

Controlling Disruption: Socio-Legal Aspects of 3D Printing

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What is 3D printing?



3D printing industry/ecology



Professional/commercial equipment manufacturers

Suppliers of raw materials

Makers e.g. Connected Community HackerSpace



Amateur/non-commercial equipment manufacturers



3D printing on demand stores in the 'real world'

MakerBot Thingiverse

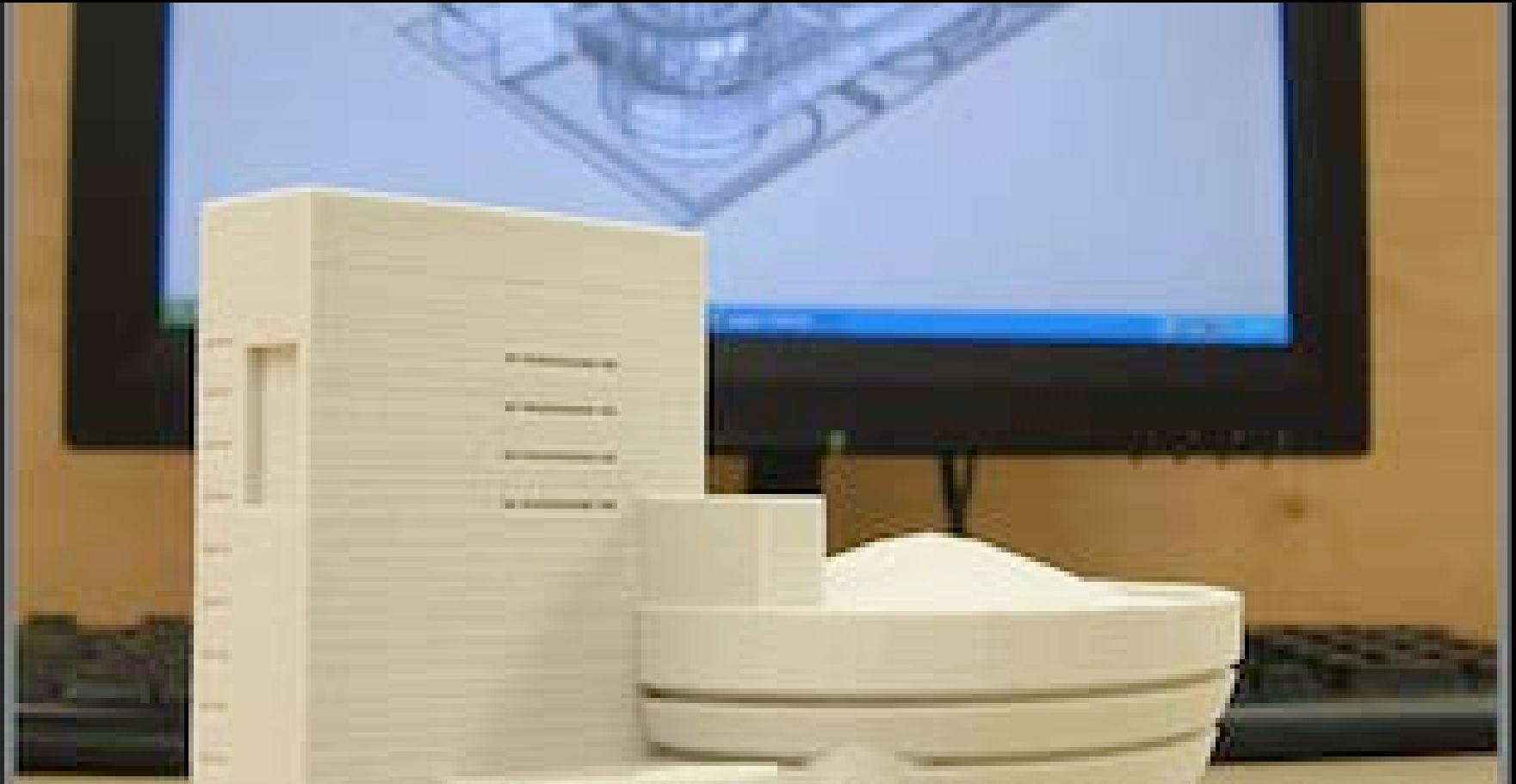
Online design repositories



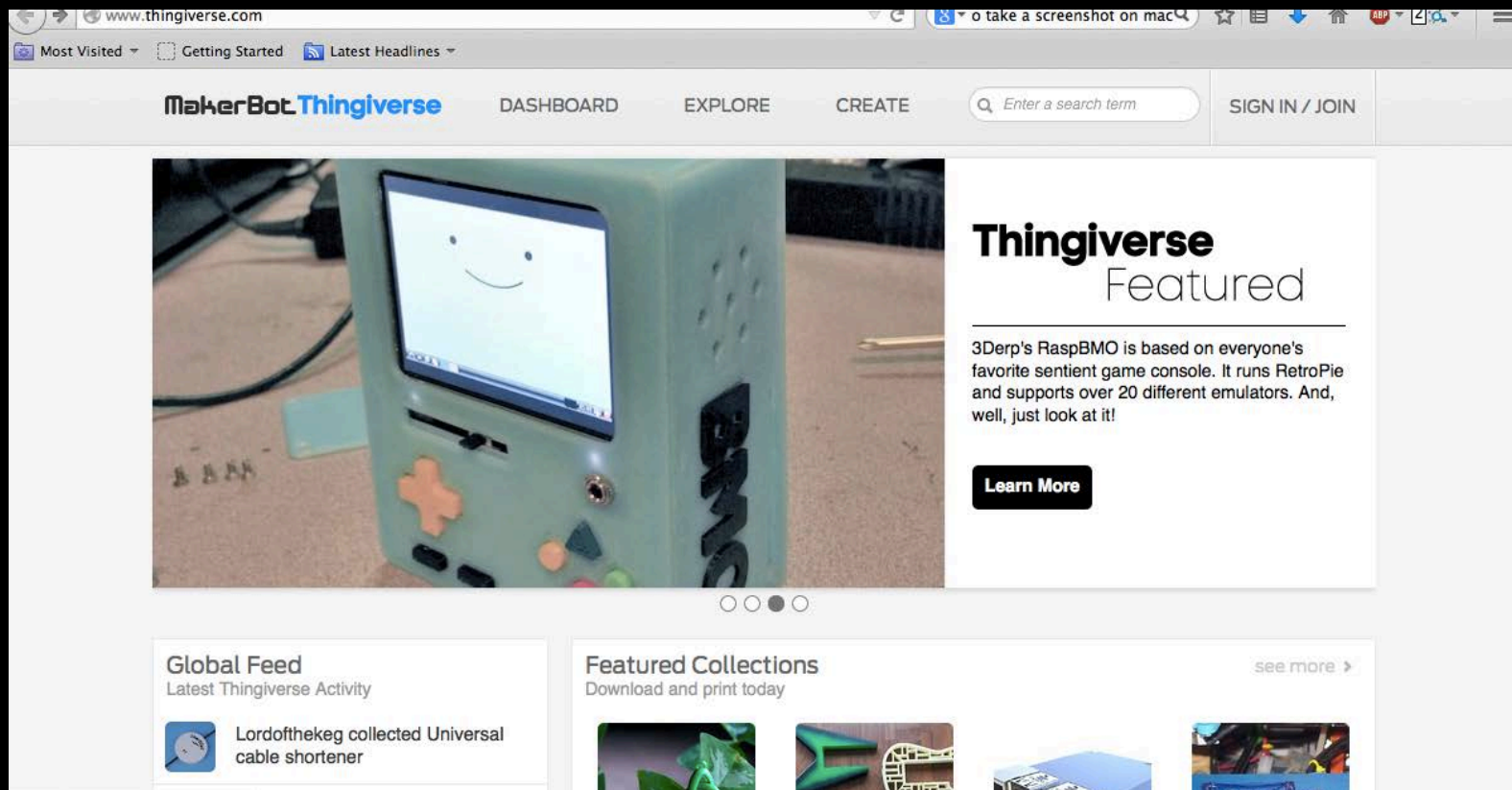
Libraries/educational institutions

Consumers/customers

Where & what is the IP?



