3D Printing: Legal Issues in the Next Industrial Revolution
Agenda

- 3D Printing Overview
- 3D Printing Industry Perspective
- Regulatory Landscape:
- Product Liability Issues:
- Intellectual Property Issues:
Agenda

3D Printing Overview

3D Printing Industry Perspective

Regulatory Landscape:

Product Liability Issues:

Intellectual Property Issues:
“3D printing that has the potential to revolutionize the way we make almost everything”

http://www1.eere.energy.gov/manufacturing/amp/obama_praises_namii.html
3D Printing Definition

“The process of joining materials to make objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing technologies.”

ASTM International Committee F42
3D Printed Objects Are Built Layer by Layer From 2D images

**SINGLE 2D PRINT**
Digitally rendered and printed 2D image

**STACK of 2D PRINTS**
Stack of individual 2D images

**3D PRINT**
Stack of 2D images printed into 3D part

**PHOTO of 3DP PART**
Photo of actual finished 3D printed part
# 3D Printing Applications - TODAY

## Final Part Manufacturing
- Accessories
- Jewelry
- Medical/dental
- Sport equipment
- New products
- Repairs

## Prototypes
- Concepts
- Models
- Fit test
- Functional test
- Training
- Jigs
- Molds

## Consumer/Prosumer Apps
- Personalization
- Toys
- Hobby
- Gadgets
- Deco/Art
- Jewelry

## Why 3D Printing
- Produces one-offs efficiently, without tooling
- Eliminates almost all setup time
- Creates complex geometric forms

## Macro trends
- Personalization
- Faster concept and product development cycles
- Short runs
Macrotrends

Personalization of products and services

© Invent Medical
Macrotrends

- Personalization of products and services
- Acceleration of development cycles
Macrotrends

Personalization of products and services

Acceleration of development cycles

Start ups...
Democratization of innovation
Macrotrends

- Personalization of products and services
- Acceleration of development cycles
- Start ups... Democratization of innovation
- Re industrialization of the western economies
Macrotrends

- Personalization of products and services
- Acceleration of development cycles
- Start ups...
- Re-industrialization of the western economies
- Democratization of innovation
- Sustainability
3D Printing = Massive Opportunity in Manufacturing

$4.5B 2016

$18.1B 2021

$640B 3D

$12.8 Trillion

5% Share of Manufacturing

Source: 2015 Wohlers
Agenda

3D Printing Overview

3D Printing Industry Perspective

Regulatory Landscape:

Product Liability Issues:

Intellectual Property Issues:
3D Transformation — driving the next Industrial Revolution

We will lead the 3D Transformation over the coming decade and help drive, along with an ecosystem of partners, the next Industrial Revolution.

Democratization of Design

Pre-Industrial

Industrial Revolution

Internet

3D Transformation

Ease of Production / Availability of Goods

Next Industrial Revolution

Today

Handmade and time intensive

Blueprint design and mass production

Computer aided design and JIT machine production

Immersive and easier design and Proto-type & Final Part “Digital” production

Democratization of Design & Ubiquitous production
HP 3D Printing Technology - How it works?

• **Key Elements:**
  
  • (1) A digital model/design of the part to be printed provided by End-User
  
  • (2) HP 3DP Pre-print Software
  
  • (3) HP Printer Hardware
  
  • (4) HP Materials (plastic powder) & HP Agents (liquid fusing formulation)
HP 3D Printing Technology- How it works?

