



Computer Systems and Professional Practice

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Commercial and Legal Issues

Commercial Issues

What is Property?

If somebody steals your laptop then:

- 1) they have your laptop
- 2) you don't.

This is theft

Suppose you develop a drug which cures the common cold. This could make you very rich. Unfortunately a spy steals the formula which he then releases to either:

- 1) A rival company
- 2) Wikileaks

Is either theft?

Intellectual Property (IP)

Theft is the “intentional taking of somebody else’s property with the intention of permanently depriving them of it”

Laptops (and bikes) are “tangible” property and protected by laws related to theft and damage

Information is intangible and governed by different laws

Intellectual property is not a new concept – trademarks and patent law is based on the Paris Convention (1883)

Some intangible property can be very valuable indeed: music, films, formulae, software, etc.

Different Types of IP Rights

Suppose a company brings out a computer game which features several key features:

Revolutionary graphics based on a novel rendering algorithm

A new way of controlling your PSP using a “Laser Sword” controller

Immersive character-driven story line (featuring Bar-Bar the comedy Rastafarian Space Alien etc.)

Copyright

Patents

Confidential Information

Trademarks

Which apply?

Copyright

Copyright, Design and Patents Act 1988

Copyright (computer programs) Regulations 1992

The owner of any IP work has certain exclusive rights:

The right to make copies of the work

The right to issue copies of the work to the public (either paid or for free)

The right to adapt the work e.g. translating from English to Japanese (or Java to C)

These rights are automatic

Copyright

Anybody must request permission (but often permission is implicit, e.g., webpages)

Copyright does not stop anybody publishing identical work – only copied work

Copyright lasts 70 years after the death of the author.

What Can You Do Without Permission?

It is not an infringement to :

Make a back up of a program you are authorized to use (but only one copy)

You can decompile code to correct any errors

Also if you need to write new code to interoperate with it

You can sell your right to use a program (but you can not keep a copy)

This might be news to some people (<http://www.defectivebydesign.org/>)

<http://www.guardian.co.uk/technology/blog/2012/sep/03/no-apple-bruce-willis>

Databases

Copyright obviously applies to databases where “content is of the authors own creation”

Often this is not the case:

Consider a fan database of every game played by Liverpool FC

No original content but a lot of work (and glorious success)

Database Copyright –

If there is “substantial investment in obtaining, verifying, or presenting the contents of the database.”

Lasts for 15 years from creation (but renews if database is modified)

Copyright Infringement

Primary Infringement

Exclusive rights of copyright holder are infringed

Civil issue – damages, injunctions

Secondary Infringement

Primary infringement in a business context

Selling copies

Using pirated software in a business

Criminal Issue – substantial fines, imprisonment, etc.

Copyright Infringement

A lot of Software uses DRM

Providing information about how to avoid DRM is the same as copyright infringement (1998 act)

Maths Books

The 500th position of Pi is "2"

Occasionally Maths Tables contain real errors to ensure (and prove) copyright

Software can do the same, e.g., lines of non-functional code for instance

Patents

Patents Act 1977

A patent is a temporary right granted by the state enabling the inventor to prevent other people from copying his work without permission.

Obtaining a patent requires an application

Far stronger than copyright - it prevents others from coming up with the same solution.

Patents were meant to encourage innovation - they reward the inventor a grace period to recoup development costs (or more realistically licence the patent to entrepreneurs)

Possible Patents

For a product to be patented it must be

New

Involve an inventive step

Be amenable of industrial application

Not in an area specifically excluded, e.g., scientific theories, mathematical methods, literary/dramatic/artistic work, presentation of information, a scheme, rule, method for performing a mental act, playing a game or doing business, or a program for a computer

Obtaining and Enforcing Patents

Patents are granted nationally

Technically you need to apply in each country but there are trade schemes such as WIPO, European PO etc.

