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# WHEN COPYRIGHT IS WRONG...

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VICTORIA UNIVERSITY OF WELLINGTON  
William Urquhart

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*The Injustice of YouTube's Content ID system for non-infringing videos*

By William Urquhart

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A research portfolio submitted to the Victoria University of Wellington in partial fulfilment of the requirements for the degree of Master of Design Innovation.

## Additional Research Content

This research portfolio includes a user-generated documentary. This documentary explores user-generated content, New Zealand's Copyright Act 1994, and its relation to YouTube's Content ID system.

This video is available at:

<https://www.youtube.com/channel/UCbwVSyHluSEmLKgylZCpQlg>

It is recommended that you consider watching this video and exploring the other creative outputs of this research portfolio for the full experience of the topics explored.

## Abstract

While copyright legally protects the ownership of created works, fair dealing with copyrighted content has become a problematic topic with the rise of user-generated content. User-generated content can be easily produced with modern technology and shared on the internet. This has resulted in websites having complicated processes for dealing with copyrighted content and many have introduced automated copyright detection systems to limit their liabilities of copyright infringement.

Since automated copyright detection systems have been introduced, they have fundamentally changed the way copyright infringement is managed online. However, a problem arises with automated copyright detection systems as they are incapable of detecting fair dealing. Fair dealing is a provision under New Zealand's Copyright Act 1994 that allows the use of copyrighted content in certain cases. Consequently, this has turned into a controversial area between content creators and copyright holders as most user-generated content usually contains copyrighted content.

Copyright laws also favour mass media companies as they control significant copyright properties, and this plays a key role in the economy. For this reason, copyright genuinely tends to focus on the rights of copyright holders and not so much for users of copyrighted content. Furthermore, New Zealand's Copyright Act 1994 has not been updated since 2011 and has become unsuitable for modern forms of creation on the internet.

This research portfolio investigates the problematic issues concerning New Zealand's Copyright Act 1994 with its application to user-generated content and YouTube's automated copyright detection system called 'Content ID'. To express research findings, this research portfolio contains a user-generated documentary and several other proposed methods of bypassing Content ID.

## Key Concepts

**Content ID:** Content ID is a digital fingerprinting system developed by YouTube which is used to easily identify and manage copyrighted content on YouTube (YouTube, 2010).

**Creative Commons:** *“Creative Commons is a licencing system that allows you to share, remix and reuse material legally. Creative Commons describes itself as “a non-profit organization that develops, supports, and stewards legal and technical infrastructure that maximizes digital creativity, sharing, and innovation”* (Victoria University of Wellington, 2021).

The provided infrastructure consists of a set of copyright licenses and tools that create a balance inside the traditional *“all rights reserved”* setting that copyright law creates.

**DMCA:** *“The Digital Millennium Copyright Act (DMCA) is a controversial United States digital rights management (DRM) law enacted October 28, 1998 by then-President Bill Clinton. The intent behind DMCA was to create an updated version of copyright laws to deal with the special challenges of regulating digital material. Broadly, the aim of DMCA is to protect the rights of both copyright owners and consumers”* (TechTarget Contributor, 2011).

**Fair Dealing:** *“Criticism, review, and news reporting*

(1) Fair dealing with a work for the purposes of criticism or review, of that or another work or of a performance of a work, does not infringe copyright in the work if such fair dealing is accompanied by a sufficient acknowledgement.

(2) Fair dealing with a work for the purpose of reporting current events by means of a sound recording, film, or communication work does not infringe copyright in the work.

(3) Fair dealing with a work (other than a photograph) for the purposes of reporting current events by any means other than those referred to in subsection (2) does not infringe copyright in the work if such fair dealing is accompanied by a sufficient acknowledgement” (Copyright Act 1994, s42).

**Fair use:** Fair use is a legal doctrine that says users can reuse copyright-protected material under certain circumstances without getting permission from the copyright owner (YouTube 2020). These circumstances include transformative use, such as to comment upon, criticize, or parody a copyrighted work (Sim, 2016).

**File sharing:** File sharing is defined as. “Where –

(a) Material is uploaded via, or downloaded from, the Internet using an application or network that enables the simultaneous sharing of material between multiple users; and.

(b) Uploading and downloading may, but need not, occur at the same time” (Copyright Act 1994, s122A).

**IP address:** “IP address means an Internet protocol address”.

**IPAP:** IPAP, or Internet protocol address provider, means a person that runs a business that, other than as an incidental feature of its main business activities –

- (a) Offers the transmission, routing, and providing of connections for digital online communications, between or among points specified by a user, of material of the user’s choosing; and
- (b) Allocates IP addresses to its account holders; and
- (c) Charges its account holders for its services; and
- (d) Is not primarily operated to cater for transient users (Copyright Act 1994, s122A).

**ISP:** “ISP, or Internet service provider, means a person who does either or both of the following things:

- (a) Offers the transmission, routing, or providing of connections for digital online communications, between or among points specified by a user, of material of the user’s choosing –
- (b) Hosts material on websites or other electronic retrieval systems that can be accessed by a user” (Copyright Act 1994).

**Machine Learning:** “Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine learning focuses on the development of computer programs that can access data and use it learn for themselves” (Expert System Team 2020).

**Mass Media Companies:** Mass Media Companies “covers a wide variety of areas—advertising, broadcasting and networking, news, print and publication, digital, recording, and motion pictures—and each has its own associated infrastructure” (Seth, 2020).

**User-Generated Content:** “User-generated content (UGC) is any content—text, videos, images, reviews, etc.—created by people, rather than brands (Newberry, 2019).”

**YouTube:** “A person who uploads, produces, or appears in videos on the video-sharing website YouTube” (Lexico, 2020).



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## CHAPTER ONE: INTRODUCTION

Since being established in 2005, YouTube has risen to become the most popular video-sharing website on the internet. However, YouTube has also become one of the most controversial websites regarding copyright, largely due to their Content ID system. Content ID is a digital fingerprint system developed by YouTube which is used to identify and manage copyrighted content on their website (YouTube Creators, 2011). This system makes it likely for user-generated content (UGC) to be flagged as infringing regardless of its context. This is a conflicting issue for YouTubers, because Content ID uses machine learning algorithms to detect copyright infringement and can't identify fair dealing.

Under New Zealand's Copyright Act 1994, fair dealing is a provision that allows New Zealanders to use copyrighted content. This is for the purposes of criticism, review, and/or news reporting if sufficient acknowledgement is made in certain instances. There are other fair dealing provisions included in the New Zealand Copyright Act such as personal research and education (Otago, 2020).

Copyright law has resulted in YouTube videos being flagged as infringing when they are not. Consequently, the boundaries of fair dealing have become a complicated area. By law, the only way for fair dealing to be determined is by a judge. However, this does not happen in reality. The current method for YouTubers to deal with invalid Content ID claims is to dispute these claims. These disputes, however, go to the claimants who decide whether or not the content infringes. Mass media companies who own the most copyrighted intellectual property along with big teams of lawyers end up bullying amateur YouTubers (Law Commission, 2011). This is because many amateur YouTubers are unaware of copyright law and are too afraid to dispute claims, and/or are in fear of doing so because of repercussions.

This research portfolio intends to research the impact of Content ID among YouTubers who create UGC, in order to inform future research and creation methods surrounding its topic.

The effects of copyright and Content ID on YouTubers is a vast topic because of the diverse and complex nature of copyright and automated algorithms. The motivation driving this research portfolio is to add research to the surrounding context and misunderstood areas of copyright with regard to content distributed on YouTube.

Additionally, this research aims to understand how fair dealing is used under New Zealand's Copyright Act 1994. An expressive UGC documentary which explores copyright was created through the methodology of remixing to evaluate the challenges YouTubers face with Content ID. YouTubers frequently use remixing to create, produce and express videos. This UGC documentary is one of the main focuses of this research portfolio and was necessary to create to help understand the processes of remixing and its impact on UGC with copyrighted content. This research portfolio aims to evaluate innovative ways to research through design with adversarial attacks to see if Content ID can be bypassed.

To support the research into fair dealing under New Zealand's Copyright Act, this research portfolio contains an in-depth literature review, which covers the history of New Zealand's copyright law and its relationship to digital media. Within this relationship, this research portfolio explores the issues that arise through the application of Content ID, and methods of bypassing this system.

In conjunction with this research portfolio, research into design precedents surrounding copyright law as well as YouTubers who explore methods of bypassing Content ID is included. The reason for this is to find criteria for how a UGC documentary can be successfully created using fair dealing, and how to bypass invalid copyright claims. Finally, this research identifies criteria upon which the final creative outputs rely via research through design methodology (Martin, 2012; Koskinen, 2012). As such, the design process incorporates an iterative approach to system testing through adversarial attacks on Content ID, in order to develop and create the definitive version of the UGC documentary.

The use of automated copyright detection systems by websites is rapidly growing. With the concerning issue surrounding fair dealing, it is essential for video creators to not only understand how copyright law but also how copyright detection systems operate, so creativity isn't impaired.

This research portfolio explores New Zealand's Copyright Act, and its relationship with YouTubers and Content ID with the focus on the following question:

Working within the bounds of the New Zealand Copyright Act 1994, how can YouTube's Content ID system be bypassed to avoid the detection of invalid copyright claims?

## CHAPTER TWO, REVIEW OF LITERATURE

### Literature Introduction

New Zealanders love to create, access, and share content on social media platforms, streaming services, and in other ways over the internet. Many of these services were not in use when New Zealand's Copyright Act 1994, was enacted over two decades ago. Since then, digital developments and the internet have unlocked a range of new opportunities to create, share, and access copyrighted content (CIO New Zealand, 2019).

Copyright affects all New Zealanders, and it is a large topic discussed in literature and research that covers a wide range of fields. Copyrighted content is created when someone takes a photograph, records a video, or creates an email. Copyrighted content is consumed by watching a sports broadcast, streaming a movie, listening to music, or reading a book (Faafai, 2018). Research that has been completed on these fields has pointed to a complex area involving fair dealing, copyright with digital content, and machine learning algorithms used to detect copyright.

The New Zealand Government recognized the necessity of updating New Zealand's Copyright Act with the Copyright (New Technologies) Amendment Act (2008). This was to create a technology-neutral framework and align with international copyright developments. These changes were influenced by media corporations such as Recorded Music NZ, formerly known as The Recording Industry Association of NZ (RIANZ), APRA AMCOS, Artists Alliance, NZ Society of Authors (NZSA), Advertising & Illustrative Photographers Association (AIPA), New Zealand Institute of Professional Photography (NZIPP), Sky TV, and aligned organizations. These changes were opposed by New Zealand artists, technology specialists, ISPs, businesses, librarians and members of the public (Pullar-Strecker, 2009; Keall, 2009; Maxwell, 2009; Drinnan, 2009). Associate Commerce Minister, Judith Tizard (2008) stated "It's about ensuring that New Zealand music and movies can keep being made. We recognize that some people (wrongly) believe that all music, movies, and games are 'free' on the internet. This illegal downloading is really damaging to our creative industries". The new copyright provisions were also part of the government's goal of promoting innovation, creativity, and economic growth (Tizard, 2008). The stronger copyright law was intended for New Zealand to negotiate international trade agreements (NZPA, 2009).

It has been argued that throughout the last century, copyright has increasingly focused on copyright holders, rather than users. This can be seen in the extension of copyright durations, the strengthening of

enforcement measures, and the emergence of a 'permission' culture where permission via license is required to use certain copyrighted content.

A controversial section included in the Copyright (New Technologies) Amendment Act was section 92A. This section would require ISPs to adopt a process for disconnecting internet access by stopping access and/or taking down web pages to stop users suspected of repeat copyright infringement, rather than face legal action from copyright holders. The definition of ISP would include anyone who supplies connections for digital online communications or hosting material/s on electronic retrieval systems. This would make schools, government departments, and businesses all potentially accountable for being an ISP (Huthwaite, 2011).

This controversial section sparked a protest led by the Creative Freedom Foundation and became known as the Internet Blackout Campaign. Internet users changed their social media profile pictures to black squares. On 19 February 2009, around 200 people protested and presented a petition outside Parliament to stop Section 92A (Torkington, 2009).

On 23rd of March, 2009, then Prime Minister, John Key announced that Section 92A will not come into force as written (Bailey, 2009). This issue led to the urgency of The Copyright (Infringing File Sharing) Amendment Bill 2011 (Deeks, 2011).

