Chapter 5

Intellectual Property

The issue of intellectual property rights has become one of the defining ethical issues of the digital era [108, p230], and the last word has not been said about it yet. Besides regulatory issues, grey areas, and gaps, one could argue it is one of the areas used by big companies in developed countries to disadvantage new entrants to the information society.

In this (too brief) chapter[1], we summarise the main IP protection mechanisms that are available and used (Section 5.1) as well as alternatives to these regimes that aim to foster open source, content, and standards (Section 5.3), interspersed with a few scenarios (Section 5.2).

5.1 Intellectual Property Protection

We could argue that an intellectual property (IP) right is a type of "natural right" that should be granted to individuals for the products that result from their labour. A more utilitarian approach is that IP is designed to promote progress, this is the view that is generally and historically favoured. Thus, there is a fair exchange for mutual benefit:

- Creator gets limited exclusive rights
- Society gets disclosure of inventions and creative works,

Thus an incentive is created for inventors and authors to create and disclose their work.

The types of intellectual property and their length of protection granted are:

Design Does not cover how the article functions (unlike patent) Protects the physical appearance of a manufactured object

- Aesthetic Design — 15 years;
- Functional Design — 10 years.

Copyright

- Computer Programs and Data — 50 years in South Africa

[1] some additional information can be found in the updated course slides, which have yet to make it into these notes

- Computer program's "author" is the person who exercised control over the making of the computer program.

Trade Secrets — not really property — the law protects industrial secrets

Trademarks forever!

Patents 20 years in South Africa, does not apply to software (yet)

5.1.1 Copyright

Copyright prevents others from copying original works without permission. It is granted for a limited time (50 years after death of author). It only protects the *expression* of an idea, and not the idea itself. There is often a fine distinction between the two. A copyrightable object must exist in a material form. In South Africa, copyright comes into being automatically and no registration is required.

In South Africa, computer programs are eligible for copyright, if they are original. So you would need permission for reproducing the computer program in any manner or form, or for making an adaptation of the computer program.

In general copyright infringement occurs where the copyrighted material of others is used for personal gain as opposed to private or personal use. Backup is allowed for personal use. Fair dealing is allowed for review, illustration in teaching, demonstration of equipment, ...

Copyright of programs lasts for 50 years after first made available to public — this is a very long time for software! The author of a computer program is the person who exercises control over the making of the program.

Exercise Discuss the main difference between software and literature. Apart from the constantly evolving nature of software, what else can you say about software that would make the literature analogy inappropriate?

5.1.2 Trade Secrecy

Laws governing trade secrecy vary from country to country. The central idea is to grant companies the right to keep certain kinds of information secret (e.g. a secret recipe), with the aim of allowing them to keep a competitive edge. The laws were not designed with computer technology in mind. In order for a piece of information to be considered trade secret, it must be possible to show that:

- It is novel
- Represents an economic investment to the claimant
- Has involved some effort in development
- The claimant has made some effort to keep it secret

Trace secrecy laws can be applied to software. This is usually done using non-disclosure clauses. Employees sign an agreement that they will not reveal secrets learnt at work even after they have left. There is often ambiguity here because the agreement does not apply to generic information in the area. Another application of this law is via licensing agreements. Software is licensed out and not sold – only the object code, and not the source code, is given to the user. The software company can do all the modification to suit the client and still retain control. The source code is in effect a trade secret.

5.1.3 Trademarks and Domains

Trademarks

Trademarks distinguishes one person's goods or services from those of another. The rights exist either via common law or by registration. Registered Trademarks are perpetually renewable in periods of 10 years [108, p. 243].

Domain Names

Domain Name System (DNS) is used instead of IP numbers. Generic Top Level Domain (gTLD) are ones such as .com, .net and .org + .aero; .biz; .coop; .info; .museum; .name; and .pro. (since 2000). This is all managed by ICANN (the Internet Corporation for Assigned Names and Numbers) which is a nonprofit organization responsible for the namespaces of the Internet.

The country code Top Level Domain (ccTLD) .za administered by `www.zadna.org.za`. The Internet Assigned Numbers Authority (IANA) is a department of ICANN, and coordinates the Internet Protocol (IP) addressing systems.

Cybersquatting Cybersquatting (or domain squatting), is when someone registers an Internet domain name in bad faith intending to profit from the good name of trademarks, famous people or businesses. The cybersquatter can then either sell the domain at an inflated price or use it to attract business.

Disputes are resolved by ICANN — Uniform Dispute Resolution Policy (UDRP), or .ZA Dispute Resolution Regulations (ZADRR)[2].

5.1.4 Patents

This is potentially the strongest form of protection because a patent

- Gives the inventor monopoly on the use of the invention – even if someone else makes the same product in a different way, they are excluded from using it;
- Grants patent owner the right to licence others to make, sell, or use the invention;

[2] `https://domaindisputes.co.za/`

- Legitimises a monopoly;
- Is granted for a limited number of years (20 in South Africa).

