

CE29x Team-Project Challenge

CSEE and the Law:

I. Intellectual Property Laws

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with acknowledgements to Keith Primrose, and Michael Fairbank

This Lecture

- * British Law (Introduction)
- * Intellectual Property

Why Does It Matter To Me?

1. You will likely be creating IP you want to protect
2. You will likely be writing software that holds client information – you have legal obligations to keep that data private and secure

Why Does It Matter To Me?

3. You have to know about these things:
 - * Ignorance is no defence under the law.

4. Explicitly mentioned in the BCS code of conduct:
 - * *“... You shall ensure that within your professional field/s you have knowledge and understanding of relevant legislation, regulations and standards, and that you comply with such requirements.”*

British Law

British legal systems

- * Britain has three / four legal systems:
 - * England and Wales
 - * Originally is based on 'common law' = judge-made law
 - * Now mainly developed from parliamentary legislation
 - * Adversarial approach
 - * Rival cases are presented in front of a judge / jury to decide
 - * Scotland
 - * Mixed legal system – different approaches to person and communities
 - * Similarities with many common law systems but also some key differences: borrowed from romano-germanic systems (France).
 - * Northern Ireland
 - * Some procedural differences from English system
- * Most laws apply to the whole of the UK (but note that Scottish devolution gave more powers to Scottish Parliament)

Sources of law

* English Parliament

- * Started making laws in 13th century
- * A Bill is a proposal for a new law or change of law, to be debated in Parliament.
- * Once voted on, a bill becomes “an Act” of Parliament, i.e. law
- * Acts are also called “statutes” (types of laws)
- * Legislation increasing dramatically: estimated 3,500 Acts

* English Government:

- * Statutory Instruments - laws
- * 10,000 Statutory Instruments in force

Sources of law (2)

- * European Union - EU (former European Community: EC)
 - * UK has to comply with European Law
 - * **EU Directives:**
 - * Member States need to transpose, i.e. to vote legislation/ a statute, for the Directive to be applicable
 - * **EU Regulations** (former Council Framework Decisions):
 - * Directly applicable – no specific statute to transpose

Two Systems

* In many jurisdictions there are two different areas of law:

1. **Criminal Law**

- * The state (in the UK 'The Crown') has the right to prosecute citizens for those breaches of Law deemed crimes
 - * E.g. crimes the police would take notice of (theft, violence)

2. **Civil Law**

- * In civil law there is no state prosecution.
- * Civil law cases include legal disputes between 2 individuals or companies.
- * One party - called the plaintiff - applies to the court for their case to be heard.
- * The other party - called the defendant - is the person or other legal entity from whom the plaintiff requires redress (i.e. some form of compensation).
- * The state provides the courts and the judge but does not take sides.

* For information: <https://www.judiciary.gov.uk/you-and-the-judiciary/>

Intellectual Property

Intellectual Property (IP)

What is IP?

- * Intangible creative work
 - * not necessarily the physical form on which it is stored or delivered
 - * E.g. software, hardware designs
- * Theft of IP is different from theft of a tangible object
 - * The IP owner is not deprived of their IP, if it is copied
 - * But if you spend 10 years developing some software you plan to sell, what can you do to prevent hackers from copying it and selling it?
 - * Note that IP can travel across the world faster than a tangible object

Intellectual Property (IP)

- * Software can be expensive to develop
 - * And valuable
- * It can be protected by IP rights, e.g.
 - * Copyright
 - * Confidential information
 - * Patents
 - * Trademarks

IP Infringement

- * Infringement of patent or copyright normally falls under civil law
- * However, some forms of infringement may also be criminal e.g.
 - * Marketing, distributing or selling pirate material
- * Other offences may be involved e.g.
 - * Forgery, trade descriptions, theft

Intellectual Property (IP)

- * IP rights are a “property”, that can be
 - * bought and sold outright,
 - * or for a defined period of time
 - * or on a renewable licence basis.
- * Income to the owner of the IP can thus accrue as
 - * one-off payments,
 - * or periodic royalties
 - * or per-use payments.