The Copyright (Infringing File Sharing) Amendment Act was dubbed the 'Skynet law' by New Zealand public after a comparison of the internet with the Terminator was made by National MP Jonathan Young (Kay, & Vance, 2011). The Copyright (Infringing File Sharing) Amendment Act was passed to replace the controversial section 92A. One of the main changes was replacing the term 'Internet Service Provider' (ISP) with 'Internet Protocol Address Provider' (IPAP). This change aimed to exclude schools, government departments, and businesses that supply internet access but are not ISPs in the traditional sense. This was to focus on the function of an ISP that is relevant to infringing file sharing, namely through the provision of IP addresses (Huthwaite, 2011).

Under sections 122B to 122U, it allows copyright holders to ask ISPs to send graduated warning notices to internet users accused of illegal file sharing by finding offenders through their IP addresses.

Since these changes, New Zealand's copyright law hasn't progressed. Technology and the internet, meanwhile has with video-sharing websites such as YouTube (YouTube, 2020).

One of the major changes of the Copyright (New Technologies) Amendment Act was adding provisions that govern the liability of ISPs for copyright infringement. One of these provisions is section 92C. Section 92C supplies safe harbours to ISPs by limiting their liability for copyright infringement by website users. Section 92C applies to websites such as YouTube. This provision doesn't require YouTube to check it's website for copyright infringement. However, in 2007, YouTube launched an automated copyright detection system called 'Content ID' to do so automatically. This system makes it easier and more likely for UGC to be flagged as infringing copyright regardless of the context in which it is uploaded. This system which uses machine learning technology has fundamentally changed the way copyright is managed on YouTube. The favouritism taken advantage of by mass media copyright holders and lawmakers with the copyright detection systems used, contradict the purposes of copyright law. This is because it discourages YouTubers and content creators alike of creating content out of fear of being prosecuted for copyright infringement.

This literature review will explore the problems inherited in New Zealand's Copyright Act and Content ID, given the fact that it is automated and copyright law favour mass media copyright holders. Part I, of this literature review will explain the impact of copyright law on the internet, with a focus on the Copyright (New Technologies) Amendment Act and it's application to YouTube. This section will also explore it's effect on UGC. Part II, will discuss the derived rights of YouTubers because of the use of automated copyright detection systems by ISPs. This section will also examine Content ID's inability of recognizing fair dealing and the lack of understanding for the fair dealing provision. The unfair split of profits earned through YouTube videos will also be discussed in this section. Part III, will examine the functionality of New Zealand's copyright law to date. Part IV, and the conclusion of this literature review summarises the key points and literature findings.

## Part I: New Zealand's Copyright Act, the internet, and the Copyright (New Technologies) Amendment Act

To understand where copyright is today, it is first important to discuss the origins of New Zealand's copyright law. Subpart A, gives a brief outline of the history and background of New Zealand's copyright law. Subpart B, discusses the evolution of copyright law, the internet, and the Copyright (New Technologies) Amendment Act's effect on ISPs. Subpart C, uses case law to explore the

application of the Copyright (New Technologies) Amendment Act with ISPs, and especially with YouTube. Finally, Subpart D, examines the treatment of UGC under New Zealand's provisions.

#### Subpart A: A brief history of New Zealand's copyright law

The history of New Zealand's copyright law reflects New Zealand's history as a colony of England (Frankel, 2015). After the signing of the treaty of Waitangi, the British Crown gained the power and influence to create laws in New Zealand. The first New Zealand copyright law was the Copyright Ordinance enacted in 1842, and was much more limited in scope than copyright today. The exclusive rights given to creators were limited to printing, reprinting, publishing, and vending. These rights only lasted for a full term of twenty-eight years and if the author shall be living at the end of that period, for the rest of their natural life (Frankel, 2015).

For most of the 20th century, New Zealand's copyright law was much the same as the United Kingdom law. The NZ Copyright Act of 1913, adopted the United Kingdom Act of 1911, and the later Acts in New Zealand of 1962, and 1994, were substantially based on the United Kingdom acts 1956 and 1988 Act respectively (Frankel, 2015).

Since the 1842 Copyright Ordinance was enacted, copyright has grown tremendously. Today, copyright is automatic once creation takes a fixed and tangible form and creators can take legal action if someone infringes their creation by, for example, copies, sells, performs, or communicates their work without permission (New Zealand Intellectual Property Office, 2020). Fixed and tangible forms of creations include music, writing, visual art, movies, computer software, dance choreography, and architecture. A creator's exclusive rights to their copyrighted works include the right to prepare derivative works based on the original, the right to control and protect who can copy their creations, and the right to display their work publicly. These rights usually last for the life of the creator plus fifty years after the creator's death. However, different types of copyright law apply to different circumstances.

While the exclusive copyright protection rights for copyright holders have changed and expanded over time, some limitations of those rights have also become included in New Zealand's Copyright Act. One of these limitations is fair dealing. Fair dealing under section 42, is the exception to use copyrighted content for criticism, review, and/or news reporting. It is important to note that different countries have different

copyright law and New Zealand's fair dealing provision (section 42) differs from other countries while there may be similarities between them (YouTube, 2019).

The two main sections of fair dealing under New Zealand Copyright Act are Section 42 and Section 43. Below is the exact excerpt from New Zealand's Copyright Act, Section 42 and Section 43. For the purposes and relevance of this literature review, the main focus is on Section 42, as this relates to UGC and YouTube.

New Zealand Copyright Act 1994 (Section 42); Criticism, review, and news reporting;

- (1) Fair dealing with a work for the purposes of criticism or review, of that or another work or of a performance of a work, does not infringe copyright in the work if such fair dealing is accompanied by a sufficient acknowledgement.
- (2) Fair dealing with a work for the purpose of reporting current events by means of a sound recording, film, or communication work does not infringe copyright in the work.
- (3) Fair dealing with a work (other than a photograph) for the purposes of reporting current events by any means other than those referred to in subsection (2) does not infringe copyright in the work if such fair dealing is accompanied by a sufficient acknowledgement" (Copyright Act 1994, s42).

New Zealand Copyright Act 1994 (Section 43): Research or private study;

- (1) Fair dealing with a work for the purposes of research or private study does not infringe copyright in the work.
- (2) For the avoidance of doubt, it is hereby declared that fair dealing with a published edition for the purposes of research or private study does not infringe copyright in either the typographical arrangement of the edition or any literary, dramatic, musical, or artistic work or part of a work in the edition.
- (3) In determining, for the purposes of subsection (1), whether copying, by means of a reprographic process or by any other means, constitutes fair dealing for the purposes of research or private study, a court shall have regard to—
  - (a) the purpose of the copying; and
  - (b) the nature of the work copied; and



- (c) whether the work could have been obtained within a reasonable time at an ordinary commercial price; and
- (d) the effect of the copying on the potential market for, or value of, the work; and
- (e) where part of a work is copied, the amount and substantiality of the part copied taken in relation to the whole work.

(4) This section does not authorise the making of more than 1 copy of the same work, or the same part of a work, on any one occasion, but in this subsection copy does not include a non-infringing transient reproduction to which section 43A applies” (Copyright Act 1994, s43).

Fair dealing is determined on a case-by-case basis. There is no statutory definition of the fair dealing doctrine. This making the interpretation of fair dealing complex for both copyright holders and content creator (CLNZ, 2020). The test of fairness is objective and comes down to whether it is fair or reasonable in the analysis of fair dealing jurisdiction. Courts tend to engage in a three-step analysis for each case. This analysis includes determining whether a substantial part of the original has been taken, whether the dealing can come under any specified purposes, and whether it is fair or reasonable. If the copyrighted content has been transformed creatively into a work that differs from the original it is more likely to fall under fair dealing. To determine these criteria, a variety of factors are considered for fair dealing. These include the purpose of the copying, the impact of the use on the market, the amount and substantiality, the nature of the copyrighted work and how it differs from the original (CLNZ, 2020; Otago University, 2020). Judges are left to decide based on their own understanding of fair dealing. Individual judges consider the factors differently and each case is decided differently on its own factors which is why there is no uniform doctrine to fair dealing. Thus, making it increasingly hard for legal professionals as well as for content creators trying to understand or process the copyright law when they upload a video online.

#### Subpart B: Copyright (New Technologies) Amendment Act and its effects on the internet

In 2001, New Zealand’s Ministry of Business, Innovation and Employment (known at the time as the Ministry of Economic Development) started a major review of copyright law because of the developments of modern technologies, such as media in digital form and communications via the internet (Ministry of Business, Innovation and Employment, 2005).

The Copyright (New Technologies) Amendment Act was an act passed by New Zealand Parliament amending the Copyright Act and received Royal Assent on 11 April 2008. The Copyright (New Technologies) Amendment Act has two parts to its amendments but only part one is relevant to this literature review, section 92 - '*Internet service provider liability*'. This title sets the limitation on the liability of ISPs for copyright infringement caused by their users under distinct types of activities. These activities include caching infringing material and storing infringing material. This section of the literature review will focus on storing infringing material as it applies to YouTube.

92(C); an ISP is not liable for copyright infringement by an ISP user unless (Copyright Act 1994, s92c):

- (2) The Internet service provider does not infringe copyright in the work by storing the material unless—
    - (a) the Internet service provider—
      - (i) Knows or has reason to believe that the material infringes copyright in the work; and
      - (ii) Does not, as soon as possible after becoming aware of the infringing material, delete the material or prevent access to it; or
    - (b) The user of the service who provided the material is acting on behalf of, or at the direction of, the Internet service provider
- (Copyright Act 1994, s92c)

If even one of these criteria is not met, then an ISP is not eligible for safe harbour and would become liable for infringement caused by a user. An ISP doesn't have to check its website for copyright infringement but only must take down infringing content when the IPS has been notified with a valid infringement notification.

The Copyright (Infringing File Sharing) Amendment Act initiated a three-strike procedure of graduated warning notices for users accused of infringing file sharing which relates to section 92(C). If an ISP is protected by safe harbours and a user is accused of infringing file-sharing by a copyright holder, they can issue copyright notices to them through the ISP. The process of this procedure is outlined below:

Step 1: Copyright owner detects an infringement and sends the internet protocol (IP) address to the relevant ISP, which sends a "detection notice" to their customer.

Step 2: A second infringement between 28 days and nine months later against the same owner or one represented by a shared body triggers a "warning notice".

Step 3: A third infringement between 28 days and nine months later will result in an enforcement notice and the ISP must forward the customer's details to the Copyright Tribunal if asked to do so by the copyright owner, who then has five weeks to decide whether to act.

Step 4: The Copyright Tribunal can impose a fine of up to \$15,000 after examining written evidence, or after a hearing if that is requested (Pullar-Strecker, 2011).

Internet users can challenge notices, through their ISP, adding an extra step and delaying the process slightly, but notices will stand unless withdrawn by the copyright holder. A challenge is not valid if it is received more than 14 days after the date of the infringement notice to which it relates. An IPAP that receives a valid challenge to an infringement notice must at once forward it to the relevant copyright owner. If a challenge is rejected, it may be raised again by the internet user in any enforcement proceedings. A challenge is accepted if it has not been rejected by the relevant rights owner before the close of the 28th day after the date of the infringement notice to which it relates.

Section 122D explains the requirements for notification of warning infringement to be valid. There are 6 steps for this validation and these steps follow a similar protocol for a challenge notice to be valid. Below are the criteria of this section (Copyright Act 1994, s122D):

- (a) Identify the rights owner; and
- (b) Identify the alleged infringement that has triggered the issue of the notice; and
- (c) Identify the date of that alleged infringement; and
- (d) State the date of the detection notice; and
- (e) Explain the consequences to the account holder if further infringing occurs; and
- (f) Explain how the account holder may challenge the notice; and
- (g) Comply with any other requirements that may be prescribed in regulations

The Copyright (Infringing File Sharing) Amendment Act also includes a provision that would allow copyright holders to apply to a court for suspension of internet services of up to 6 months. Again, this law caused controversy as a United Nations report following the enactment found that disconnecting people from the internet is a human rights violation and is against international law (NZPA, 2011; Kravets, 2011). Despite

this, the law still stands, and politicians later said it would only become into use if the three-strike system was found ineffective (NZPA, 2011).

#### Subpart C: Copyright (New Technologies) Amendment Act and its application to YouTube

Section 92C retains knowledge standards like the United States Digital Millennium Copyright Act 1998 (DMCA) section 512(c) that are presumably intended to lessen an ISPs obligation to check the information it stores for copyright infringement. This shifts the responsibilities of finding this material onto copyright holders who are more able to identify potential infringements of their own copyrighted material (Hallet-Hook, 2008). Due to the limitations of jurisdictions and law cases related to New Zealand's Copyright Act, conclusions and evidence has been drawn from the application of the DMCA and its operation to ISPs and its application to YouTube. The DMCA is an amendment made to the United States copyright law which has similar protocols to the New Zealand Copyright (New Technologies) Amendment Act.

*Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd.* was an important US Supreme Court case in 2005 which helped set up the rule that ISPs are liable for infringement by users if the platform encourages users to take part in copyright infringement as its primary use. If an ISP encourages infringement, then the ISP understands that copyright infringement is occurring and the DMCA can no longer supply a safe harbour (*Metro-Goldwyn-Mayer Studios Inc. v. Grokster*, 2004).

One of the most important cases interpreting how safe harbours applies to an ISP of a video-sharing website, is *Viacom International, Inc. v. YouTube, Inc.* under DMCA's section 512(C). This case began in 2007 when Viacom filed suit against YouTube for alleged copyright infringement and sought to more than \$1 billion in damages. Viacom argued that roughly 160,000 unauthorized clips of Viacom programming were made available on the popular video-sharing website (CBS/AP, 2007). As to whether YouTube had the right and ability to control the content on its website, the court decided that it did not, because all of the algorithms on the website are fully automated and reacted entirely to user input, without any kind of employee involvement. YouTube also takes down any infringing content when issued with a copyright notification (*Viacom International Inc. v. YouTube, Inc.* 2012). Cases like these have gone a long way in assuring that video-sharing websites, like YouTube, are covered by the law. This is beneficial for ISPs, and even for copyright holders because they are assured of a takedown-notice procedure. These cases supply no assurance to users of ISPs however, as those rights get violated every time a video is taken down

invalidly. In fact, creators, and the content they generate have virtually no protection under the current regime as they are guilty until proven innocent.

#### Subpart D: The effects of UGC with the Copyright (New Technologies) Amendment Act

The widespread presence of UGC on the Internet has become the foundation of video-sharing websites like YouTube. As YouTube's name suggests, users, create UGC unlike the traditional producers of mass media copyright holders. This form of content became prevalent in 2005 when YouTube was launched and mass media companies are still learning how to deal with it, especially because it is so easy for anyone to create UGC (Solomon, 2015).

UGC can be produced with technology and digital software in the forms of visual and audio manipulation. These forms of creation have a valuable contribution to society by providing expressive, political, and entertaining content by giving perspective and reflection of culture. This form of content has become an integral part of creating meaning and expression of ideas (Lee, 2008).

The biggest problem mass media copyright holders have with UGC is that it often uses bits and pieces of copyrighted content to create something entirely new. Some users create content that is entirely their own, others using existing content and edit them into something new, and then there are those to combine their own content with pre-existing content. This is known as remixing. Most remixes take existing content and re-imagines it in new creative ways while keeping its cultural interest alive. Therefore, remixes deserve fair dealing protection (CMSI, 2021). It's also nearly impossible for users to get permission for every piece of copyrighted content if they use a variety in creation. (Ferguson, 2015). Given that the purpose of copyright law is to promote innovation and creativity, one would think they would embrace UGC, however, the literature clearly shows this has not always been the case.

Mass media copyright holders have been at the top of the copyright game for a long time now and many of the additions to copyright law have been in their favour. This is because they helped influence the changes in them and they see it as a business model that they actively create and the public passively consume (Solomon, 2015).

The rise of the internet and UGC have turned the traditional mass media business models on its head and they are still learning to adapt. A 2020 UGC survey showed a clear trend of people increasingly wanting to

hear from others through user-generated, visual content (Greenwood, 2020).

UGC holds opposite beliefs to mass media and, therefore, pose a threat to mass media copyright holders. For this reason, mass media copyright holders want to limit and control UGC through copyright protection and copyright infringement notices. Some mass media companies embrace UGC but they do so on their own terms and put a stop to any content that goes in the direction they do not like. On the other hand, mass media companies are able to freely borrow from pre-existing folk cultures without anyone to stop them but when online users essentially do the same thing with mass media content, they are quick to put a stop to it and halt creation (McKay, 2010).

“Multiple YouTubers have run into issues with what they describe as aggressive copyright claims from record labels. That includes two of today’s most popular creators: Jimmy “MrBeast” Donaldson, who said he lost more than “five figures” on a video for simply saying the Bon Jovi lyric “livin’ on a prayer,” and beauty guru James Charles, who complained that an a cappella song parody was unjustly claimed” (Alexander, 2019).

Even though the New Technologies Amendment Act did make necessary changes to change the handling of copyrighted content for ISPs. The law is in no way equipped to deal with UGC that uses, transforms, and reworks copyrighted content into something new. Therefore, its focus was to stop piracy through the illegal sharing of copyrighted content. Section 92(C) only supplies safe harbours for ISPs. Creators have no protection under the guilty upon accusation legal framework. This lack of protection has become more complicated for YouTubers with the introduction of Content ID. Content ID is designed to scan and check every video on YouTube to flag any video with recognized copyrighted content (YouTube, 2010).

*Lenz v. Universal Music Corp* is an important court case that proved the rights of YouTubers as well as the complicated nature of Content ID. Lenz uploaded a twenty-second video of her child dancing to a Prince song on YouTube. The song could be heard in the background of the video and Universal Music Corp sent a takedown-notice for the video to be removed from YouTube. YouTube removed the video and emailed Lenz letting her know of the removal. Lenz sent a counter-notification reply to YouTube claiming that the video falls under fair use (USA’s equivalent of fair dealing) and requested the video to be put back on the website, YouTube obliged. Lenz further sued Universal Music Corp for misrepresentation under § 512(f) of the DMCA claiming they did not check to see if the video was fair use and just took it down purely because of the Prince song in the background. Lenz’s lawsuit proposed that copyright holders must look through

every video that is flagged with copyrighted content before sending a takedown notification, which is unmanageable. The decision concluded that there is too much copyright infringement on the internet for humans to examine each potential infringement of content. It was ruled that false infringement notices can be excused if the material targeted was believed to be infringing (*Lenz v. Universal Music Corp, 2015*).

While *Lenz v. Universal Music Corp* challenged the boundaries of fair use and copyright infringement its relevance remains today because it helped set the standards of a successful counter-notification by a YouTuber. More cases of such are needed to help define the law as YouTubers are genuinely unaware of their rights and the process for them to go through if they do find themselves in a conflicting situation such as *Lenz*. Furthermore, with the growth of automatic flagging of online content, it is becoming more frequent for UGC to be flagged.

## Part II: Content ID prevents YouTubers of their rights

Content ID is ideal for YouTube and copyright holders but it's not ideal for YouTubers because many do not know their rights under copyright law, and are afraid to be sued for infringement, or both. However, some YouTubers try to circumvent Content ID to avoid copyright complications and the dispute process altogether. For this purpose, Subpart A of this section will explore how Content ID deprives users of their rights and Subpart B of this section will explore how users bypass copyright detection.

### Subpart A: The Evolution of Content ID

As previously mentioned, section 92C doesn't require ISPs to check their own websites for copyright infringement. However, many websites such as YouTube use automated systems to find infringing content before the copyright holders do and to notify those copyright holders of the contents existence on the website. This was because of growing legal concerns.

In 2007, YouTube developed Content ID and became one of the first websites to use automated filtering systems. "Copyright holders, usually limited to those with large catalogues of content, can register with YouTube and submit their works to be digitally fingerprinted, a process referred to as Automatic Content Recognition (ACR) and included in the Content ID database" (Graves, & Lee, 2017).

Content ID is a sophisticated system that uses digital fingerprints of copyrighted content and compares them with every video that is uploaded to YouTube. The automated system uses certain algorithms to find a match if a video contains parts or fully uses copyrighted content and flags the video. Once a video has been flagged, a notification is sent to the copyright holder and they are given the option of how they wish to deal with the situation. The options granted to copyright holders include:

- (1) mute the audio of the video;
- (2) block the whole video from being viewed on the website;
- (3) monetize the video by running ads; or
- (4) track the video's viewership statistics (YouTube, 2010);

Most copyright holders choose to monetize these videos allowing them to make advertising revenue that is displayed before or during its duration. Advertising revenue is split 45/55 between YouTube and the copyright claimer while the YouTuber receives nothing apart from allowing the video to still be displayed on the website (YouTube, 2010).

YouTubers thus become deprived of any originality of their creations because context isn't brought into account. If their videos use only a small portion of copyrighted content their whole video is flagged for copyright infringement and the copyright holders get all the benefits. If copyright holders decide to act, the uploader can dispute the claim but many YouTubers lack knowledge concerning copyright law. Many Content ID claims are not disputed as YouTubers are unaware of the process, or are in fear of potential consequences from copyright holders. Furthermore, fair dealing and fair use is complex and varies per jurisdiction. It could be likely an attorney who specializes in copyright law is needed, which is an expense some YouTubers are not willing to incur. This makes disputing Content ID claims a daunting and sometimes scary process because YouTubers disputing claims risk receiving a copyright strike on their channel if they get their fair dealing analysis wrong (Graves, & Lee, 2017).

If a YouTuber receives three copyright strikes their account gets terminated. A strike expires after three months if YouTube's Copyright School is completed. YouTube's Copyright School consists of four basic questions of copyright law and video. It is clear YouTube's Copyright School video is unpopular with 87 thousand dislikes with over 10 million views since published in 2011. It also is still unclear if this is an effective method for teaching YouTubers about copyright law or its impact on their creativity (YouTube Creators, 2011).



In 2019, YouTube did make the system easier for YouTubers to be able to see the portion that is claimed and allows options such as to mute the audio of that portion or cut that portion of video out which will release the claim. However, it still puts YouTubers at a disadvantage when they try to use fair dealing or fair use for educational content that involves breaking down a song or movie (Graves, & Lee, 2017).

#### Subpart B: Adversarial Attacks on Copyright Detection Systems

While it's unknown how exactly Content ID functions and the only information available doesn't go into depth, it can be understood that it works by using digital fingerprint algorithms to extract assembling features of vectors from source content and then matching these vectors to a library of known vectors associated with the copyrighted content. If there are enough matches between a source sample and a library sample, then the two samples are considered identical and the content is matched (Saadatpanah, 2019).

Copyright detection systems are among the most widely used machine learning systems in modern day technology, however, many machine learning systems are easily manipulated by adversarial attacks. The purpose of adversarial attacks on copyright detection systems is to test the operation and limitations of the systems' algorithms or to simply bypass detection. Adversarial attacks work with small disturbance added to input data causing substantial changes to the output of a model (Saadatpanah, 2019).

Adversarial attacks are a way for YouTubers to avoid Content ID. This is done by manipulating the copyrighted content so its fingerprints cannot be detected. There have been some interesting and successful case studies which have managed to bypass Content ID (Quach, 2019).

A study done by Boffins at the University of Maryland in America used code to successfully manipulate the audio in two songs to avoid Content ID detection. These two songs were, Stevie Wonder's song "Signed, Sealed, Delivered" and Kesha's song "Tik Tok" (Quach, 2019). To execute these adversarial attacks, they extracted a 30-second fragment of these songs. For one method they introduced new noises frequencies and for another method, they removed identifiable frequencies with both methods working. This confused Content ID resulting in them being undetected (Saadatpanah, 2019).

Video

Visibility

0:33

original

Add description

0:33

adversarial example

Add description

Draft

Copyright claim

Draft

The content identified in your video is listed below, along with details and actions.

Content used

Claim type

Impact on the video

Actions

▼

Signed, Sealed, Delivered I'm Yours

Stevie Wonder

●

Video cannot be monetized

Ad revenue paid to copyright owner

SELECT ACTION

▼

Figure 1: Study done at the University of Maryland in America shows YouTube successfully identified the original audio signal but failed to detect the adversarial example (Saadatpanah, 2019).

### Part III: Functionality of New Zealand's Copyright Act for Digital Content

New Zealand's Ministry of Business and Innovation conducted a review of the current Copyright Act in November 2018 and closed consultation in April 2019. The conclusion of the review being that the Copyright (Infringing File sharing) Amendment Act with the three-strike policy hasn't been enforced since 2015. After the Copyright (Infringing File Sharing) Amendment Act was enacted, most cases brought to the Tribunal were by Recorded Music NZ. In 2017, Recorded Music NZ expressed their concerns with the law. These concerns included the process of sending notices to ISPs being ineffective, with them getting lost, thrown away, or invalidated by technicalities. Cases taken to Tribunal were also ineffective. The rewards ordered by tribunal were disproportionate to the crimes and some decisions took months to be released (Ashley, 2019).

