

The nature, patentability and value of patents for computer-implemented business method inventions in the UK and Canada

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Computing technology permeates almost every aspect of our lives and is particularly ubiquitous in the conduct of commercial activity, which is increasingly software and web-based.¹ Further, global online commercial activity, including retail sale and business to business sales, recently increased dramatically in light of the coronavirus disease 2019 (COVID-19) pandemic.²

This article reviews the nature of innovations in the field of e-commerce, the policy rationales underlying their exclusion or inclusion as patentable subject matter and the quality of patents in this area. The focus is on the legal frameworks surrounding the inherent patentability of computer-implemented business method inventions

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- 1 Brownyn H Hall, 'Business and Financial Method Patents, Innovation and Policy' (2009) National Bureau of Economic Research Working Paper 14868, 2. Available at <http://www.nber.org/papers/w14868> (accessed 27 June 2021).
- 2 United Nations, 'Global e-commerce jumps to \$26.7 trillion, fuelled by COVID-19' *UN News* (3 May 2021). Available at <https://news.un.org/en/story/2021/05/1091182/> (accessed 27 June 2021).

Abstract

- This article asks to what extent inventions of methods for conducting business using computing technology are considered patent-eligible subject matter and whether such patents fulfil the patent bargain.
- Part I summarizes the characteristics of computer-implemented business method inventions (CIBMIs), the policy rationales underlying their exclusion or inclusion as patentable subject matter and concerns respecting the quality of patents of this nature.
- Part II provides an in-depth discussion of the inherent patentability of CIBMIs through a comparative analysis of the legal frameworks of Canada and the UK with respect to the eligibility of such inventions under each respective patent system (with some exploration of the EU and US approaches for greater context).
- Part III discusses the validity of public policy concerns resulting from the issuance of CIBMI patents, including their impact on the market and on innovation, with reference to Canadian e-commerce company, Shopify Inc., as an illustrative and anecdotal example.

(CIBMIs) in Canada and the United Kingdom (UK). The article concludes with a discussion of the impact of CIBMI patents on innovation and the market with reference to the Canadian e-commerce company, Shopify Inc. (Shopify), as an illustrative and anecdotal example.

Firstly, however, it is important to position the significance of the question of patentable subject matter as it relates to the first principles of patent law and provide an explanation of certain terminology used in this paper.

Significance of patentable subject matter in patent law

The most widely accepted legal and economic theory which underpins the entire patent system is the utilitarian theory of the patent bargain.³ The theory is that the patent system promotes innovation by granting rewards to inventors in the form of limited-term exclusive monopoly rights in respect of their inventions in exchange for the inventor publicly disclosing the specifics of how their invention works.⁴ The theory is that society will benefit as a whole from increasing innovation, which is both incentivized by the reward of a patent, and which will be fostered and further advanced through public access to the information about the invention and its enablement.⁵

The big picture objective and mandate of any patent-issuing body is therefore to 'determine whether the terms of the bargain are met'.⁶ This is done through adherence to statutory provisions, regulations and case law, which continue to shift and evolve in an attempt to adapt to the advancements in the technology over which they have jurisdiction.⁷

There are several requirements to be met before a patent is issued. In the jurisdictions discussed in this article, patents are only issued for *inventions* that are novel, non-obvious (also referred to as involving an inventive step) and useful (also referred to as capable of industrial application).⁸ A further requirement is the sufficiency of the disclosure of how the invention can be worked, such that a person skilled in the art could make or use the invention.⁹ We are primarily only concerned with the question of patentable subject matter (also referred

to as subject matter eligibility, the invention requirement or inherent patentability), which asks: 'Well, quite apart from whether this thing is new, useful and non-obvious, is this the kind of thing we should even be granting patents over?'¹⁰ The issue of subject matter eligibility is therefore 'a "threshold" question along the path to patent protection'.¹¹

Subject matters which are not considered patentable remain either in the public domain or are claimed under other forms of intellectual property, such as copyright, trade mark or trade secret law. The scope of which subject matters can be patentable inventions therefore plays a fundamental role in 'balancing the incentive to innovate with the need to keep technological building blocks in the public domain'.¹² It both determines which subject matters are inherently patentable, and further restricts the breadth of a granted patent, which may otherwise appear to incorporate ineligible subject matter, to only the subject matter which is properly conceived of as an invention under patent law.¹³

A note on terminology

The term 'business method' does not have a fixed definition,¹⁴ however the plain and ordinary interpretation of 'business' is generally understood to at least encompass ways of conducting and managing commerce and finance.¹⁵ Once implemented by computing technology, a CIBMI would therefore certainly include methods that facilitate e-commerce, such as purchase and sale transactions, billing, auctions, online marketing, customer management and price determination.¹⁶ CIBMIs are a subset of computer-implemented inventions (CIIs or software inventions) and remain subject to the same legal principles which are discussed below. The term CIBMI is preferred herein given the focus of this article, where possible, on the e-commerce industry; however, a CIBMI is a CII, and any discussion below relating to CIIs also includes and relates equally to CIBMIs unless specifically distinguished.

3 William Fisher 'Theories of Intellectual Property' in Stephen Munzer (ed) *New Essays in the Legal and Political Theory of Property* (Cambridge University Press 2001), 168.

4 Dan L Burk and Mark A Lemley 'Policy Levers in Patent Law' (2003) 89 *Virginia Law Review* 1575, 1580.

5 Hall (n 1) 2.

6 *Amazon.com Inc Re* 2011 FCA 328, [2012] 2 SCR 459, 27; Robert P Merges 'As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform' (1999) 14 *Berkley Technology Law Journal* 577, 592.

7 Stephen J Perry and T Andrew Currier *Canadian Patent Law* (3rd edn, LexisNexis 2018) para 6.124.

8 Patent Act, RSC 1985, c P-4 (Canada) (Patent Act (CA)), s 2 'invention' (new and useful requirements), s 28(3) (non-obvious requirement); The Patent Act 1977 (Patent Act (UK)), s 1(1)(a)-(c) (new, inventive step and industrial application requirements); Convention on the Grant of European Patents (European Patent Convention, as amended) (EPC), art 52(1) (new, inventive step and industrial application requirements); 35 USC §101 (new and useful requirements) and §103 (non-obvious requirement).

