

DATA 605

Ethical & Legal Issues in

Data Science

SPRING 2022

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MARCH 3, 2022

AGENDA

- Questions?
- Paper and Discussion Grading
- Intellectual Property
- Breakout Discussion

Ethical Theories - Summary

Kantianism – Every person is equally valuable, and when you interact with other people you should always respect them as rational beings.

Utilitarianism – You should consider the consequences of an action before deciding whether it is right or wrong.

Social Contract Theory – We should collectively promote human rights, such as rights to life, liberty, and property.

Virtue Ethics – You can count on a good person to do the right thing at the right time in the right way.



Information Technology Changing Intellectual Property Landscape

- We benefit from access to high-quality television shows, music, movies, computer programs
- Value of intellectual properties much greater than cost of media
- Illegal copying pervasive
- Internet allows copies to spread quickly and widely
- In light of advances in information technology, how should we treat intellectual property?

What Is Intellectual Property?

Definition*: IP refers to creations of the mind

- Inventions
- Literary and artistic works
- Symbols, names, images used in commerce
- Patents
- Copyrights
- Trademarks
- Trade secrets

Intellectual property \neq physical manifestation

Does right to own property extend to intellectual property?

* World Intellectual Property Organization

Property Rights

John Locke: **The Second Treatise of Government**

People have a right...

- to property in their own person
- to their own labor
- to things which they remove from Nature through their labor

As long as...

- nobody claims more property than they can use
- after someone removes something from common state, there is plenty left over

Expanding the Argument to Intellectual Property

Writing a play akin to making a belt buckle

Making a belt buckle

- Mine ore
- Smelt it down
- Cast it

Writing a play

- “Mine” words from English language
- “Smelt” them into prose
- “Cast” them into a complete play

Benefits/Limits of Intellectual Property Protection

Benefits:

- Some people are altruistic; some are not
- Allure of wealth can be an incentive for speculative work
- Authors of US Constitution recognized benefits to **limited** intellectual property protection

Limits:

- Giving creators rights to their inventions stimulates creativity
- Society benefits most when inventions in public domain
- U S Congress has struck compromise by giving authors and inventors rights for a limited time

Prices Fall When Works Become Public Domain

Artist	Work	Previous Rental Fee	Year Became Public Domain	Purchase Price
Ravel	Daphnis et Chloe Suite no. 1	\$450.00	1987	\$155.00
Ravel	Mother Goose Suite	540.00	1988	70.00
Ravel	Daphnis et Chloe Suite no. 2	540.00	1989	265.00
Griffes	The White Peacock	335.00	1993	42.00
Puccini	O Mio Babbino Caro	252.00	1994	26.00
Respighi	Fountains of Rome	441.00	1994	140.00
Ravel	Le Tombeau de Couperin	510.00	1995	86.00
Respighi	Ancient Aires and Dances Suite no. 1	441.00	1996	85.00
Elgar	Cello Concerto	550.00	1997	140.00
Holst	The Planets	815.00	1997	300.00
Ravel	Alborada Del Gracioso	360.00	1999	105.00

Table from “Letter to The Honorable Senator Spencer Abraham,” by Randolph P. Luck from **Luck’s Music Library**. (Copyright © 1996 by Randolph P. Luck. Reprinted with permission.)

Trade Secret

- Confidential piece of intellectual property that gives company a competitive advantage
- Never expires
- Not appropriate for all intellectual properties
- Reverse engineering allowed
- May be compromised when employees leave firm

Trademark, Service Mark

- Trademark: Identifies goods
- Service mark: Identifies services
- Company can establish a “brand name”
- Does not expire
- If brand name becomes common noun, trademark may be lost
- Companies advertise to protect their trademarks
- Companies also protect trademarks by contacting those who misuse them

Trademarks and Service Marks



If a trademark is misused it could come undone.

If you didn't know zipper was a trademark, don't worry, it's not. But it used to be. It was lost because people misused the name. And the same could happen to ours, Xerox. Please help us ensure it doesn't. Use Xerox only as an adjective to identify our products and services, such as Xerox copiers, not a verb, "to Xerox," or a noun, "Xeroxes." Something to keep in mind that will help us keep it together.

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Patent

- A public document that provides detailed description of invention
- Provides owner with exclusive right to the invention
- Owner can prevent others from making, using, or selling invention for 20 years

Copyright

- Provides owner of an original work five rights
 - Reproduction
 - Distribution
 - Public display
 - Public performance
 - Production of derivative works
- Copyright-related industries represent 6% of U.S. gross domestic product (> \$900 billion/ year)
- Copyright protection has expanded greatly since 1790

Key Court Cases and Legislation

Gershwin Publishing v. Columbia Artists

- Columbia Artists Management Inc. held liable for copyright infringements of community concert associations it supported

Davey Jones Locker

- Richard Kenadek found guilty of violating copyrights of owners of software he posted on a computer bulletin board system

No Electronic Theft Act

- Made it a criminal offense to reproduce or distribute more than \$1,000 worth of copyrighted material in a six-month period

Copyright Creep

- Since 1790, protection for books extended from 28 years to 95 years or more
- Some say latest extension done to prevent Disney characters from becoming public domain
- Group of petitioners challenged the Copyright Term Extension Act of 1998 (CTEA), arguing Congress exceeded Constitutional power
- U.S. Supreme Court ruling
 - CTEA does not create perpetual copyrights
 - CTEA is constitutional

Fair Use

Right given to a copyright owner to reproduce a work is a limited right.