Intellectual Property (IP)

We will look at four methods of IP protection:

1. Copyright
2. Confidential Information
3. Patents
4. Trade Marks

I. Copyright

Copyright

- * Copyright is associated with the right to copy a piece of “work”.
- * The work must be one of:
 1. Original literary, dramatic, musical or artistic work
 - * Includes Software
 2. Sound recordings, films, broadcasts
 3. The typographical arrangement of published editions

Copyright

- * Copyright comes into existence when the work is written down/recorded in some way
- * Draw attention to your copyright by writing “(C) Author Name 2017”
- * Work must be *original*
 - * you’re not breaking copyright by reusing “i=i+1”
- * Copyright for software and literary works
 - * lasts for author’s lifetime + 70 years.

Copyright

- * Copyright normally belongs to the work's creator
 - * but can be sold
 - * Author retains moral right for recognition
- * Copyright belongs to your employer if the work was created as part of your job
 - * Unless you have an explicit written agreement to say otherwise
 - * This only affects employees
 - * not to independent contractors
 - * (The copyright of commissioned work belongs to the author, unless the commissioner stipulates for it in the contract)

Copyright Usage

- * Copyright law usually grants the copyright holder several exclusive rights:
 - * to make copies
 - * to issue copies to the public (with or without payment)
 - * to import or export the work
 - * to adapt the work (e.g. to translate it)
 - * to perform or display the work publicly
 - * to rent or lend the work to the public
 - * to transmit or display by radio or video
 - * to sell or cede these rights to others
- * No one can do any of these things without the copyright owner's permission

Copyright Usage

- * Copyright does not protect you if someone else produces an identical work, if they can show they did not produce it by copying the original work
 - * Programmers don't need to worry if they inadvertently produce identical code
 - * Proving theft of code can be quite difficult
 - * So authors sometimes aid proof-of-theft by inserting redundant LOCs
 - * `i++; i--`

Copyright Usage

The Copyright (Computer Programs) Regulations 1992:

- * If you use copyright work, you are allowed to
 - * Make a single personal backup copy
 - * Decompile the program in order to
 - * correct errors
 - * discover how to create a program which interoperates with it
 - * Sell your rights to use the program
 - * But you have to remove your own copy

Copyright Law – databases

- * Databases may receive copyright protection for the selection and arrangement of the contents.
- * Also database copyright may exist in the data itself.
- * Database right lasts for 15 years from the making but, if published during this time, then the term is 15 years from publication.

Full UK copyright law summary:

<https://www.copyrightservice.co.uk/ukcs/docs/edupack.pdf>

Copyright Law – Computer Generated work

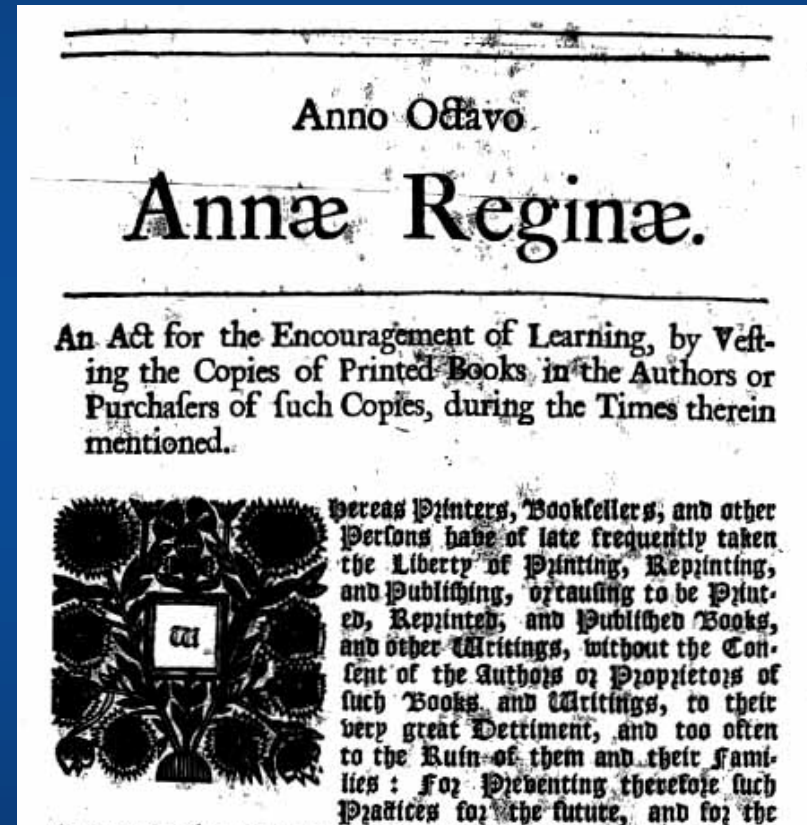
- * Computer generated works can also be covered:
 - * Copyright is granted to the person who undertakes “the arrangements necessary for the creation of the work”,
 - * This person is recognised as the author.
 - * For these works, Copyright lasts for 50 years, from the creation date.