9 Patent Act (CA), s 27(3) (clear, concise and exact disclosure requirement); Patent Act (UK), s 14(3) (clear and complete disclosure requirement); EPC, art 83; 35 USC §112 (full, clear, concise and exact disclosure requirement).

10 Perry and Currier (n 7) para 6.2.

11 Daniel Harris Brean 'Business Methods, Technology, and Discrimination' (2017) 2018 *Michigan State Law Review* 307, 331.

12 *Ibid* 344.

13 Justine Pila 'The Future of the Requirement for an Invention: Inherent Patentability as a Pre- and Post-Patent Determinant' (2010) University of Oxford Legal Research Paper Series 35, 2. Available at <http://ssrn.com/abstract=1584209> (accessed 27 June 2021).

14 Hall (n 1) 2.

15 Oxford English Dictionary (OED) Online (Oxford University Press 2021), sub verbo 'business'. Available at www.oed.com/view/Entry/25229 (accessed 1 July 2021).

16 World Intellectual Property Office, 'International Patent Classification', RN2020/3E (WIPO 2020), G06Q/30.

Part I: Nature of CIBMI patents

Business methods are generally viewed as poor-quality subject matter for the fulfillment of the patent bargain. One glaring reason is that the dangling carrot of a patent is unnecessary as the market itself provides sufficient incentives and rewards for innovative business methods.¹⁷ As aptly stated by James Boyle:

There is no evidence to suggest that we need a state-backed monopoly to encourage the development of new business methods. In fact, we *want* people to copy the businesses of others, lowering prices as a result. The process of copying business methods is called ‘competition’ and it is the basis of a free-market economy. Yet patent law would prohibit it for twenty years.¹⁸

Another common justification ‘lurking behind’ the exclusion of pure business methods is that an invention is something concrete and technological, thus a method of doing business is seen as something too abstract to be an invention.¹⁹ However, when business methods are combined with technology, the line blurs. Almost every new business can now be characterized ‘as essentially new combinations of hardware and software.’²⁰ This is evident from the ‘explosion’ of patent applications for CIBMIs coincident with the increased use of software in business in the US around 1999–2001.²¹

Many scholars that argue in favour of the patent eligibility of CIBMIs argue that there is no principled reason for their exclusion at the threshold invention requirement stage.²² The TRIPS Agreement provides that ‘patents shall be available and patent rights enjoyable *without discrimination* as to the place of invention, *the field of technology* and whether products are imported or locally produced.’²³ It is important to note that ‘[m]any, perhaps most, endeavors in those fields [CIBMIs] may not be “inventive” or ultimately patentable, but that is beside the point of whether the field itself is technological.’²⁴

Despite the TRIPS prohibition against discrimination, member states are divided in their treatment of CIBMIs.²⁵ As is discussed further below, business methods, software and CIBMIs are generally considered patentable in

the US (with a more restrictive approach having emerged in recent years).²⁶ Meanwhile, business methods are expressly excluded under UK and EU law, as are computer programs.²⁷ In Canada, there is no conclusive exclusion of business methods or computer programs, but ‘mere’ scientific principles and abstract theorems are prohibited subject matter.²⁸ However, as is discussed in greater detail in Part II, CIBMI patents issue in each of these jurisdictions to varying degrees.

Jeff Bezos, CEO of Amazon, has stated that ‘the patent laws should recognize that business method and software patents are fundamentally different than other kinds of patents.’²⁹ Likewise, Burk and Lemley have commented upon ‘the industry-specific nature of innovation’³⁰ and, specifically in relation to the software industry, have noted certain attributes, which are summarized below:³¹

- **Relatively low research and development (R&D) costs:** While it still can be a costly and timely undertaking for a team of developers to write a new software application or program, software development generally requires significantly less R&D costs than does developing a new drug or semi-conductor chip.
- **Relatively low ratio of R&D cost to imitation cost:** For many software inventions, the disclosure of the invention via publication of a patent does not disclose enough information to permit exact imitations of the invention. Would-be imitators are then left to rely on the tedious process of reverse-engineering. As a result, the cost to imitate may closely compare with the initial R&D investment to create a program that creates similar results.
- **Relatively frequent iterative improvements:** In order to address bugs in earlier versions, to maintain the ability to interoperate between different programs or different program generations, or to adapt to new functionality, such as increased processing speeds or storage capacities, it is common to see frequent iterative improvements developed for software products.
- **Overlapping patents:** It is further common to see multiple patents covering various components or inputs of the same product (referred to as ‘complementarity’³²),

17 Merges (n 6) 585.

18 James Boyle *The Public Domain: Enclosing the Commons of the Mind* (Yale University Press 2008), 169.

19 Lionel Bently and others *Intellectual Property Law* (5th edn, OUP 2018), 474; Merges (n 6) 581.

20 Merges (n 6) 586.

21 Hall (n 1) 1.

22 Brean (n 11) 351.

23 Agreement on Trade-Related Aspects of International Property Rights (TRIPS) (1994), art 27(1) (emphasis added).

24 Brean (n 11) 359.

25 Ibid 355.

26 Brean (n 11); *State Street Bank & Trust Co v Signature Financial Group Inc*, 149F 3d 1368 (Fed Cir 1998); *Diamond v Diehr*, 450 US 175 (1981); Perry and Currier (n 7) para 6.73.

27 Patent Act (UK), s 1(2); EPC, art 52(2).

28 Patent Act (CA), s 27(8); *Amazon* (n 6); Perry and Currier (n 7) para 6.79.

29 Sirkaa L Jarvenpaa and Emerson H Tiller *Protecting Internet Business Methods: Amazon.com and the 1-Click Checkout* (University of Texas, date unknown). Available at <http://btl.mcombs.utexas.edu/IBM%20Course%20modules/bizmethpatents1.pdf> (accessed 1 July 2021).

