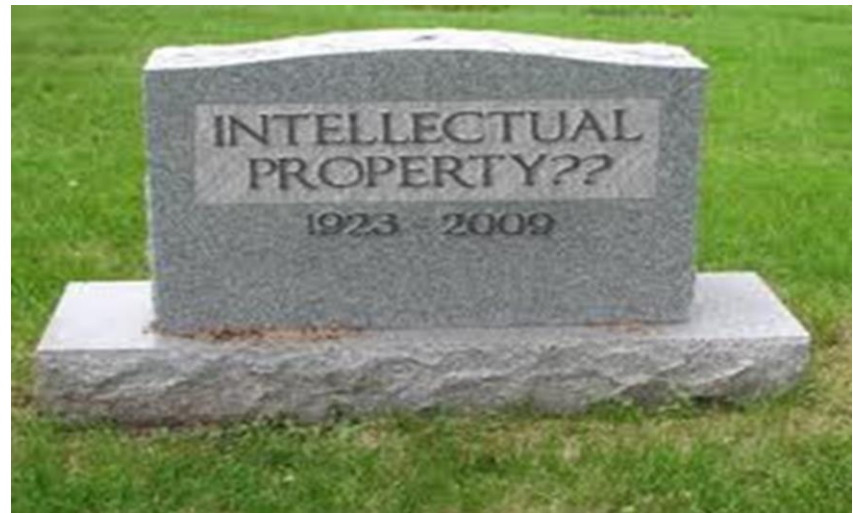
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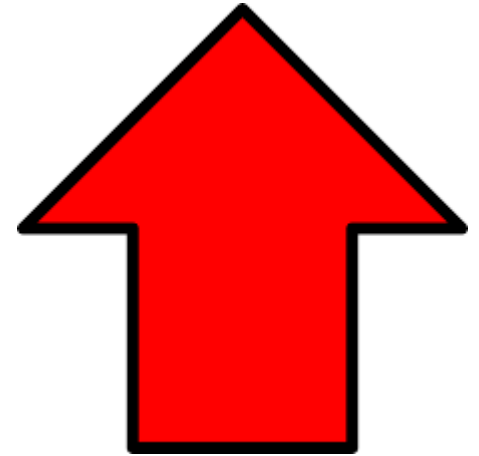


What if . . .



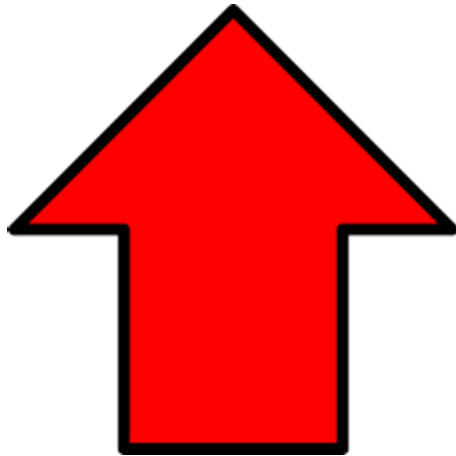
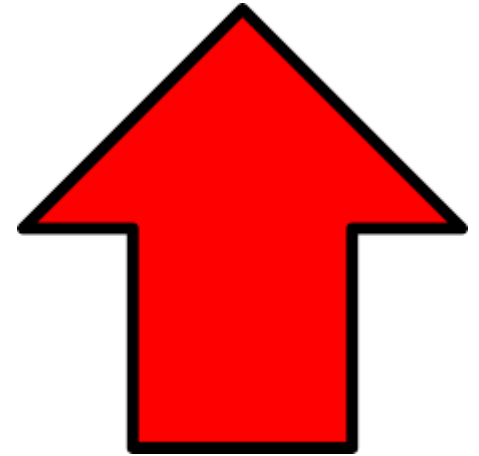
What if . . .

As democratization
increases . . .



What if . . .

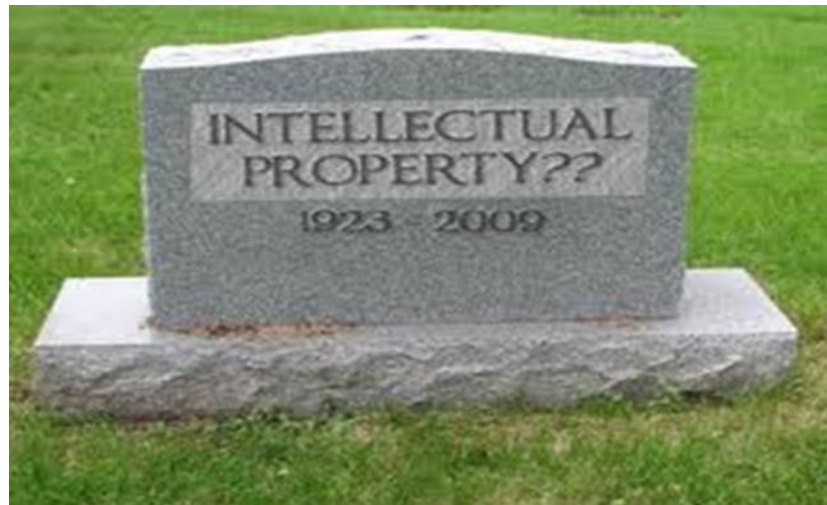
As democratization
increases . . .



