

2021

## **A Modern Copyright Framework for the Internet of Things (IoT): Intellectual Property Scholars' Joint Submission to the Canadian Government Consultation**

Pascale Chapdelaine  
*University of Windsor, Faculty of Law*

Anthony D. Rosborough  
*European University Institute, [anthony.rosborough@dal.ca](mailto:anthony.rosborough@dal.ca)*

Aaron Perzanowski  
*University of Michigan Law School*

Bitá Amani  
*Queen's University, Faculty of Law*

Sara Bannerman  
*Canada Research Chair in Communication Policy and Governance, Department of Communication  
Studies & Multimedia, McMaster University*

~~See next page for additional authors~~  
Follow this and additional works at: <https://digitalcommons.schulichlaw.dal.ca/reports>



Part of the [Intellectual Property Law Commons](#), and the [Science and Technology Law Commons](#)

---

### **Recommended Citation**

Pascale Chapdelaine et al, Submission on the Internet of Things from IP Scholars to the Minister of Innovation, Science, & Industry & the Minister of Canadian Heritage (26 September 2021) for the Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things, [unpublished, archived at Schulich Law Scholars, Dalhousie University].

This Report is brought to you for free and open access by the Faculty Scholarship at Schulich Law Scholars. It has been accepted for inclusion in Reports & Public Policy Documents by an authorized administrator of Schulich Law Scholars. For more information, please contact [hannah.rosborough@dal.ca](mailto:hannah.rosborough@dal.ca).

---

## Authors

Pascale Chapdelaine, Anthony D. Rosborough, Aaron Perzanowski, Bitá Amani, Sara Bannerman, Carys Craig, Lucie Guibault, Cameron J. Hutchison, Ariel Katz, Alexandra Mogyoros, Graham Reynolds, Teresa Scassa, and Myra Tawfik

September 26, 2021

**Sent by e-mail**

Minister of Innovation, Science and Industry  
Minister of Canadian Heritage  
[copyright-consultation-droitdauteur@canada.ca](mailto:copyright-consultation-droitdauteur@canada.ca)

**Consultation on a Modern Copyright Framework  
for Artificial Intelligence and the Internet of Things**

**Submission by IP Scholars  
Copyright and the Internet of Things**

Dear Ministers,  
Chers Ministres,

In response to the consultation process on the modernization of the copyright framework launched in the summer 2021, we hereby present our analysis and recommendations concerning some of the issues involved on the interaction between copyright an artificial intelligence (AI), and copyright ant the Internet of Things (IoT). Although there are similar structural issues involved in AI and the IoT, for practical purposes, we are submitting two concurrent separate briefs addressing the interaction between copyright and AI on the one hand, and the interaction between copyright and IoT on the other hand.

This submission concerns the interaction between copyright and the IoT. The analysis and recommendations (section 4 of this brief) reflect the opinion of the intellectual property scholars (IP Scholars) signatories to this brief and are informed by years of study, teaching and practice in Canadian and international intellectual property law. Should there be hearings set up pursuant to the written submission phase, the signatories would welcome the opportunity to appear separately before the consultation committee to explain and expand upon particular aspects of this brief and/or other copyright reform proposals not addressed herein.

In what follows, we emphasize:

- The importance of approaching the questions raised in the consultation with a firm commitment to maintaining the appropriate balance of rights and interests in Canada's copyright system, within the broader framework of the Constitution;

- That the modernization of the *Copyright Act* (the “Act”)<sup>1</sup> requires a careful examination of the copyright framework within larger observable trends of dominant positions in the marketplace and anti-competitive practices, of the extraction of big (personal) data, and of market and legal infrastructures’ heavy reliance on non-negotiated standard terms (as evidence of *consent*, and to legitimize various commercial practices).

Our comments and recommendations will occasionally make reference to the consultation paper “A Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things” <https://www.ic.gc.ca/eic/site/693.nsf/eng/00316.html> [the Consultation Paper].

## **1. Introduction: IoT and copyright within the broader context of the Constitution, property, competition, data protection and privacy**

Throughout this submission, “Technical Measures” refers to devices deployed for the purpose of blocking the access to, or certain uses of works protected by copyright. “Technological Protection Measures” or “TPMs” refers to the legal regime implemented in Canada (and other jurisdictions) that prohibits various acts in relation to Technical Measures.

The impact of copyright law on the IoT, and more specifically on the right of repair and issues of interoperability revolves to a large extent around the current scope of TPMs in the *Act*. Before discussing the nature of TPMs within the copyright framework, including Canada’s international obligations (section 2), it is *à propos* to briefly situate copyright and the IoT within the broader context of the promotion of innovation, the Constitution, property, competition law and privacy law.

References made in the Consultation Paper to maintaining the right level of incentives to invest and innovate are focused, in the context of the IoT, on right holders and their competitors, while being silent about nurturing innovation and freedom among the users of such innovations.<sup>2</sup> The perils of a selective vision of innovation that justifies strong copyright and other IP protection without due consideration for the innovation of their users have been widely commented upon by copyright scholars.<sup>3</sup> In the IoT/copyright interface, such narrow view of innovation quickly leads to ignoring the basic freedoms that come with, and are enabled by the things that individuals or

---

<sup>1</sup> R.S.C., 1985, c. C-42, ss 41-41.21.

<sup>2</sup> Consultation Paper, p. 24 (“As digitisation continues, the Government wants to ensure that the copyright framework is able to maintain appropriate incentives for investment and innovation, while also promoting competition.”).