30 Burk and Lemley (n 4) 1581.

31 Ibid 1582–4, 1611–4, 1620–2.

32 Ibid 1612.

requiring permissions and rights to be acquired from multiple parties. A similar but related issue is when the scope of a patent is broader than the product actually made and when multiple patents relate to the same aspect of a product (referred to as ‘patent thickets’³³), either as a result of a narrow improvement claim fitting within the larger scope of an earlier claim or as a result of insufficient prior art searches.

- Relatively low fixed costs: As noted above, although R&D costs can still be significant, the software industry does not typically require large, fixed costs such as laboratories or factories.
- Relatively short time to market and lifespan: Compared with industries that require long periods of clinical testing or the construction of factories, where a single product may last decades in the market, computer programs have a much shorter time to market and are often replaced by new products after a few years.

It must be noted that these foregoing characteristics do not apply in all instances of software inventions. For example, some CIBMIs enjoy a long lifespan in the market, such as the Amazon one-click patent, which generated significant royalty revenue throughout the life of the patent.³⁴ For others, such as cloud-based products, reverse-engineering of hidden back-end elements may not really be possible (subject to illegal hacking methods), and may be entirely speculative. Although some of these characteristics may therefore be criticized for their oversimplification and certainly do not apply to all software inventions equally, they are included here as a contextual backdrop for the discussions to follow on the quality of CIBMI patents specifically.

Some argue that CIBMI patents, when granted, are of a low quality³⁵ in that they do not meet the other statutory requirements, such as novelty or sufficiency of disclosure, or because there is uncertainty in terms of the scope of their claims or their validity as patentable subject matter.³⁶ Those which favour the inherent patentability of CIBMIs are of the view that if CIBMIs are to be excluded, it should be for failure to satisfy one or more of the other requirements such as novelty, lack of inventiveness

or insufficiency of disclosure.³⁷ As a result, low quality patents for CIBMIs should not issue.

The US, where business methods and software have long been deemed patentable subject matter,³⁸ is one very significant example of low quality CIBMI patents pushing the patent system ‘into crisis’.³⁹ In 1999 in the US there were ‘persistent reports’ that CIBMI patents were ‘of extremely poor quality’.⁴⁰ The primary concern was the low quality of examinations in terms of existing prior art at the time.⁴¹ A secondary concern was that of the completeness and precision of the disclosure of the invention since claims in software patents are often phrased in ‘outcome-oriented’ terms and the actual functional language and certain operational details are excluded.⁴²

Concern over patent validity due to anticipation of prior art or non-fulsome disclosure not only fails to meet the terms of the patent bargain, but also complicates infringement detection and enforcement of respective rights.⁴³ Another consequence of low quality patents is the cost generated by complementarity and patent thickets, which may have the effect of preventing a product from being made if deals to acquire the necessary rights cannot be reached, effectively imposing a ‘patent tax on new entrants who cannot bring their own patents to the table’.⁴⁴

Further, CIBMI patents are often ‘singled out as the poster child for vague, overbroad claims that are abusively asserted’.⁴⁵ Often thought of as an uniquely American concept, but which is not exclusively American, is the existence of patent assertion entities (PAEs), also known as ‘patent trolls’ or non-practicing entities.⁴⁶ It is less of an issue in the UK, but still accounts for approximately 11 per cent of patent litigation.⁴⁷ Software patents are especially favoured by such entities for several reasons. One of which is because the exact scope of their claims can be difficult to ascertain for infringement and their cumulative and complementary nature make them easy targets for weak or artificial claims for infringement.⁴⁸ Given the high cost of patent litigation, disputes such as these are often effective at extracting settlement or

33 Ibid 1614.

34 Jim Hinton ‘Despite What its CEO says, Shopify’s IP is Worth a Lot more than a “Good Bottle of Scotch”’ *The Globe and Mail* (18 April 2021). Available at <https://www.theglobeandmail.com/business/commentary/article-despite-what-its-ceo-says-shopifys-ip-is-worth-a-lot-more-than-a-good/> (accessed 27 June 2021).

35 Merges (n 6) 589.

36 Hall (n 1) 15.

37 Brean (n 11) 351.

38 *State Street* (n 26); *Diehr* (n 26).

39 Merges (n 6) 591.

40 Ibid 589.

41 Ibid; Brean (n 11) 350.

42 Brean (n 11) 351.

43 Ibid 337.

44 Burk and Lemley (n 4) 1615.

45 Brean (n 11) 371.

46 Christian Helmers and others ‘Is There a Patent Troll Problem in the UK?’ (2015) 24 *Fordham Intell Prop Media & Ent LJ* 509.

47 Ibid 509.

48 Brean (n 11) 313.

licensing fees which raises the cost of the system as a whole⁴⁹ and may even cause ‘entry-avoidance’ by those intimidated by the threat of litigation and uncertainty of the outcome.⁵⁰

Although it can be criticized as a ‘clumsy’⁵¹ or ‘blunt policy-setting tool’⁵² raising the threshold for subject-matter eligibility is one approach to further reducing the numbers of such low quality patents issuing and therefore reducing such costs and negative consequences.⁵³

The overview of the industry-specific characteristics and policy concerns relating to CIBMIs patents discussed above is the foundation on which the remaining issues in this paper are discussed. Part II surveys and compares the legal principles and tests to be applied in determining if and when CIBMIs are patentable, focusing primarily on the UK and Canada, with reference to the US and EU as applicable. Part III will discuss the impact of CIBMI patents in the market in an exploration of the current validity of the concerns outlined above.

Part II: Inherent patentability of CIBMIs in the UK and Canada

What was considered an ‘invention’ under the English Statute of Monopolies⁵⁴ of 1623 and its subsequent interpretation by the English courts had considerable influence upon the earliest Canadian patent statute as well as the earliest US patent laws with respect to the definition of an invention.⁵⁵ The definition which emerged has remained essentially constant through to modern-day Canadian patent law.⁵⁶ However, the modern UK statutory provision with respect to patentable subject matter, section 1(2) of the Patent Act (UK),⁵⁷ which was based on the EPC,⁵⁸ no longer bears any resemblance to the parallel Canadian and US provisions.