Some companies decided they wouldn't bother with infringing file-sharing law as infringement notices cost a \$25 fee to ISPs and there were hundreds of thousands of infringements, thus, making it far too expensive and time-consuming for it to be worthwhile for copyright holders. An additional \$200 fee to bring cases before the tribunal was also found to be too expensive and so the process was virtually abandoned. Internet NZ engagement director Andrew Cushen stated that "New Zealand's copyright law around file-sharing has become completely irrelevant and unused... Since late 2015, ISPs do not appear to have been requested by copyright owners to send any notices to their account holders - the last claim to be taken to

the Copyright Tribunal was also in 2015.” Cushen further stated that the file-sharing framework is not used because it is not relevant to the current situation of the internet, as even the distributors who pushed for the law changes in 2011 have moved on. (Ashley, 2019) This is because new business models opened new ways for New Zealanders to access and pay for creative works online with the rise and popularity of streaming services such as Netflix and Spotify.

While it is clear reform is necessary and small steps are being made in this direction, no timeline of when the first draft bill will be released has been given (Dean, 2017; Ashley, 2019). In all likelihood, it could take years before the law is updated again.

#### Part IV: Conclusion of literature

This literature review aimed to research the serious topics of New Zealand’s Copyright Act 1994 and its relation to fair dealing, UGC, and Content ID. As a result, an understanding of background knowledge concerning this topic is established. The research found that Content ID creates a range of conflicting problems between YouTubers and copyright holders. The only obvious way for YouTubers to overcome invalid copyright claims is to dispute these claims made against them. However, this creates a complicated situation, as the dispute goes to the copyright claimant who decides whether to accept the dispute or not.

An interesting area discovered involves the determining factors of fair dealing, including the fact that fair dealing cannot be determined by YouTube but only by jurisdiction, which creates complications for YouTubers who are ignorant about copyright law and do not have the resources to go up against mass media companies when their content gets flagged. Furthermore, mass media companies own most copyrighted content making it difficult for YouTubers to exercise creative outputs without being penalized or limited by these companies.

Going from these solidified findings and additional discoveries, the literature review supplies ample base for further research and development of the creative outputs of this research portfolio, including aforementioned UGC documentary, and methods for bypassing Content ID.

## CHAPTER THREE: DESIGN PRECEDENTS REVIEW

### Part I: Documentary Precedents

#### Subpart A: RiP: A REMIX MANIFESTO

A good precedent communicating the changing concept of copyright is the open-source documentary called *RiP!: A Remix Manifesto* directed by Brett Gaylor, released in 2008. The film's focus is on copyright and the fight between the creative minority and the corporate majority. The film was released under a Creative Commons Attribution-Non-commercial 3.0 license. Under this Creative Commons license, the entire documentary is available for downloading, remixing, and sharing online. Throughout the film, Gaylor explores the ways the new generation of artists have uncovered original methods for creating something new from the fabric of something old. In Gaylor's opinion, there are two sides to this war: the 'copy-right' (those who want to control intellectual property) and the 'copy-left' (those who want the free sharing of ideas to protect cultural evolution. (Bermingham, 2009). Gaylor and Girl Talk (his favourite remixing artist) are part of the copy-left, while the copy-right is populated by big corporations who presumably want to dictate intellectual property for profit, and therefore control culture.

The film's manifesto and organizing framework is broken into 4 parts:

1. Culture always builds on the past.
2. The past always tries to control the future.
3. Our future is becoming less free.
4. To build free societies you must limit the control of the past

(Bermingham, 2009).

The documentary's analysis of sampling, remixing, sharing, and copy-fighting was pieced together over six years, during which Gaylor shared his raw footage with other content creators online, some of whose remixes he added into the film. Given the realities of the remix culture, Gaylor offered the movie online as a remix experiment for others to remix and uploaded their contribution to a new and improved version of the film called *RiP! A Remix Manifesto 2.0* (Thill, 2009).

#### Subpart B: Copyright Criminals

*Copyright Criminals* is a 2009 documentary film directed and produced by Benjamin Franzen. The film explores the creative expressive use of musical sampling as innovative technologies have made it easier to reuse sounds and turn them into something new. The film challenges the use of sampling and copyright

infringement where the lines of producers and consumers has become blurred with digital technology. They hope to inspire viewers to become active participants in conversations about updating the laws that regulate the remix culture. Franzen states he wants people to better understand how copyright law affect creativity and free expression (Franzen, 2010). Franzen also states that the movie couldn't have been made and distributed without fair use. The total cost of clearing the rights for the materials used would have been an estimated \$4 million which was far beyond the films projected budget (Franzen, 2010).

## Part II: YouTube Content ID Precedents

### Subpart A: Breaking YouTube Content ID to See How It Works

*Breaking YouTube Content ID to See How It Works* is a YouTube video uploaded on the 22nd of January 2020, by a YouTuber called Market Power. In the video, Power suggests it is important to understand how machine learning algorithms work in relation to our wellbeing, since machine learning is increasingly being used in many different elements of everyday life. For example, detecting plagiarism, monitoring purchases, and identifying faces across various networked infrastructures. Power's experiment with Content ID involves pushing it to the limit to figure out how it works and what triggers it.

The conditions he mentions for this experiment are the following:

1. Algorithm Basics
2. Hypothesis
3. Base condition
4. An experimental channel
5. Results

#### **Algorithm Basics:**

Power explains that Content ID scans content uploaded to YouTube and generates a probability of copyrighted content it contains through the Content ID library. His understanding of the system is that its algorithm makes predictions but just like any predictions, the wrong probability could be an outcome.

#### **Hypothesis**

Hypothesis one:

Power's first hypothesis is that length matters and is a determining factor in the process of if something will trigger a Content ID claim. Power's experiment intention was only on music detection. He states he thinks the length matters for two reasons. His first reason is that Content ID needs time to identify a song. He backs this idea by sharing 1 second of a few songs to show the difficulty to identify songs through this brief period. His second reason addresses the fair use doctrine and he explains you can use copyrighted content if you do so in certain conditions and sometimes the length is considered in one of those conditions.

#### Hypothesis two:

Power's second hypothesis is that the song matters. He believes that popular and current American songs are more likely to trigger Content ID compared to older and foreign songs. He states that he does not have solid evidence for this reason but feels like it is an issue for his experiment. For this experiment, Power uses 23 different songs from different decades, different genres, and different countries, he then varies the length of these songs to see how the Content ID algorithm reacts.

#### **Base Condition:**

For more accurate results, a base condition for the experiment is set and does not change for the full experiment. This base condition is the same clip of him dancing to every song with the only variation being the change of length of the song audio.

#### **An experimental channel:**

Power creates an experimental channel for this experiment because copyright claims can get channels shut down. He also did not make any of these videos public.

#### **Results:**

For all 23 copyrighted songs at 10 seconds long with the same base condition (clip of him dancing), Content ID flagged 43% of them as violating copyright even though he is violating 100 percent of these songs' copyright. He says this shows the weaknesses in machine learning algorithms as they sometimes can make the wrong predictions. Only 30% of international songs received a claim with some of these being popular songs. He further expresses similar problems with songs 10 years or older. A current popular song is 3 times more likely to be flagged than any other type of song.

#### **Vary of length:**

- At 9 seconds there were no changes in copyright claims.
- At 8 seconds half of the songs got copyright claims.
- At 7 seconds only one song got a copyright claim.
- At 6 seconds no songs got a copyright claim.

Power states that these results could conclude that YouTube allows 6 seconds of copyrighted content without being a conflict or being detection. Although this may be the case this doesn't mean the content isn't invading copyright. It is just a tool YouTube uses to defend people's copyright content and to find the places where copyright is violated (Power, 2020).

### Subpart B: Dena's Vlog: Bypassing the Content ID System

*Dena's Vlog: Bypassing the Content ID System* is a YouTube video uploaded on the 21st of March 2016, by YouTuber Cyborcat. In this video, Cyborcat goes into depth on her approach to bypassing the Content ID system, and claims she doesn't bypass Content ID for illegal purposes but because her videos are under fair use. This is because if a video is flagged as infringing it doesn't get monetized and the dispute process could take up to 30 days to resolve. Dena prefers to bypass Content ID because she sees it as a broken system, and it is easier to avoid it instead. Cyborcat explains in the video the main thing she does is to try to keep clips under 10 seconds long. A problem that arises with this method is that some clips have long pauses, so she tries to cut out these pauses or any unnecessary parts of clips to get straight to the point. She also cut to clips of her talking to help break up movie footage. At this point she recommends this is the easiest way for people to do to evade Content ID.

When a video is done or is almost ready to upload, Cyborcat uploads it to YouTube as unlisted and gives it a title unrelated to the clip. Her favourite part of Content ID is that it shows the timestamps of the infringing section of a video. This allows her to go back to the editing process of the video and add markers to the section that she needs to edit.

Cyborcat's second and backup method involves zooming in on character's faces for every second shot or so, but she mentions this may dilute the quality and look bad. Also, because her YouTube channel reviews films, she doesn't want her viewers to think films are purposely filmed badly. In reality, it is just her trying to bypass Content ID. After editing these zoom changes, clips are given a test name because it is likely

there will be more tests to conduct. If the first test doesn't work, she continues to zoom in until it does. After doing so, she re-renders the whole video and uploads it back to YouTube to test if it is successful.

One of the problems with this system, Cyborcat discovers, is that sometimes only one clip gets detected by Content ID at a time. This results in Cyborcat having to go back and do the same method again for the new section copyright is detected after the last section has been resolved. At the end of this process, sometimes she ends up with a ridiculous amount of test videos. These are deleted once she bypasses the system.

Another method Cyborcat explains she has explored in the past with success includes turning videos into black and white. Cyborcat explains that some people have had success with mirroring the footage (flipping footage back to front) but the downfall of this, is that any writing becomes backward which could be distracting to viewers. Her final method includes zooming a video out and having an animated background, but this method didn't work well for her.

Cyborcat concludes her video by stating that some videos eventually receive copyright claims. On these occasions, she leaves the claims unless the videos are blocked worldwide (by the claimant), and then she would make disputes. Her disputes are normally made under fair use and she gives a quick tutorial of this process. This part of the video she informs viewers of how this process works as well as the information she provides for this process to be successful. For Cyborcat, the upside of disputing claims is that those videos become unblocked (from her audience) while disputes are in progress (Cyborcat, 2016).

#### Subpart C: Abusing YouTube Copyright Claims (Tutorial)

The Original Ace is a popular YouTuber who creates gaming videos for his fanbase. After facing problems with Content ID, he found a solution and made a tutorial video of this solution. This video is called *Abusing YouTube Copyright Claims (Tutorial)*, uploaded on the 25th of November 2019. The video is a tutorial explaining the process of how to claim your own YouTube videos through Content ID. This theory explores the opposite side of Content ID by getting content into the system and make money off this content without being a YouTube Partner. The Original Ace explains he sees this as a loophole in YouTube's system and it shows how broken YouTube's system is.

The video shows a compilation of YouTubers who are victims of invalid and abusive Content ID claims. In this compilation, these YouTubers explain the problems of fair use/dealing and how Content ID has fundamentally changed the way this is handled, while suggesting this as an area YouTube does not want to



address. One of the issues they highlight is that disputes go to the claimant and they decide whether the dispute is valid. The YouTubers in the video explain that this is frustrating for them as they're going to lose time if they choose to dispute claims. Also, if companies make invalid claims there are no repercussions for them in doing so. It is apparent to them that the system is biased to those making the claims especially mass media companies as they have a lot of power with lawyers and big legal teams behind them. This results in them and smaller YouTubers alike to get pushed around by these bigger companies as YouTube gives big creators and companies access to the Content ID system (The Original Ace, 2019).

The Original Ace later explains the problem he faced with a false Content ID claim. However, he overcame this claim by claiming his own video which results in him splitting 50/50 percent of ad revenue with the other claimant. From this part of the video, The Original Ace mentions the process for how this can be achieved (The Original Ace, 2019).

Firstly, The Original Ace explains that if you are a smaller artist without a music distribution copyright and someone else uploads your song there is nothing you can do except dispute the claim and file a takedown-notice. However, if signed with a music distributor, they will Content ID claim any videos uploaded by other YouTubers which results in ad revenue being paid to you. This eliminates the need to file disputes.

The Original Ace briefly explains the process for this tutorial as below:

1. You create a song or album.
2. You pay a music distribution service.
3. They distribute your song through multiple music stores such as iTunes, Spotify, etc. and they take a small dividend cut per song. But this is also a way for YouTubers to get their song into the Content ID system (anyone can do this if they own the rights to their song and use this song at the end of their videos). This results in the video being monetized without being qualifying for the YouTube partnership program.

The Original Ace sarcastically states that instead of complaining about music companies claiming his videos instead he will join the music companies and claim his own videos. The Original Ace further explains the biggest flaw in this system is being able to upload anyone's videos and use his song (in the Content ID system) as an outro. This allows him to get 50/50 percent of ad revenue if another claim exists. Essentially,

music companies do the exact same thing, with The Original Ace's conclusion of this technique being that there are good and bad applications of its usefulness.