<sup>3</sup> See e.g., L. Ray Patterson, & Stanley W. Lindberg, *The Nature of Copyright: A Law of Users Rights* (University of Georgia Press: Athens, Georgia, 1991); Jessica Litman, *Digital Copyright* (Amherst: Prometheus Books 2001); Julie E. Cohen, “The place of the User in Copyright Law” (2005) 74 *Fordham Law Review* 347; Niva Elkin-Koren, “Making Room for Consumers Under the DMCA” (2007) 22 *Berkley Technology Law Journal*, 1119; Carys J. Craig, *Copyright, Communication and Culture, Towards a Relational Theory of Copyright Law* (Cheltenham, UK: Edward Elgar, 2011); Pascale Chapdelaine, *Copyright User Rights, Contracts and the Erosion of Property* (Oxford University Press, 2017).

businesses use and own and which are and should remain out of copyright subject matter and scope. Innovation deserves protection only insofar as such protection does not unduly constrain further (related) innovations, or the ingenuity and freedom of individual users to tinker, to repair, to maintain, to modify, and to build upon the things they own.

Unlike copyright and IP more generally, the IoT largely deals with tangible objects (personal or real property; moveable or immovable in Québec civil law) that are and should remain predominantly outside the scope of copyright law. Around the time of the introduction of TPMs in 1996 at the international level,<sup>4</sup> the constitutionality of TPMs as a legal device was put in question, as potentially unduly encroaching upon the provincial jurisdiction of property and civil rights.<sup>5</sup> And while the constitutionality of TPMs has never been tested before a court of law, the Ministers should revisit the scope of TPMs, in light of the resulting deeper incursions of copyright exclusive rights into the realm of tangible property in ways that were unimaginable when TPMs were introduced at the international level by WIPO in 1996, and later on in the *Act*. The Ministers should do so in keeping with the Canadian constitutional framework of federal-provincial division of powers.

The Consultation Paper aptly points to the interaction between IoT, TPMs, interoperability and the competition issues that TPMs may create. We discuss the interface between TPMs and competition further below in this submission.<sup>6</sup> The Ministers should also examine the recalibration of TPMs in light of the broader trend which TPMs directly or indirectly enable: increased surveillance and control by firms through the extraction of business or individual users' personal data.<sup>7</sup> The compounded effects of Technical Measures (reinforced by strong TPM copyright regimes such as in the U.S. or Canada) and the extraction of personal data conferring increased control to suppliers at the expense of the privacy and freedom from interference of their users, are well documented in Perzanowski and Schultz *The End of Ownership: Personal Property in the Digital Economy*.<sup>8</sup> And while privacy and personal data protection are not within the purview of this consultation, there is a parallel to be drawn between the end goals pursued on the one hand, through the strong promotion of TPMs and on the other, the exponential growth of the extraction of (personal) data in the IoT and e-commerce more generally (which contrary to Technical Measures, has been left largely unregulated in Canada and elsewhere). Both trends -strong TPMs, and largely unregulated extraction of (personal) data- have facilitated the acceleration of market dominance, lack of transparency, and various restraints on technology users and their freedoms.

---

<sup>4</sup> See discussion below in section 2. *Canada's International Obligations*.

<sup>5</sup> See e.g. Jeremy de Beer "Constitutional Jurisdiction Over Paracopyright Laws" in Michael Geist, ed., *In the Public Interest: The Future of Canadian Copyright Law* (Toronto: Irwin Law, 2005); see also Chapdelaine, *supra* note 3 at 143-144; Jeremy de Beer, Jules Bélanger, and Mohit Sethi, "Consumer Contracts, Copyright Licensing, and Control over Data on the Internet of Things" (2020) 18 CJLT 162-207 <https://jeremydebeer.ca/contracts-copyright-licensing-and-control-over-data-on-the-internet-of-things/> (on key considerations within the traditional provincial scope of governance over property and civil rights at its intersections with IOTs more generally).

<sup>6</sup> See section 2 below *The Scope and Effect of TPMs - (c)Economic and Ecological Consequences*.

<sup>7</sup> Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (New York: Public Affairs, 2019) at 63-97, 199-232.

<sup>8</sup> Aaron Perzanowski and Jason Schultz, *The End of Ownership: Personal Property in the Digital Economy* (Cambridge, Mass: The MIT Press, 2018).

## 2. TPMs within the copyright legal framework

While there may be debate about the constitutionality of TPMs, there is little doubt that the TPM regime that Canada has adopted, has not only significantly increased the protection of right holders in copyright digital works; it also extended protection and control beyond the copyright works that TPMs were initially allegedly meant to protect. In the IoT, TPMs' reach goes far beyond the medium within which the copyright work is made accessible (CDs, DVDs, streaming services): it extends to cars, smart sensors, smart homes, tractors, medical devices, health tracking devices, all of which have little to do with the *original literary, dramatic, musical and artistic works* that the *Act* is meant to protect.

In this part, we address the scope and effect of TPMs, how a sound approach to TPMs needs to be in keeping with balancing competing interests including user rights, and Canada's international obligations regarding TPMs.

### - *The scope and effect of TPMs*

TPMs were introduced in Canada as part of the *Act*'s last major reform in 2012. This was part and parcel of Canada's efforts to comply to the *WIPO Copyright Treaty* (1996) and *WIPO Phonogram and Performance Treaty* (1996).<sup>9</sup> TPMs were among the most contentious issues of that legislative reform, as well as of the several failed reform attempts prior to that.<sup>10</sup> Canada chose to adopt a broad conceptualisation of TPMs as "access controls", borrowed largely from the United States' *Digital Millennium Copyright Act*.<sup>11</sup> This expanded the purpose and objectives of TPMs envisioned by the WIPO treaties. Rather than be used principally as copyright tools 'in connection with the exercise of rights' and which would restrict acts 'in respect of works', the access control model birthed the 'access right'. In adopting this approach, Canada introduced a distinct set of novel exclusive rights, and a separate regime of exceptions which operate in parallel to the already existing framework under copyright.<sup>12</sup>

The undesirable ramifications of the 'access right' created by TPMs are numerous and have been thoroughly discussed by copyright experts.<sup>13</sup> As we contend in this submission, these ramifications are particularly poignant in relation to IoT devices. By restricting *access* to copyright works, TPMs transform copyright protection into controls over the use and modification of tangible property. This control is exacerbated by the proliferation of embedded computer systems in myriad devices and components, all of which integrate some form of software as a protected copyright work. Where such embedded systems control the physical components of devices, TPMs become a

---

<sup>9</sup> See discussion below in section 2 *Canada's international obligations*.