Paradoxically, the similarities in statutory wording do not correlate with similar states of the law in respect of the subject matter eligibility of CIBMIs. The US and Canadian statutory provisions continue to resemble each other quite closely, but have divergent approaches to determining the patentability of CIBMIs. Likewise, section 1(2)

of the Patent Act (UK) and Articles 52(2) and (3) of the EPC are very similar, yet the UK courts and the European Patent Office (EPO) have distinct approaches on this issue. Therefore, for the purposes of contextualizing and comparing both the Canadian and UK approaches to the patentability of CIBMIs, brief discussions of the EU and US approaches are also included. Firstly, the applicable statutory frameworks and current legal tests for each of the UK and Canada with respect to CIBMIs is set out below.

UK Framework (Contrasted with EU)

It should be noted that the UK courts have deemed it appropriate to consider the statutory source of patentable subject matter in the UK to be Article 52(2) and (3) of the EPC.⁵⁹ The statutory approach of the EU and the UK is to define inventions by what is *excluded*. Article 52(2)-(3) provides a non-exhaustive list of categories which are *not* patentable inventions:

Article 52

Patentable inventions

(2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1:

- (a) discoveries, scientific theories and mathematical methods;
- (b) aesthetic creations;
- (c) schemes, rules and **methods for performing mental acts, playing games or doing business, and programs for computers;**
- (d) presentations of information.

(3) Paragraph 2 shall exclude the patentability of subject-matter or activities referred to therein only to the extent to which a European patent application or European patent relates to such subject-matter or activities as **such**.

[Emphasis added.]

Of particular relevance to CIBMIs are the above exclusions of ‘methods for...doing business’ and ‘programs for computers’. Importantly such categories are only considered excluded to the extent the invention relates to that excluded category ‘as such’.⁶⁰ This qualifier effectively narrows the scope of the exclusions to instances where an invention consists only of excluded

49 Hall (n 1) 13.

50 Ibid 15.

51 Perry and Currier (n 7) para 6.124.

52 Brean (n 11) 333.

53 Burk and Lemley (n 4) 1613.

54 Statute of Monopolies 1623 (UK), 21 Jac 1, c 3.

55 Donald MacOdrum and Jean-Louis Baudouin *Fox on the Canadian Law of Patents* (5th edn, Carswell 2013) s 3:2(a), 3–7.

56 Ibid s 3:2(d), 3–18.

57 Patent Act (UK), s 1(2).

58 EPC, art 52(3); Justine Pila, *The Requirement for an Invention in Patent Law* (OUP 2010) 4.

59 Pila *The Requirement for an Invention* (n 58) 312.

60 Patent Act (UK), s 1(2); EPC, art 52(3).

subject matter or a combination of only excluded subject matter.⁶¹

The justifications behind the statutory exclusion in the UK/EU of business methods were discussed in Part I. Generally, pure business methods are viewed as belonging in the public domain and too abstract to be a good candidate for the fulfilment of the patent bargain.⁶² The computer program exclusion was included on the basis that they were considered ‘non-inventive mathematical methods’⁶³ and also due to concerns that prior art was too difficult to search and that they were better protected by the domain of copyright law.⁶⁴

Borne out of the UK’s negative definition of what an invention is not, the courts have said that applicants need only concern themselves with whether the subject matter of their invention falls into the list of exclusions.⁶⁵ The difficulty, however, lies in determining the patentability of an invention which may actually be, or which may appear to be, some interactive combination of excluded and non-excluded subject matter. Such is the case with CIBMIs which, as their name implies, involve both computer programs and business methods.

Any question of subject matter eligibility in the UK requires application of the following *Aerotel*⁶⁶ test as modified by *Symbian*,⁶⁷ also known as the ‘technical effects’ approach,⁶⁸ which is as follows:

1. Construe the claim using the ‘whole contents’ approach to claim construction, which means that courts will examine the invention as a whole and disregard whether there are any statutorily excluded or non-technical elements.⁶⁹
2. Once construed, identify the contribution of the invention in the sense of ‘what has the inventor really added to human knowledge’.⁷⁰ This is done by looking beyond the words of the claim to the substance of it, and asking questions such as what problem is there to be solved, how does the invention

work, what are its advantages, and what does it add to human knowledge?⁷¹

3. Ask whether the contribution is ‘technical’ in nature.⁷² The presence of technical character or a technical solution to a problem will mean that the contribution is not excluded by Article 52(2) and, equally, a dearth of technical character is ‘virtual proof’ that a contribution is composed of excluded subject matter under Article 52(2).⁷³

Despite the centrality of the ‘technical’ concept to the analysis, the courts have not provided a strong framework as to what ‘technical’ means.⁷⁴ Rather, the courts have distinguished it from the ‘abstract, intellectual, mental, [and] undefined’ and linked it with descriptors such as ‘concrete, physical [and] tangible’⁷⁵ including inventions that generate a concrete or non-abstract change or result.⁷⁶ What will constitute a ‘technical effect’ in the context of computer programs is further difficult to define and has not been definitively stated in the case law.⁷⁷

The UK courts have provided some guidance for determining whether a CII has a ‘technical effect’ in *AT&T/CVON* and *HTC* where five ‘signposts’ of when a CII may be considered patentable subject matter were articulated.⁷⁸ These signposts, which are stated in full at the end of Part II, include when the CII causes a technical effect on something outside of the computer, or where the technical effect has a direct effect on the architecture or functioning of the computer itself, or where a perceived problem is overcome through use of the computer.⁷⁹ An example of a technical change or result is the recent decision of *Lenovo*, where a CIBMI, which had the effect of removing a physical step, was found to be sufficiently ‘technical’. The CIBMI was a machine-implemented method whereby multiple payment cards were presented to a card reader and either one would be chosen to be charged or the payment in question would be split over multiple cards and accounts through automatic detection.⁸⁰ The contribution of the invention was the automated aspect to the card selection, which had the

61 UK Intellectual Property Office Manual of Patent Practice, s 1 (Patentability) (last updated October 2020) s 1.22; *Merrill Lynch’s Inc’s Application* [1989] RPC 561 (CA).