1. Material coating
2. Apply agents
3. Apply energy
4. Fusion
HP 3D Printing Product:

Software & Plugins
- Job preparation & submission

Printer Utilities
- Printer management

HP Jet Fusion 3D Printer
HP Jet Fusion 3D Build Unit
HP Jet Fusion 3D Processing Station with Fast Cooling
HP 3D Printing End-User Customers

**Contract Manufacturer**

**Service Bureau**
- Maker Community
- B2B Service Bureau

**SMB/Enterprise**
- Service Bureau
- In-house Large Model Shop
- In-house Small Model Shop
- Product Design & Eng. Firms
Examples of 3D Printing Market Verticals

- AUTOMOTIVE
- AEROSPACE
- CONSUMER GOODS & ELECTRONICS
- MEDICAL DENTAL
Agenda

3D Printing Overview

3D Printing Industry Perspective

Regulatory Landscape

Product Liability Issues

Intellectual Property Issues
3D Printing – Legal & Regulatory Landscape

- Are there specific 3DP laws and regulations?
- Are existing laws & regulations sufficient?
- Should there be regulation of 3D Printing?
3D Printing Industry Risks in the Unknown Legal landscape:

- **(1) Product Liability/Tort Lawsuit** that results in PR, financial liability, and precedent setting case law.

- **(2) IP Infringement Lawsuit** that results in PR, financial liability, injunction and precedent setting case law.

- **(3) New Regulations or Interpretation of Existing Regulations** that either impose legal liability, impose financial duties/fees, cause HW manufacturer to change 3D Printer or the End-User to change the 3D printed product (design, manufacturing, marketing), change Go-To-Market business model, and/or stop selling products:
  - Regulations for Standards
  - Regulations for Product Liability
  - Regulations for Product Safety and Tech requirements
  - Regulations for Cybersecurity
  - Regulations for IP
  - Regulations for Global Trade
  - Regulations for Environmental
  - Regulations for specific verticals (Medical, Auto, Aerospace, Consumer (toys, wearables, accessories)
  - Regulations for 3D printed guns
In 3DP, lines for who is responsible for designing, manufacturing and selling a product erode. Potentially leaving plaintiffs with no liable or viable defendant.

1. Disrupt
   Enabling final parts mass scale manufacturing

2. Democratize
   Providing anyone the power to design, manufacture, and sell any printable 3D object

3. Drive
   In 3DP, lines for who is responsible for designing, manufacturing and selling a product erode.
   Potentially leaving an plaintiffs with no liable or viable defendant.
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3D Printing: Legal Issues in the Next Industrial Revolution (Products Liability)
Thoughts on 3D Print Liability

• As 3D printing disrupts traditional manufacturing, products liability law will evolve to accommodate new technology

• Savvy products liability attorneys will use strict liability theories in the 3D Print lawsuits (as opposed to negligence theories)
Why Use Strict Liability in the 3D Print Litigation?
Hurdles Associated With Negligence Claims in the 3D Print World

Duty, breach, causation, damages

Who owes a duty of care to the consumer?

– Existence of duty depends on type of loss (personal v. economic)
– Duty also depends on type of product
California Will Likely Lead the Charge...
It Has Already Started….

  - Class action against 3D Printing company Invisalign for design misrepresentation
  - MTD granted due to plaintiff's failure to identify specific information relied upon to suggest Invisalign would resolve her dental condition (malocclusion)
Buckley v. Align Implications

- Learned Intermediary Rule:

- Product manufacturer fulfils its duty of care when it provides all of the necessary info to a "learned intermediary" (usually prescribing doctor) who then interacts with the consumer of the product
The Future of Products Liability Law (in the 3D Print Context)

- Preliminary Thoughts on "Who Do You Sue?"
- Preliminary Thoughts on "Proving Your Case?"
Adam Smith and the "Invisible Hand"
Overview of Products Liability Law

• PAST

• PRESENT
Historical Development of Products Liability Law
LIFE BEFORE THE RESTATEMENT ON TORTS

BUYER BEWARE!!!
INDUSTRIAL REVOLUTION
PUBLIC POLICY Dictates CHANGE
Restatement of the Law
The major thrust of § 402A was to:

1) eliminate privity so that a user/consumer (without having to establish negligence) could bring an action against a manufacturer,

2) Include other members in charge of distribution.
Manufacture and Chain of Distribution
Section 402A

(1) One who sells any product in a defective condition **unreasonably dangerous to the user or consumer** or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if

(a) the **seller is engaged in the business** of selling such a product, and

(b) it is expected to and does **reach the user or consumer without substantial change** in the condition in which it is sold.