File-sharing and Intellectual Property



[Moilanen, Daly, Lobato & Allen, 'Cultures of Sharing in 3D Printing: What Can We Learn from the Licence Choices of Thingiverse users?' \(2015\) 6 Journal of Peer Production](#)

A new abundance?

‘By democratizing the precision creation of physical objects, 3D printing may make the creation of physical objects nearly as widespread as the creation of [digitised] copyright-protectable works’

Weinberg, ‘It Will Be Awesome if They Don’t Screw It Up: 3D Printing, Intellectual Property, and the Fight Over the Next Great Disruptive Technology’ (2010) Public Knowledge White Paper

Abundance works both ways

1. MakerBot as TakerBot?
2. Creative Commons-licenses for 3DP designs being breached by commercial operators (eg not complying with no-derivs or non-commercial)?

The Dark Side of Democratisation



Reclaiming rights?

“A well regulated militia being necessary to the security of a free state, the right of the people to keep and bear arms shall not be infringed.”

Second Amendment to the US Constitution

‘It’s already possible, if you want, to just go buy some pipes and put a gun together. This is another thing that I think has been conflated. People thought, ‘oh no this is the first time now people can expediently make guns.’ No; in fact, this is a very inexpedient way of making a gun, and kind of ridiculous. But it’s trying to be demonstrative and predictive of the future’

[Wilson \(2013\)](#)