Towards the end of the video, The Original Ace goes into the further specifications of the process for this technique to be successful. These specifications are below:

1. The song needs to be original with exclusive rights; if you make your own you need to be careful about audio synthesizers that may require a license to use them, which means you have to either buy the license or use free synthesizers.
2. The song needs to be at least 20 seconds long or else the Content ID might not be able to pick it up.
3. The song needs to be very easily recognizable. If it's just one or two notes it might not be detected. So, variation is needed for the content ID system to pick it up automatically (The Original Ace, 2019).

### Part III. Conclusion of Design Precedents

*The analysis of Copyright Criminals* and *RIP: A Remix Manifesto* shows the importance and significance of understanding copyright law and fair use. Without this knowledge, both these documentaries wouldn't have been able to be created or distributed because of licensing costs. Therefore, they provide proof of successful outcomes utilizing fair use. *RIP: A Remix Manifesto* is a further useful precedent as it was released under a Creative Commons 3.0 license. The construction and style of these documentaries were important to consider when developing the final design outputs of this research portfolio.

Review of Content ID precedents gave insight into how Content ID works and the tests that have been done before. An interesting finding is that Power's experiment holds similarities to Cyborcat's method by keeping copyrighted content to 10 seconds or less. As Power mentions, this could be because the machine learning algorithms need time to identify the probability to match digital fingerprints. Power's precedent is also useful because it is relevant to the time of this study as it was uploaded to YouTube in 2020.

All of these precedents are useful for defining criteria and starting points for establishing past techniques used to utilize fair use (dealing) and test Content ID. However, because Content ID deals with both visual and audio aspects, likely, there are still more techniques of bypassing the system. Hence this shows there is

limited knowledge of how Content ID operates. Regardless, The Original Ace's tutorial brings forward a different angle of dealing with Content ID which isn't bypassing the system but joining it. His tutorial solves many of the problems YouTubers face through a different technique and this is mainly to profit from creation. This area offers relevance to this research portfolio by showing that past YouTubers have explored bypassing Content ID with success in different ways.

Supplementing the literature review, these design precedents provide a varied baseline of research and practice to draw from when developing the creative outputs of this research portfolio.

## CHAPTER FOUR: METHODOLOGIES

To achieve the aims and objectives of this research, the following methods were adhered to. To find what information was needed to utilize fair dealing as well as bypass Content ID, this research portfolio includes a literature and design precedent review. This is to emphasize the identification and investigation of the topic's problems to help form a design solution. As a researcher, this is necessary to first understand the literature in the general area or field. The literature review is useful for understanding what has been done before, the strength and weaknesses of existing studies, and what they might mean (Boote, & Beile, 2005). In addition to this, important criteria of how fair dealing is applied for relevance to the research question are identified, in this case criticism, review, and news reporting with sufficient acknowledgement of the copyrighted content used. The literature review also reveals that fair dealing is decided by jurisdiction and all cases are different based on its own levels of facts. Despite this, it can be understood that there are criteria that courts tend to adhere to in deciding fair dealing cases. These criteria include the impact of the use on the market, the amount and substantiality, the nature of the copyrighted work, and how it differs from the original. These criteria are important design factors for practising fair dealing.

Remixing is a creative method used to produce videos and similar content with the use of UGC. For this reason, one of the design outputs focuses on the creation of a UGC documentary with practice of criticism and review under New Zealand's Copyright Act 1994, Section 42. This UGC documentary uses the methodology of remixing because it became apparent that it is a suitable and appropriate method related to the research findings stemming from the literature review. Remixing often uses bits and pieces of copyrighted content to create something entirely new. Remixes can be content that is created entirely their own, or using existing content and are edited into something new, and also remixes that combined creators' own content with pre-existing content (Hang, 2016). This method also links to the problems YouTubers face because often remixes, even if they are believed to be protected by fair dealing or fair use, are still flagged as infringing because of Content ID. By tying together fair dealing with copyrighted UGC and methods of getting around Content ID through the form of remixing and research through design, an accurate scenario of what YouTubers face can be achieved.

Design precedents relating to Content ID provide important information and criteria to work from for the purposes of adversarial attacks on Content ID, in order to test methods of bypassing the system.

Based on the design criteria identified from the literature and precedents review, the second section of this research portfolio focuses on the iterative process and development of the final video output. Research through design, using adversarial attacks, is used to produce, iterate, create, and implement the video output. Research through design using adversarial attacks is a suitable method as it is “constituted by the design process itself, including materials research, development work, and the critical act of recording and communicating the steps, experiments, and iterations of the design” (Martin, 2012; Koskinen, 2012). Furthermore, while constructing this video output, problems and discoveries were found which would have otherwise gone unnoticed (Koskinen, 2011).

A more detailed method for answering the second part of the research question further involves adversarial attacks on Content ID. This utilizes an iterative approach by testing the operations and limitations of Content ID’s algorithms. The design criteria for this part of the research is based on previous design precedents’ criteria as identified through the literature and precedent review, and includes keeping content under 10 seconds, zooming on areas, turning content to black and white, and mirroring.

## CHAPTER FIVE: RESEARCH OVERVIEW

### *WHEN COPYRIGHT IS WRONG...* (UGC YouTube Documentary)

#### Part I: Creating a Remix Video in Adobe Premiere Pro

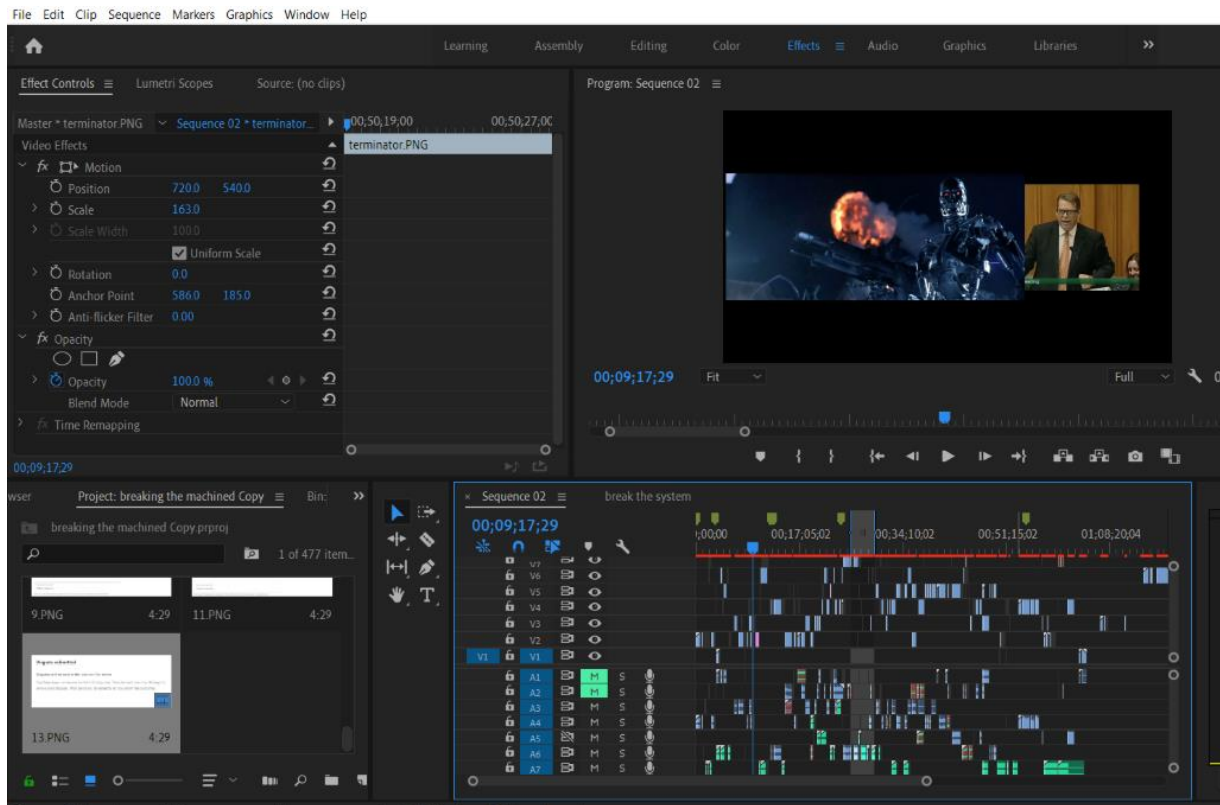


Figure 2: A screenshot showing the sequence timeline of Adobe Premiere Pro in the making of *WHEN COPYRIGHT IS WRONG*.

“A remix video is when separate media elements are joined to form a new, different piece of media with an entirely different meaning than the original. It can be in narrative format or a mashup montage” (Hang, 2016).

The following design documentation outlines key decisions in the creation of one of the research portfolio design outputs; *‘WHEN COPYRIGHT IS WRONG...’* Initial developments of the UGC documentary included planning, sourcing, iterating, editing and storyboarding directly in Adobe Premiere Pro to create the final output (Martin, & Koskinen, 2012). These are all components of remixing, as detailed in the methodologies section, which also included copyrighted content to explore the research question. As the literature review mentions, this is a feature of UGC and became the essence of creating *‘WHEN COPYRIGHT IS WRONG...’* For this reason, the results of bypassing Content ID are a feature in the UGC documentary as UGC is affected by Content ID regardless of whether the footage is used fairly or not. This UGC documentary takes inspiration from the precedents analysed with their styles, ethics and approaches. The rest of Part I explains the step

by step process of the creation of this UGC documentary while Part II explains how bypassing Content ID was designed.

### Step 1: Sourcing the footage

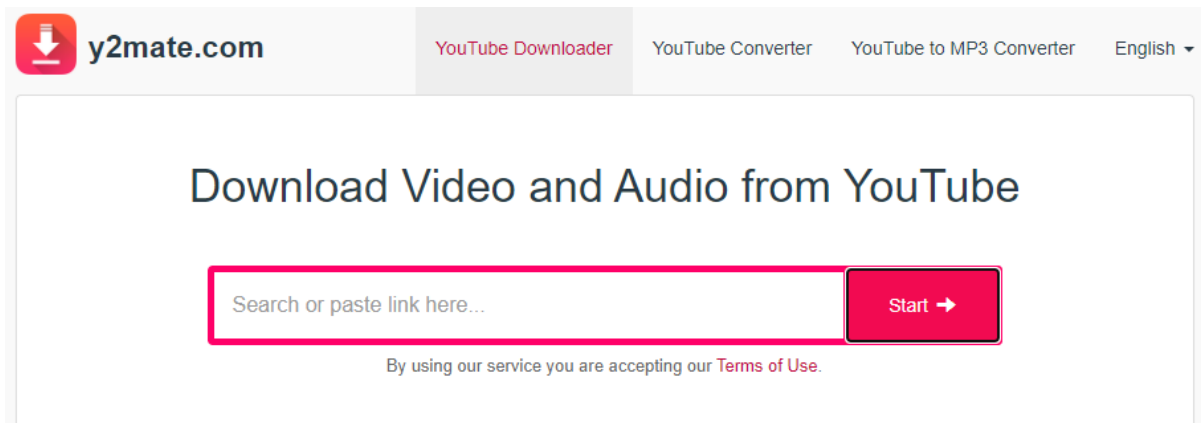


Figure 3: A screenshot of y2mate.com (y2mate, 2021).

The first step was coming up with the idea and brainstorm a list of media clips that were needed. Once the general idea (based on the topic of this research portfolio itself) was solidified, relevant footage was sourced and added to a playlist on YouTube after creating a YouTube account. This playlist can be viewed with the following link <https://www.youtube.com/playlist?list=PLkYU2lXMvSefaq8ieQeESanZkbczWC99B>.

These YouTube videos were found by searching related keywords such as 'fair dealing', 'YouTube's Content ID', 'copyright' and 'remix'. Searches using these keywords were useful to help build a variety of footage for the later editing stages.

To help situate New Zealand's copyright law and its relationship to wider internet culture, footage containing Kim Dotcom, Aaron Swartz, Lawrence Lessig and the *New Zealand National Party V 8 Mile style* (Hatton, 2017) was sourced to show the complexity and different angles of copyright.

Kim Dotcom's relevance to New Zealand and his legal issues with his deemed illegal file sharing website 'Megaupload' dives deep into the complications of the liability of ISPs for copyright infringement (New Zealand Law Society, 2020).

Aaron Swartz was an important figure with his contribution to copyright and "wrote most of the code underpinning Creative Commons (co-founded by Lawrence Lessig (Geere, 2011)), an inspired system that

uses copyright law to give ordinary people control over how their digital creations can be used by others” (Naughton, 2015).