Copyright Law – Computer Generated work

- * Where computer generated work is concerned the author is
 - * The person who was using the computer to generate the work
 - * Or the person who owned the computer which produced the work
- * Consider a piece of computer generated art:
 - * The company that wrote the software that generates the art own copyright in that software
 - * The computer artist or his/her employer who used the software to generate a new and unique work would hold copyright in that work
 - * Even if the work of art was generated from a series of random sequences of numbers produced by the program

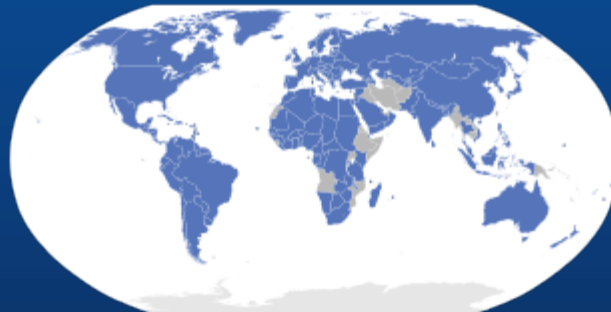
Copyright Laws

- * First copyright act in the world was 1710:
 - * Statute of Anne
- * This made new concepts:
 - * Author is the owner
 - * Fixed term of protection
 - * Libraries must have a copy



Copyright Laws

- * Principle not internationally agreed until the 1886 International Copyright Act – The Berne Convention
- * Last revised in 1979
- * 121 signatory countries
- * Details vary slightly between countries
 - * e.g. may differ in duration of copyright



Countries in blue have signed up to Berne convention

Copyright infringement

- * The author can pursue pirates to regain lost royalties, and impound the copies
- * **Primary infringement** is when any of the exclusive rights of the owner are breached
 - * Civil case:
 - * Claim for damages;
 - * injunction to refrain from the activity
- * **Secondary infringement** is when a primary infringement occurs *in a business or commercial context*
 - * E.g. trading in pirated software
 - * E.g. using pirated software in a business
 - * Criminal case:
 - * Fines, imprisonment, civil damages, confiscation of equipment

Copyright infringement



- * Usually up to the copyright owner to police software theft (can be costly)
- * You are helped by FAST and BSA organisations to do this
- * FAST & the BSA encourage employees to expose employers using pirate software.
- * The Federation Against Software Theft (FAST) was set up by the British Computer Society (BCS) in 1984.
- * They represent UK s/w publishers and have been successful in getting UK Law changed.
- * They provide education programmes, consultancy and certification services for s/w licence compliance for audit purposes.
- * Note that copyright infringement is also prohibited by University of Essex [IT-usage regulations](#)

Copyright infringement



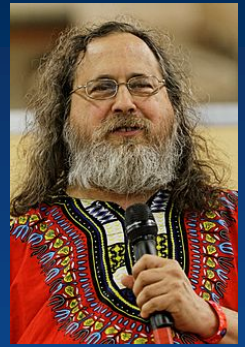
- * Business Software Alliance (BSA) is the foremost organisation dedicated to promoting a safe and legal digital world.
- * BSA is the voice of the world's commercial software industry, and their hardware partners, before governments and in the international marketplace.
- * BSA educates consumers on software management and copyright protection, cyber security, trade, e-commerce and other Internet-related issues.
- * Established in 1988, by Microsoft, BSA has programmes in more than 60 countries worldwide.

