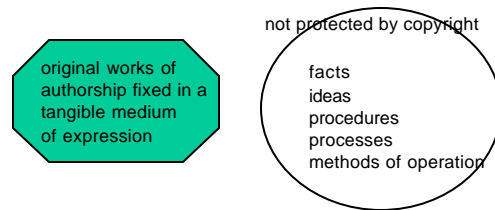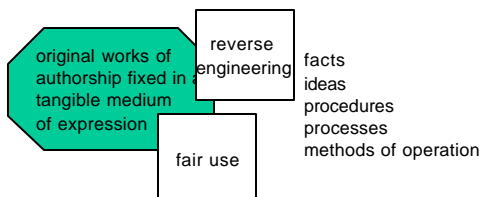# Copyright, Copy Protection, and Trusted Systems

---

- Life-Time, Inc., distributes free CD-ROMs through a mass mailing campaign. The CD-ROMs contain a huge collection of celebrity photos and interviews. Readers who use the CDs in their computers find that they can sample--i.e. get access to--up to three interviews, selecting from a list. After the user selects and views three interviews, the program offers an 800 number that, when called, allows the user to offer a credit card number and be charged $9.95 for twenty more interviews. After payment is verified, the caller is given an "unlock" code that causes the program to permit viewing of the additional requested interviews.

- Jane Doe is sent a copy of the CD, explores it, and thanks to her undergraduate work in computer science is able to crack the CD's protection scheme and view all 2,000 interviews at her leisure without paying for a single one.
- Should the law penalize Jane in any way for what she did? Does it?
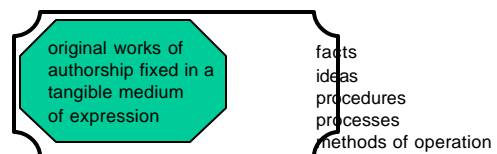

Copyright

original works of authorship fixed in a tangible medium of expression

not protected by copyright

facts
ideas
procedures
processes
methods of operation

Copyright

original works of authorship fixed in a tangible medium of expression

reverse engineering

fair use

facts
ideas
procedures
processes
methods of operation

Copyright + DRM

original works of authorship fixed in a tangible medium of expression

facts
ideas
procedures
processes
methods of operation
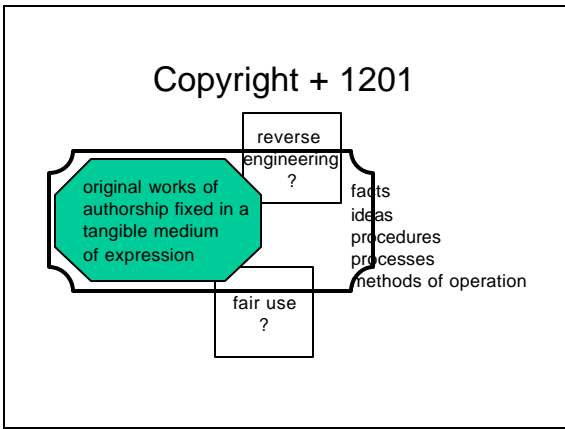
Alice in Wonderland
eBook

Permissions:
"This book cannot be lent
or given to someone else"

"This book cannot be
read aloud"

DRM and the smart cow

- All it takes is one cow to push open the gate; the others just have to follow.

- On the Darknet, it's easy to follow.

Copyright + 1201

reverse engineering ?

original works of authorship fixed in a tangible medium of expression

facts
ideas
procedures
processes
methods of operation

fair use ?

