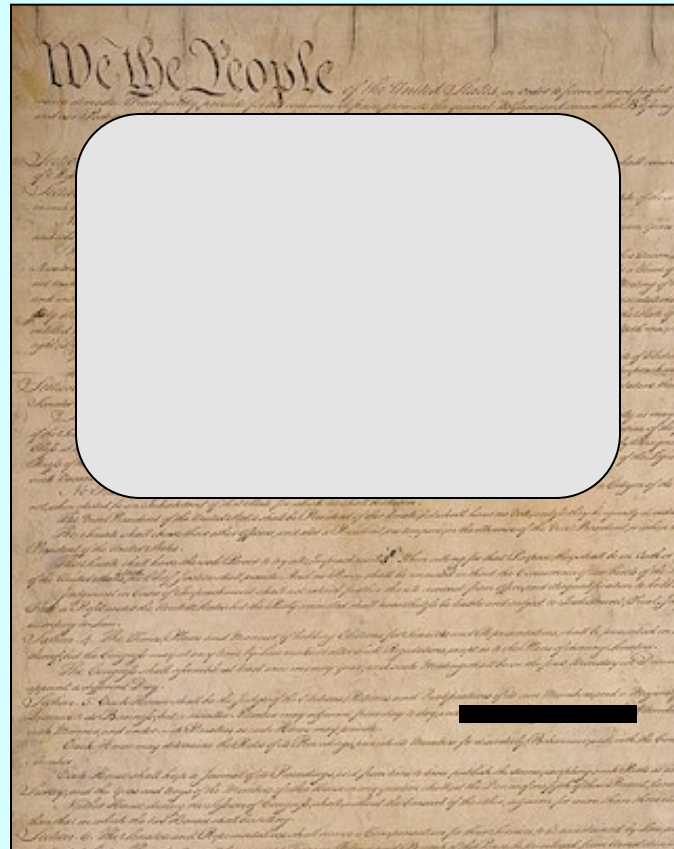


Intellectual Property in the Computing Age



News: Technical challenges of machine learning and language translation

– <http://www.bbc.com/news/business-36638929>

- Funny story about the problems of automatic translation

Despite the amusing nature of the story, it underlies one of the real dangers of over-relying on technology to help with communication. And the example of skype with the Great China Firewall is real, and could be dangerous if the results were not so ridiculous.



Technology for “good”

- Saudi Arabia to issue e-bracelets for Hajj worshippers
 - <http://www.bbc.com/news/technology-36675180>
- Smartphones to alert when an accident occurs
 - <http://www.bbc.com/news/business-36671297>
- Virtual doctors in Zambia
 - <http://www.bbc.com/news/business-36576510>
 - The use of virtual doctors, and/or telemedicine could be an interesting final project topic.
- Eliminating smog
 - <http://money.cnn.com/2016/07/01/technology/smog-free-tower-china/index.html>

Some questions to frame this talk

- What is IP, and how is it different from physical property?
- Why might we wish to protect IP?

Outline

1. Foundations of intellectual property protection in the West
2. Forms of protection
 - a) Copyright
 - b) Patents
 - c) Trademarks
 - d) Trade secrets
 - e) Protecting mere ideas
3. IP protection for software

Outline

1. Foundations of intellectual property protection in the U.S.
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IP Protection in the Digital Age

Copyright protection is not an obstacle in the way of the success of the NII; it is an essential component. Copyright motivates the creative activity of authors and thereby provides the public with the products of those creators. By granting authors exclusive rights, the public receives the benefit of literature and music and other creative works that might not otherwise be created or disseminated. Effective copyright protection promotes a new cybermarketplace of ideas, expression, and products.

— IITF White Paper on Copyright, 1995

Available from: <https://www.eff.org/files/filenode/DMCA/NTIA%20DMCA%20White%20Paper.pdf>

US Constitutional Basis for IP Protection

In the United States, intellectual property protection comes from Article 1, Section 8, of the Constitution:

Congress shall have the power . . .