- (2) The rule stated in Subsection (1) applies although
  (a) the seller has exercised all possible care in the preparation and sale of his product, and
  (b) the user or consumer has not bought the product from or entered into any contractual relation with the seller.

Caveat:
- The Institute expresses no opinion as to whether the rules stated in this Section may not apply
  - (1) to harm to persons other than users or consumers;
  - (2) to the seller of a product expected to be processed or otherwise substantially changed before it reaches the user or consumer; or
  - (3) to the **seller of a component part** of a product to be assembled.
Restatement on Torts (Third) (1998)

• A product is defective when, at the time of sale or distribution, it:

• (1) contains a manufacturing defect,

• (2) is defective in design, or

• (3) is defective because of inadequate instructions or warnings.
Notable Differences Between 402A and Restatement on Torts (Third)(1998)

- Categorization of Claims
- Different Test for Design Defect Claims
- Claim Unification
- Post Sale Warnings
### 3D Printing Applications - TODAY

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#### Why 3D Printing

- Produces one-offs efficiently, without tooling
- Eliminates almost all setup time
- Creates complex geometric forms
- Personalization
- Faster concept and product development cycles
- Short runs

#### Macro trends
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Restatement (Third) Limitations
Prescription Drugs/Medical Devices

- Design Liability -- Drug and Medical Device arena

- (the plaintiff must prove that the drug or device should not have been on the market).

- Learned intermediary rule--recognized exception where the manufacturer knows or should have known that warning only the health care provider was insufficient.
Products Liability Law
(Strict Liability Today)
Products Liability Law (Today)
Joe Gagootz Hypo I

- ACME supply manufactures a TOOL sold at STORE.
- STORE sells TOOL to Joe Gagootz
- According to Joe, the TOOL malfunctioned and he was i
3D Printing: Rise of Tort Liability and Litigation

• Strict Liability for 3D Printing?

• Traditional rule: hospitals are service providers that cannot be strictly liable for personal injuries arising from product defects

• Installation of in-house 3D printers may change overturn the traditional rule and transform hospitals into manufacturers for liability purposes
Some Liability Considerations

• Who is considered the manufacturer or supplier of 3D printed devices for liability purposes?
  – Hospital: traditionally not liable for damages caused by medical devices
  – Doctor: same as hospital, but may be held negligent
  – **Software designer**: will it be hard to impute liability if designer had no input in actual manufacture???
Preliminary Thoughts on…
Who Do You Sue in the 3D Printing World?
Pro Consumer Arguments
1. A company in China uploads a software file on the Internet for a 3D printed ray gun;
2. Buyer, in Ohio buys the 3D software file and sells it to STORE;
3. STORE sells the 3D print file to Joe Gagootz;
4. Joe prints a ray gun at home and leaves it on the printer;
   and,
5. Joe Gagootz Jr., thinking it’s a toy, accidently disintegrates neighbor.
3D Printing: Rise of Tort Liability and Litigation

• THRESHOLD ISSUE
  – Do 3D Printers constitute a "product"?
    • Is it only the finished "print" that is a product?

• WHO IS THE MANUFACTURER?
  • Printer?
  • Person Who Pushes the Print Button?

• WHO IS RESPONSIBLE FOR DESIGN DEFECTS?
  – Administrating hospital and/or individual employees?
  – Design companies?
What is a Product for 3D Printing Purposes?

*Winter v. G.P. Putnam's Sons*, (1991) 938 F.2d 1033 (9th Cir.)

- Inaccurate content contained in an encyclopedia is **NOT** a "product" for product liability purposes.
3D Printing
Manufacturing Issues
Who Is Responsible for a 3D Printed Product?

• Who is the Manufacturer?