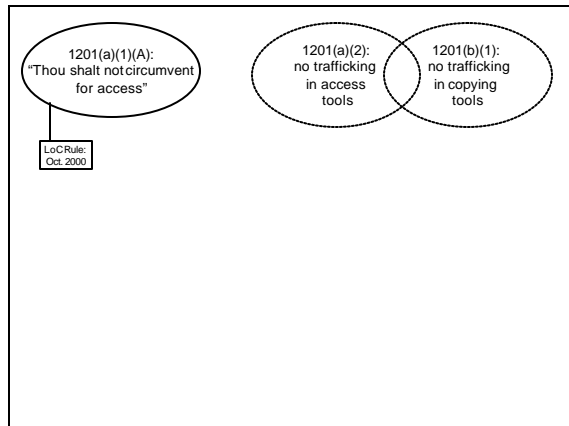
Sec. 1201(a)(1)(A):
"Thou shalt not circumvent access controls"

Sec. 1201(a)(1)(A):
"Thou shalt not circumvent for access"

Potential for exceptions by rules made under Sec. 1201(a)(1)(B)

Sec. 1201(a)(1)(A):
"Thou shalt not circumvent for access"

LoC Rule:
Oct. 2000

In October 2000, the Librarian of Congress announced a rule limited to circumvention (1) of obsolete technological protection measures and (2) designed to gain access to lists of blocked websites.