<sup>10</sup> See Michael Geist, "The Case for Flexibility in Implementing the WIPO Internet Treaties", in Michael Geist, ed., *From Radical Extremism to Balanced Copyright: Canadian Copyright and the Digital Agenda* (Irwin Law: Toronto, 2010); Carys J Craig, "Locking Out Lawful Users: Fair Dealing and Anti-Circumvention in Bill C-32" in Michael Geist, ed., *From Radical Extremism to Balanced Copyright: Canadian Copyright and the Digital Agenda* (Irwin Law: Toronto, 2010) 177.

<sup>11</sup> *Digital Millennium Copyright Act*, 17 U.S.C. § 1002(c) (Supp. V 1993) [DMCA].

<sup>12</sup> See Chapdelaine, *supra* note 3 at 129-149.

<sup>13</sup> See e.g. Zohar Efroni, *Access-Right: The Future of Digital Copyright Law* (OUP, 2010) at 289; Cameron Hutchison, *Digital Copyright Law* (Irwin Law: Toronto, 2016).

functional bottleneck for their operation and use. This sets unprecedented restraints on the use of personal property under the sanction of copyright law.

It is important to stress that this copyright-enabled control over the physical functioning of devices is not limited to a few niche products. Rather, it has granted designers and manufacturers of myriad products a legal basis upon which to fashion a new design paradigm. This paradigm is marked principally by user limitation, control, and permissions. Formerly squarely within the domain of computer scientists, so-called “compliance and robustness rules”<sup>14</sup> are now the common domain of product designers in the IoT space, ranging from smart hairbrushes to complex agricultural equipment. Below we canvass two practical manifestations of these techniques and their consequences; namely, the ability to repair tangible property, and the implications for follow-on innovation.

#### (a) Repair

Product manufacturers have used TPMs to inhibit or prevent repair and servicing in several ways. One approach, demonstrated by Apple as part of its iOS 9.2.1 mobile operating system, can detect whether an authorised service person has repaired the device (including iPhones and iPads). Known as “Error 53”, this software Technical Measure will disable the device entirely following a repair by an unauthorised technician. This applies particularly to repairs involving interference or replacement of the device’s screen or home button – repairs which are incidentally very commonly performed by independent technicians. The disabling of these devices (or “bricking” as it is informally known) led to the Australian Competition and Consumer Commission launching suit against Apple in 2017 on account of its infringement of Australian consumer law. The suit resulted in fines to Apple in the amount of AU \$9 million for its use of TPMs as an anti-repair mechanism.<sup>15</sup>

Another way that manufacturers have used Technical Measures and TPMs to inhibit repair is in the access and disclosure of diagnostic information. While a cracked smartphone screen needs little in the way of diagnosis, many complex computerised devices require servicing where the solution is not immediately apparent. This is the case for the Taylor C602 ice cream makers, which are used in McDonald’s restaurants around the world to produce soft-serve ice cream and milkshakes.<sup>16</sup> These are very expensive, computerised machines with intricate parts that must operate at certain temperatures, or the machine will fail. The machine is programmed to periodically enter a self-cleaning process which superheats the machine to kill bacteria. Incidentally, many McDonald’s franchisees have found that the machines fail during this process and require maintenance. The machines are equipped with Technical Measures which ensure that *only* Taylor’s certified technicians can perform repairs. The system does not allow a user to perform diagnostics or obtain information regarding why the machine has failed or what must be done to make it operational again. Accessing diagnostic information requires the user to input a

---

<sup>14</sup> Kenneth A Bamberger, “Technologies of Compliance: Risk and Regulation in a Digital Age” (2010) 88:4 *Texas Law Rev* 669 at 682.

<sup>15</sup> Jennifer Bisset, “Apple fined \$6.6M in Australia after Error 53 controversy” (18 June 2018) online: *cnet* <<https://www.cnet.com/tech/mobile/apple-bricked-our-phones-with-error-53-now-it-owes-6-8-million-in-australia/>>.

<sup>16</sup> Andy Greenberg, “They Hacked McDonald’s Ice Cream Machines – and Started a Cold War” (20 April 2021) *Wired* (online: <https://www.wired.com/story/they-hacked-mcdonalds-ice-cream-makers-started-cold-war/>).

code, which is not provided to franchisees and is not found anywhere in the machine's maintenance manual.<sup>17</sup>

Frustrated franchisees found relief from Kytch, a third-party peripheral device that can connect to Taylor machines to provide diagnostic information and to provide a user-friendly interface. Effectively acting as tool to circumvent Taylor's Technical Measures, the makers of Kytch received cease-and-desist letters from Taylor, and franchisees later received letters advising them that the use of Kytch voided warranties and posed risks to employees and customers. Opting for the safer approach, Kytch acquiesced to Taylor's demands in 2020 only to discover that Taylor had replicated the Kytch device and begun distributing it to franchisees.

The Taylor/Kytch example shows a use of Technical Measures and TPMs, in conjunction with exclusive service agreements and warranty terms, to deny access to the information necessary to complete repairs. While Apple's Error 53 code is demonstrative of absolute locks on independent repair, Taylor's approach with the C602 machine demonstrates a use of TPMs as part of a suite of statutory and contractual tools to control the use and management of devices long after the point of sale.

The ability to remotely disable devices and deny access to diagnostic information are merely two of many TPM-enabled practices utilised by manufacturers to inhibit or deny repair activities. As IoT devices and embedded systems become increasingly reliant on co-verification techniques<sup>18</sup> and tethered connectivity to OEMs,<sup>19</sup> we anticipate that these techniques will increase and be even more latent in modern product design.