62 Matthew G Wells ‘Internet Business Method Patent Policy’ (2001) 87 *Virginia Law Review* 729, 739–40 and n 54.

63 *Pila The Requirement for an Invention* (n 58) 154.

64 Bently (n 19) 473.

65 *Biogen Inc v Medeva Plc* [1996] UKHL 18, [1995] RPC 25.

66 *Aerotel Ltd v Telco Holdings Ltd & Ors Rev 1* [2006] EWCA Civ 1371, [2007] 1 All ER 225 [40].

67 *Symbian Ltd v Comptroller General of Patents* [2008] EWCA Civ 1066, [2009] Bus LR 607 [11]; Bently (n 19) 476.

68 UKIPO Manual (n 61), s 1.08; Bently (n 19) 475.

69 Bently (n 19) 478–9.

70 Ibid.

71 *Symbian* (n 67) [11].

72 Ibid; Bently (n 19) 476.

73 Bently (n 19) 479.

74 *Pila The Requirement for an Invention* (n 58) 9.

75 Bently (n 19) 482.

76 Ibid.

77 *Symbian* (n 67) [24].

78 *AT&T Knowledge Ventures LP Re* [2009] EWHC 343 (Pat), [2009] Bus LR D51 [40]; *HTC Europe Co Ltd v Apple Inc* [2013] EWCA Civ 451, [2013] RPC 30 [50]–[51].

79 Ibid.

80 *Lenovo (Singapore) PTE Ltd v Comptroller General of Patents* [2020] EWHC 1706 (Pat) [6].

effect of removing the physical step of a customer pressing a button to select their preferred payment method.⁸¹ This result of ‘making a physical interaction obsolete’⁸² was found sufficiently technical in character.⁸³

The UK’s ‘technical effect’ approach is significantly different to the approach which has evolved in the EPO. Rather, the EPO Boards of Appeal interpret the list of exclusions in Art. 52(2) and (3) as ‘resolving to a positive requirement for technical character.’⁸⁴ As such, in addition to the requirements of novelty, inventive step and industrial application, there is an additional ‘implicit’ requirement that the invention have ‘technical character.’⁸⁵ The EPO will look at the ‘character or essence of the invention’ as a whole to determine whether it possesses technical character.⁸⁶ The identification of the contribution (step 2 of the UK approach) is disregarded at this stage of inquiry and reserved for an examination of novelty and inventive step.⁸⁷ The invention must only include a ‘single technical feature,’⁸⁸ which feature need not predominate.⁸⁹ As such, ‘technical’ features sufficient to satisfy the technical character requirement would include everyday items such as a pen and paper,⁹⁰ a cup,⁹¹ and a USB drive,⁹² hence being dubbed the ‘any hardware’ approach.⁹³

In the EU, the threshold for satisfying the subject matter eligibility question is therefore very low and more time is spent on evaluating whether the other requirements are met.⁹⁴ This is particularly true for CIIs which inherently involve some ‘hardware’ and so easily satisfy the technical character requirement at the subject matter eligibility threshold. This outcome is possible despite the statutory exclusion for computer programs because of the way in which the EPO construes (i) a computer program ‘as such,’ as opposed to (ii) a computer program with technical character. A computer program ‘as such’ is interpreted very narrowly by the EPO as an abstract

‘set of instructions’⁹⁵ and once the code is programmed into a computer, it is considered to be more than a computer program ‘as such’ and have the requisite technical character.⁹⁶

In *Aerotel*, the court reinforced that the UK takes the broader view of the computer program exclusion. In the UK a computer program ‘as such’ is one which is already programmed and is operable.⁹⁷ Therefore, the UK courts have stated with respect to computer programs, ‘the technical effect to be identified ha[s] to be technical effect over and above that to be expected from the mere loading of a program into a computer.’⁹⁸

It should be noted that an application rejected due to the identification of the contribution in the UK *Aerotel* test is likely to be rejected in the EU because of lack of inventive step.⁹⁹ As such, despite the significant differences in the approaches to patentable subject matters and the interpretation of ‘computer programs,’ there is no indication that the differences in the UK and EU lead to different results in terms of ultimately issuable CII patents.¹⁰⁰

Canadian framework (Contrasted with US)

Unlike Article 52(2) of the EPC, the Patent Act (CA) defines an invention by what it *includes* and then identifies some exclusions. In Canada, an invention is defined as ‘any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter.’ The Supreme Court of Canada has stated that ‘by choosing to define invention in this way, Parliament signaled a clear intention to include certain subject matter as patentable and to exclude other subject matter as being outside the confines of the Act.’¹⁰¹ One such limitation particularly applicable to CIBMIs is found expressly in the words of the Act where it states ‘[n]o patent shall be granted for any mere scientific principle or abstract theorem.’¹⁰²

Even with the different statutory frameworks, UK jurisprudence with respect to the exclusion of business methods from patentability were considered persuasive in the development of Canadian jurisprudence on

81 Ibid [18], [36].

82 Ibid [26].

83 Ibid [36].

84 Pila ‘The Future of the Requirement for an Invention: Inherent Patentability as a Pre- and Post-Patent Determinant’ (n 13) 4–5.

85 European Patent Office ‘Guidelines for Examination in the European Patent Office’ (March 2021) (EPO Guidelines), Part G-I, 2(ii).

86 Bently (n 19) 488.

87 Ibid.

88 Justine Pila and Paul Torremans *European Intellectual Property Law* (2nd edn, OUP 2019) s 6.4.2.2.

89 Pila ‘The Future of the Requirement for an Invention: Inherent Patentability as a Pre- and Post-Patent Determinant’ (n 13) 5.

90 *Hitachi/Auction method*, T 258/03 [2004] OJ EPO 575.

91 *President’s Reference/Patentability of programs for computers*, G 3/08 [2011] OJ EPO 10.

92 Ibid [9.2].

93 Bently (n 19) 485.

94 Ibid 489.

95 *Aerotel* (n 66) [31].

96 Bently (n 19) 506; *President’s Reference* (n 91).

97 *Aerotel* (n 66).