The main aim of the patents is not only to ensure the rights of the inventor, but also to advance useful arts and science. This will foster inventions and encourage others to learn from and build on inventions. It also promotes disclosure of inventions and assures that ideas already in the public domain remain there.

However, it must be noted that patent does not guarantee financial success. This is only achieved if the product is accepted by the market. Additionally one cannot patent an abstract idea, an algorithm or a scientific principle. To qualify for patent protection, the object in question must satisfy the following criteria:

- Falls into a category of permissible subject matter
- Satisfies the three tests of having utility, novelty, and non-obvious.

5.2 Scenarios

Pirated Software from Abroad

Bernie works for a large consulting company. When he was on holiday in South East Asia he found an Office suit that looks identical to Microsoft Office. The package he found costs R50 compared to the price tag of R3000 back home. Bernie knew that the seller does not honour US copyright law. Despite the documentation looking like it has been photocopied, he decided to buy it and returned home with it.

- Do you think Bernie has done anything wrong?
- Do you think the customs will confiscate it should they find out?

Stealing an Idea

It is 1980 and Bingo software has just developed a new operating system called BOS. BOS is better than anything else around but Bingo is a small firm and needed venture capital to start up. It spent 3 years bringing the product to the market, after which it launched and sold well for a year. At this point, it has recovered about 25% of initial investments. Pirate Pete entered the market with PPOS which is cheaper and has more features than BOS — but it appears to be a copied or slightly modified version of BOS. In addition to this, copying of BOS is rampant with customers making copies. Bingo did not last long and went bankrupt within a year.

- Do you think that this is unfair?
- Has PPOS wronged Bingo?
- Have the customers wronged Bingo?

In Bingo's case, trade secrecy would have helped. Non-disclosure agreements would prevent employee from giving away important secrets even after they left. However, this might only be useful during development; once BOS is released, it is more difficult to control. General principles are there for everyone to see (and copied) – BOS is trying to sell or licence the software, something just can not be hidden. However, specific behind-the-scene methods of doing something can still be made a secret. Generally, trade secrecy works for specialised bespoke software but is poor for general purpose software.

Improving Software

Earl develops a virus tester which is very good. It detects and repairs all known viruses. He makes the software and its source code available on the web for free and he also publishes an article on it. Jake reads the article and downloads a copy. He figures out how it works, downloads the source code and makes several changes to enhance it. After this, Jake sends Earl a copy of the modified software together with an explanation. Jake then puts a copy on the web, explains what he has done and gives appropriate credit to Earl.

- Discuss whether or not you think Earl or Jake has done anything wrong?

Exercise There are some issues that you should think about before proceeding further. Write down any thoughts you might have on each of the following:

- Distinction between hardware and software is often blurred.
- Macro issues — should software be owned? Should it be protected like property?
- Micro issues — are (unauthorised) copies illegal?
- Legal and moral issues — descriptive (what the law says) versus normative (what the law should say)

Protecting Software

Consider the Bingo scenario whereby PPOS copies BOS and sells it more cheaply. PPOS is able to do that because its development costs were lower. It also seems unfair that PPOS used BOS without paying. What is the solution to this problem? One is to give Bingo legal exclusive right to its software.

There are currently three mechanisms to deal with scenarios like Bingo: copyright, trade secrecy and patent.

5.3 Alternatives to Current Intellectual Property Regimes

In response to the misuse of current IP mechanisms to stifle, rather than encourage, creativity and innovation, a coherent movement has arisen to counteract it. Three different strategies are being deployed:

Open Source or Free Software: Freedom to use, study, modify and share software.

Open Content Freedom to use, study, modify and share scientific and creative works

Open Standards Publicly licensed standards that allow different hardware/software vendors to make products that interoperate

The central idea of the first two is to exploit the concept of IP, but instead to use it to guarantee to keep it open.

> **Open Source Software**
>
> *Open Source Software* is software of which the source code is publicly available. Its copyright holder provides people the rights to study, modify, and (re)distribute the code to anyone.

> **Open Source Software**
>
> *Free software* is software that is free (in the sense of liberty, not price). This means one has the freedom not just to run the software, but also copy, distribute, study, change and improve it. Free software is open source, but open source software is not necessarily also free.

In a play of words, this is also referred to as *copyleft*. It is a general method for making a program or other work free, and requiring all modified and extended versions of the program to be free as well. It uses copyright law, but flips it over to serve the opposite of its usual purpose: instead of privatising software, it becomes a means of keeping it free. Notably, under such rules, one can give everyone the permission to run the program, copy the program, modify the program, distribute modified versions, but not permission to add restrictions of their own. Thus, the crucial freedoms of "free" software are guaranteed to everyone who has a copy, and it cannot be taken away.