#### (b) Follow-on Innovation

Modern agricultural equipment is produced by a small group of large manufacturers with global reach, including the likes of John Deere, CNH Industrial and AGCO. To suit a variety of crop-specific needs and soil types, manufacturers of shortline or "add-on" manufacturers have sprouted up. These manufacturers principally develop peripheral devices that plug into large OEM machinery to perform specific tasks or functions. Whether attached to the front (known as a "header"), or towed behind, shortline agricultural machinery has proven itself to be an innovative industry in Canada – building on top of and adding value to the dominant platforms. Canada's shortline industry accounts for over \$4 billion in revenues generated by over 500 companies.<sup>20</sup> These companies show promise as innovation leaders for many small towns and rural areas.<sup>21</sup>

---

<sup>17</sup> A copy of the Taylor C602's maintenance manual can be found here:

<https://www.manualslib.com/manual/1605591/Taylor-C602.html?page=3#manual>.

<sup>18</sup> Anthony Rosborough, "Unscrewing the Future: The Right to Repair and the Circumvention of Software TPMs in the EU" (2020) 11:3 J. Intellectual Property, Information Technology and E-Commerce L. 26 at 9.

<sup>19</sup> Chris Jay Hoodnagle, Aniket Kesari & Aaron Perzanowski, "The Tethered Economy" (2019) 87 George Washington L. Rev. 783 at 798.

<sup>20</sup> Anthony Rosborough & Carlo Dade, "The Serious Hidden Problem Facing Canada's Agricultural Innovators" (25 February 2021), online: Policy Options <[policyoptions.irpp.org/magazines/february-2021/the-serious-hidden-problem-facing-canadas-agricultural-innovators/](https://policyoptions.irpp.org/magazines/february-2021/the-serious-hidden-problem-facing-canadas-agricultural-innovators/)> [perma.cc/PM8Z-6QBN].

<sup>21</sup> Western Economic Diversification Canada, "Interoperability: An Overview with a Western Perspective" (5 February 2021) at 4, online: Government of Canada <[open.canada.blob.core.windows.net/opengovprod/resources/36976fc5-a393-409b-9416-](https://open.canada.ca/blob.core.windows.net/opengovprod/resources/36976fc5-a393-409b-9416-)



Until relatively recently, shortline companies in Canada have been able to produce interoperable equipment with OEM machinery on the basis of the ISOBUS standard, a communications protocol and interface that allows for the exchange and use of information between the central computer and add-on device. They have been able to accomplish this through internal research and development, including reverse engineering activities. With the advent of the John Deere X9 combine, however, this interoperability is no longer possible. Relying on a suite of Technical Measures, TPMs, and a bespoke interface, shortline innovators in Canada are being denied participation in follow-on innovation and secondary markets.

Though the *Act* contains a clear exception which permits circumvention of TPMs for the purposes of “interoperability”, it conceptualises such interoperability as purely a relationship between two computer programs. One consequence of this approach is that it fails to accommodate a broader class of technologies (such as embedded systems within physical devices) and by extension, significantly narrows the type of innovative activity that is permitted by the exception.<sup>22</sup> By extending the effect of TPMs into the realm of physical components and devices, there is a clear need to broaden the interoperability exception to accommodate IoT devices and embedded systems, including agricultural equipment. This is because today’s follow-on innovation requires interoperability between a broader class of technologies than merely “computer programs”. This is particularly problematic in the case of embedded systems and IoT technologies where the distinction between the computer program and other components of the device is not entirely clear. In the absence of reforms to its interoperability framework, Canada risks further cementing an approach to product design which restricts repair and follow-on innovation in the embedded systems and IoT space.

### (c) Economic and Ecological Consequences

The negative effects of TPMs on repair and interoperability within IoT devices and embedded systems are numerous. From a market perspective, the use of TPMs in this way effectively affords OEMs in dominant market positions a convenient tool to deny others access to an essential facility for market participation. As Canada’s shortline industry reveals, this applies equally to the principal market occupied by OEMs as well as secondary ones. The type of activity or conduct restricted by TPMs is often essential for independent repair and follow-on innovation. By using TPMs to reserve secondary markets for themselves, OEMs are engaging in palpable anti-competitive activities enabled by copyright law. Curtailing these effects are particularly important in a country such as Canada, where many large OEMs are located elsewhere, and domestic industries are to a large extent reliant on secondary markets and follow-on innovation.

Importantly, Canadian competition law and policy is generally deferential to the exercise of statutory intellectual property rights. For this reason, the use of TPMs as copyright overreach -

---

47707fb6a34b/interoperability-an-overview-with-a-western-perspective-final.pdf?sr=b&sp=r&sig=dcOkNv7fX0cmEs1u7JDpVBOhaAnEbEyDNkw3YXFooD4%3D&sv.

<sup>22</sup> Anthony D Rosborough, “If A Machine Could Talk, We Would Not Understand It: Canadian Innovation and the *Copyright Act*’s TPM Interoperability Framework” (2021) 19 J L & Tech 141.

beyond what the scope of what copyright justifies - deserves more scrutiny. Our position is that the failure to do so may undermine Canada's competitive landscape.<sup>23</sup> As such, the Ministers should evaluate the role of TPMs within broader issues of market fairness and dominance. This may add crucial insight into the activities of digital platforms and other high-tech players, and how our blind spot regulatory approaches may have contributed or facilitated anti-competitive practices exercised through market dominance.

Beyond the anti-competitive effects of TPMs used to curtail repair and follow-on innovation, there are environmental implications as well. We gladly take note of these concerns in the Consultation Paper. TPMs that preclude independent repair and follow-on innovation can reduce product lifespan and increase maintenance and repair costs. The result is often a market incentive to "throw away and buy new". In this way, TPMs can act as not only impediments to market fairness, but also to the establishment of a circular economy.