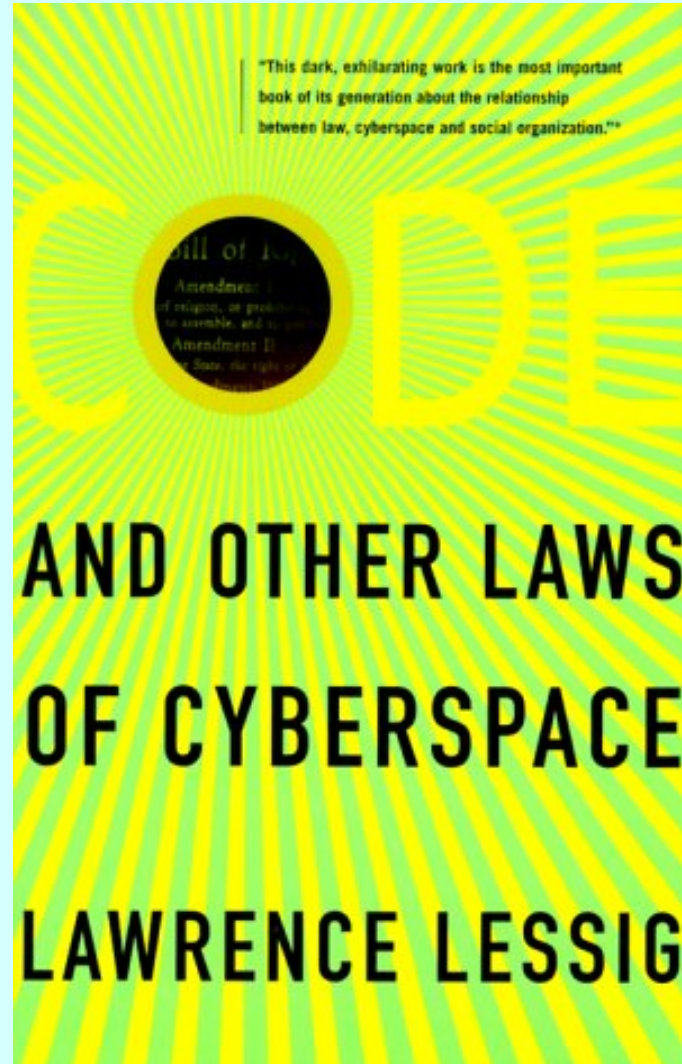
To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;

Technology and Social Processes

- Technology and social conventions both affect the cultural conventions around intellectual property.
- Throughout much of history, the idea that authors should be compensated for their work has teetered back and forth as technology changed the economic equation for making and distributing copies.
- Consider, for example, the world in the following times:
 - Information transfer before the development of writing
 - Before the invention of the printing press in 1440
 - Prior to international agreements on copyright

The Speed of Code

Code (as in program code) runs very fast.



Code (as in laws) runs very slowly.

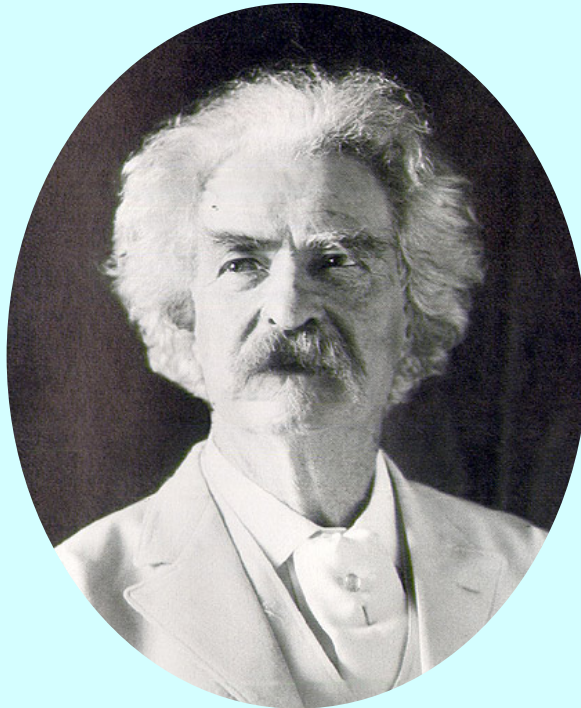
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Copyrights Have Long Been Confusing

Only one thing is impossible for God: to find any sense in any copyright law on the planet.

—Mark Twain, *Notebooks*, 1902-03



Copyright

History

- Historical foundation in the Statute of Anne in 1710
- U. S. law established in the Constitution
- Major revisions of copyright law in 1909 and 1978
- U. S. law now adheres to the Berne Convention of 1971 and the Uruguay Round Agreements Act of 1994

