The Copyright Amendment Bill
Problems and Solutions

Peter Gutmann

University of Auckland

Proposed Changes to Copyright Law

Clarification of transient copying

- Brings the law into line with current technology like cacheing

ISP liability

- Enough material there for an entire conference

Time- and format-shifting

DRM

- Called Technical Protection Measures (TPMs) in the Bill

Time- and Format-Shifting

Hollywood has always vehemently opposed this

> We are facing a very new and very troubling assault from the video cassette recorder [...] we are going to bleed and bleed and haemorrhage unless this Congress at least protects one industry from the savagery and the ravages of this machine.

> The VCR is to the American film producer and the American public as the Boston strangler is to the woman home alone
> — Jack Valenti, (then) head of the MPAA,
> testimony to US Congress, 1982

Tried to have VCRs outlawed

- Fought them all the way to the US Supreme Court
- VCRs ended up saving Hollywood (studio bankruptcies in the 1980s)

Time- and Format-Shifting (ctd)

Everyone does it

- Tape a programme to watch it later
  - Hours later (legal)
  - Months later (illegal)
- "I'm stuck at work, can you tape X for me"
  - Wife/husband: Legal
  - Neighbour: Illegal
  - GF/BF at different address: Illegal (probably)
- Copy a CD to an MP3 player
  - Variations: Use a CD as the soundtrack for a wedding video, …

No-one really knows when "legal" crosses to "illegal"

Time- and Format-Shifting (ctd)

Current approach: Turn a blind eye

- Every VCR and MP3 player owner in New Zealand is a criminal
- Having explicitly unenforceable laws isn't notably useful (outside of totalitarian societies)

Time-shifting changes in the Bill

- No change for long-term time shifting
- No change for taping for a friend/neighbour/…
- Everyone remains a criminal

Time- and Format-Shifting (ctd)

Format-shifting changes

- Content providers didn't want this under any circumstances

  If you buy a DVD you have a copy. If you want a backup copy you buy another one
  — Jack Valenti, (then) head of the MPAA, 2002

Managed to render it mostly void

- No format-shifting at all for video content
- Can only format-shift audio content that you own
  81A(1)(c) "the copy is made by the owner of the recording"
- No consumer owns a sound recording, they buy a limited license to play it under approved conditions
  – Probably a wording oversight

Time- and Format-Shifting (ctd)

Content industry can disallow format shifting by notifying the purchaser

- Already used universally in software via shrink-wrap/click-through licenses

- <CD cover image>

Sunsets after two years

Consequences of an Unenforceable Law

People will continue to time and format shift as before

- Won't understand that they don't own a work that they've paid for
- Won't understand that they've contracted out of format-shifting
    - In one instance a roomful of lawyers couldn't decide what appropriate notification of users was
    - The average consumer has no hope of figuring it out

Solution: Hope you don't get prosecuted

- As a techie, this seems very strange: Parliament is passing a law that everyone involved knows cannot possibly work

Jury Nullification

Judges judge a case according to the law

- The jury has the power to judge the law itself
- "Justice would not be served by returning a guilty verdict"

Goes back to the Magna Carta's right to trial by jury

- One of the reasons why we have trial by jury
- Jury nullifies a law that it believes is morally wrong or inappropriately applied
- Courts really, *really* dislike this

Jury Nullification (ctd)

Examples of jury nullification

- William Penn ("Pennsylvania") found not guilty for preaching a Quaker sermon in England in 1670
  - Judge had the jury fined and imprisoned for failing to return the verdict he wanted
- Created the Scottish tri-state system of "proven", "not proven", and "not guilty" in an accidental death case in 1728
- British juries rolled back overuse of capital punishment by refusing to return death sentences for minor crimes
- Juries refused to find people guilty of violating the 1850 Fugitive Slave Law in the US
  - Helped end slavery in the US northern states

Fixing Format Shifting

All VCR and MP3 player owners are criminals

— but —

No jury of peers would ever convict someone for taping "Scrubs" (jury nullification)

Problem: This is civil and not criminal law (no trial by jury)

- Escalate the transgression to make it criminal?