Timing is crucial

Date of initial application determines what is “new”

Full patent specification requires specialist work and commonly takes four years to complete

Computing is a global industry, hence the patent to be in enough countries to ensure it is challengeable

Enforcing a patent is difficult, hence many patents are contested

“prior art”, “inventive step”, enforcement costs time and money, small companies often can not contest

Software Patents

USA

US Patent and Trademark Office has always refused to patent software

Changed in 1981 – patent for curing rubber (using software to determine required heat)

Currently – software can be patented if it:

1. Is part of a product that can be patented
2. Controls some process with a physical effect (or)
3. Processes data that arises from the natural world

Software Patents

UK and Europe

European Patent Convention & Copyright, Design and Patents Act 1988

Technically software can not be patented but several countries do in fact patent software

EU Commission produced a draft directive (2002)

It has since been heavily modified

Unlikely to be accepted by anybody

Software Patents are a mess

Richard Wiseman

MIT Hacker (1970s-80s)

1983 - launched GNU Project - free Unix (also developed Emacs, GNU compiler etc.)

Free Software Foundation

General activism versus Privacy/Copyright etc.

<http://stallman.org/>

What about Linux?

The Linux Kernel (1991)

GNU/Linux



Copyleft

Political / software philosophy

Software is released as "free"

No restrictions on re-use/modification/copying

EXCEPT THAT ANY RESULTING CODE MUST ALSO BE FREE

In other words - you can do anything with this code except change the licence to "not free"

GNU General Public Licence for Software v3.0

<http://www.gnu.org/licenses/gpl-3.0.txt>

Confidential Information

Often work involves an obligation of confidence

For example, software development for a company might reveal commercially sensitive information

Conditions of employment for employees

Long periods of notice for employees with sensitive knowledge

Clauses in consultancy agreements for consultants

Even without such conditions, obligations might occur under Equity

Obligation occurs if a reasonable person in such a position would reasonably understand that information was given in confidence

Confidential Information

Public Interest Disclosure Act (1998)

Information can be disclosed if the employee believes any of the following might occur

A criminal offence

Failure to comply with a legal obligation

A miscarriage of justice

Danger to health and safety

Environmental damage

Information that has been concealed

Trademarks and Passing Off

Any sign capable of being represented graphically which is capable of distinguishing goods and services ...

Extremely useful to protect some kinds of retail software

Software maybe difficult to protect

Logos are not

Trademarks can be either registered or not

UK via the Patent Office

Many countries require registration before legal protection

The US and Canada do not

Rules for what can be a trademark (i.e. not people's names or places)

Trademarks and Passing Off

UK 1994 Act makes it illegal to:

- Apply unauthorised trademark to goods
- Sell or hire goods with such a trademark
- Have in the course of business such goods
- This is usually a criminal offence but civil actions can also be brought

UK law also protects unregistered trademarks

- Tort of Passing off
- Civil action (but far less strong than registered trademarks)



Thoughts on Intellectual Property

Avoiding conflation and appreciating the distinction of rights, protections and enforcements is key

Copyright

Patents

Trademarks

Confidential information

Legal Perspectives

Birmingham Student Jailed For Hacking

University of Birmingham Biosciences student Imran Uddin used keyboard spying device in lecture theatres to steal staff passwords

Improved his own grades on Canvas

Jailed for 4 months under Computer Misuse Act in April 2015



<http://www.birminghammail.co.uk/news/midlands-news/university-birmingham-exam-cheat-jailed-9105937>

What Is The Law?

This can be a philosophical question but commonly viewed as "A set of laws which can be enforced by a court"

Jurisdiction – the geographical area governed by a single set of laws, e.g., Federal Law vs. State Law in the US

We'll focus on English law but jurisdiction is often not obvious in computer use

The Law is more than just a set of "rules"

- Different systems of courts

- Different rules concerning how appeals are made.

- Different rules about how new laws work with old.