The *New Zealand National Party V 8 Mile style* was an interesting court case which demonstrated that even politicians themselves struggle to understand the use copyright, when a soundtrack used by The National Party in a political ad campaign was deemed infringing on the copyright of Eminem’s song Lose Yourself (New Zealand High Court, 2017).

All of the videos sourced through YouTube were downloaded using a YouTube third-party tool called *y2mate.com*, a YouTube video downloader. This is a very simple process and all that is needed is to copy the YouTube link, paste it into a menu dialog, and click start for a download link of the video. This method of sourcing videos does bring up legal and ethical concerns with the question being - Is it legal to download videos from YouTube? “It’s essential to differentiate the two sides of the question. On the one hand, there’s the question of how YouTube views the situation. On the other, there are the national laws of the country in which the downloading is taking place” (Price, 2019). While it states that it is a breach of YouTube’s terms of service, this is not illegal because of the contents use under fair dealing.

YouTube's Terms of Service clearly state that;

“You shall not download any Content unless you see a ‘download’ or similar link displayed by YouTube on the Service for that Content. You shall not copy, reproduce, distribute, transmit, broadcast, display, sell, license, or otherwise exploit any Content for any other purposes without the prior written consent of YouTube or the respective licensors of the Content” (YouTube, 2021).

YouTube however, has shown no indication to penalise users of downloading content off YouTube (Helen, 2020). Otago University (2020) also states “You can make a single copy of part of a work for your own research or private study, as long as the copying is 'fair.' This covers literary, dramatic, musical, or artistic works or the typography of a published edition”. Therefore, while this method of sourcing footage is against YouTube’s Terms and Service and can be seen as ethically wrong because it stops the owners of YouTube video from receiving views and profits (Helen, 2020), it does not break New Zealand’s Copyright Act because of Section 42 and 43. In total, around 80 videos were downloaded using *y2mate.com*.

## Step 2: Creating the Project file & Importing the Clips



To create the project file, the Adobe Premiere Pro software was used to create a new file and from there, Premiere Pro gives access to several tools that can be used to import, edit, organize, and preview all different types of media. For this circumstance, the sourced footage was dragged and dropped from its folder location into the project panel (Martin, & Koskinen, 2012).

### Step 3: Creating a Sequence and Adding Footage

To begin the editing stages of creating the new sequence, the 'New Item' menu was clicked in the Project panel and Sequence was chosen from the drop-down menu. This became the master sequence of creating the video. To build the project, sourced footage from the project panel were dragged and dropped into the sequence timeline. From here, footage was moved around, cut shorter, and effects were added to transform the working file. This was an iterative process by changing and adapting the footage to make it different as well and fitting it together with the other footage (Martin, & Koskinen, 2012). For example, this can be seen between 6:32 – 7:30 of the final UGC documentary. The original video used (<https://www.youtube.com/watch?v=bW-Sqtqfadw&t=2s>) has been modified by editing and overlaying other video components to change the overall outcome of the footage. This strongly methodological example of remixing was applied with consistence throughout the whole project in different ways and editing techniques (Hang, 2016). Fortunately, in this case, copyright law does not exactly specify how to apply fair dealing, and that was used to its advantage as fair dealing does not follow a specific formula (CMSI, 2021).

### Step 4: Creating a Voiceover

Comment and critique are at the very core of fair dealing as a safeguard for freedom of expression. As long as the process of creation is able to be analysed, commented on, or responded to in relation to the work itself, the means for expression itself are allowed to be varied. Commentary may be explicit (as might be achieved, for example, by the addition of narration) or implicit (accomplished by means of recasting or recontextualizing the original). In the case of negative commentary, the fact that the critique itself may do economic damage to the market for the quoted work (as a negative review or a scathing piece of ridicule might) is irrelevant.

Creating a voiceover narrative was essential to utilise fair dealing. Many remixers quote copyrighted material (for instance, music, video, photographs, animation, text) not in order to only comment upon it, but also because it aptly illustrates an argument or a point. To the extent possible and appropriate, illustrative quotations are drawn from a range of different sources; and each quotation (however many

may be employed to create an overall pattern of illustrations) are no longer than what was necessary to achieve the intended effect (CMSI, 2021).

To create the voiceover in its basic form, a script was formulated using information from the literature review and the footage sourced in step 1. This script was narrated and recorded with a USB microphone. The vocal audio was synchronized with the related video clips downloaded and this was necessary for the criteria of fair dealing by giving these clips purpose through criticism and review of New Zealand's Copyright Act and Content ID. Without making these video clips transformative (with the use of voiceover), it is likely the final video output wouldn't be covered by fair dealing due to the re-purposing of the content and not adding enough originality or changes to its components.

“If a work is merely reused without significant change of context or meaning, then its reuse goes beyond the limits of fair dealing.”

(CMSI, 2021)

#### Step 5: Adding Titles and Exporting the Clip

To build the structure of the UGC documentary, it was divided into chapters and titles were added to break up these chapters. This was to making viewing easier for viewers.

### Step 6: Adding Music

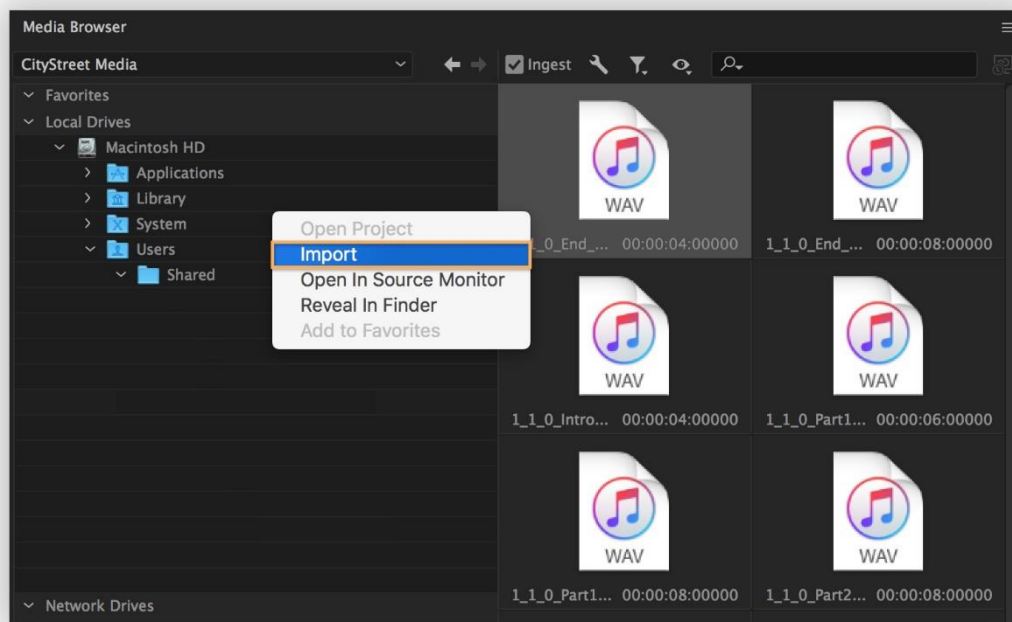


Figure 4: A demonstration of how to import music/audio into Adobe Premiere Pro.

“Works of popular culture typically have illustrative power precisely because they are popular. This kind of use is fair when it is important to the larger purpose of the work but also subordinate to it. It is fair when video makers are not presenting the quoted material for its original purpose but to harness it for a new one. This kind of use is, thus, creating new value” (CMSI, 2021).

While adding (copyrighted) music was not necessary to illustrate the narrative of the UGC documentary, it is an element frequently used in the creation of remixes and copyleft documentaries. Therefore, to make the final output more appealing and to help build structure, a remixed music mix called MATRIX (Concentration / Programming music) uploaded by Horvballi (Horvballi, 2018) was sourced and added to the video’s sequence to support it. The reason for the selection of this music mix was because of its relevance and theme to the internet.

### Step 7: Uploading to YouTube

After exporting the draft version of the UGC documentary, the video was uploaded to YouTube. This was done by clicking the video icon in the top right corner and dragging and dropping the video from the computer location to the YouTube webpage. While YouTube processed the video, the options of adding titles, descriptions and the privacy options were offered. Creating a video description is an optimal

opportunity for YouTubers to add accreditation of the copyrighted works used in videos. Because the video description panel only offers 5,000 characters (Lockwood, 2018), and the amount of copyrighted content used to create the video and characters needed to give proper attribution to the creators and sources of footage (over 5,000 characters, see appendix), a link to a Google document was created and added to the description. As the purpose of this video is designed and argued to be under criticism and review, it was a requirement for the work to be accompanied with sufficient acknowledgement of the ‘titles and authors’ of the copyrighted works used (Channel4, 2021).

For the purposes of Part II of this chapter, the video’s privacy was listed as private, preventing anyone from watching it until the completion of the final video output was resolved (further explained in Part II).

## Part II. Bypassing Content ID

### Subpart A: Invisivel by Pancho Trackman

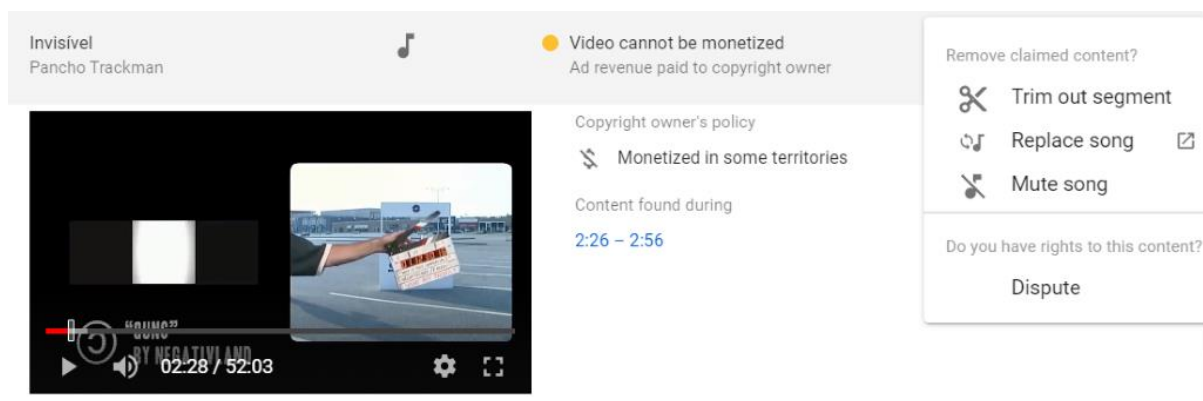


Figure 5: A screenshot showing the Content claim by Pancho Trackman for the song Invisivel.

The process for answering the second part of the research question relates to uploading the draft version/s of the UGC documentary to YouTube. This served the purpose of seeing which footage Content ID claimed so these particular clips could be iterated upon in the video editing process and retested to YouTube. This was to identify the techniques that worked and didn’t work for bypassing Content ID. The goal of this process was to remove all copyright claims. In total, there were three copyright claims and different methods were explored for each claim to bypassing Content ID. While the whole video was comprised of copyrighted UGC, the reason only three copyright claims were made against the video presumably is due to the remixing of sourced footage disorientating the Content ID’s digital fingerprint system. The different specific methods explored to bypass Content ID are further elaborated upon in the second part of Chapter 5.

### First Content ID Claim

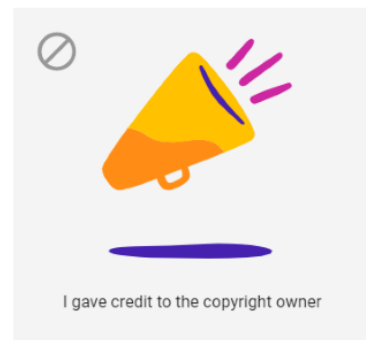
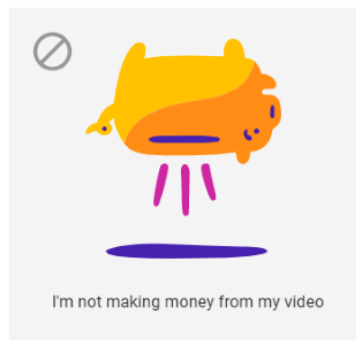
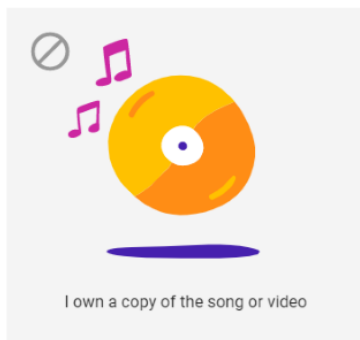
The first Content ID claim detected in an early draft version uploaded to YouTube was by Pancho Trackman. Pancho Trackman, a Brazilian beats producer, sampled the audio heard early in the UGC documentary as part of a song called Invisível (Trackman, 2008). This song was released by a music distributor called CD Baby. This audio was used with permission and taken from RIP: A Remix Manifesto, the open-sourced documentary mentioned in Chapter Three and Four. For this Content ID claim, the dispute option was chosen to resolve this issue. Below is the step by step process of disputing the claim.