• Commercial/Non-Commercial

  – “[o]ne engaged in the business of selling or otherwise distributing products who sells or distributes a defective product is subject to liability for harm to persons or property caused by the defect.”
3D PRINT
PRODUCT LIABILITY ISSUES

• Manufacturing Issues
  – Software Issues
  – Materials Issues
  – Human Error

• Design/Failure to Warn Issues
  – Design defect in original product used to create digital design
HP 3D Printing Product:

Software & Plugins
Job preparation & submission

Printer Utilities
Printer management

HP Jet Fusion 3D Build Unit
Software Defects

- Software bugs (corrupted)
- Transmission errors, and,
- Inaccuracies in the replication of the
Preliminary Thoughts on …
Proving a DEFECT in the 3D Print World?

• Consumer Expectation Test
• Risk Benefit/Utility Test
• Warnings
Jurisdictional Splits

• **Consumer Expectation Test Jurisdictions (15)**
  – AR, IN, KS, MD, NE, NH, OK, OR, RI, TN, UT, VT, WI, WY

• **Risk-Utility Test Jurisdictions (18)**
  – AL, CO, GA, ID, KY, LA, MA, MI, MN, NJ, NM, NY, NC, OH, PA, SC, TX, WV

• **Either Test (9)**
  – AK, AZ, CA, CT, FL, HI, IL, MS, WA

• **Neither Test (8)**
  – DE, IA, ME, MO, MT, NV, SD, VA
3D Printing Design Issues
CA Consumer Expectations Test

Soule v General Motors, (1994) 8 Cal.4th 548, 882 882 P.2d 298

Did the product performed as safely as an ordinary consumer would expect when used in an intended and reasonably foreseeable manner.

Did the product performed as safely as an ordinary consumer would expect **when used** in an intended and reasonably foreseeable manner.


The California jury instruction addresses whether the product "performed as safely as an ordinary consumer would have expected it to perform **when used or misused** in an intended or reasonably foreseeable way. CACI 1203"
What is Misuse?

– 1. The product was [misused/ [or] modified] after it left [name of defendant]’s possession; and,

– 2. The [misuse/ [or] modification] was so highly extraordinary that it was not reasonably foreseeable to [name of defendant], and therefore should be considered as the sole cause of [name of plaintiff]’s harm.

– (see CACI No. 1245.)

– **Product misuse** is a complete defense to strict products liability if the defendant proves that an unforeseeable abuse or alteration of the product after it left the manufacturer’s hands was the sole cause of the plaintiff’s injury. Campbell v. Southern Pacific Co. (1978) 22 Cal.3d 51, 56 [148 Cal.Rptr. 596, 583 P.2d 121];
Component Part Suppliers

• Restatement of Torts (Third): Products Liability (1998) says that:
  1. If the component is itself defective and the defect causes harm, then the supplier is liable.
  2. The supplier is liable if the seller substantially participates in the integration of the component into the design of product, the product causes the harm. Restatement 3d, Section 5.
Can a 3D Print File Designer Be Held Liable in the 3D Print Context?

• Under **Consumer Expectations Test**, a **product designer held responsible** (despite no involvement in manufacture, sale or distribution)
  
  – Muti-car chain reaction crash. Alleged seatback defect.

  – "[I]f the minimum safety of a product is within the common knowledge of lay jurors, expert witnesses may not be used to demonstrate what an ordinary consumer should expect."

• **Romine v. Johnson Controls, Inc.** (2014) 224 Cal.App.4th 990, 169 Cal.Rptr.3d 208
Raw Material Suppliers

- Manufacturing Defect
- Failure to Warn
Does the CET Apply to Suppliers of Raw Materials in the 3D Printing Context

• Consider the following case in the 3D printing context:

  – Defendants manufactured/distributed latex globes that allegedly contained toxic substances and pursued a failure to warn theory.