98 *Shopalotto.com Ltd’s Application* [2005] EWHC 2416 (Pat) [9].

99 Bently (n 19) 491.

100 Ibid.

101 *Harvard College v The Commissioner of Patents* 2002 SCC 76, [2002] 4 SCR 45 [158].

102 Patent Act (CA), s 27(8).

this issue.¹⁰³ While business methods are not expressly excluded in the Patent Act (CA) nor in Canadian case law as patentable subject matter,¹⁰⁴ ‘mere’ business methods ‘with no practical embodiment’ are excluded on the basis that they are too abstract.¹⁰⁵ Further, simply by having a practical embodiment or a practical application, such as implementation by a computer program, an abstract idea will not necessarily become patentable subject matter in Canada.¹⁰⁶

The current legal framework for the subject matter eligibility analysis in Canada was recently confirmed and clarified in *Choueifaty*, which reaffirmed the approach of the Federal Court of Appeal in the *Amazon* decision.¹⁰⁷

The CIBMI in *Amazon* was Amazon’s method and system for one-click purchasing. In that case, the Federal Court of Appeal held that the correct approach to claim construction (the first step of the subject matter eligibility test discussed below) was that of the ‘purposive approach’ articulated by the Supreme Court of Canada in *Free World* and *Whirlpool*.

Nevertheless, the Canadian Intellectual Property Office (CIPO) endorsed a different approach to claim construction for several years post-*Amazon*, applying the ‘problem-solution’ approach (explained below) to claim construction.¹⁰⁸

Following *Choueifaty*, CIPO issued a new Practice Notice with respect to subject matter eligibility.¹⁰⁹ This Practice Notice endorsed the purposive approach set out in *Free World* and specifies that the ‘problem-solution’ approach should be disregarded.¹¹⁰ Specifically applicable to CIBMIs, the Practice Notice states:

To constitute patentable subject matter and be outside the subsection 27(8) prohibition, a business method that is an abstract idea must cooperate with other elements of the claimed invention so as to become part of a combination of elements making up an actual invention that relates to the manual or productive arts and that either has physical existence or manifests a discernible physical effect or change.¹¹¹

As such, the current legal framework in Canada for purposive construction, and thus a determination of patentable subject matter, is as follows:

1. Purposive construction: Identify the ‘essential’ elements of the claimed invention by breaking apart the claim into its various elements. In order to determine whether an element is essential, ask: ‘1. Would it be obvious to a skilled reader that varying a particular element would not [a]ffect the way the invention works? If modifying or substituting the element changes the way the invention works, then that element is essential. 2. Is it the intention of the inventor, considering the express language of the claim, or inferred from it, that the element was intended to be essential? If so, then it is an essential element.’¹¹²
2. Grounded on the purposive construction from step 1, determine the ‘actual invention’ of the claim, which ‘may consist of either a single element that provides a solution to a problem or of a combination of elements that cooperate together to provide a solution to a problem.’¹¹³ An essential element from the purposive construction may not necessarily be part of the actual invention as it may have no material effect to the working of the invention.¹¹⁴
3. Determine whether the ‘actual invention’ of the claim has a physical existence or manifests a discernible physical effect or change and relates to the manual or productive arts.¹¹⁵ The manual or productive arts is distinguished from the fine arts.¹¹⁶

CIPO’s pre-*Choueifaty* ‘problem-solution’ approach also involved an identification of essential and non-essential elements; however, it did so quite differently than described above. After identifying the person skilled in the art and their relevant common general knowledge, the next step endorsed by CIPO was to identify the problem addressed by the invention. The essential elements were then those which were fundamental to the problem’s solution.¹¹⁷ Under the purposive approach outlined above, an essential element is one the substitution or omission of which does not affect the working of the invention.¹¹⁸ The exercise is also conducted taking into

103 MacOdrum and Baudouin (n 55), s 3:11, 3–85.

104 *Amazon* (n 6) [60].

105 *Ibid* [59].

106 *Ibid* [61]; *Schlumberger Ltd v Canada (Patent Commissioner)* (1981), [1982] 1 FC 845, 1981 CarswellNat 138.

107 *Choueifaty v Canada (Attorney General)*, 2020 FC 837, 2020 CarswellNat 6342 [35], [40].

108 MacOdrum and Baudouin (n 55) s 3:9, 3–82.4–82.5.

109 *Ibid* 3–82.6.

110 Canadian Intellectual Property Office ‘Patentable Subject-Matter under the Patent Act’, Practice Notice (3 November 2020) (CIPO PN 3/11/2020).

111 *Ibid*.

112 *Choueifaty* (n 107) [38], citing *Free World Trust v Électro Santé Inc* 2000 SCC 66, [2000] 2 SCR 1024 [55].

113 CIPO PN 3/11/2020; *Amazon* (n 6) [63].

114 *Free World* (n 112) at 55–59.

115 *Amazon* (n 6) [66]–[69]; CIPO PN 3/11/2020.

116 *Amazon* (n 6) [58].

117 MacOdrum and Baudouin (n 55) s 3:9, 3–82.5.

118 *Choueifaty* (n 107) [39].

consideration the common general knowledge of the person skilled in the art as of the date of publication;¹¹⁹ however, the presumption is that, without express language to indicate to the contrary, an element, by virtue of being included in the claim by the inventor, will be deemed essential.¹²⁰

The CIBMI in question in *Choueifaty* was ‘a computer implementation of a new method for selecting and weighing investment portfolio assets that minimizes risk without impacting returns.’¹²¹ Following the problem-solution approach to claim construction, the Commissioner characterized the essential elements of the invention to be the creation of a new financial portfolio.¹²² As the claims were thus found to be directed at financial management, the subject matter was found to be ineligible under section 2 of the Patent Act (CA).¹²³

On appeal, the Federal Court stated that the commissioner erred in not applying the purposive approach.¹²⁴ On the Commissioner’s reconsideration of the *Choueifaty* patent, the Commissioner found that ‘the computer operations performed...[permit] the optimization to be performed with significantly less processing and greater speed...[a]ccordingly, this can be considered an algorithm that improves the functioning of the computer used to run it.’¹²⁵ The actual invention claimed was thus found not to be a mere abstraction, but a combination of ‘the computer and the algorithm together...that has physicality and solves a problem related to the manual or productive arts.’¹²⁶