Copyright infringement

- * Software may be protected from copying
 - * E.g. with a hardware device
 - * E.g. difficult to reverse-engineer code
 - * E.g. publishing code as “Software as a service” (SaaS)
 - * E.g. OneDrive, Dropbox, Google Docs, Gmail
 - * Wolfram Alpha, Paywalls to Newspapers
 - * Cloud computing ([explainer video](#))
 - * E.g. Use of “Digital Rights Management” (DRM)
 - * Not popular with users – too restrictive
 - * iTunes and google music downloads are now advertised as “DRM free”



Copyright infringement



Richard Stallman,
Founder of the FSF

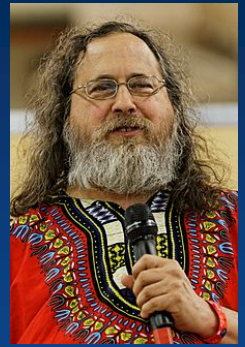
- * FSF's views on DRM and SaaS.
 - * Can you guess?
 - * On DRM, Free Software Foundation's views:
 - * DRM="Digital Restrictions management"
 - * "Defective by Design" stickers placed on new computers to deter purchase

- * Cory Doctorow:



*"Digital rights management always converges on malware.
... In one famous incident, Sony loaded covert rootkit installers on 6 million audio CDs."*

Copyright infringement



Richard Stallman,
Founder of the FSF

- * FSF's views on DRM and SaaS.

- * On SaaS:

- “With SaaS, the users do not have even the executable file that does their computing: it is on someone else's server, where the users can't see or touch it. Thus it is impossible for them to ascertain what it really does, and impossible to change it.*

- ... This has the same effect as spyware: the server operator gets the data—with no special effort, by the nature of SaaS”*

- * Source: [Free Software Foundation, “Who does that server really serve?”](#)

Offences - Piracy

- * The Video industry advanced the law to combat pirates. Losing millions to video pirates they used an obscure case brought by Anton Piller to gain entry into premises without notice.
- * The “Anton Piller” orders are now known as “search orders” in England and Wales.

In the 1975 English case of Anton Piller KG v Manufacturing Processes Limited, dealing with the theft of trade secrets.

Search orders (Anton Piller case precedent)

- * The plaintiff seeks an *ex parte** order to gain entry
 - * once inside they seek evidence to incriminate the pirates.
- * The argument is that if the pirates were given notice the evidence would be removed from the premises prior to entry.
- * Later an asset-freezing injunction (“Mareva Injunction”) was added
 - * which stops the defendants moving their assets to a foreign country.
- * If a pirate refuses to comply with the order they can be committed to prison for contempt of court, with remarkable speed and lack of formality.

*An ex parte decision is one decided by a judge, without requiring all involved parties to be present

Norwich Pharmacal Orders: Forced disclosure of documents

- * Norwich Pharmacal* orders:
- * A court order for the disclosure of documents or information
 - * Where the information is necessary to identify wrongdoers
 - * Granted against an (innocent) third party who hold details on those involved in illegal activities, particularly IP violations
- * Used against ISPs to identify users which have allegedly engaged in wrongdoing.