Away From Control

What if . . .

IP increasingly irrelevant



What if . . .



What if . . .

- Customization replaces IP



What if . . .

- Customization replaces IP
- IP for infrastructure



What if . . .

- Customization replaces IP
- IP for infrastructure
- Non-IP-based business models





3DP Today

3DP in Aerospace



“This is the ultimate manufacturing method for us”



“This is the future of manufacturing”

LEAP

Alabama

Weight



3DP in Aerospace



MONASH University



3DP in Aerospace



3DP in Healthcare



3DP is Rocking Healthcare





What Will Happen Next?

Within Control



Away From Control

5 Is



Away From Control

5 Is
Infringement



Away From Control

5 Is

Infringement

Identification



Away From Control

5 Is

Infringement

Identification

Impractical/Impossible



Away From Control

5 Is

Infringement

Identification

Impractical/Impossible

Irrelevant



Away From Control



Away From Control



Away From Control



Away from Control: Bigger Effect



Why buy brands?

Away from Control: Bigger Effect

“Do I envision a future where we might still own the file, from an IP perspective, . . . and you can manufacture that in your home . . .? Oh yeah, that’s not that far away.”

Eric Sprunk, COO



Away from Control: Bigger Effect

“Do I envision a future where we might still own the file, from an IP perspective, . . . and you can manufacture that in your home . . .? Oh yeah, that’s not that far away.”

Eric Sprunk, COO



“will people still pay for that Nike file . . . or will . . . people . . . rather brag that they . . . designed and printed their own shoes instead of simply printing a file from a company?”

Michelle Matisons, 3Dprint.com



Rocking the IP World

Rocking the IP World

- Principles



Rocking the IP World

- Principles
- Magnitude
 - All IP



Rocking the IP World

- Principles
- Magnitude
 - All IP
 - Most products



Rocking the IP World

- Principles
- Magnitude
 - All IP
 - Most products
 - Scale/targets



Rocking the IP World

- Principles
- Magnitude
 - All IP
 - Most products
 - Scale/targets
- Gartner: \$100B by 2018



Rocking the IP World



Rocking the IP World



Rocking the IP World

Futility: The Fight Against Online Piracy



Online users find nothing wrong with online piracy



Of global internet bandwidth is used for online piracy



Of computers have at least 1 downloaded illegal application



Of music downloaded online is illegal



Reactions

Reactions

- Lawyer Up



Reactions

- Lawyer Up
- **Litigation**



Reactions

- Lawyer Up
- Litigation
- **Licensing**



Reactions

- Lawyer Up
- Litigation
- Licensing
- **Legislation**



Reactions

- Lawyer Up
- Litigation
- Licensing
- Legislation
- **Lock it Up**





My Vision

My Vision

- **Within Control**

My Vision

- **Within Control**
 - **Multi-function machines**

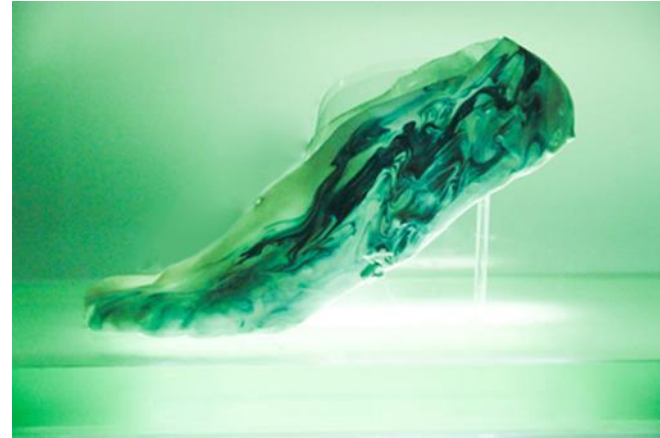


“We want our machines to make anything” in 5 years

Epson

My Vision

- **Within Control**
 - Multi-function machines
 - **Radically different L&F**



My Vision

- **Within Control**
 - Multi-function machines
 - Radically different L&F
 - **Complement TM**