  – Claimed between 1991-94, 5-12% of health care workers exposed to latex developed some degree of latex allergy (response to HIV/AIDS crisis)
A product is defective if its design embodies “‘excessive preventable danger’” (id. at p. 430, 143 Cal.Rptr. 225, 573 P.2d 443), unless “the benefits of the ... design outweigh the risk of danger inherent in such design” (id. at p. 432, 143 Cal.Rptr. 225, 573 P.2d 443)
A product is defective if its design embodies “‘excessive preventable danger’” (id. at p. 430, 143 Cal.Rptr. 225, 573 P.2d 443), unless “the benefits of the ... design outweigh the risk of danger inherent in such design” (id. at p. 432, 143 Cal.Rptr. 225, 573 P.2d 443)

The California jury instruction requires:
1. That ACME/STORE manufactured the TOOL;
2. That Joe Gagootz was harmed; and
3. That the TOOL's design was a substantial factor in causing harm to Joe Gagootz.

Then your decision on this claim must be for Joe Gagootz unless ACME/STORE proves that the benefits of the TOOL's design outweigh the risks of the design. ... CACI 1204
3D Printing Warning Issues
Do Warnings Really Make A Difference?


– Ask Mr. Martinez?
1. Mr. Martinez (mechanic injured when a tire exploded while mounting a 16-inch tire on a 16.5-inch rim).
2. There was a prominent warning label containing yellow/red highlights and a pictograph of a worker being thrown into the air by an exploding tire.”
3. Mr. Martinez admitted he knew it was dangerous to stand over the tire while changing it.
4. Result--$17M verdict
402A versus Restatement 3D Design/Warning Issues?

- Comment j to §402A addresses product directions and warnings. It states that “in order to prevent the product from being unreasonably dangerous, the seller may be required to give directions or warnings.”

  “where warning is given, the seller may reasonably assume that it will be read and heeded; and a product bearing such a warning, which is safe for use if it is followed, is not in defective condition, nor is it unreasonably dangerous.”

- Third Restatement Comment l to §2 states:

  • Reasonable design and instructions or warnings both play important roles in the production and distribution of reasonably safe products. In general, when a safer design can reasonably be implemented and risks can reasonably be designed out of a product, adoption of the safer design is required over a warning that leaves a significant residuum of such risks.
Failure to Warn


• The purpose of requiring adequate warnings is to inform consumers about a product’s hazards and faults of which they are unaware, so that the consumer may then either

1. Refrain from using the product altogether; or,

2. Avoid the danger by careful use.”
The purpose of requiring adequate warnings is to inform consumers about a product’s hazards and faults of which they are unaware, so that the consumer may then either

1. Refrain from using the product altogether; or,
2. Avoid the danger by careful use.”

The California jury instruction requires:
1. That [name of defendant] [manufactured/distributed/sold] the [product];
2. That the [product] had potential [risks/side effects/allergic reactions] that were [known/or knowable in light of the [scientific/and medical] knowledge that was generally accepted in the scientific community] at the time of [manufacture/distribution/sale];
3. That the potential [risks/side effects/allergic reactions] presented a substantial danger when the [product] is used or misused in an intended or reasonably foreseeable way;
4. That ordinary consumers would not have recognized the potential [risks/side effects/allergic reactions];
5. That [name of defendant] failed to adequately warn [or instruct] of the potential [risks/side effects/allergic reactions];
6. That [name of plaintiff] was harmed; and
7. That the lack of sufficient [instructions] [or] [warnings] was a substantial factor in causing [name of plaintiff]’s harm.

CACI 1205
QUESTIONS?

Credits:

Ross, Ken, Manufacturers versus Component Part and Raw Material Suppliers: How to Prevent Liability DRI Newsletter, 1/08

Jennifer N. Hinds, Bowman and Brooke LLP (Los Angeles)
Agenda

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- Intellectual Property Issues
Intellectual Property Issues

Panelists

- Garfield B. Simms, Partner, Jones Day (Washington, D.C.)