Choueifaty therefore confirms that business methods may be patentable in Canada when they are ‘essential elements of a broader valid patent claim.’¹²⁷ Subsequently to *Choueifaty*, CIPO is allowing for the patentability of more CIIs than it did using the problem-solution approach.¹²⁸

Contrasted with Canada’s interpretation of the statutory definition of ‘invention’ as being broad but not unlimited,¹²⁹ in the US, the almost identical definition is held to mean that Congress intended to ‘include anything

under the sun that is made by man.’¹³⁰ There have, however, been three accepted exclusions to patentability in the US: laws of nature, physical phenomena and abstract ideas.¹³¹

In the *State Street* decision, the US Court of Appeals of the Federal Circuit stated that business methods were as patentable as any other process or method. It was deemed that any process with ‘a useful, concrete and tangible result’ was patent eligible.¹³² As was discussed in Part I of this article, post-*State Street* there was a significant rise in CIBMI patents.¹³³ However, while *Choueifaty* has brought greater certainty in Canada as to the subject matter eligibility analysis applicable to CIIs, in the US, which has for a long time considered business methods¹³⁴ and computer programs¹³⁵ patentable, the line has blurred as recent cases indicate a more restrictive approach will be taken.¹³⁶

The landmark cases of *Bilski*, *Mayo*, *Myriad*, and *Alice* were all instances where CIBMIs were held ineligible for being essentially an abstract idea.¹³⁷ *Alice* related to a CIBMI for a method for facilitating computerized credit and debit records in an escrow situation to mitigate the risk only one part will perform.¹³⁸ It was held patent ineligible as it was a ‘generic’ computer implementation of a business method, using computer functions which are ‘routine’ and ‘conventional’.¹³⁹ In *Alice*, the Supreme Court articulated the current framework for assessing subject matter patentability in the US:

1. Determine whether the claims at issue are directed to a patent-ineligible concept [i.e. abstract idea]; and
2. If so, examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to transform the claimed abstract idea into an ineligible application.¹⁴⁰

It has been argued that it is easy to distil an invention down to an abstract idea and that most computer

119 Perry and Currier (n 7) para 15.9.

120 Ibid para 15.55.

121 *Choueifaty* (n 107) 4.

122 *Choueifaty (Re)*, 2021 CAC 3, 2021 CarswellNat 212 (*Choueifaty* 2021) [29].

123 *Choueifaty* 2021 (n 122) [4].

124 MacOdrum and Baudouin (n 55) s 3:9, 3–82.5.

125 *Choueifaty* 2021 (n 122) [34].

126 Ibid.

127 Perry and Currier (n 7) para 6.78.

128 PCK ‘PAB Allows Two Software Patents, Revealing Post-*Choueifaty* Approach’ *PCK Intellectual Property (blog)* (7 June 2021). Available at <https://www.pckip.com/article/software-patents-post-choueifaty> (accessed 27 June 2021).

129 *Harvard College* (n 101) [158].

130 *Diamond v Chakrabarty* 447 US 303 (1980); MacOdrum and Baudouin (n 55) s 3:2I, 3–14 and 3–22.

131 MacOdrum and Baudouin (n 55) s 3:2(c), 3–16.

132 *State Street* (n 26) [1373]; Brean (n 11) 345.

133 Brean (n 11) 345.

134 *State Street* (n 26).

135 *Diehr* (n 26).

136 Brean (n 11) 363; Perry and Currier (n 7) para 6.73; MacOdrum and Baudouin (n 55) s 3:2(c), 3–14.

137 *Bilski v Kappos* 130 S Ct 3218, 3225 (2010) (a non-computerized business method for risk hedging); *Mayo Collaborative Services v Prometheus* 132 S Ct 1289, 1299 (2012) (method of medical diagnostics); *Ass’n for Molecular Pathology v Myriad Genetics, Inc* 133 S Ct 2107 (2013) (gene patenting); MacOdrum and Baudouin (n 55) s 3:2(c), 3–17.

138 Brean (n 11) 322.

139 *Alice Corp v CLS Bank International* 134 S Ct 2347 (2014) [2359].

140 Ibid [2355].

functions can be characterized as conventional.¹⁴¹ As a result, relatively very few CIIs are held to be patent eligible since *Alice*, unless they ‘improve computing technology’.¹⁴² It is therefore not surprising that two-thirds of rejections based on the new framework articulated in *Alice* relate to e-commerce CIBMIs.¹⁴³

Comparative analysis

The UK and Canadian approaches to patentable subject matter and treatment of CIBMIs are very similar. Despite the different statutory frameworks, the qualifier of ‘as such’ in the Patent Act (UK) and the qualifier of ‘mere’ in the Patent Act (CA) both appear to have the similar effect of narrowing the scope of excluded subject matter to instances where the ‘contribution’ or ‘actual invention’ is only composed of excluded elements, rather than instances where they are sufficiently integrated with technical (in the UK) or physical (in Canada) eligible subject matter.

Further, the influence of English case law is strong in Canada’s approach to this issue.¹⁴⁴ For example, the Canadian ‘purposive approach’ to claim construction was heavily influenced by English decisions and was essentially a reaffirmation of the *Catnic Proposition* inherited from the English House of Lords.¹⁴⁵

In the UK, where the contribution of a CIBMI is simply the implementation of a computer program, the technical effect will not be sufficient to deem the business method patentable ‘merely by use of a computer in its implementation’.¹⁴⁶ Likewise, the state of the law in Canada has been the same in this regard for a long time, where the mere fact that a claimed invention has a practical application or contemplates the use of a physical tool, such as a computer, to give the abstract theorem a practical application, does not necessarily make an invention patentable.¹⁴⁷

With respect to cases which go beyond mere implementation via a computer, the jurisdictions appear to be following the same approach. A close review of the UK’s ‘technical effects’ approach and the Canadian *Amazon/Choueifaty* approach reveal many similarities and perhaps only semantical differences:

1. Both jurisdictions construe claims by looking at both included and excluded (or technical and

non-technical) elements.¹⁴⁸ The Canadian approach of only looking at the essential elements arguably seems narrower than the ‘whole contents’ approach to claim construction in the UK. However, it must be noted that, under the Canadian approach, the presumption is that all elements of the claim are essential and one must look at all of the essential elements together, except for what the applicant has signaled something as being a non-essential element or which a skilled reader would obviously find to be non-essential. It is thus arguable that the Canadian approach is also to effectively look at the whole contents of the claim.