Criminal Versus Civil Law

Criminal Law

Designed to protect "society" from wrong doers

Police investigation and arrest

CPS proceeds with prosecution

"Innocent till proven guilty"

Guilt must be beyond reasonable doubt

Civil Law

Settling disputes between people

Companies can become people

Litigation must be brought by one of the parties of the dispute (the plaintiff) against another (the defendant)

Both parties must present arguments, with the decision being based on the "balance of probabilities"

Usual objective is to obtain damages (money) or injunction (court order)

Two Examples

An e-commerce site uses third party software for encryption, but the encryption software has a security loophole allowing it to be easily cracked

Case 1: The encryption software is developed by a security company who licences it for use to other companies

Case 2: The software is cut and pasted from some old lecture notes from an introductory lecture on computer security, which explains the loophole

When a user of the site finds that their bank account details are shared with a criminal gang takes their savings, who is liable?

Tort

In Common Law, a Tort is a civil wrong

The action might not necessarily be illegal (or criminal) but somehow has caused harm which can be handled through the courts

Torts are usually re-addressed through damages awarded

Negligence

Duty of care, dereliction of duty, tortfeasor caused injury, plaintiff suffered damages, proximate cause

Nuisance

Defamation

A Brief History Of English Law

~1086

System of Common Law

Law is essentially precedent plus common sense by judges

Central authority is the court of the King

Equity & the Court of Chancery

15th century

Legal power moved from King to Parliament

Legislation by political bodies

19th century

Courts reorganised to combine common law and equity.

Legislation becomes more important than common law or equity

Legislation

A “Legislative Act of Parliament” (or statute) can create, amend, repeal any new or existing law

Any statute overrules any previous act or precedent (but not court decisions)

Body of law is regularly reviewed by the Law Commission

A defined process:

Bill is drafted (usually under supervision of government minister)

Bill introduced in House of Commons or Lords (but usually passed by both)

Several stages of reading and amendment

Bill becomes an Act following Royal Assent

European Union

EEC established in 1957

Single European Market established in 1992

Council of the European Union and European Parliament have legislative powers

Attempts to harmonise laws of the member states - enduring influence on English Law

Regulations - Directly enforceable by Parliament and English Courts

Directives - Instructions for member states to alter their laws

Decisions - Specific decisions on states, enterprises, individuals



European Convention on Human Rights

Drafted in 1950, signed 1953

Allows individuals an active role in International Law

Articles of particular interest to computing professionals:

Article 5 Liberty and Security

Article 7 Retrospectivity

Article 8 Privacy

Article 10 Expression

Hacking Facebook

Gareth Crosskey (21, Sussex) hacked a US citizen's facebook account and gained access to an email account in Jan 2011

Breach was reported to Facebook who reported it to the FBI

FBI traced hack to the UK and informed UK police

Crosskey was charged under the Computer Misuse Act (1990,2004)

Due to evidence presented, Crosskey pleaded guilty and was imprisoned for 12 months in May 2011

http://www.theregister.co.uk/2012/05/17/facebook_account_hacker_jailed/

R v. Gold & Schifreen (1988)

Gold and Schifreen used home computers and modems in 1984-85 to gain unauthorised access to BT's Prestel viewdata service.

At a trade fair, Schifreen noted the username and password of a Prestel engineer (22222222, 1234)

Gained access to personal mail to Prince Phillip among others

Charged under Forgery and Counterfeiting Act (1981) as defrauding BT using a "false instrument" - the internal condition of BT's computers after it had processed the lifted password

Tried and fined £750 & £600 respectively

R v. Gold & Schifreen (1988) Appeal

Appeal to Criminal Division of Court of Appeal

Lack of evidence that defendants had intended material gain

Evidence that BT didn't really take security seriously

Not really a case of forgery and/or Counterfeiting

Acquited by Lord Justice Lane

CPS appealed to the House of Lords

House of Lords upheld the Acquittal - "The Appellants' conduct amounted in essence, ..., to dishonestly gaining access to the relevant Prestel data bank by a trick. That is not a criminal offence. If it is thought desirable to make it so, that is a matter for legislature rather than the courts." (Lord Brennan)

Computer Misuse Act (1990)

Three Offences

Unauthorized access to a computer

Unauthorised access to a computer to commit a serious crime

Unauthorised modification of the contents of a computer

A person is guilty of a crime if either they or the computer in question is in the UK at the time of the offence

Unauthorised Access Offence

Section 1 states that a person is guilty of an offence if:

They cause a computer to perform any function with intent to secure access to any program or data held in any computer;

The access they intend to secure is unauthorised; and

They know at the time when he causes the computer to perform the function that this is the case.