#### Step 1: Confirming Eligibility

##### Dispute claim: Invisível

1 Confirm eligibility — 2 Select type — 3 Review requirements — 4 Provide rationale

Remember that the following are **not** valid reasons to dispute a Content ID claim.



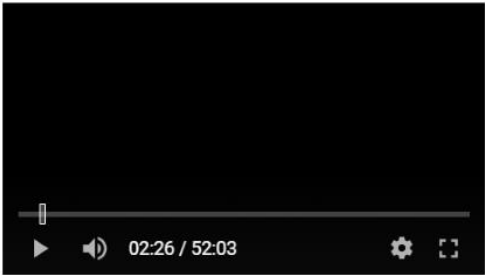
☒ My dispute isn't based on any of the reasons above. I would still like to dispute this Content ID claim.

Figure 6: A screenshot showing the first step of the dispute process for the copyright claim by Pancho Trackman.

The first step of the 4-step process is the confirmation of eligibility and this section provides links to explain what are invalid reasons to dispute a Content ID claim. These invalid reasons are misconceptions of copyright and this step is to stop invalid claims (Basey, 2020). To get to the next step it was necessary to tick the box stating “My dispute isn’t based on any of the reasons above. I would still like to dispute this Content ID claim”.

### Step 2: Select Type

1 Confirm eligibility
2 Select type
 3 Review requirements
4 Provide rationale



Invisivel  
Audio claim  
Copyright owners: CD Baby ?

Select the main reason you're disputing this claim

- ☐ Original content  
The video is my original content and I own all the rights to it.
- ☒ License  
I have permission or a license to use the content claimed in my video.
- ☐ Fair use  
I have significantly transformed the content claimed in my video; the video is protected by fair use, fair dealing, or similar exceptions to copyright.
- ☐ Public domain  
The content claimed in my video is in the public domain and is no longer protected by copyright.

Figure 7: A screenshot showing the second step of the dispute process.

The second step provides options for the dispute type. For this circumstance the license option was selected as permission was obtained to use this content from the owner. Fair use (there is no fair dealing option as YouTube is US-based) (Basey, 2020) could also have been chosen for this claim, however, license claim was the better option as it's easier to rationalize because fair use/dealing is a complex topic.

### Step 3: Review requirements

1 Confirm eligibility
2 Select type
3 Review requirements
 4 Provide rationale

**Not all licenses are the same**  
If you have a license, make sure you understand the terms of your agreement. For example, some licenses allow you to include a song in your video, but don't permit you to monetize it.

**Copy of your license agreement**  
If you received permission directly from the artist or copyright owner, it can help to get written confirmation. You can provide a copy of your license agreement or token for the copyright owner's review.

**Look for any country-specific or usage restrictions**  
Some licenses restrict where or how you can use the song. If your video is blocked in some countries, make sure you have the appropriate territorial rights before you dispute the claim. You may also want to confirm if the license allows you to add the song to a video and post it online.

[Learn more about licensing content for your videos](#)

☒ I have permission to use the content from the copyright owner.

Figure 8: A screenshot showing the review requirements of disputing a Content ID claim.

The 3rd step provides information about licensing to ensure permission is granted and understood. To go to the final step, it was necessary to tick the box stating “I have permission to use the content from the copyright owner”.

#### Step 4: Provide Rationale

**Dispute claim: Invisível**

Confirm eligibility — Select type — Review requirements — **4 Provide rationale**

Please include your license information below (required)

The content used in this claim is from an open-source documentary called "RiP: A Remix Manifesto". This content was released under a Creative

328/2000

This will go to the claimant for review.

Please review the statements below and check the boxes to agree.

- ☒ My video does not infringe anyone's copyright.
- ☒ I understand that the claimant will be able to review my video and my dispute rationale.
- ☒ I understand that filing fraudulent disputes may result in termination of my YouTube account.

Signature (required)

William Urquhart

Enter your full legal name (usually a first and last name), not a company or channel name.

Questions to consider

- What rights does your license grant?
- Do you have a copy of your license?
- Which countries does your license cover?

Figure 9: A screenshot showing the last step of a copyright dispute by providing a rationale.

The last step involves giving a rationale for the dispute and this was an opportunity to include any information about the licensing permission. For this section, a brief rationale was explained as to why permission for this content had been granted. This was followed by a statement review and signature to conclude the dispute submission process (Basey, 2020).

## Dispute submitted

Disputes will be sent to the claimant for review

YouTube does not review Content ID disputes. The claimant now has 30 days to review your dispute. We'll send you an email to let you know the outcome.

[CLOSE](#)

Figure 10: A screenshot showing the dispute was submitted.

Once a dispute is submitted it is sent to claimant for review. In this case, it was sent to CD Baby (the distributor of Trackman's song), who were given 30 days to review the dispute. YouTube outlines in their Terms and Conditions, there are a few actions a claimant can take once a dispute is submitted. These are, release the claim, uphold the claim, take the video down or do nothing and the claim expires (YouTube 2020).

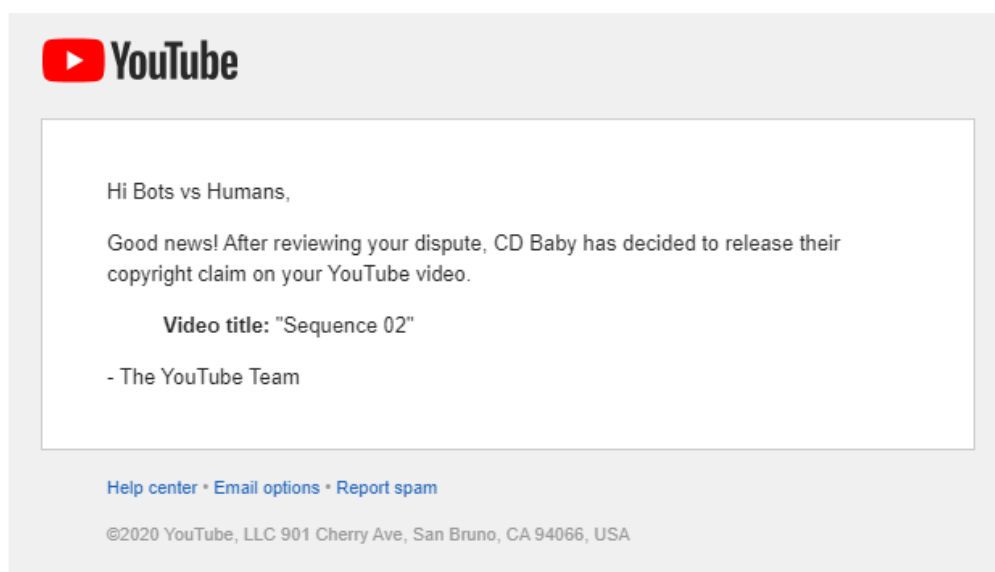


Figure 11: A screenshot showing the release of the copyright claim by CD Baby ("Sequence 02" being the draft title of WHEN COPYRIGHT IS WRONG and "Bots vs Humans" being the draft username of the YouTube Channel).

The best result to come out of a dispute would either be for the claim to be released by the claimant or the claimant does not respond within 30 days and the dispute expires. If the claimant turns down the Content ID dispute an appeal can be made, however that may result in a copyright takedown if it is rejected - after which a counter-notification can be made. If this meets all legal requirements it is sent to the claimant who has 10 business days to provide evidence that they have initiated a court action to keep the content down.






For this occasion, after 14 days, CD Baby released the copyright claim and it disappeared from the video and all other future videos uploaded with the use of this footage. This shows the importance of YouTubers understanding copyright so disputes can be made, and they can defend themselves against invalid Content ID claims. It is interesting to note that while this was an invalid claim, there were no consequences for the claimant when compared to with potentially major ones for the subject (or YouTuber) of a claim in case of an unsuccessful dispute (including, for example, the potential termination of a YouTube channel). As such, it is understandable why some YouTubers such as Cyborcat would prefer to bypass Content ID and avoid the dispute matters altogether.

## Subpart B: Terminator 2




Video: Terminator Content ID claim

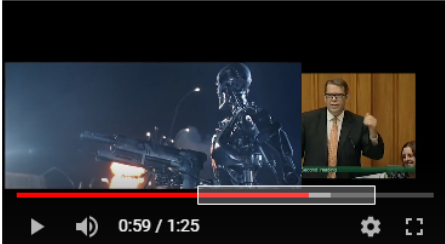
**Copyright summary and status**

The Content ID claim on your video doesn't affect your channel. This is not a copyright strike.



|   |   |  |
|---|---|--|
| <b>Channel impact</b><br> <b>Not affected</b><br>The Content ID claim on your video doesn't affect your channel. This is not ... | <b>Visibility</b><br> <b>Public</b><br>This video is visible to everybody. | <b>Monetization</b><br> <b>Ineligible</b><br>Even though you're not in the YouTube Partner Program, ads may be showing o...<br><a href="#">Learn more</a> |
|---|---|--|

The content identified in your video is listed below, along with details and actions.

| Content used   | Claim type  | Impact on the video   | Actions                       |
|--|---|---|-------------------------------|
|  Terminator 2: Judgment Day (1991) R... |  |  Video cannot be monetized<br>Ad revenue paid to copyright owner | <a href="#">SELECT ACTION</a> |



Copyright owner's policy

-  Monetized in some territories
-  Blocked on mobile

Content found during

0:37 – 1:13

Copyright owners

Studiocanal, Paramount Pictures

Figure 12: A screenshot showing the Content ID claim for the Terminator reference.

The second Content ID claim was for the Terminator reference by Studiocanal, Paramount Pictures. Paramount Pictures restricted the video from being viewed on mobile devices and allowed them to earn ad revenue through monetization in some countries.



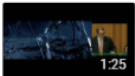

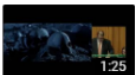

|   |  |  |                 |                           |
|---|--|--|-----------------|---------------------------|
|  | Terminator 2 Opening Scene<br><a href="#">Add description</a>    |  Public | Copyright claim | May 13, 2020<br>Published |
|  | Terminator Adversarial Attack<br><a href="#">Add description</a> |  Public | None            | May 13, 2020<br>Published |
|  | Terminator Content ID claim<br><a href="#">Add description</a>   |  Public | Copyright claim | May 13, 2020<br>Published |

Figure 13: A screenshot showing the Content ID claim for the original material (Terminator 2 Opening Scene), the successful adversarial attack with no Copyright claim and the original usage of the original material with a Content ID claim.


To bypass this Content ID claim, this footage was iterated upon, and every 10 seconds was cut out before combining the cut-out sections (Kosinen, 2011).


The next step in this process involved uploading it to YouTube to test whether the bypass was successful. Fortunately, this method worked successfully with its first attempt.

To see the exact visual impacts of this method compared to the original versions, these videos can be viewed and compared in the following YouTube playlist with the link below:

<https://www.youtube.com/playlist?list=PLkYU2IXMvSeeXEVOGLgpvsHIYuxjZsboE>


Subpart C: Peter Pan



 Video cannot be monetized  
Ad revenue paid to copyright owner

[SELECT ACTION](#)

Copyright owner's policy

 Monetized in some territories

Content found during  
10:15 – 11:27

Copyright owners  
BBTV\_SonyPictures, Universal Pictures (Vobile), NAN Films LLC

Figure 14: A screenshot showing the Content ID claim for the Peter Pan reference.

The third Content ID claim was for the Peter Pan reference by BBTV SonyPictures, Universal Pictures (Vobile), and NAN Films LLC. Again, this Content ID claim allowed the claimants to earn ad revenue through monetization in some countries.