* Named after a 1974 legal case of Norwich Pharmacal Co. v Customs and Excise Commissioners

Specific UK Copyright Laws

- * In UK, relevant laws are:
 - * Copyright, Design and Patents Act, 1988
 - * Copyright (Computer Programs) Regulations, 1992
 - * Copyright and Rights in Databases Regulations, 1997
 - * Copyright, etc. and Trade Marks (Offences and Enforcement) Act 2002
 - * Copyright and Related Rights Regulations 2003
 - * Digital Economy Act 2017
- * Directive 2004/48/EC of the European parliament and of the council of 29 April 2004, on the enforcement of intellectual property rights
- * UK law broadly complies with EU regulations on copyright

Copyright, etc. and Trade Marks (Offences and Enforcement) Act 2002

Described at

<http://www.legislation.gov.uk/ukpga/2002/25/crossheading/amendment-of-the-copyright-designs-and-patents-act-1988>

This act has three main powers:

- * Increases the penalties for the offence of copyright theft to 10 years to match trade mark law, so it is no longer a low risk option for organised crime.
- * Strengthens search warrant provisions
 - * to make it easier to expose counterfeiting and piracy – i.e.: search orders (Anton Piller orders).
- * Gives greater powers to allow rights owners to obtain forfeiture of infringing material
 - * to reduce the current potential return for criminals – by asset freezing (a.k.a. Mareva Injunctions#)

#after the case *Mareva Compania Naviera SA v International Bulkcarriers SA*, which resulted in asset-freezing

Copyright and Related Rights Regulations (2003)

Described at

<http://www.legislation.gov.uk/ukxi/2003/2498/contents/made>

- * The Regulations exist to address the issues raised by information technology in business.
- * Addresses deficiencies brought about by the ease of transfer of information
- * Creates clarity for legal protection of copyright assets in today's environment.
- * Brings legal protection up-to-date within the digital environment
 - * making copyright protection technology neutral
 - * no longer relying on artificially fitting infringing activity into one of the exclusive rights in the Copyright, Designs & Patents Act 1998.

Copyright and Related Rights Regulations (2003)

- * Circumventing copy protection systems, or digital rights management software is now an infringement of copyright.
 - * This also applies to service providers who are aware that their services are being used to infringe copyright.
- * This opens Internet Service Providers to liability when they are put on notice that their customers use their services to infringe copyright material.
- * This whole area is being heavily debated within the Industry and Government and (undoubtedly) a legal Test Case will be needed to establish precedence.

2. Confidential Information

Confidential Information

- * Obligations of confidence

- * Implicit:

- * for employees not to reveal confidential information about the company

- * Trade secrets

- * Or sales negotiations

- * Employment contracts might include long tie-ins (garden leave)

- * Explicit:

- * Non-disclosure agreement (NDA)

3. Patents

Patent

- * A patent is an exclusive right to exploit an invention
 - * For a limited period of time
 - * In return for which the patent holder must publish details
 - * You have to apply for a patent and prove that your invention is new, useful and non obvious.
- * To use someone else's patented invention you need to have their agreement and often a contract with them

Patent Law

- * A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say:
 - * the invention is new;
 - * it involves an inventive step;
 - * it is capable of industrial application;
- * A patent covers the “idea”.
 - * E.g. once the idea is protected, it doesn't matter if someone uses different methods to reimplement the idea- they are still not allowed to do so.
 - * More powerful than copyright in this sense

Patent Law

- * It is not patentable in the UK, if it consists of:
 - * a discovery, scientific theory or mathematical method;
 - * a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever;
 - * a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer;
 - * the presentation of information;
- * This makes it very difficult to patent pure software in the UK (An algorithm is equivalent to a mathematical method)
- * US Patent Laws have allowed software patents though

Patent Law

- * Patents cost money to file, and renew
 - * E.g. with UK patent office
 - * <https://www.gov.uk/topic/intellectual-property/patents>
- * If several people invent the same idea
 - * IP rights go to the first person to file the patent
- * Keep your idea secret until filed.
 - * If you need to discuss your idea with someone, use a NDA

Patent Law

- * Patent must describe product correctly
 - * Worth getting a patent lawyer to help
 - * <https://www.gov.uk/guidance/why-you-should-use-an-ip-attorney>
- * Each patent only covers a given country (or region)
 - * You have to pay for patent protection in each region you think is worth paying for
 - * E.g. EU + US ?
- * You also have to pursue offenders and pay to prosecute them
 - * Patent lawyer can help