Slide 1

1201(a)(1)(A): "Thou shalt not circumvent for access"
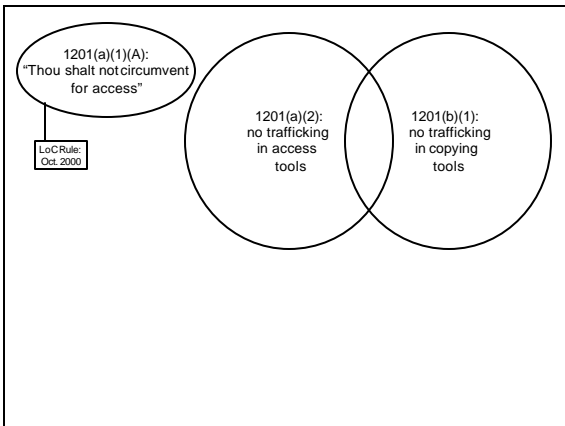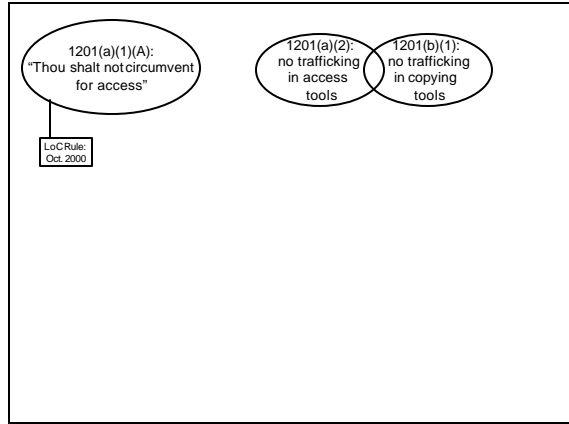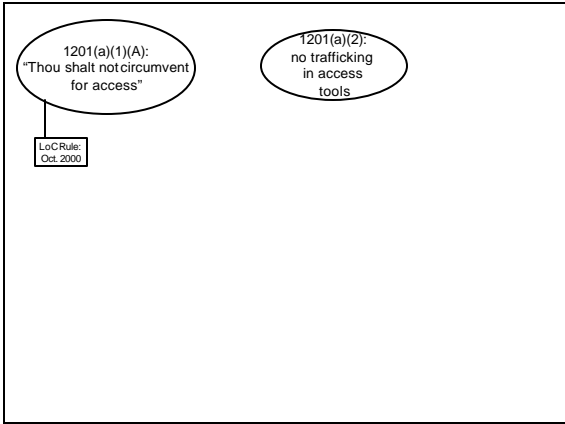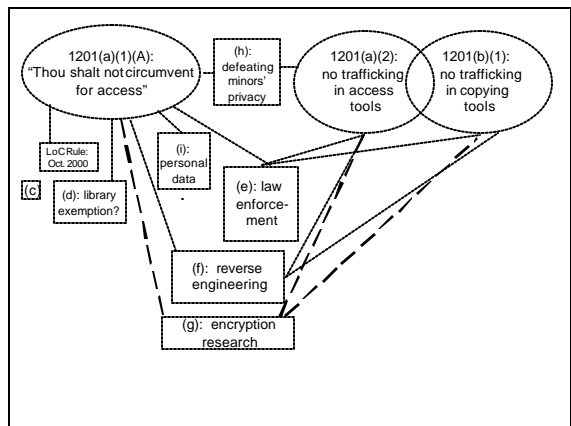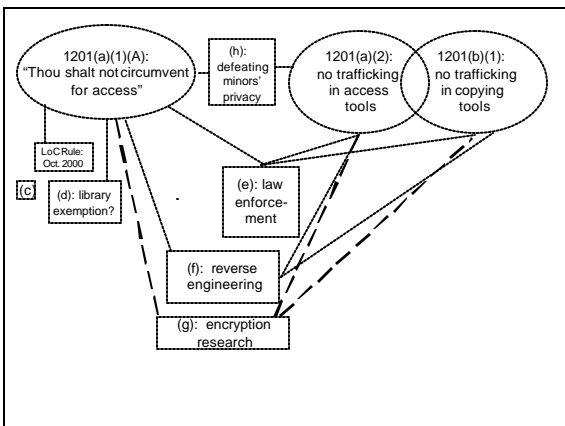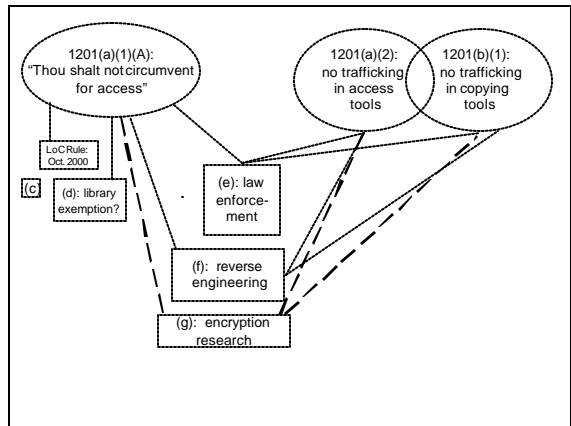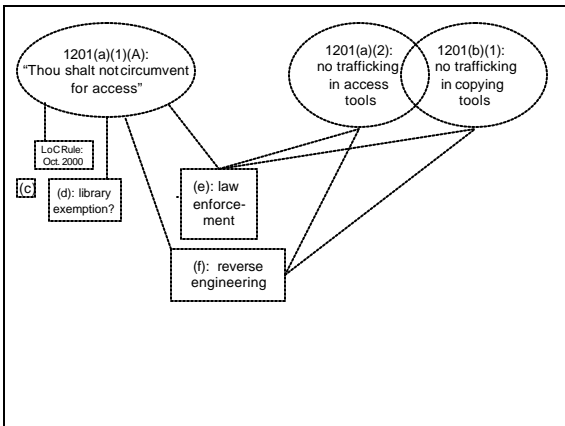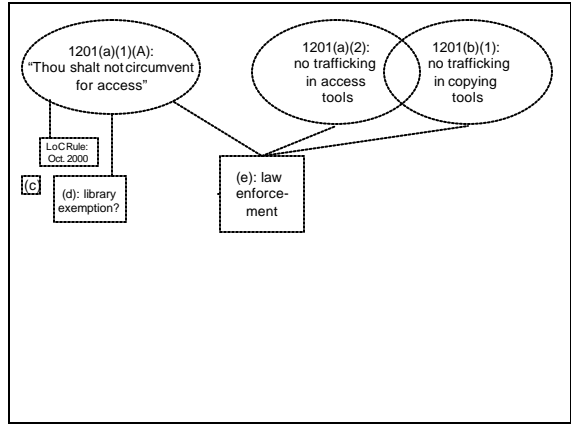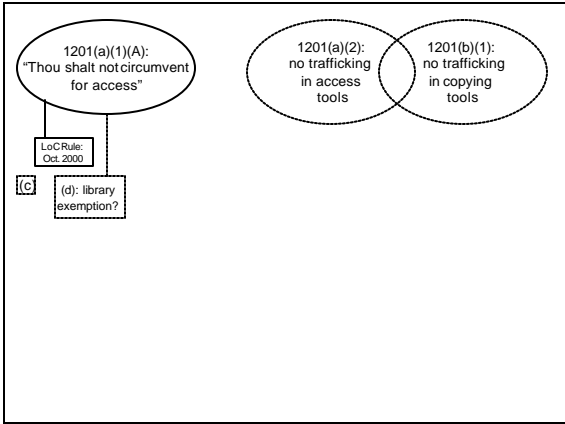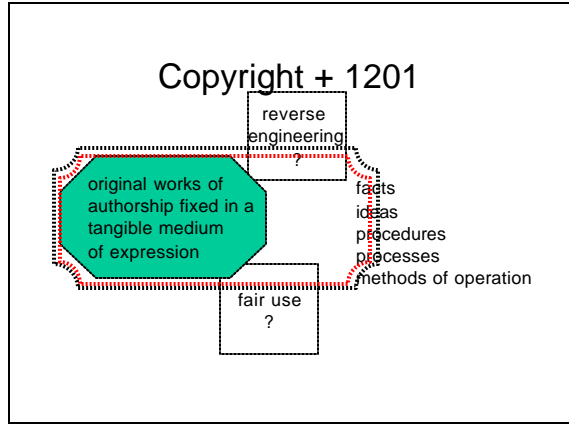
LoC Rule: Oct. 2000