- Nate St.Clair, II, Partner, Jackson Walker (Dallas)
A New Breed of IP Evader…

• Creates and sells 3D-printable files based on stolen or reverse-engineered (e.g., scanned) designs for patented articles
• Avoids direct patent infringement (i.e., not making, using, or selling)
• Counts on the barriers to enforcement against direct infringers (e.g., end consumers)

GARTNER ESTIMATES 7% OF IP LOSSES ($100 B) DUE TO 3D PRINTING BY 2018
Lack of Legal Protection

• Optical scanning is difficult to deter

• CAD files are afforded minimal IP protection

• Most method patents do not cover 3D printing

• Damages are difficult to obtain
Optical Scanning Process

- 3D scanners are utilized to capture the profile of an existing object and transfer the digital scan to CAD software, making it possible to reproduce the object within a short time period.
- Optical scanning is analogous to the process of ripping a CD to a MP3.
Illegal Optical Scanning – Difficult to Deter

• The ease of scanning makes manufacturing possible anywhere & at any time by anyone
• Mainstream use would make it easy for home users or 3D print shops to counterfeit products.
• It’s difficult to locate an infringer who uses a 3D printer at home
• Even if located, jurisdictional issues may arise that would threaten the feasibility of litigation
Status of 3D Printing and U.S. IP Laws
Applicability of U.S. Patent Laws

- 2 Types of Patents are Relevant to 3D Printing
  - Utility patents cover functional aspects of a process, machine, manufacture, or composition (35 USC § 101)
  - Design patents cover ornamental design features of a manufacture (35 USC § 171)

- Infringement
  - Direct Infringement requires making, using or selling a patented invention (35 USC § 271)
  - Indirect infringement includes contributory infringement, induced infringement, (35 USC § 271) and several court-made doctrines
  - A plaintiff cannot sue the indirect infringer without also suing the direct infringer.
End-Run Around Traditional Hard-IP ...

- Reverse engineering and distributing 3D printable files both occur upstream of U.S. patent law protection

<table>
<thead>
<tr>
<th>Reverse Engineering</th>
<th>Sharing Design Files</th>
<th>Making (Printing)</th>
<th>Selling and Using</th>
</tr>
</thead>
<tbody>
<tr>
<td>(new and useful)</td>
<td></td>
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- Few existing method patents cover 3D Printing
  - Hard to obtain strong patent protection because 3D printing is not specific to any particular product

3D CAD files are difficult to protect
Patent Laws May Fail to Deter Infringement Due to Enforcement Gaps

<table>
<thead>
<tr>
<th>Issue</th>
<th>Consequence</th>
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<tr>
<td>A 3D-printable file is not understood to be a <strong>process, machine, manufacture, or composition</strong></td>
<td>Making and disseminating 3D-printable files is <strong>not</strong> direct patent infringement – at best only indirect infringement</td>
</tr>
<tr>
<td>Manufacturing hard to detect</td>
<td>Infringers perceive low risk</td>
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<tr>
<td>Direct infringers tend to be undesirable targets or hard to reach (e.g., end consumers)</td>
<td>Infringers perceive low risk</td>
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Patentability of CAD files & Judicial Landscape

- 3D CAD files are difficult to protect with typical IP strategies (see, e.g., In re Beauregard, 53 F.3d 1583 (Fed. Cir. 1995))
- Current judicial landscape on CAD files is unclear
- A CAD file owner could possibly be infringing by selling or offering to sell the file (of a patented object).
- A patent owner would argue that the CAD file is specific to a protected item that will be illegally copied and infringes the owner’s patent.
  - The purpose of the sale of the CAD file would be to extract the economic worth of the printed object
  - CAD files are the most valuable aspect of 3D printing since they directly and significantly affect the sales potential of the printed 3D object.
Many Commentators Advocate Focusing on Soft IP Aspects of Invention …

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<td>Infringement (17 U.S.C. § 501(a)); Secondary Infringement</td>
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<td>Possible Infringement 15 U.S. Code § 1114</td>
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*Vicarious liability; contributory infringement*
Applicability of U.S. Copyright Laws