Both the manufacture and disposal of IoT devices can take a massive toll on the environment. From the extraction of raw materials from ecologically sensitive areas, manufacturing techniques, shipping and packaging, there are enormous environmental costs for failing to extend the lifespan and repurpose devices. Perhaps even more troubling are the end-of-life impacts and harms to human health through the recovery of rare earth elements in electronics waste.<sup>24</sup> Given the Intergovernmental Panel on Climate Change (IPCC)'s recent Climate Report signalling a "code red for humanity",<sup>25</sup> Canada should make every effort to prioritise the reduction of unnecessary electronics waste and consumption. We believe that an essential step toward this goal is to enable independent repair and follow-on innovation through expanded exceptions to Canada's TPM framework.

Canada would not be alone in enabling the right to repair through an environmental lens. In November of 2020, the European Union adopted a suite of measures under its Directive 2009/125/EC (the "EcoDesign Directive") to promote the repairability of various consumer products. While these measures do not address TPMs *per se*, they do require manufacturers of certain products to provide access to repair information, replacement parts, and to design products that can be repaired using commonly available tools.<sup>26</sup> Given the global reach of many consumer products and IoT devices, we believe that Canada should take a similar approach and make revising its TPM framework a key part of its strategy.

---

<sup>23</sup> *Competition Act*, R.S.C., 1985, c. C-34, s.32 (use of exclusive rights to restrain trade provision has been very rarely applied or invoked by the Competition Bureau); s. 79(5) (exercise of right under *Copyright Act* is not an anti-competitive act under the general provisions applying to abuse of a dominant position); see also Government of Canada, *Intellectual Property enforcement guidelines*, (March 13, 2019), Part IV, online: <https://www.ic.gc.ca/eic/site/cb-bc.nsf/eng/04421.html>.

<sup>24</sup> Teklit Gebregiorgis Ambaye et al., "Emerging technologies for the recovery of rare earth elements (REEs) from the end-of-life electronic wastes; a review on progress, challenges, and perspectives" (2020) 27:29 *Environmental Science and Pollution Research* 36052-36074.

<sup>25</sup> Intergovernmental Panel on Climate Change (IPCC), "Climate Change 2021 The Physical Science Basis" (August 7, 2021) online: IPCC, <https://www.ipcc.ch/assessment-report/ar6/>.

<sup>26</sup> European Commission, "The new ecodesign measures explained" (1 October 2019) online: [https://ec.europa.eu/commission/presscorner/detail/en/QANDA\\_19\\_5889](https://ec.europa.eu/commission/presscorner/detail/en/QANDA_19_5889).

The necessity of TPM reforms are not merely academic or theoretical musings. Manufacturers of myriad products have shown a keen interest in strictly enforcing their TPMs, and Canadian courts have supported that approach. The most notable example is the Federal Court's 2017 decision in *Nintendo v King*.<sup>27</sup> It was the first (and remains the only) case centred around TPMs in Canada. It illustrates the compounding effects of broad statutory language coupled with broad judicial interpretation. The case involved "mod chip" devices sold and installed by the defendant which allowed users to play user-generated games as well as infringing copies of Nintendo's games. By affirming that Nintendo's encryption technology and the design of physical components of their consoles constitute TPMs, it emboldened manufacturers' ability to lock out users and market competitors in ways that extend well beyond preventing copyright infringement. In the end, the Federal Court awarded Nintendo over \$12 million in damages (including punitive damages) on the basis that the defendant was held to have trafficked circumvention devices in contravention of s 41.1(c) of the *Act*.<sup>28</sup>

*Nintendo v King* also shed light upon the inadequacy of Canada's TPM interoperability exception for follow-on innovation. Though not raised by the defendant, the Court inferred an "interoperability defence" based on the defendant's claim that modifications to Nintendo's consoles were for the purposes of allowing users to play user-generated games. In response, Campbell J introduced several factors to establishing the 'defence' of interoperability. One of which is that the *primary purpose* of the circumvention must be for the purposes of interoperability. Another factor is whether there are "legitimate paths" for developers to achieve interoperability without circumventing TPMs.<sup>29</sup>

The result is that Canada is saddled with both statutory language for an interoperability exception which fails to accommodate broader modalities of innovation, and potentially, an additional factor of *necessity*.<sup>30</sup> The effect of this requirement is to significantly narrow the application of the existing interoperability exception to be one that fails to provide essential breathing room to innovators within the IoT and embedded systems space to develop innovative products and solutions.

The above demonstrates that *Nintendo v King* is instructive on many levels. It shows how the *Act's* TPMs confer legal entitlements which under the cloak of IP protection, may facilitate commercial practices with anti-competitive effects, including use of exclusive rights to restrain trade, for exclusive dealing, or tied selling restrictions.<sup>31</sup> Overall, the foregoing decision demonstrates the need for statutory revision. It makes clear that market forces alone will not resolve the negative market and ecological consequences posed by TPMs given the unequivocal language in the *Act* and narrow judicial interpretation. Revisions to TPMs and the related exceptions are essential for the health of Canadian innovation, robust market competition and the environment.

---

<sup>27</sup> *Nintendo v King*, 2017 FC 246.

<sup>28</sup> *Ibid* at 110.

<sup>29</sup> *Ibid* at 123.

<sup>30</sup> *Ibid*.

<sup>31</sup> *Competition Act*, R.S.C., 1985, c. C-34, ss 32, 77(1).