Punishable by a fine up to £5000 or six months imprisonment

Key points:

Knowledge and intent

Attempt is sufficient

No requirement of damage done

Intent to do Serious Crime

Section 2 covers unauthorized computer access to commit a more serious crime

For example. a blackmailer might hack into email to gain evidence of an affair, etc.

It is not necessary for the more serious crime to be carried out, as long as intent to do so can be shown

Punishment is up to five years imprisonment or an unlimited fine.

Unauthorised Modification

A person is guilty of an offence if:

They do any act which causes an unauthorized modification of the contents of any computer; and
At the time when they do, the act he has the requisite intent and the requisite knowledge

Requisite intent covers:

To impair the operation of any computer;
To prevent or hinder access to any program or data held in any computer; or
To impair the operation of any such program or the reliability of any such data

Maximum penalty is 5 years or unlimited fine

Spreading a virus
Encrypting files and demanding a ransom for revealing the key
Redirection of browser home pages, etc., etc., etc.

Review of CMA (2004)

All Party Review of the Act, which included inputs from professional bodies (e.g., BCS)

Added an additional offence "impairing access to data"

Mainly motivated by DoS attacks

Increased tariff for unauthorised access from 6 months to two years

A sign to show this is a serious crime

Now a crime which is extraditable under UK law

Despite this, the UK has had relatively few immediate prosecutions under the CMA

32 and 26 successful in 2006

10 prosecutions in 2010

http://www.theregister.co.uk/2012/05/18/uk_hacking_prosecutions_decline/

Police and Justice Act (2006)

2004 All Party Intergroup proposed further amendments

Section 35. Unauthorised access to computer material

Section 36. Unauthorised acts with intent to impair operation of computer, etc.

Section 37. Making, supplying or obtaining articles for use in computer misuse offences (Books? Tools?)

Section 38. Transitional and saving provision

Following News International Phone Hacking

Discussion about explicit reference to mobile phones with browsers and to what extent these are covered

Issues Surrounding CMA

Common view is that the real issue with computer crime is a lack of resources for investigation and prosecution rather than a lack of laws

Phising, for instance, is often better dealt with as a case of Fraud

Unfortunately "Fraud" is a unclear term in English law

"Conspiracy to defraud"

Eight different types of "deception"

Can a computer be deceived?

Some instances of DRM might be liable under CMA

Gary Mckinnon

Scottish citizen (born 1966) and mid-level system admin

Between 2001 and 2002 hacked into 97 US military and Nasa computer systems

Claimed to be looking for evidence of UFOs and free energy suppression

Diagnosed with mild autism/aspergers

The US claims:

Deleted files, copied passwords, closed servers for 24 hours and posted jokes on Government websites and BBS

Investigation has cost more than \$700,000

Gary Mckinnon

Extradition

Interviewed by UK police in August 2002

Indicted by Federal Grand Jury in Virginia in November 2002

Seven counts of computer misuse, each carrying a ten year tariff

2003 Extradition Treaty with the US does not require the US to provide any evidence of wrong doing

Potential of a 70 year sentence

US prosecutors have said that if the charges are uncontested then McKinnon will face a sentence of 36-47 months

Won approval for judicial review of case in 2009 - but this review held the extradition to be legal

Further Judicial Review granted in 2010 due to concerns about suicide risk if extradited

October 2012 - Home Office blocked Extradition to the US

December 2012 - CPS decided not to prosecute due to difficulty in evidence being located in the US.

- <http://freegary.org.uk/> (which now links to Gary's SEO business ...)



Thoughts on Legal Perspectives

English law has historically been based on precedent, but legislation has increased

Inevitable due to technological change

Most offences are best dealt with as forms of traditional crime, but some computer crime doesn't fit the models

Computer Misuse Act

Civil law is probably more relevant to most, e.g., copyright, contracts etc. are mostly civil