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<th>Cons</th>
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<td>Infringement triggered by <strong>duplicating, copying, or disseminating</strong> the file</td>
<td>Limited scope – separability test filters out functional aspects (e.g., data)</td>
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<td>Statutory damages available</td>
<td>Independent invention is a defense to infringement</td>
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<td>Legal mechanism and remedies under DMCA – takedown notices</td>
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<td>Less expensive than patents</td>
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Copyright targets the upstream infringer because copyright covers copying and dissemination (e.g., internet transmission)
Applicability of U.S. Copyright Laws (cont.)

- Copying and dissemination (e.g., internet transmission) protections may be used to target upstream infringers

- Both the 3D-printable file itself AND the printed object are separately protectable

- BUT . . .

  - Protection would extend only to a separable non-functional portion of an article of manufacture

  - To protect the 3D-printable file, some aesthetic feature must be added (otherwise the file is just a the list of numbers)
Applicability of U.S. Copyright Laws (cont.)

Whether a CAD file is protectable depends on whether the CAD file was created from a scanned object or was independently created by an author using CAD software.

- When the design file is obtained by scanning, the act of scanning the copyrighted object, as well as distribution of the file may implicate copyright laws.

- When the design file is created using CAD software, it is unlikely to be considered copying because the designer of a CAD file does not write the file’s code.
  - The specific design that the user creates determines the exact code that is sent to the printer
  - The programmer of the CAD software must predetermine the pieces of the code used to compose the CAD file.
Applicability of U.S. Copyright: DMCA

• When copyright protection does attach to the design file, distribution of the design file over the internet is subject to the Digital Millennium Copyright Act ("DMCA")
• A rights holder can then give the hosting service provider a notice and takedown order
Applicability of Trademark Laws:
Lanham Act Protections

- Covers making or using a registered mark in commerce so as to cause consumer confusion as to the origin of goods (15 U.S. Code § 1114)
  - Trademark can include trade dress - the overall commercial image (look and feel) of a product
- **However**, reproducing or even selling a trademark-bearing object alone is not sufficient to trigger protection, unless it results in consumer confusion. *Polaroid Corp. v. Polarad Elecs. Corp.*, 287 F.2d 492 (2d Cir. 1961)
  - Focus of trademark law is the consumer, not the owner
Application of Trademark Law to 3D Printing

- Not effective against personal end-consumer printing
- While printing the Game-of-Thrones dock might violate copyright law, it would only violate trademark law if the printed item were used in commerce
- No protection afforded to the 3D-printable file.
Commentators Also Advocate Robust Approach to Trade Secret Protection

- Businesses seeking to integrate 3D printing will **EXONENTIALLY** increase their digital footprint of proprietary information compared to traditional manufacturing settings.

- If kept undisclosed, 3D printing CAD files can qualify as protectable.
  - In *Ritani v. Aghjaya*, the court denied a motion to dismiss trade secret misappropriation claims that had been based in part on the theft of 3D printable CAD files.

- Must employ “reasonable measures” to keep information undisclosed, for example:
  - People, Process, Data – Know what you have and who will have it
  - Execute NDAs
Takedown Notices: Lessons from the Entertainment and Fashion Industries
Monitor and Take Down 3D File Content

- DMCA take down notices have proven effective for copyrighted articles

- Reputable platforms may be inclined to honor takedown notices on patented products (and avoid becoming the next Napster)

“Notification from a copyright or other rights owner or from a person authorized to act on behalf of the copyright or other rights owner that fails to comply substantially with the provisions above shall not be considered as providing actual knowledge or an awareness of facts or circumstances from which infringing or otherwise unauthorized activity is apparent.”
– (from Thingiverse IP Policy)
Instructive Lessons from the Music Industry

Madonna's American Life album was an early example of content poisoning. Before the release of the album, tracks that appeared to be of similar length and file size to the real album tracks were leaked by the singer's record label. The tracks featured only a clip of Madonna saying "What the *** do you think you're doing?" followed by minutes of silence.