- *TPMs and the balancing of competing interests within the copyright law framework*

Earlier prognosis about the implementation of TPMs being substantially at odds with the scope of copyright, and the Supreme Court jurisprudence affirming that copyright law was not just about securing rights and remedies to copyright holders, but to secure legitimate access and use to copyright works, are even more applicable today.<sup>32</sup> The use of TPMs by manufacturers to control and protect uncopyrightable features of physical devices in no way furthers the objectives of copyright and the delicate balance to preserve between competing interests, and significantly narrows the scope of the property rights and uses of such physical devices.<sup>33</sup> Meanwhile, the Supreme Court has continually reaffirmed the prominence of the interests of users alongside the ones of copyright holders within copyright law, as stated in *Théberge* and in *CCH*.<sup>34</sup> Similarly, the Supreme Court has highlighted the “limited nature” of copyright holder’s rights,<sup>35</sup> and warned against giving “excessive control” to “holders of copyrights and other forms of intellectual property”.<sup>36</sup>

The modernization of copyright efforts initiated by the Ministers should be an opportunity to revisit the important *décalage* that the TPM provisions continue to create, relative to the highest court’s continuous affirmation of copyright law’s role to promote and preserve the interests of users and the public alongside the interests of copyright holders.

-*Canada’s international obligations*

The primary source of Canada’s international obligations to enact TPMs is found in the *WIPO Copyright Treaty* (“WCT”) and the *WIPO Performances and Phonograms Treaty* (“WPPT”).<sup>37</sup> Concluded in 1996, these international agreements require state parties to enact provisions preventing the “circumvention of effective technological measures that are used by authors in connection with the exercise of their rights...and that restrict acts, in respect of their works, which are not authorized by the authors concerned or permitted by law.”<sup>38</sup>

---

<sup>32</sup> See Pascale Chapdelaine, “The Ambiguous Nature of Copyright Users’ Rights”, (2013) 26 I.P.J. 1 at 21-26.

<sup>33</sup> Justice Binnie, for the majority in *Théberge*, *infra* note 34 at paras 9, 28, 31-32, warned against such an approach in interpreting the scope of copyright under the *Act*, noting the dissenting opinion’s interpretation of the *Act* provided “too little scope to the property rights of the purchaser who owns the poster, i.e., the physical object incorporating the copyrighted expression, and excessive rights to the artist who authorized the printing and sale of the poster purchased.”

<sup>34</sup> *Théberge v. Galerie d’Art du Petit Champlain inc.*, 2002 SCC 34; *CCH Canadian Ltd. v. Law Society of Upper Canada*, 2004 SCC 13; for the most recent supreme court decision, see *York University v. Canadian Copyright Licensing Agency (Access Copyright)*, 2021 SCC 32.

<sup>35</sup> *Théberge*, *supra* note 34 at para. 31.

<sup>36</sup> *Ibid* at para. 32; *York University*, *supra* note 34 at para 95 (“The limits to these private [copy]rights, defined by fair dealing and other exceptions — and circumscribed by the boundaries of the public domain — are therefore essential to ensure that the copyright system does not defeat its own ends” (citing Craig, *supra* note 10 at 179)).

<sup>37</sup> *World Intellectual Property Organization Copyright Treaty*, 20 December 1996, 2186 U.N.T.S. 121 (entered into force 6 March 2002), online: <[https://www.wipo.int/edocs/lexdocs/treaties/en/wct/trt\\_wct\\_001en.pdf](https://www.wipo.int/edocs/lexdocs/treaties/en/wct/trt_wct_001en.pdf)>, [WCT]; *World Intellectual Property Organization Performances and Phonograms Treaty*, 20 December 1996, 2186 U.N.T.S. 203, (entered into force 20 May 2002) online <<https://wipolex.wipo.int/en/text/295477>>, [WPPT].

<sup>38</sup> WCT, *supra* note 37, art. 11; WPPT, *supra* note 37, art 18.

These agreements left few (if any) functional limitations on what types of mechanisms or instruments should be covered by TPM regimes. Nevertheless, the WCT and WPPT set some conceptual boundaries on the purposes and use cases for TPMs. With the caveats that Technical Measures would be used ‘in connection with the exercise of rights’, and which restrict unauthorised acts ‘in respect of works’, the WCT/WPPT retained a conceptual link to the exercise and protection for copyright works and unauthorised acts in that context.

When Canada added TPM provisions to the Act in 2012, the United States had already pushed ahead with a more robust and restrictive approach from the WCT and WPPT in the DMCA.<sup>39</sup> The DMCA in many ways divorced itself from the conceptual links to copyright set by the WCT and WPPT.<sup>40</sup> Instead, the TPM regime extends to any Technical Measures which ‘effectively control access’ to works. The result is to grant the manufacturers of *technologies* (as opposed to merely rightsholders) a new *de facto* right to determine user and consumer conduct. It was this “WIPO Plus” approach that Canada ultimately followed in implementing its obligations under the WCT and WPPT.

In addition to the WCT and WPPT, Canada’s international obligations over TPMs are governed by the *Canada-United States-Mexico Agreement* (“CUSMA”).<sup>41</sup> CUSMA’s effect on Canada’s TPMs are threefold. First, it reiterates and formalises Canada’s ‘access control’ approach to TPMs mirrored in the DMCA. Secondly, it requires Canada to enact criminal penalties for wilful circumvention of TPMs where the purpose is commercial advantage or financial gain. Finally, CUSMA requires that Canada confine its exceptions and limitations to Technical Measure protections to a fairly rigid list of purposes or use cases. The one exception to this rigid list is a general “adverse effect” provision found at Article 20.66(1)(h), which enables state parties to:

“...provide additional exceptions or limitations for non-infringing uses of a particular class of works...when an actual or likely adverse impact on those non-infringing uses is demonstrated by substantial evidence in a legislative, regulatory, or administrative proceeding in accordance with the Party’s law.”<sup>42</sup>

The result is that Canada’s international obligations regarding TPMs are now stronger and more comprehensive than they initially were under WCT and WPPT. Through the ratification of CUSMA, Canada has moved far beyond the original minimum requirements for TPMs and rationale found in the WCT and WPPT. Today’s TPM framework effectively creates a *sui generis* right over technological design and use which is bolstered by criminal penalties.