1201(a)(2): no trafficking in access tools

Slide 2

1201(a)(1)(A): "Thou shalt not circumvent for access"

LoC Rule: Oct. 2000

1201(a)(2): no trafficking in access tools

1201(b)(1): no trafficking in copying tools

Slide 3

1201(a)(1)(A): "Thou shalt not circumvent for access"

LoC Rule: Oct. 2000

1201(a)(2): no trafficking in access tools

1201(b)(1): no trafficking in copying tools

Slide 4

1201(a)(1)(A): "Thou shalt not circumvent for access"

LoC Rule: Oct. 2000

1201(a)(2): no trafficking in access tools

1201(b)(1): no trafficking in copying tools

Slide 5

1201(a)(1)(A): "Thou shalt not circumvent for access"

LoC Rule: Oct. 2000

(c)

1201(a)(2): no trafficking in access tools

1201(b)(1): no trafficking in copying tools

Note that the language of Sec. 1201(c), preserving (among other things) the "fair use" defense, applies to copyright but not to "paracopryight"!

Slide 6

1201(a)(1)(A): "Thou shalt not circumvent for access"

LoC Rule: Oct. 2000

(c)

1201(a)(2): no trafficking in access tools

1201(b)(1): no trafficking in copying tools

4

Copyright + 1201

reverse engineering

?

original works of authorship fixed in a tangible medium of expression

facts
ideas
procedures
processes
methods of operation

fair use
?

Universal v. Corley

- Major movie studios v. *2600 Magazine*, "The Hacker Quarterly"
- *2600* posted and linked to DeCSS
- Studios sued under 1201(a)(2) and (b)(1)
- *2600* enjoined from posting or linking to DeCSS
- Second Circuit affirmed