After an unauthorized copy of Michael Moore’s movie Sicko was uploaded online, it became a hit on P2P websites such as Pirate Bay. MediaDefender was hired to poison torrents using decoy insertion.

In 2005, it was reported that HBO was poisoning torrents of its show Rome by providing chunks of garbage data to users.
## Potential Applications to 3D Printing Space

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Instructive Lessons from the Fashion Industry

• Fashion designers are already positioning themselves to work with 3-D printers (similar to iTunes).

• Example:
  • Designer Asher Levine teamed up with 3-D printer MakerBot to create fanciful print-at-home sunglasses, promoted by being printed for models during one of Levine's New York Fashion Week shows.
  • Levine's sunglasses were then readily available from MakerBot at thingiverse.com.
Instructive Lessons from the Entertainment Industry

- HBO issued cease-and-desist letters to a 3D printing business selling Game of Thrones iPhone docks, asserting that the throne was its IP
  - The alleged infringer complied by removing the item from the website
- Paramount Pictures issued a cease-and-desist letter against a CAD designer who uploaded a licensed item appearing in a movie
  - In this and other cases, third party distributors readily comply with cease-and-desist letters
- The creator of the Warhammer-style (a game) figurines issued a takedown notice to Thingiverse, under the DMCA, asserting copyright infringement regarding figurines posted on Thingiverse
  - Thingiverse complied with the takedown notice
Practical Steps for IP Owners
Practical Steps for IP Owners

1. Develop overlapping IP protection
2. Contract Approach
3. Marking
4. Monitoring CAD file websites
5. Assertion letters; Take-down Notices; Litigation
Practical Steps for IP Owners (cont.)

• Develop overlapping IP protection

  • Utilize patent prosecution strategies can target 3D printable files (i.e., Method claims, Beauregard-style claims)
    • A claim to a computer program written in the form of a claim to an article of manufacture; requires that the innovation be embodied in a tangible medium
    • Build proprietary position in methods for using 3D printers to make complex articles

  • Establish robust trade secret protection of digital design files
    • If kept undisclosed, 3D printing CAD files can qualify as protectable

• Design patents

  • In addition to utility patents, design patents protect the novel, ornamental aspects of a product’s appearance. The scope of protection is limited by the fact that only the exact design is covered.

• Copyright protection
Practical Steps for IP Owners (cont.)

- **Shrink-wrap license:**
  - An end user agreement typically enclosed with software in wrapped packaging; once user opens the packaging, the Agreement is considered to be in effect.
    - An agreement not to infringe copyright law.

- **Marking**
  - Digital Signature
  - Embedded/hidden digital thread in CAD files

- **Monitoring CAD File websites**
  - Reputable websites tend to treat takedown requests similarly to DMCA takedown notices; they comply immediately.

- **Assertions/Litigation**
  - No major actions against infringers to date for 3D printing.
    - An action akin to the Napster litigation may be likely in the future.
But At the End of the Day, There Are **No Magic Legal Bullets**

- Soft IP protection is usually “thin” and easily avoided
  - Copyright protection requires adding a “creative” element to file, and any copyright seems easy to avoid

- No universal way to deter optical scanning or other forms of reverse engineering
  - Infringement by the end-consumers is difficult to deter due

- Unpalatable to pursue direct infringers (a pre-requisite to attaching liability to indirect/secondary infringers)
  - Direct infringer may be end consumer
  - Small damages
The 3D printing paradigm exposes gaps in IP laws – **NO MAGIC LEGAL BULLETS**

- Damages are difficult to obtain
- Effective protection of IP assets requires understanding how the upstream IP evader will operate and adapt
- Several keys to success:
  - Understand how the courts interpret IP statutes
  - Take advantage of how reputable 3D sites try to respect all IP
  - Exploiting inherent weaknesses of unreplicable
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