Modify the format-shifting section

> Legitimately purchased content can be transferred to any other medium for personal use so long as the original copy is retained

TPMs (DRM)

Intent of the Copyright Amendment Bill is to protect digital content

Provides such sweeping powers that content providers can do almost anything in the name of "content protection"

- Actions that inconvenience users
- Actions that endanger (!!) users
- Actions that directly contravene other portions of the Copyright Act

Intent of TPMs

Copyright owners will have the ability to take action in respect of devices, means, or information where circumvention could enable infringement of *any of the copyright owner's rights, not just the reproduction right*
— General policy statement, page 5

Consumers should, however, *be able to make use of materials under the permitted acts* or view or execute a non-infringing copy of a work
— General policy statement, page 5

The "permitted acts" or exceptions to the exclusive rights of copyright owners contained in the Act provide an important balance between protection and incentives for copyright owners and access for users
— General policy statement, page 6

Intent of TPMs (ctd)

Strongly biased in favour of content owners

The incentives of a copyright regime would cease to operate effectively if the exceptions were so broad as to negate the *rights granted*
— General policy statement, page 6

Rights are granted to the content owners, not the consumers

- Consumer rights are considered as special-case "exceptions"
- Other laws like the road code are intended to protect the public; this seems aimed more at protecting a business model

This allows content owners to override consumer rights via TPMs

TPMs in Practice: Adobe eBook

"Alice in Wonderland", published 1865

- Electronic text created by Project Gutenberg
- Public domain and freely available

TPM-enforced restrictions imposed by Adobe

Copy
No text selections can be copied from this book to the clipboard.
Print
No printing is permitted on [sic] this book.
Lend
This book cannot be lent or given to someone else.
Give
This book cannot be given to someone else.
Read Aloud
This book cannot be read aloud.

TPMs in Practice: Adobe eBook (ctd)

So basically you're not allowed to read Alice in Wonderland
to your child
— Lawrence Lessig, Stanford law professor

- "Read Aloud" is a text-to-speech facility in eBooks

TPMs in Practice: Sony Rootkit

> The industry will take whatever steps it needs to protect itself and protect its revenue streams...It will not lose that revenue stream, no matter what... Sony is going to take aggressive steps to stop this
>> — Steve Heckler, Sony VP

Sony BMG Music Entertainment secretly distributes a Windows rootkit on music CDs

> a set of software tools intended to conceal running processes, files or system data [...] malware to help intruders maintain access to systems while avoiding detection
>> — Wikipedia

- Two rootkits installed without user consent
- Extended Copy Protection (XCP) rootkit was put on 52 albums
- MediaMax CD-3 rootkit was put on 50 albums

TPMs in Practice: Sony Rootkit (ctd)

Sony's rootkits introduced numerous problems

- Affected system stability (BSODs)
- Disabled hardware (CD drives) due to poor implementation
- Slowed down systems due to CPU consumption
- Introduced security holes
  - Security holes were quickly exploited by hackers

Discovered by a private individual, Mark Russinovich

- Anti-virus companies had known about it beforehand, but kept quiet

TPMs in Practice: Sony Rootkit (ctd)

Problems affected a *minimum* of half a million machines around the world (actual figures were much higher)

- Government machines, medical systems, Dept.of Defence military systems, mission-critical systems, …

  Those are amazing infection numbers, making this one of the most serious Internet epidemics of all time
  — Bruce Schneier, Wired

Anti-virus companies only very reluctantly added detection for it under intense consumer pressure

  The only thing that makes this rootkit legitimate is that a multinational corporation put it on your computer, not a criminal organisation
  — Bruce Schneier, Wired

TPMs in Practice: Sony Rootkit (ctd)

Sony didn't care

  Most people don't even know what a rootkit is, so why should they care about it?
  — Thomas Hesse, Sony BMG President of
       Global Digital Business

An avalanche of class-action lawsuits finally forced them to take action

- Their uninstaller introduced further security holes
- Any web page you visit can download, install, and run anything it wants on your system

TPMs in Practice: Sony Rootkit (ctd)

Sony still refused to acknowledge fault

> There are no security risks associated with the anti-piracy technology
>> — Sony BMG

> The software exposed consumers to significant security risks
>> — US Federal Trade Commission

- CERT and the Department of Homeland Security also issued security advisories about the rootkits

TPMs in Practice: Sony Rootkit (ctd)

The Sony rootkit saga is a tour-de-force example of almost every problem in the TPM section of the bill

- Abuse of TPMs by copyright owners
- System security and safety compromised by the TPM
- Need to ask content owners for permission to bypass the TPM
    - TPM creators wouldn't even admit that there was a problem
- Need to be a "qualified individual" to perform this act

TPMs in Practice: DVDs

"This will open a Pandora's box," he said, promoting the idea of "elaborate rights." These, he said, could move the concept of buy-once rights to time- based rights — "you can make it so the user can, say, only read this book on Tuesday" — or location-based rights
— Jeff Ramos, Microsoft Director of Worldwide Marketing

Journalist Juha Saarinen bought the DVD "Coral Reef Adventure"

- (Was actually given a purchased copy as a present, same thing)

TPMs in Practice: DVDs (ctd)

Properties

File | Content | Playist | Media Usage Rights

View the media usage rights for this file.