Fair use – it is legal to reproduce a copyrighted work without the permission of the copyright holder.

Four Factors to be considered:

1. What is the purpose and character of the use?

- An educational use is more likely to be permissible than a commercial use.

2. What is the nature of the work being copied?

- Use of nonfiction is more likely to be permissible than use of fiction. Published works are preferred over unpublished works.

3. How much of the copyrighted work is being used?

- Brief excerpts are more likely to be permissible than entire chapters.

4. How will this use affect the market for the copyrighted work?

- Use of out-of-print material is more likely to be permissible than use of a readily available work. A spontaneously chosen selection is better than an assigned reading in the course syllabus.

Fair Use Example # 1

A professor puts a few journal articles on reserve in the library and makes them assigned reading for the class. Some students in the class complain that they cannot get access to the articles because other students always seem to have them checked out. The professor scans them and posts them on his Web site. The professor gives the students in the class the password they need to access the articles.

1. *What is the purpose and character of the use?*
2. *What is the nature of the work being copied?*
3. *How much of the copyrighted work is being used?*
4. *How will this use affect the market for the copyrighted work?*

Fair Use Example # 2

An art professor takes slide photographs of a number of paintings reproduced in a book about Renaissance artists. She uses the slides in her class lectures.

1. *What is the purpose and character of the use?*
2. *What is the nature of the work being copied?*
3. *How much of the copyrighted work is being used?*
4. *How will this use affect the market for the copyrighted work?*

Breakout – Database Guru

When you analyze the case look from the lens of:

1. Kantianism
2. Social Contract Theory
3. Act Utilitarianism
4. Virtue Ethics

Case Study: Database Guru

Rajiv employed at Felicity Software

Signed a confidentiality and proprietary rights agreement

Developed some database optimizations

Moved to [Unrelated.com](https://unrelated.com), supervises team developing database software

Realizes his optimizations would help team at [Unrelated.com](https://unrelated.com)

Two alternatives for Rajiv

“Clean room” strategy

- Provide team with publicly available information
- Provide team with performance targets

Become personally involved

- Ask team open-ended questions
- Allow them to rediscover the optimizations he made at Felicity

Kantian Analysis

“Clean room” option

- Rajiv does not violate agreement he signed
- “You can share your expertise with others” is a rule that can be universalized
- Morally right

“Personally involved” option

- If he does not ask leading questions, OK
- If he asks leading questions, he is disclosing information and violating agreement he signed
- Breaking a contract = breaking a promise → wrong
- Is it reasonable to think he can avoid asking leading questions?

Social Contract Theory Analysis

Similar to Kantian analysis

“Clean room” option

- Rajiv helps team without violating an agreement
- This is OK

“Personally involved” option

- If he can avoid disclosing information, OK
- If he gets impatient and discloses information, not OK

Act-Utilitarian Analysis (1 of 4)

Quantify consequences of each option in dollars

Time horizon: 5 years

Affected parties

- Rajiv: Income over next five years
- [Unrelated.com](#)
 - Lost income due to delay in releasing product
 - Expected costs associated with potential litigation

Act-Utilitarian Analysis (2 of 4)

“Clean room” option

Consequences for Rajiv

- Expects 10% raise, worth \$15,000
- Total worth \$75,000 over five years

[Unrelated.com](#)

- Six-month delay costs the company six months' revenue from its steady state
- $50,000 \text{ customers} \times \$10/\text{month/customer} \times 6 \text{ months} = \$3,000,000$
- No risk of litigation

Act-Utilitarian Analysis (3 of 4)

“Ask right questions” option

Unrelated.com

- Three-month delay costs the company six months' revenue from its steady state, or \$1,500,000
- Litigation risk 6.25% and cost \$5,000,000, so expected loss $\$5,000,000 \times .0625 = \$312,500$

Rajiv

- If no litigation, 15% raise, worth \$112,500 over 5 years
- If litigation, get fired, lose \$750,000 over 5 years
- Expected outcome: $.9375 \times \$112,500 - .0625 \times \$750,000 = \$58,594$

Act-Utilitarian Analysis (4 of 4)

	Course of Action	
	Set up clean room	Ask team “right questions”
Affected parties		
Rajiv	\$75,000	\$58,594
Unrelated.com		
Lost income due to delay in product release	(\$3,000,000)	(\$1,500,000)
Litigation risk	\$0	(\$312,500)
Overall benefit	(\$2,925,000)	(\$1,753,906)

Better

Virtue Ethics Analysis

“Clean room” option

- Gives team opportunity to create a system that meets performance requirements
- Rajiv shares expertise, insists performance goals get met, characteristic of a good engineer and manager

“Personally involved” option

- Working hard and sharing expertise are characteristic of good managers
- Runs risk of violating confidentiality agreement, which is dishonest and not characteristic of good managers

Prudent choice is “clean room” option

Conclusion

- “Clean room” option better option according to Kantianism, social contract theory, and virtue ethics
- “Personally involved” option better according to act utilitarianism, though a more risk-averse analysis would have resulted in “clean room” option being preferred

Articles to Read – Preparation for next week

AI with ethical impacts

Driverless cars <https://theconversation.com/the-everyday-ethical-challenges-of-self-driving-cars-92710>

Lethal autonomous weapons systems <https://www.hrw.org/report/2018/08/21/heed-call/moral-and-legal-imperative-ban-killer-robots>