Despite this seemingly inflexible and privileged status afforded to TPMs, CUSMA makes clear that Canada retains the right and ability to enact exceptions and limitations to TPMs when *an actual or likely adverse impact [...] is demonstrated*. We urge the Ministers to consider all flexibilities that CUSMA offers to better curtail the unintended detrimental effects of TPMs in the context of the IoT and beyond.

---

<sup>39</sup> *Supra* note 11.

<sup>40</sup> *Supra* note 37.

<sup>41</sup> Canada-United States-Mexico Agreement, 30 November 2018 (entered into force 1 July 2020) [CUSMA].

<sup>42</sup> *Ibid.*, art. 20.66(1)(h).

### 3. Looking Abroad: The United States TPM framework

As the Consultation Paper is soliciting comments about various possible ways to constrain the effect of TPMs on the right of repair and interoperability, looking at the decades-long history of regulatory exemptions under the anticircumvention provision of the DMCA<sup>43</sup> is instructive.

When Congress passed the DMCA in 1998, it included a number of narrowly tailored statutory defenses. These provisions targeted circumvention undertaken by law enforcement<sup>44</sup> and non-profit libraries,<sup>45</sup> as well as circumvention necessary for encryption research,<sup>46</sup> security testing,<sup>47</sup> some acts of reverse engineering,<sup>48</sup> and the protection of personally identifiable information.<sup>49</sup> With the exception of the broad law enforcement carveout, these defenses are exceedingly narrow, offering precious little comfort to researchers and device owners in practice.

Recognizing the likelihood that other exceptions would prove necessary, Congress provided for a triennial rulemaking, conducted by the Librarian of Congress and the Register of Copyrights, to identify classes of copyrighted works, the non-infringing uses of which are likely to be adversely affected by the prohibition on circumvention.<sup>50</sup> While Congress provided the Librarian and the Register with a list of factors to determine whether an exemption was warranted, the substantive and procedural rules were left largely undefined.<sup>51</sup>

The history of the triennial rulemaking reveals the struggles of the Copyright Office. It has applied a set of shifting and unpredictable standards that have yielded inconsistent and sometimes surprising results. The Copyright Office has answered fundamental questions—like the definition of a “class of works,” the consideration of fair use, and the standard of review for existing exemptions—in radically different ways from rulemaking to rulemaking.<sup>52</sup> In the most dramatic example, the Register’s refusal to renew a twice-granted exemption permitting owners of mobile phones to remove digital locks that prevented them from lawfully using their devices on competing carrier networks, led to over 100,000 signatures on a White House petition,<sup>53</sup> a Federal Communications Commission (FCC) investigation,<sup>54</sup> a private agreement among carriers

---

<sup>43</sup> *Supra* note 11.

<sup>44</sup> *Ibid* § 1201(e).

<sup>45</sup> *Ibid*. § 1201(d).

<sup>46</sup> *Ibid* § 1201(g).

<sup>47</sup> *Ibid* § 1201(j).

<sup>48</sup> *Ibid* § 1201(f).

<sup>49</sup> *Ibid* § 1201(i).

<sup>50</sup> *Ibid*. § 1201(a)(1)(C).

<sup>51</sup> *Ibid*.

<sup>52</sup> See Aaron Perzanowski, *The Limits of Copyright Office Expertise*, 33 Berkeley Tech. L.J. 733, 757-60 (2018).

<sup>53</sup> See Derek Khanna, *Cellphone Unlocking Is the First Step Toward Post-SOPA Copyright Reform*, BOING BOING (Feb. 22, 2013), <https://boingboing.net/2013/02/22/taking-on-real-reform-in-a-pos.html>.

<sup>54</sup> See Derek Khanna, *FCC to Investigate Cellphone Unlocking*, FORBES (Mar. 1, 2013), <https://www.forbes.com/sites/derekkhanna/2013/03/01/fcc-to-investigate-cellphone-unlocking/#1b3aec28137b>.

to allow unlocking,<sup>55</sup> and an act of Congress overturning the Register's decision.<sup>56</sup> Equally troublingly, exemption proposals commonly raise contested questions of fact and law—from election security and consumer privacy to environmental protection and patients' rights—that are far beyond the expertise of any single agency or official.<sup>57</sup>

In recent years, the rulemaking has yielded a proliferation of narrowly defined exemptions that apply to exceedingly narrow circumstances. It is lawful to circumvent a Technical Measure to repair a smartphone, but not a smart TV, or a car, but not a boat. Crucially, under U.S. law, these exemptions apply to acts of circumvention, but not to the creation or distribution of software tools that enable circumvention, rendering these legal rights all but useless to the vast majority of consumers.<sup>58</sup> Moreover, the process for proposing and securing exemptions is resource intensive, requiring hundreds of hours of legal work, often provided pro bono by law school clinics and non-profit organizations.<sup>59</sup>

While the U.S. experience can serve as a learning opportunity to craft a better process for regulatory exceptions, it also helps illustrate the need for a narrow scope of TPMs, including through broad, permanent exceptions that accommodate reasonable uses from the outset.

#### 4. Recommendations

The growing prevalence of the IoT reveals more clearly than ever before how TPMs need to be recalibrated in keeping with the objectives of copyright, the Constitution, property rights, and of promoting competitive markets. As such, the most effective way to achieve this goal would be to:

1. Narrow the scope of the TPM prohibitions under the *Act*, whereby the circumvention of access controls or copy controls for non-copyright-infringing purposes would be lawful, with a non-exhaustive list of such purposes to provide greater legal certainty. The same treatment would apply to the dealing in TPM circumvention technology enabling the exercise of non-copyright-infringing purposes.