Operation Imperium



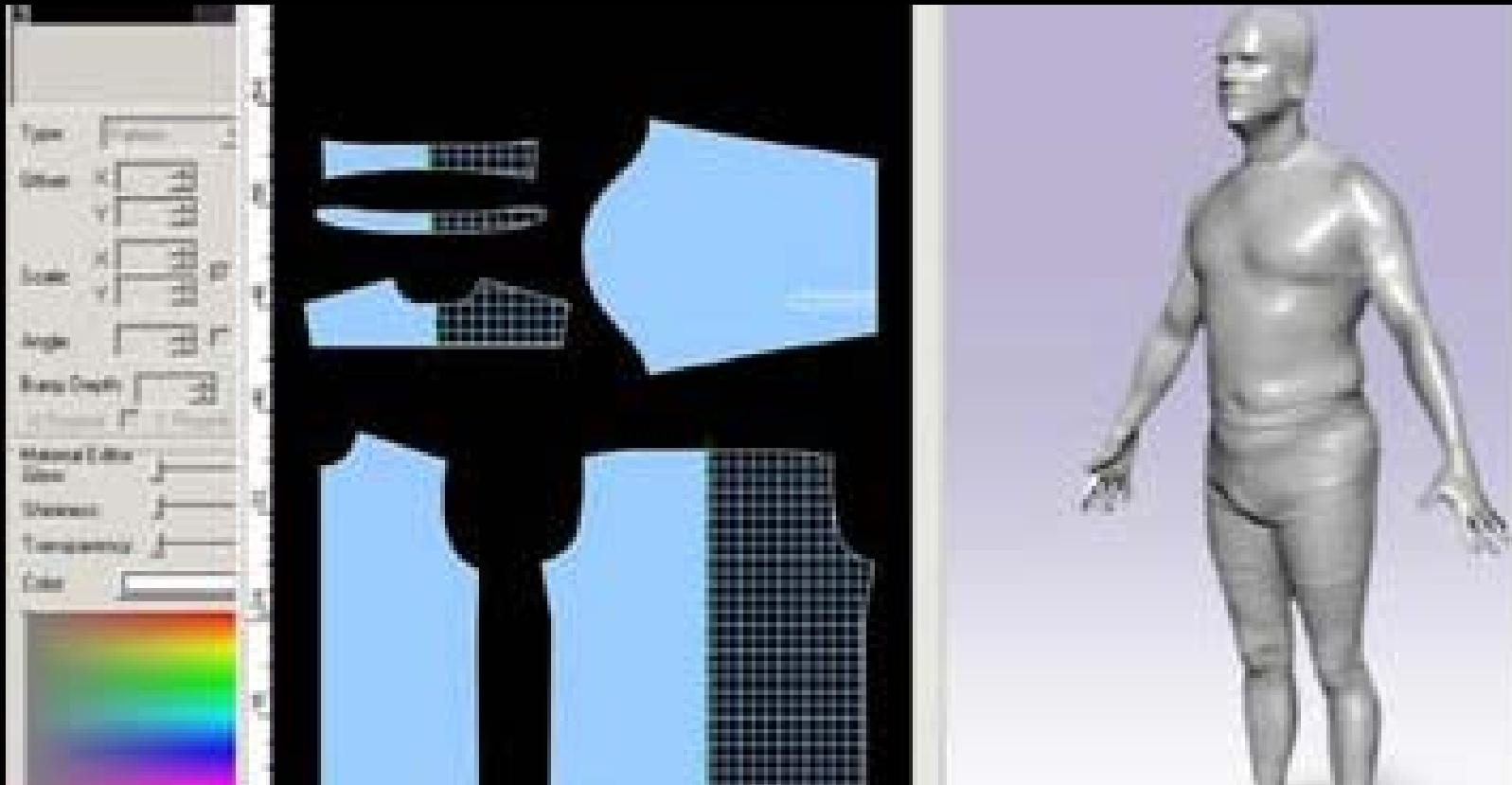
Spare parts



3D scanning



Fashion -> biometrics



How to regulate?

- Regulate 'access points'/gatekeepers: 3D printer manufacturers and online design repositories
- Get ISPs to monitor what users are doing online vis-à-vis 3D printing design files
- Self-regulation:
 - Danish 3D printing firm Create It REAL recently announced it had come up with a firearms component detection algorithm which can give 3D printers option to block gun parts;
 - example of Mega taking down the gun blueprint as well

Problems for effective regulation

- people can make their own printers!
- despite lots of laws & enforcement around IP rights and digitised content, you can still easily get hold of pirated content
(Giblin, Evaluating Graduated Response (2014) 37 Columbia Journal of Law and the Arts)
- Presence of technical protection measures may mitigate liability of 3D printer manufacturers and intermediaries but they can easily be circumvented so not effective enforcement

Real life attempts to regulate: DMCA



Real life attempts to regulate: weapons

- Liberator – restricted by US Arms Export Control Act
- Discussion in Australia re more legislation to restrict 3D printed guns, design files etc
- Bill introduced in QLD



Other ideas?

“And other aspects of our legal system, like torts, will have to change when the people who produce goods are no longer large companies who design them but the very individuals who might be injured by them... We may need to replace tort law with a social safety net as it becomes harder and harder to find those who make unsafe products and hold them liable.”

[Lemley, 'IP in a World without Scarcity' \(2014\) Stanford Public Law Working Paper No. 2413974](#)

Post scarcity?



Post-control?

“three disruptive technologies—file sharing, 3D printing, and distributed digital currency—have severely undermined the legal and regulatory capacity of the state, resulting in an anarchic environment where actors’ behavior is determined primarily by factors other than legislation or governmental authority”

[Michael, ‘Anarchy and Property Rights in the Virtual World’ \(2013\) SSRN working paper](#)

Not so sure...



[Arizmendi, Pronk & Choi, 'Services No Longer Required? Challenges to the State as Primary Security Provider in the Age of Digital Fabrication' \(2014\) Small Wars Journal](#)

Concluding thoughts

- In principle, decentralised nature of 3D printing (coupled with Internet etc) DOES weaken the effective enforcement of various areas of law
- Extent to which this plays out in practice is key
- Political economy of 3D printing?
- Who is using 3DP? Benefitting from it?
- Not only individuals – large corporations and the state too
- Is Internet instructive? Not total control but not total anarchy either...

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