My Vision

- **Within Control**
 - Multi-function machines
 - Radically different L&F
 - Complement TM
 - **Every classroom**



My Vision

- **Within Control**
 - Multi-function machines
 - Radically different L&F
 - Complement TM
 - Every classroom
 - **Flourishing economies**



My Vision

- **Within Control**

- **Multi-function machines**
- **Radically different L&F**
- **Complement TM**
- **Every classroom**
- **Flourishing economies**

- **Away from Control**

My Vision

- **Within Control**

- Multi-function machines
- Radically different L&F
- Complement TM
- Every classroom
- Flourishing economies

- **Away from Control**

- **iFactory**



My Vision

- **Within Control**

- Multi-function machines
- Radically different L&F
- Complement TM
- Every classroom
- Flourishing economies

- **Away from Control**

- iFactory
- **Every home**



My Vision

- **Within Control**

- Multi-function machines
- Radically different L&F
- Complement TM
- Every classroom
- Flourishing economies

- **Away from Control**

- iFactory
- Every home
- **Any functionality**



My Vision

■ Within Control

- Multi-function machines
- Radically different L&F
- Complement TM
- Every classroom
- Flourishing economies

■ Away from Control

- iFactory
- Every home
- Any functionality
- **Easy as a breadmaker**



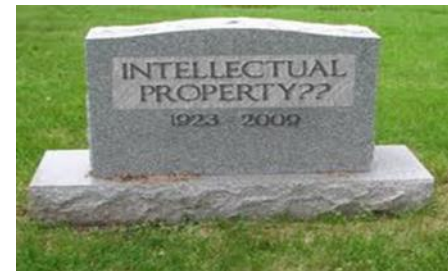
My Vision

■ Within Control

- Multi-function machines
- Radically different L&F
- Complement TM
- Every classroom
- Flourishing economies

■ Away from Control

- iFactory
- Every home
- Any functionality
- Easy as a breadmaker
- IP increasingly irrelevant



When?

“We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten”

Bill Gates



Will we be Ready?

Will we be Ready?

“a substantial portion of manufacturers may be caught off-guard by the rapid changes underway”





Keep in Mind . . .

Keep in Mind

- Tipping into the mainstream



Keep in Mind

- Tipping into the mainstream



- Everything will change . . .

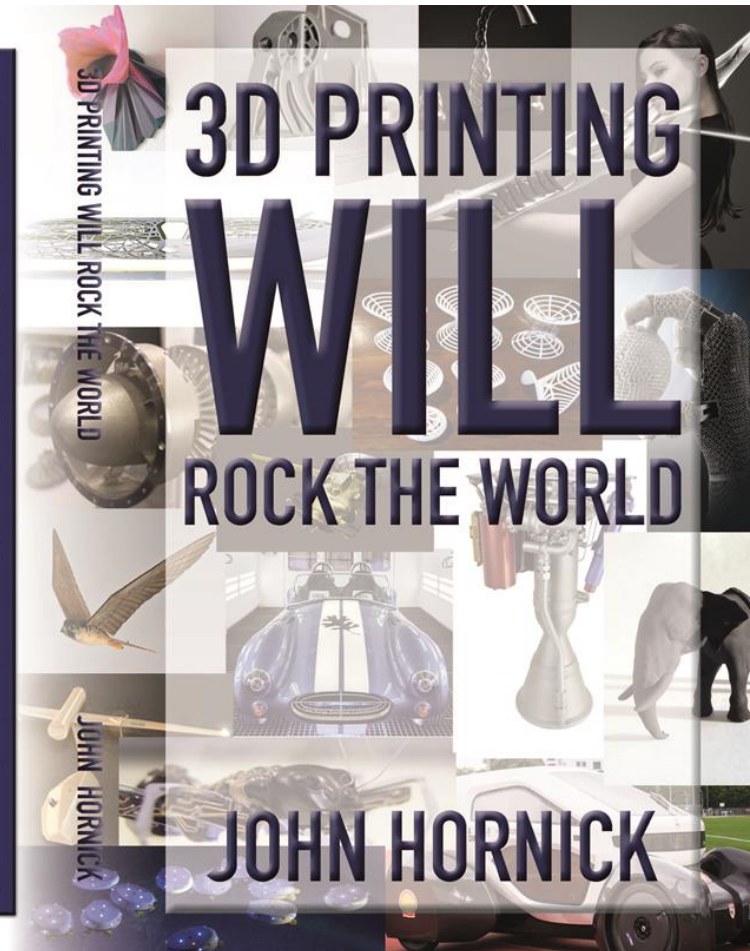
Keep in Mind

- Tipping into the mainstream



- Everything will change . . .
- Implications

QUESTIONS??



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