Media usage rights:

This file can be played until 2/02/2007
Collaborative play for this file is not allowed
This file cannot be burned
This file cannot be synchronized
The media usage rights for this file cannot be backed up
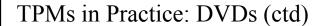
OK   Cancel   Apply

Content effectively self-destructs some time after purchase

Usage rights can't be backed up

In the digital world, we don't need back-ups, because a digital copy never wears out
— Jack Valenti, MPAA, 2003

- See next slide for the consequences

TPMs in Practice: DVDs (ctd)

If your Windows machine crashes and you lose your media rights file, this is what your content turns into

- You can't get beyond this point

Media Usage Rights Acquisition

1.licenseserver.com

Please re-insert the "Coral Reef Adventure" DVD into your DVD-ROM drive in order to view the film.

For more information, go to
http://www.synccast.com/faq/imax/coralreef.asp

Play   Cancel

TPMs in Practice: DVDs (ctd)

You can't even make a backup of the content that you've purchased

If you buy a DVD you have a copy. If you want a backup copy you buy another one
— Jack Valenti, (then) head of the MPAA, 2002

In the digital world, we don't need back-ups, because a digital copy never wears out
— Jack Valenti, (then) head of the MPAA, 2003

The domestic digital formats available to the average consumer, such as standard CDs and DVDs, are not stable and were never intended to be used for long-term storage
— Denis Noel, Canadian government archivist

TPMs in Practice: DVDs (ctd)

Self-destructing content makes a mockery of a fundamental tenet of copyright law dating back to the Statue of Anne, the original Copyright Act of 1709

- In exchange for the initial period of protection, content eventually enters the public domain

TPMs allow content owners to rewrite copyright law in whichever manner suits them

- In the presence of TPMs, the Copyright Act really only has about four pages around about section 226
- Everything else is at the whim of the TPM provider
- This is outsourcing NZ lawmaking to TPM providers

TPMs in Practice: DVDs (ctd)

Example of rewriting of the Copyright Act through TPMs

- Statute of Anne, 1709 stipulated a limited term for copyright
- Despite intense pressure from content providers ("Mickey Mouse Protection Act" in the US), successive acts have maintained this provision
- Now, TPMs give them the ability to strike it from the act

No known TPM allows for expiration of the copyright term

- No part of the Act proscribes these actions by TPM providers
  This would turn the PC into a record player as far as music is concerned
      — Microsoft Research News

TPMs in Practice: DVDs (ctd)

Any copyrighted material produced today will require the TPM's used to be active and available for all eternity

- This problem has already surfaced on a large scale with DIVX in the US
    - Not to be confused with DivX, which is a video codec
- On 7 July 2001, all DIVX DVDs became unplayable when the content provider decided to discontinue support
- The TPMs used prevented any comeback by consumers. Millions of dollars worth of players and movies became bricks overnight.

TPMs in Practice: DVDs (ctd)

All content "protected" in this manner will be lost forever once the last TPM device capable of playing it back expires

- A whole era of NZ's culture will be lost due to being locked up behind never-expiring TPMs

That's a pretty scary thing. Think of the implications for the province. I mean, if you look at the archives as the memory, the heritage of a thing, nobody wants to lose their mind. That's basically your memory. It's who you are

— Denis Noel, Canadian government archivist

TPMs in Practice: Video Playback

Retired filmmaker with 50 years of educational films

- Incredible collection of ethnographic material
  - American Indian tribes
  - Pre-Soviet invasion Afghanistan
  - South American tribes
  - …
  - Works are listed by the Academic Film Archive of North America
- Transferred them to DVD to make them more accessible to schools without film projectors
- Region-free, so educators anywhere can use them

TPMs in Practice: Video Playback (ctd)

Windows refused to play the content because Macrovision couldn't be enabled

- Macrovision is applied to TV-out connectors on video cards…

  … but his PC doesn't have TV-out!
- What it has is a theoretical ability to provide TV-out
- Since it doesn't have actual TV-out circuitry, Macrovision can't be enabled on it

Windows TPM is preventing playback due to the absence of protection on a nonexistent output!