This can be put into a licensing model. So, then each open source project has a license associated with it that indicates what rights and responsibilities the user of the software has. A very common license is the GNU General Public License (GPL), which allows the user to:

- freely copy and distribute copies of source code and software, only with the license
- modify code, but those changes must be clear and made available with the same license

Other open licenses include BSD-Style Copyright and Mozilla Public License (MPL).

Popular, and widely used, open source software are, among others, Linux (and its derivatives, such as the Ubuntu operating system), Apache web server (most web serves in the world use it), database software such as PostgreSQL, and office suites such as OpenOffice.

Other fields observed the success of this copyleft notion and followed suit. The most popular one is the Creative Commons[3]. CC expands the range of creative work available to others legally to build upon and share. Key themes there are fairly similar to the open source

[3] `http://creativecommons.org`

software movement's ideas. It's about Sharing, Accessing, Collaborating and Negotiating, so as to unleash the potential of the digital environment to facilitate the "cut and paste", remix, P2P, with attribution and unencumbered by large transaction costs and threats of lawsuits. The four protocol components are:

Attribution Other people may use, modify and distribute the work, as long as they give the original author credit.

Non-commercial Other people may use, modify and distribute the work, but for non-commercial purposes only.

No derivatives Other people may use and distribute the work, but can not modify it to create derivative works.

Share alike Other people may modify the work and distribute derivatives, but only on the condition that the derivatives are made available to other people on the same licence terms. This term can not be used with the No Derivatives term, because it applies only to derivative works.

For each creative work, the creator chooses yes/no for each of them. For instance, these notes are now made available under a CC-BY licence, and there are several open textbooks[4], open access science journals, and linked open data. UCT also provides lots of open content, such as through OpenUCT[5] and other efforts, such as the Computer Science departmental server of publications, theses, and honours projects[6]. The, perhaps, most famous online open resource under a CC-BY licence is Wikipedia.

5.4 Fair Use in the Electronic Age

** *Note: this is an old section and is kept for historical purpose, for now. It most likely has been updated, and may differ from country to country.* **

The purpose of this section is to outline the lawful uses of copyrighted works by individuals, libraries, and educational institutions in the electronic environment. Representatives of the following associations advocate the arguments below:

American Association of Law Libraries, American Library Association, Association of Academic Health Sciences Library Directors, Association of Research Libraries, Medical Library Association and the Special Libraries Association.

"'The primary objective of copyright is not to reward the labour of authors, but "to promote the Progress of Science and useful Arts." To this end, copyright assures authors the right to their original expression, but encourages others to build freely upon the ideas and information conveyed by a work. This result is neither unfair nor unfortunate. It is the means by which copyright advances the progress of science and art.' - US Supreme Court Justice Sandra Day O'Connor

[4] one of the open textbook libraries is available at `https://open.umn.edu/opentextbooks`.
[5] `https://open.uct.ac.za`
[6] `http://pubs.cs.uct.ac.za/`

It follows that the benefits of the new technologies should flow to the public as well as to copyright proprietors. As more information becomes available only in electronic formats, the public's legitimate right to use copyrighted material must be protected. In order for copyright to truly serve its purpose of "promoting progress," the public's right of fair use must continue in the electronic era, and these lawful uses of copyrighted works must be allowed without individual transaction fees.

Without infringing copyright, the public has a right to expect:

- to read, listen to, or view publicly marketed copyrighted material privately, on site or remotely
- to browse through publicly marketed copyrighted material
- to experiment with variations of copyrighted material for fair use purposes, while preserving the integrity of the original
- to make or have made for them a first generation copy for personal use of an article or other small part of a publicly marketed copyrighted work or a work in a library's collection for such purpose as study, scholarship, or research
- to make transitory copies if ephemeral or incidental to a lawful use and if retained only temporarily Without infringing copyright, non-profit libraries on behalf of their clientele, should be able:
- to use electronic technologies to preserve copyrighted materials in their collections
- to provide copyrighted materials as part of electronic reserve room service
- to provide copyrighted materials as part of electronic inter-library loan service
- to avoid liability, after posting appropriate copyright notices, for the unsupervised actions of their users

Users, libraries, and educational institutions have a right to expect:

- that the terms of licenses will not restrict fair use or other lawful library or educational uses
- that U.S. government works and other public domain materials will be readily available without restrictions and at a government price not exceeding the marginal cost of dissemination
- that rights of use for non-profit education apply in face-to-face teaching and in transmittal or broadcast to remote locations where educational institutions of the future must increasingly reach their students

Carefully constructed copyright guidelines and practices have emerged for the print environment to ensure that there is a balance between the rights of users and those of authors, publishers, and copyright owners. New understandings, developed by all stakeholders, will help to ensure that this balance is retained in a rapidly changing electronic environment. The above working statement addresses lawful uses of copyrighted works in both the print and electronic environments.