By using Adobe Premiere Pro and utilizing the video editing effects available, this footage was iterated using several different methods (Martin, & Koskinen, 2012). Three of these methods were those mentioned by Cyborcat. The goal was to see if her techniques were still relevant today. The exploration of

new methods were also tested. These methods were created using Adobe Premiere’s visual effects options to transform the visual output (Martin, & Koskinen, 2012). These were preset effects that come with Adobe Premiere’s software. The method of adding these effects were easy to replicate by dragging and dropping them onto the footage in the sequence timeline. Some effects were then altered to change to outcome of the visual look. For example, this can be visually seen with the difference between the warping method and the warping and tilting method. The warping and tilting method use both effects to change its visual output compared to the warping method which only contained this feature itself. In total, the methods explored included black and white, zooming, warping (new method), tilting (new method), warping and tilting (new method), rotating (new method), and mirroring of this footage. Some of these methods changed the outcome of the footage with very noticeable differentiations when compared to the original, but none of these methods worked to bypass detection. All of them still resulted in the same copyright claim when uploaded to YouTube (Martin, & Koskinen, 2012). Presumably, this could be because of the originality of this footage in the Content ID system makes it easier for Content ID to identify it. Content that is similar in nature could confuse Content ID if different copyright claimants owned this material. For example, two songs that sound the same could have an impact of the ability to identify the creditable owner.











|   |   |  |                 |                           |
|---|---|--|-----------------|---------------------------|
|  | Peter Pan Adversarial Attack - Rotate Method (...)<br><a href="#">Add description</a> |  Public | Copyright claim | Jun 25, 2020<br>Published |
|  | Peter Pan Adversarial Attack - Black & White ...<br><a href="#">Add description</a>   |  Public | Copyright claim | Jun 25, 2020<br>Published |
|  | Peter Pan Adversarial Attack - Warp/tilt metho...<br><a href="#">Add description</a>  |  Public | Copyright claim | Jun 25, 2020<br>Published |
|  | Peter Pan Adversarial Attack - Warp method (...)<br><a href="#">Add description</a>   |  Public | Copyright claim | Jun 25, 2020<br>Published |
|  | Peter Pan Adversarial Attack - Zooming metho...<br><a href="#">Add description</a>    |  Public | Copyright claim | Jun 25, 2020<br>Published |

Figure 15: A screenshot showing the outcome of the unsuccessful adversarial attacks on Content ID.

Following the success of the Terminator’s method to bypass Content ID, a similar method was explored by adding pauses for roughly 5 seconds in-between every 10 seconds of footage. This method worked successfully, and while it is slightly different from that of the Terminator’s, it holds the same theory that Content ID isn’t given enough time to calculate and match digital fingerprints.



Peter Pan Adversarial Attack - Pause method (...)  
Add description

Public

None

Jun 25, 2020  
Published

Figure 16: A screenshot showing that Content ID was bypassed with a pause method.

To see the exact visual impacts of these methods including the original version, these videos can be viewed and compared in the following YouTube playlist with the link below:

[https://www.youtube.com/watch?v=KaaxXlnB9M0&list=PLkYU2lXMvSefxbVym-91\\_jHSZubn2qbm](https://www.youtube.com/watch?v=KaaxXlnB9M0&list=PLkYU2lXMvSefxbVym-91_jHSZubn2qbm)

## CHAPTER SIX: RESEARCH FINDINGS & LIMITATIONS

### RESEARCH FINDINGS

The process of creating the UGC documentary presented questions of its own with regards to whether or not downloading YouTube videos is legal, and what ethical boundaries are potentially crossed. YouTube states that it is against their Terms of Service, but historically they do not penalize users for doing so. It can also be viewed as unethical because “by downloading videos and sharing it with friends offline, you deny the creator clicks, and by extension, reduce their income” (Price, 2019). However, in this instance, this is not the case as the video clips were downloaded to be repurposed under New Zealand’s fair dealing law, with full accreditation given in the description of the YouTube video when uploaded (YouTube, 2021; Helen, 2020; Otago, 2020). Remixing was utilized through the medium of Adobe Premiere Pro which offers the resources and abilities to alter, literature and transform content.

Research and associated design output findings prove that fair dealing is a complex topic because it contains creative elements which are made by the creator itself, which further complicates decision making systems on whether or not it is fair before or after it comes into contact with automated copyright detection systems and copyright jurisdiction. Within this research portfolio, this was proven through the method of remixing, research through design and adversarial attacks, however it remains very hard for an individual creator to understand if they are within copyright law because of automated copyright systems and the fact that there are no clear (nation-specific) fair dealing guidelines. It is up to the creators to decide whether or not to combat the copyright claims made against them, and if they choose not to then it is in favour of the copyright claimant (if claims are made). This is a judgement that creators themselves have to make with the consequence that come presented with systems like Content ID (Graves, & Lee, 2017).

Research through Design proved at least part of the issues discussed in the literature and precedents review to hold true (Cyborcat, 2016; Ferguson, 2015; CMSI, 2021; Solomon, 2015; Alexander, 2019). More detail was uncovered with the invalid Content ID claim by Pancho Trackman (Basey, 2020; Trackman, 2008). The importance of understanding copyright became clear in this discovery and this illustrated the importance of Research through Design. By actually creating the UGC documentary, discoveries were made that otherwise would have gone unnoticed, and also assisted in affirming how Content ID works in practice. Without knowledge of permission access for the use of this content, it could have become even more difficult for this claim to be resolved. The successful dispute allowed for the discovery that all future uploads of this material weren’t flagged as infringing. This is an advantage of winning a dispute as future uses of this content won’t have to go through this process again. Another approach could have been taken

to dispute this claim under the fair use dispute option given by YouTube because this footage also conforms to fair dealing.

For the other Content ID claims, adversarial attacks were made to work out how the system can be bypassed. By doing so, this worked out the legitimacy of Cyborcat's proposed solutions of bypassing Content ID. The results concluded with only one of Cyborcat's methods being successful and that was by keeping copyrighted content under 10 seconds long. This may mean Content ID's system has improved overtime, however the results still showed that Content ID can be bypassed.

Another interesting finding showed that the music mix 'MATRIX (Concentration / Programming music)' presented no Content ID claims. This is likely because the overlaying narrative voiceover and the volume of the music was not efficient or loud enough for Content ID to identify it. This is an area which presents opportunity for further study. It is also important to note that although this music mix contains copyrighted content, it is eligible for the use of fair dealing because it is important to the larger purpose of the UGC documentary by subordinate it (CMSI, 2021).

### LIMITATIONS

Due to time limitations, the exploration of The Original Ace's method by getting a song through Content ID could not be executed as the Discovery of this method did not leave sufficient time for testing. Clearance of a song could take up to a month and potentially longer for it to enter Content ID (Amuse, 2020).

Furthermore, to successfully execute this method, it would result in ad revenue being received which could have an impact on the market value of the used copyrighted content and potentially prevent fair dealing protection.

## CHAPTER SEVEN: DISCUSSION

New Zealand's Copyright Act calls for serious reform and it has been over 10 years since major changes were made. It is clear, some provisions in the current law are too problematic and unable to function with the current climate of technology. In 2017, New Zealand Screen Association managing director Matthew Cheetham stated that

"in New Zealand piracy is almost an accepted thing, because no one's really doing anything about it, because no one actually can do anything about it." He further explained that "As new technologies have evolved; the law has struggled to keep pace with those new technologies and to make sure that the law is fit for purpose in the digital age."

(Hatton, 2017)

While being used to detect copyright, machine learning is also being used to generate works in music, videos, journalism, and gaming. These works in theory could be believed to be free of copyright as they do not need human input for their creations (Guadamuz 2017). This suggests a balance needs to be found that works for people exercising creative skills, people pushing technology, and the rest of society as well. Clarity of copyright law needs to be promoted and educated so it can be used to its utmost potential without confusion.

Former New Zealand Consumer Affairs Minister Jacqui Dean (2017) stated that "copyright, especially in the digital era, is highly complex and has warned that the Government will not be able to resolve all issues to everybody's satisfaction". Regardless of this, the internet will continue to shape the way humans think and operate which cannot be stopped but should be embraced. UGC will continue to be uploaded to the internet regardless of regulations through loopholes while streaming services are becoming the norm for media access. The future is built upon the past and nothing is original but a remix. Everything mankind creates takes inspiration from something that has come before. Originality doesn't exist, people simply rework what already exists in their own way.

Informed by background research concerning New Zealand's Copyright Act and YouTube's Content ID system, this research portfolio aimed to shed light on earlier and current copyright issues related to YouTubers. Although copyright is different in every country and YouTube has universal terms and conditions, laws must be obeyed within the country of residence, and as such in this occasion focused on

New Zealand. Background information of New Zealand's Copyright Act 1994 was necessary for building the foundation and direction for how to fair deal with copyrighted content as well as the operations of Content ID. Without this knowledge, the applied design criteria would have been insufficient and could have resulted in the misuse of copyrighted content, furthermore as background research suggests creativity can be suppressed through automated copyright detection systems such as Content ID.

The examination of existing experiments with Content ID provided an avenue to explore and compare this information with system to find differentiation and/or new discoveries. A range of Cyborcat's methods that were named in the precedents review were unsuccessful for bypassing Content ID. Perhaps this is because Content ID has further developed since 2016 when Cyborcat's video was uploaded to YouTube. However, different techniques may have different outcomes for different copyrighted content. The possibility Content ID manages to detect certain content easier than others seems to be another contributing factor to how it works in practice. While copyright was bypassed in this case, it cannot be concluded that these two methods are reliable. Also, Content ID can detect copyright at any given time. Thus meaning, while copyright was bypassed, for now, it may still be detected in the future.

Adversarial attacks on Content ID are a suitable method to gain technical understanding of how the system works. This technical understanding can be useful for YouTubers who use copyrighted content under the fair dealing provision and wish to avoid the dispute process of copyright claims, as for most content creators this potentially becomes a timely, resource heavy and complicated process.

It was not possible to demonstrate all possible adversarial attacks against Content ID, and this was not the goal. However, further studies could explore the impact of the loudness of audio, unusual colour manipulation, and render quality of copyrighted content tested against Content ID. There are likely many other video and audio editing techniques unexplored as well. Going from the research findings, it may be assumed that the more a copyrighted content is altered, the more likely it can bypass Content ID. Thus, because the ability for its system to match digital fingerprints becomes harder and the probability of identifying a match becomes lower. For this reason, I recommend further studies to head in this direction as background knowledge concerning the complex nature of New Zealand's copyright law is now established, and bypassing is confirmed possible.

The Original Ace's method of joining Content ID through a music distributor is also another direction for further study.





## CHAPTER EIGHT: CONCLUSION

*WHEN COPYRIGHT IS WRONG...* explores the complex nature of fair dealing under New Zealand's Copyright Act 1994, the process of remixing, and its relationship with Content ID. After the examination of prior literature and precedents, this research identified criteria for creating the final design outputs of this research portfolio, based around a UGC documentary. To create these outputs, criteria were utilized using fair dealing as a guideline and remixing as methodology. The purpose of this output was to apply fair dealing, through criticism and review of New Zealand's Copyright Act. However, it was found through literature, that the overall successful application of fair dealing can only be determined by a judge. Therefore, the conclusion of whether this UGC documentary applies to fair dealing is inconclusive.

Included in the final output was the exploration of Content ID to answer the second part of the research question. Draft versions of *WHEN COPYRIGHT IS WRONG...* (UGC documentary) were uploaded to YouTube to find Content ID claims made against the final output. Three Content ID claims were found and different methods were explored to bypassing Content ID.

One method explored was the traditional approach of disputing an invalid copyright claim. This successful dispute puts into context the responsibility and importance of understanding copyright for YouTubers. Without knowledge of copyright, copyright claims cannot be disputed resulting in benefits for the copyright claimants. In some cases, they may be invalid claims.

The other two successful methods involved adversarial attacks on Content ID by working out how to bypass its detection algorithms. The first involved cutting out every 10 seconds and combining the cut-outs of the footage. The second included adding pauses to break down the footage. This was to stop Content ID from having enough time to work out a probability of matching the content as infringing. These pauses were added after every 10 seconds of copyrighted content shown. These two methods were executed iteratively by using Adobe Premiere Pro editing software before being uploaded and tested on YouTube. During this process, it was discovered that several methods did not work. This does not mean these methods should be ruled out but instead be re-evaluated with different copyrighted content to form conclusive evidence.

There are still a wide range of opportunities for YouTubers to test the limits and operations of Content ID, which is where further research is required. This could take form in the endless opportunities to manipulate audio and visual copyrighted content through editing software. Within the context of this

research portfolio, only the surface has been scratched but this foundation can offer sufficient background for additional research in this field.

By specially focusing on New Zealand's Copyright Act 1994 and YouTube's platform, the hope is that this research portfolio has provided insight into helping New Zealand YouTubers beginning to tackle the challenges presented by the technology and copyright law under discussion.

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## APPENDIX

### Acknowledgement for *WHEN COPYRIGHT IS WRONG...*

You can copy parts of a work for the purpose of criticism or review, provided there is “sufficient acknowledgement,” i.e. acknowledging the author/source and date of the work. For this reason the materials used in *WHEN COPYRIGHT IS WRONG...* have been listed below:

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