- Filmmaker is prevented from playing back his own content
- 50 years of educational film-making is reduced to a Macrovision error message

TPMs in Practice: Video Playback (ctd)

Google search reveals that this affects thousands upon
thousands of users around the world

- Had to commit a crime under the Copyright Act (either the
  original or the proposed amended form) using a copyright-
  circumvention device in order to allow the filmmaker to view
  his own films

TPMs in Practice: Windows Vista

Far too many issues to explain easily, see "A Cost Analysis
of Windows Vista Content Protection",
`http://www.cs.auckland.ac.nz/`
`~pgut001/pubs/vista_cost.html`

- Alternatively, see media coverage in the New York Times,
  BBC, Guardian, (UK) Times, Observer, …

TPMs in Practice: OSS Software

Vendors are adding TPMs into commodity PC hardware

- See the Vista writeup on TPMs in PC video hardware, motherboard chipsets, …

In order to support this hardware in OSS software, it may be necessary to bypass the TPM

- Without strong protection of consumer rights, the increasing use of TPMs in PC hardware could slowly strangle OSS systems like Linux, FreeBSD, …

TPMs in Practice: September 11

TPMs prevented emergency services from restoring and/or operating systems needed as part of the rescue effort

- This problem was fairly well documented
- What wasn't documented was whether this caused lives to be lost…

Shortcomings of the Bill

226E The user of a TPM work who wishes to exercise a permitted act allowed under this Act but cannot practically do so because of a TPM may
(a) apply to the copyright owner or the exclusive licensee for assistance enabling the user to exercise the permitted act

- Your computer crashes when you try and play a video. How long will it take to get permission from everyone involved to even try and identify the problem?
- The copyright owner is unlikely to be the cause of the problem
- Copyright owner: "No, go away"
- Copyright owner: "Sure, if you buy our US$4,995 SDK"
- Copyright owner: "Sure, it'll take us 18 months to set up"
  - I cannot even begin to imagine what the intent of this clause actually is

Shortcomings of the Bill (ctd)

(b) engage a qualified person (see section 226D(3)) to exercise the permitted act on the user's behalf

- The discoverers of things like the Sony Rootkit have explicitly been non-qualified (section 226D(3)) people
- What distinguished the qualified people (AV vendors) is that they were the ones who kept silent about it
- If you have a problem, *you* should be allowed to rectify it
  - Currently if you have a hardware or software problem you're required to ask a teacher or librarian for help
  - You can't ask a programmer or PC technician!

Shortcomings of the Bill (ctd)

226C (1) Every person commits an offence who
(i) makes for sale or hire, imports, sells, lets for hire, offers or exposes for sale or hire, or advertises for sale or hire, a TPM spoiling device

- Anti-virus vendors had better watch out
    - Removing the Sony rootkit is a TPM spoiling action
- Criminalising A/V tools and research doesn't seem like a good move

Fixing the TPM Section

Intent: Protect consumers from abuse by copyright holders

- Provide some balance to the bill

Modify section 226 (covering TPMs) to protect consumers

- Make explicit consumer's rights
- Provide explicit protection of protected acts
- See Stephen Marshall's submission on the bill,
  `http://artemis.utdc.vuw.ac.nz:8000/pebble/`

Fixing the TPM Section (ctd)

Section 226K Absolute protection of permitted acts

No clause in this Bill, nor any term or condition in an agreement for the use of any media or device, nor any TPM has any effect or standing in law in so far as it prohibits or restricts

(a) any permitted act as set out by the Copyright Act; or

(b) use of any device or means to enable, or information on how to enable, the exercise of a permitted act; or

(c) use of any device or means to observe, study, or test the functioning of a TPM in order to understand the ideas and principles that underlie it for the purpose of enabling the exercise of permitted acts; or

… continues …

Fixing the TPM Section (ctd)

(No clause in this Bill, nor any term or condition in an agreement for the use of any media or device, nor any TPM has any effect or standing in law in so far as it prohibits or restricts)

… continued …

(d) the disabling of any TPM that

(i) introduces security vulnerabilities to any system; or

(ii) violates the reasonable expectations for privacy of users of any system; or

(iii) negatively affects a system's safety or reliability; or

(iv) prevents the exercise of any permitted act.

Fixing the TPM Section (ctd)

Subsection (d) is the most important part of these revisions

- Recognises that TPMs can (and will) be abused by content owners and provides remedies
- Non-abusive content owners have nothing to fear :-)

The Acid Test

Can your proposed changes deal with

- The Sony Rootkit
- Adobe eBooks of children's stories that can't be read to children
- Self-destructing DVDs
- The filmmaker who couldn't play his own films

These are all real-world scenarios that the Act *must* be able to deal with