Patent Law

- * To show how complex things can become, here is a section from a UK government web site¹ regarding patents:
- * "This is an unofficial consolidation of the Patents Act 1977, as amended up to and including 1 October 2011. This consolidation therefore includes (amongst other changes) the amendments to the 1977 Act made by:
 - * the Copyright, Designs and Patents Act 1988
 - * the Patents and Trade Marks (World Trade Organisation) Regulations 1999
 - * the Patents Regulations 2000
 - * the Enterprise Act 2002
 - * the Regulatory Reform (Patents) Order 2004
 - * the Patents Act 2004,
 - * the Medicines (Marketing Authorisations etc.) Amendment Regulations 2005
 - * the Intellectual Property (Enforcement, etc.) Regulations 2006
 - * the Patents (Compulsory Licensing and Supplementary Protection Certificates) Regulations 2007
 - * the Legal Services Act 2007, and
 - * the Patents Act 1977 (Amendment) Regulations 2011"

1 HMG., 2011, "The Patents Act 1977 (as amended) An unofficial consolidation produced by Patents Legal Section" available from: <http://www.ipo.gov.uk/patentsact1977.pdf>, accessed 10th Jan 2012

Problems with patents

- * Patents can be granted on broad ideas that might be considered as obvious, i.e. creating absurd patents
 - * Particularly in the US where patents on software are much easier to grant than in the UK
- * Patent Trolls are people/business who buy up ownership of lots of patents, including absurd ones
- * They then litigate against small businesses or users who've accidentally infringed their patent catalogue, intimidating those businesses to pay up, or fold
- * Large IT companies have to build up huge patent portfolios themselves
 - * so they are ready to counter-sue anyone who tries to sue them
- * Free Movie: Patent Absurdity

Patent wars

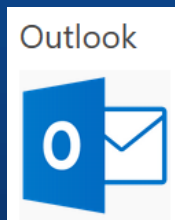
- * Patent wars are an ongoing phenomenon between tech companies
- * Apple vs. Samsung was a recent case over smartphone designs
 - * Each party claimed \$billions damages from the other
- * Patents included:
 - * You pick up your smart phone with its curved sides ([US Patent No. D618,677](#)),
 - * Swipe your finger across the screen to unlock it ([US Patent No. 8,046,721](#)),
 - * Check email that was “pushed” to the phone without a request to the server ([US Patent No. 6,272,333](#)),
 - * Type a text message using only a few touches as the phone automatically completes each word you start to spell ([US Patent No. 8,074,172](#))

*Source: [Navigating the smartphone patent thicket](#)

4. Trade Marks

Trade Marks

- * Trade Marks Act 1994, protects
 - * Any sign capable of being represented graphically which is capable of distinguishing goods or services of one undertaking from those of other undertakings.
 - * Includes words, designs, letters, numerals, shapes of goods and packaging



Trade Marks

- * Aims to stop bogus or counterfeit goods



- * Register trade marks with UK Intellectual Property Office (UKIPO)

Lecture Summary

- * IP laws are designed to protect your work as a software developer + inventor (to some extent)
- * A constant battle goes on between people who want to monetise their creations/IP, and those who want to use it without paying (or “share”)
- * Quiz: Intellectual-Property
- * Quiz: Allocating resources
- * Next lecture: Privacy and Security followed by Financial accounting I

Further reading

- * F. Bott, *Professional Issues in Information Technology*, 2nd edition:
 - * Chapter I: “Law and Government”
 - * Chapter II: “Intellectual Property Rights”
- * <https://www.gov.uk/government/organisations/intellectual-property-office>
- * Full UK copyright law summary:
<https://www.copyrightservice.co.uk/ukcs/docs/edupack.pdf>

Further reading

Another critical view of DRM:

Cory Doctorow's [Lockdown: The coming war on general-purpose computing](#):



* Refers to Intel's [Management Engine](#), a MINIX OS *within the processor*, which acts as a potential gatekeeper/gateway for malware