DVD Decryption in Perl

```
#!/usr/bin/perl
# 472-byte qrpff, Keith Winstein and Marc Horowitz <sipb-iap-dvd@mit.edu>
# MPEG 2 PS VOB file -> descrambled output on stdout.
# usage: perl -I <k1>:<k2>:<k3>:<k4>:<k5> qrpff
# where k1..k5 are the title key bytes in least to most-significant order

s''$/=\2048;while(<>){G=29;R=142;if((@a=unqT="C*",_)[20]&48){D=89;_=unqb24,qT,@
b=map{ord qB8,unqb8,qT,_^$a[--D]}@INC;s/.../$1$&/;Q=unqV,qb25,_;H=73;O=$b[4]<<9
|256|$b[3];Q=Q>>8^(P=(E=255)&(Q>>12^Q>>4^Q/8^Q))<<17,O=O>>8^(E&(F=(S=O>>14&
7^O)
^S*8^S<<6))<<9,_=(map{U=_%16orE^=R^=110&(S=(unqT,"\xb\ntd\xbz\x14d")[_/16%8]);E
^=(72,@z=(64,72,G^=12*(U-2?0:S&17)),H^=_%64?12:0,@z)[_%8])(16..271))[_]^((D>>=8
)+=P+(~F&E))for@a[128..$#a]}print+qT,@a}';s/[D-HO-U_]/\$$&/g;s/q/pack+/g;eval
```

Is it illegal to display this slide?
(David S. Touretzky's Gallery of CSS Descramblers)


Is this wardrobe illegal?

- John Roe pays $19.95 for a DVD of "Tarzan." When he puts it into his standard DVD player, he finds that it shows promotional trailers at the beginning – and he can't fast-forward past them. He doesn't want his young children to be exposed to this commercialism in their own home, so he programs DVD software on his Linux-based computer to skip directly to the beginning of the movie when he inserts the DVD.

- Should the law penalize John for what he did? Does it?

Lexmark v. Static Control

- Printer company v. toner cartridge remanufacturer
- Lexmark claims SCC microchip circumvents access-controls limiting access to copyrighted printer software
- But the program is available, unencrypted, to anyone who buys a printer

Broadcast Flags

- "Digital Broadcast Content Protection" 47 CFR 73.9002(b) and following:
- *"No party shall sell or distribute in interstate commerce a Covered Demodulator Product that does not comply with the Demodulator Compliance Requirements and Demodulator Robustness Requirements."*
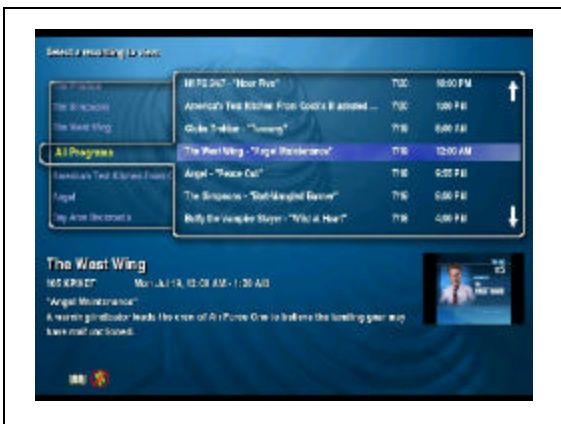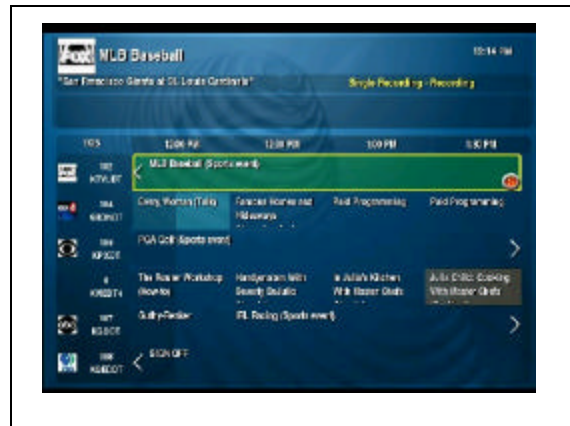
Code finer-grained than law

- Code can prevent uses law couldn't practically reach (even if earlier law technically prohibited them)

- This preemptive power stops many potential fair use challenges, preventing judicial review of whether a use is fair or foul