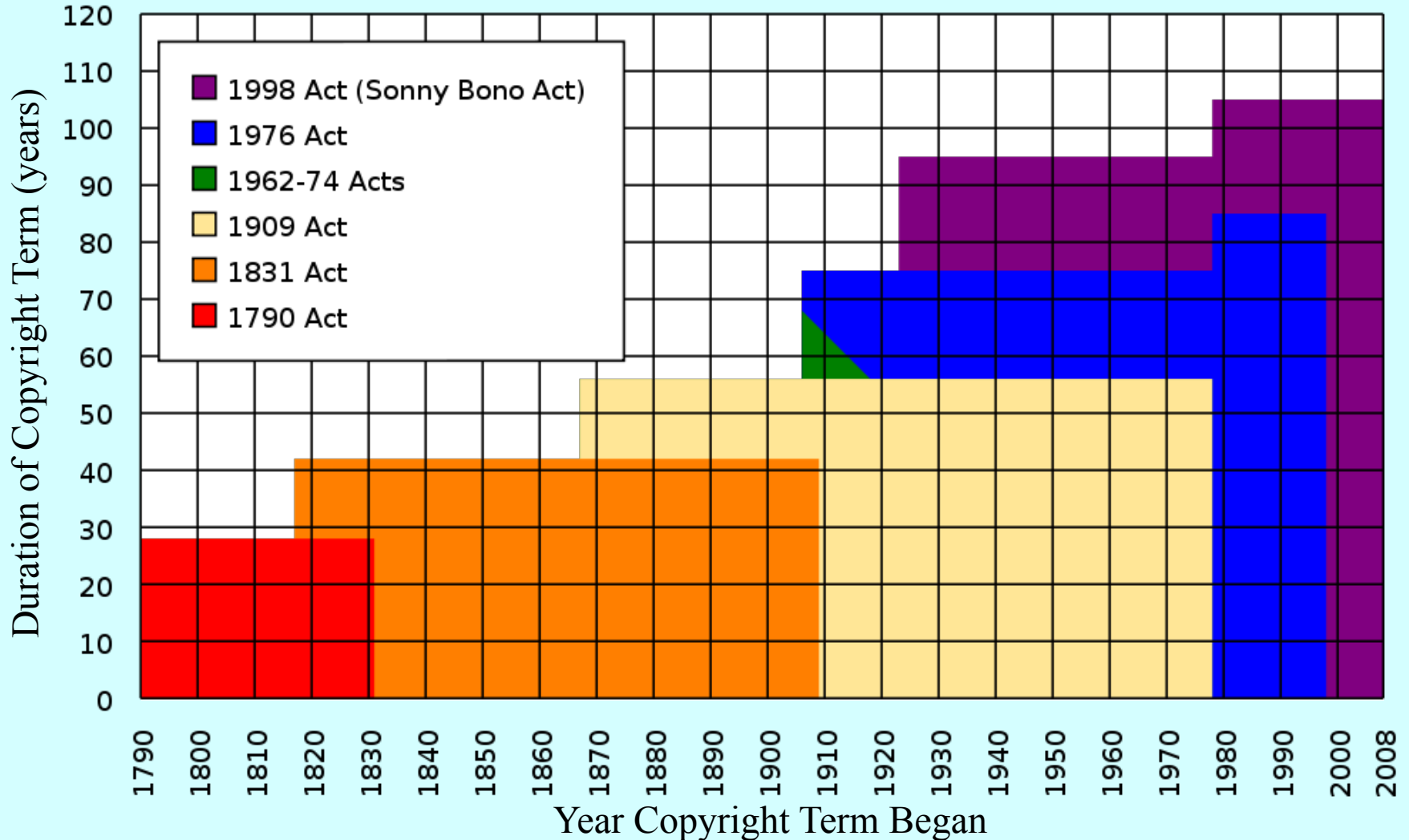
Coverage

- Current protection is life of the author plus 70 years
- Copyright protection has been regularly extended in recent years through such legislation as the Sonny Bono Copyright Term Extension Act of 1998

Copyright law

- Awarded to an author for a work that is:
 - Original, non-functional, and fixed in a tangible medium

Copyright Terms Get Longer



Source: Tom Bell

Creative Commons Attribution-Share Alike 3.0

Patents

History

- Modern foundation is the Statute of Monopolies in 1624
- U.S. law established in the Constitution
- Central authority today is the Patent Act of 1952

Coverage

- Patented invention must be *useful*, *novel*, and *nonobvious*
- Covers use of invention and its underlying ideas
- Patents require disclosure
- Current protection is 20 years for most patents

Trademarks

History

- Foundation is in common law against unfair competition
- Governed by the Lanham Act (aka Trademark Act) of 1946, revised in 1988

Coverage

- Protection continues as long as product is sold

Trade Secrets

History

- Protections established in state law
- Most states now subscribe to the Uniform Trade Secrets Act

Coverage

- Protection continues as long as secret is maintained

Protecting mere ideas

- Protecting mere ideas as personal property
 - E.g. Buchwald vs. Paramount Pictures

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Important US Software Copyright Cases

Apple v. Franklin (1983)

- Established copyright protection for operating systems

Whelan v. Jaslow Dental Laboratory (1986)

- Held copyright applies even if there is no direct copying
- Later decisions have held that this ruling was too broad

Lotus v. Paperback Software (1990)

- Established “look and feel” protection

Lotus v. Borland (1992)

- Set limits on “look and feel” for “essential” features

Computer Associates International v. Altai (1992)

- Established a three-step assessment for infringement

Important Software Patent Cases

Gottschalk v. Benson (1972)

- Found that software is an idea and not patentable

Diamond v. Diehr (1981)

- Established patentability of software in certain cases

In re Iwahashi (1989)

- Broadened patent protection to include certain algorithms

In re Alappat (1994)

- Strengthened software patentability, with some gray areas

State Street Bank v. Signature Financial Trust (1998)

- Expanded notion of utility and eliminated exceptions

In re Bilski (2008)

- Restricted scope of business method patents

Important Software Patent Cases

Mayo v Prometheus (2012)

- Reaffirm the laws-of-nature exception for patents

Alice Corp v CLS Bank (2014)

- A generic computer and its application is not patentable

The GNU Manifesto

I consider that the golden rule requires that if I like a program I must share it with other people who like it. Software sellers want to divide the users and conquer them, making each user agree not to share with others. I refuse to break solidarity with other users in this way. I cannot in good conscience sign a nondisclosure agreement or a software license agreement. . . .

So that I can continue to use computers without dishonor, I have decided to put together a sufficient body of free software so that I will be able to get along without any software that is not free.

— Richard Stallman, 1985