In the alternative, bearing in mind the limits but also the flexibilities available under CUSMA, the *Act* should be amended to:

2. Introduce a new exception that would confirm that the TPM provisions (and other relevant exclusive rights in the *Act*) do not apply to the right to repair, including for maintenance and diagnostics purposes. We note that private member's Bill C-272 proposing an exception to the

---

<sup>55</sup> See Roger C. Sherman & Kris Monteith, *Wireless Providers Fulfill Commitment to Let Consumers Unlock Mobile Phones*, FED. COMM. COMMISSION (Feb. 11, 2015), <https://www.fcc.gov/news-events/blog/2015/02/11/wireless-providers-fulfill-commitment-let-consumers-unlock-mobile-phones>.

<sup>56</sup> See Unlocking Consumer Choice and Wireless Competition Act, Pub. L. No. 113–144 (2014).

<sup>57</sup> Perzanowski, *supra* note 52.

<sup>58</sup> 17 U.S.C. § 1201(a)(1)(C).

<sup>59</sup> See Blake Reid, Letter to Senate Committee on the Judiciary, 7 October, 2020, online: Committee on the Judiciary, <https://www.judiciary.senate.gov/imo/media/doc/Reid%20Responses%20to%20QFRs.pdf>.

prohibition against circumventing TPMs, as well as against dealing in TPM circumvention technology in connection with exercising the right of repair is one approach to consider.<sup>60</sup>

3. Introduce a new exception to encourage follow-on innovation. The existing interoperability exception's affirmation of the "computer programs" language in CUSMA leaves little room to widen its application to broader modalities of innovation. Rather, Canada should look to article 20.66 of CUSMA's "adverse effects" provision to enact an entirely new exception. This would provide innovators with the breathing room to engage in circumvention activities for the purposes of product development and testing, even where the prohibition of such activities does not have immediate market or competition consequences.

4. Additionally, just as copyright holders should not be allowed to contract out of exceptions to copyright infringement through non-negotiated standard form agreements,<sup>61</sup> neither should they be allowed to opt out of exceptions to TPM prohibitions by contract.<sup>62</sup>

In the end, adding more exceptions to the already long list of exceptions to TPMs will only amplify the convolutedness and disjunction that the parallel TPM regime of prohibitions and exceptions has introduced within the *Act*. Therefore, realigning the TPM provisions to encompass no more than what copyright protects remains the preferred approach for the reasons outlined in this submission.

5. The Governor in Council should also make use of its regulatory powers under s. 41.21 of the *Act*, to introduce exceptions to the application of TPMs, in instances where TPMs unduly *restrict competition in the aftermarket sector in which the technological protection measure is used*,<sup>63</sup> and beyond such instances.<sup>64</sup> This includes the power to require copyright holders to grant access to copyright works restricted by TPMs. To that effect, we invite the Ministers to look to other jurisdictions that have implemented such mechanisms, including France.<sup>65</sup> While those regulatory powers of the Governor in Council confer additional flexibility under the *Act*, we acknowledge that such powers are restricted in scope, and may not be suited to address several of the issues identified in this brief, including the obstacles TPMs impose on the right of repair.

---

<sup>60</sup> Canada, Parliament, House of Commons, Bill C-272: An Act to Amend the Copyright Act (diagnosis, maintenance or repair), 43rd Parl, 2nd Sess (Feb 2021), online: House of Commons <https://www.parl.ca/LegisInfo/BillDetails.aspx?Language=E&billId=11112088>.

<sup>61</sup> See Pascale Chapdelaine et al., *Brief - Statutory Review of the Copyright Act submitted by Canadian scholars in intellectual property law*, (22 October 2018) at 4-5 ("No contracting out of User Rights") Available at [https://www.uwindsor.ca/law/sites/uwindsor.ca.law/files/updatedcopyrightreform-2018-briefcanadianipscholars\\_copy.pdf](https://www.uwindsor.ca/law/sites/uwindsor.ca.law/files/updatedcopyrightreform-2018-briefcanadianipscholars_copy.pdf).

<sup>62</sup> *Ibid* at 5 ("Technological Protection Measures (TPMs) not to Override User Rights").

<sup>63</sup> The *Act*, *supra* note 1, s. 41.21 (1).

<sup>64</sup> *Ibid*, s. 41.21 (2) (the regulatory powers under that section are more limited than under s. 41.21(1) as they pertain to only limiting the application of s. 41.1(1)(a) of the *Act*, i.e. the prohibition of circumvention of access controls).

<sup>65</sup> Code de la Propriété intellectuelle, L 331-12 & fol. (establishing the Haute Autorité pour la diffusion des œuvres et la protection des droits sur Internet [HADOPI]); HADOPI <https://hadopi.fr>.



We thank the Ministers for having the opportunity to submit this brief in the context of this important consultation on the modernization of the *Act*. Nous vous remercions à l'avance pour l'attention que vous porterez à ce mémoire.

Respectfully, Respectueusement,

**Signatories and affiliations:**

Pascale Chapdelaine, Associate Professor, University of Windsor Faculty of Law

Anthony D. Rosborough, Doctoral Researcher, European University Institute

Aaron Perzanowski, Professor of Law, Case Western Reserve University

Bitá Amani, Associate Professor, Queen's University, Faculty of Law

Sara Bannerman, Canada Research Chair in Communication Policy and Governance

Carys Craig, Associate Professor, Osgoode Hall Law School, York University

Lucie Guibault, Professor, Schulich School of Law, Dalhousie University

Cameron Hutchison, Professor, Faculty of Law, University of Alberta

Ariel Katz, Associate Professor, Faculty of Law, University of Toronto

Alexandra Mogyoros, Assistant Professor, Lincoln Alexander School of Law at Ryerson University

Graham Reynolds, Associate Professor, Peter A. Allard School of Law, University of British Columbia

Teresa Scassa, Canada Research Chair in Information Law and Policy, University of Ottawa

Myra Tawfik, Don Rodzik Family Chair in Law and Entrepreneurship, University of Windsor

---