2. Further, identifying the contribution of the invention under step 2 of the *Aerotel* test has parallels with the concept of determining the ‘actual invention’ under the Canadian approach in that they both look at what problem is there to be solved and what solution does the invention (properly construed) present.¹⁴⁹
3. Finally, there are obvious parallels between the requirement that an invention be ‘technical’ under UK law and the requirement that it have ‘physicality’ under Canadian law. The physicality requirement under the Canadian approach requires that the invention have a physical existence or manifest a ‘discernible physical change or effect’ which is satisfied by ‘the electronic, magnetic or optical changes that take place during the operation of a computer...provided that the computer is part of the actual invention’.¹⁵⁰ Under UK law, the meaning of ‘technical’ in steps 3/4 of the ‘technical effects’ approach has been linked with descriptors such as ‘concrete, physical [and] tangible’ and includes inventions which lead to a tangible, concrete or non-abstract change or result.¹⁵¹ At the EPO, ‘the physical conception of technology has been interpreted very broadly’¹⁵² to include transient matter such as electrical signals, television signals and X-ray tubes.¹⁵³ Although not quite as broad, the UK approach to what has sufficient physicality to be technical appears to be broadening and following the trend at the EPO in this regard.¹⁵⁴ As such, there is no clear distinction between the technical

141 Brean (n 11) 323–4.

142 Ibid 324.

143 Ibid 340.

144 MacOdrum and Baudouin (n 55) s 3.2(a), 3–6.5.

145 Perry and Currier (n 7) para 15.45.

146 Bently (n 19) 484.

147 *Schlumberger* (n 108); *Amazon* (n 6).

148 Bently (n 19) 478–9; Perry and Currier (n 7) para 15.55.

149 *Symbian* (n 67) [11]; CIPO PN 3/11/2020; *Amazon* (n 6) 63.

150 CIPO PN 3/11/2020.

151 Bently (n 19) 482–3.

152 Ibid.

153 Ibid.

154 Ibid.

requirement in the UK and the physicality requirement in Canada.

It therefore seems highly likely that under the *Amazon/Choueifaty* approach in Canada all five ‘signposts’ of patentable CIIs articulated by the UK courts in *AT&T/CVON* and *HTC* would possess the requisite physical existence or manifest the requisite discernible physical effect or change. For example, CIPO’s Practice Notice post-*Choueifaty* states that where the running of a computer program improves ‘the functioning of the computer’, it will be patentable subject matter.¹⁵⁵ This is similar to the fourth sign-post of patent-eligible CIIs noted below. In conclusion, the signposts are reproduced below as a summary of instances in which CIBMIs would be considered eligible subject matter in both the UK and Canada:

- whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;
- whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run;
- whether the claimed technical effect results in the computer being made to operate in a new way;
- whether the program makes the computer a better computer in the sense of running more efficiently and effectively as a computer; and
- whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.¹⁵⁶

Part III: Impact of CIBMI patents on innovation and the market

After examining the nature of CIBMIs in Part I and the requirements for their subject matter eligibility in various jurisdictions in Part II, we now turn to the impact of CIBMI patents on innovation and the market.

As discussed above with respect to CIBMIs in particular, there are reasons to be concerned that the terms of the patent bargain will not be met in that they do not actually generate innovative activity and that they generate significant costs and thus are not worth the cost of granting the inventor a monopoly; however, there is almost no data to support this. It is unfortunate, but true nonetheless, that ‘economists can tell lawyers essentially nothing

about intellectual property’.¹⁵⁷ As such, this Part III will rely upon empirical and anecdotal evidence in terms of the value and uses of CIBMI patents in the market and for patent owners.

First of all, with respect to incentivizing innovation, it is clear that business methods and CIBMIs have existed without patent protection for a long time and continue to be innovated even if their ability to be patented is uncertain. It is therefore clear that there are alternative forms of incentives to innovate CIBMIs rather than solely patents, the most obvious incentive being the returns of the market.¹⁵⁸ Other incentives include, to varying degrees, intrinsic motivations, government grants and prizes.¹⁵⁹ As such, there appears to be support for the statement that ‘[i]nnovation in software does not depend critically on strong, broad patent protection’.¹⁶⁰

From the inventor’s perspective, the most obvious value of a patent is the exclusive monopoly rights and the ability to prevent competitors from implementing similar features. However, there are other possible uses such as using patents to generate royalty revenue or the strategic defensive use of patents as bargaining tools in negotiations if used for, or threatened with, an infringement action by another.¹⁶¹ Due to the issues of patent complementarity and patent thickets in the software industry discussed in Part I, many components of the same product may be covered by different and even overlapping patents.¹⁶² As such, having patents of one’s own which are also able to be asserted can prove an extremely effective bargaining chip in settlement negotiations.¹⁶³ Further, such direct value, such as royalty revenue, can also make patents indirectly valuable in that they attract needed investment to the inventor’s exploitation of the invention.¹⁶⁴

Despite the monopoly rights being thought of as the foremost benefit to the inventor associated with the normative understanding of the patent bargain, all these uses have value. This is empirically evident in the case law where companies spend multiple millions of dollars prosecuting large patent portfolios and defending and/or enforcing their patents. For example, Amazon has over an estimated 11 000 worldwide patents¹⁶⁵ and Amazon’s

157 Burk and Lemley (n 4) 1580, n 10.

158 *CFPH LLC’s Application* [2005] EWHC 1589 (Pat), [2006] RPC 5 (Pat Ct) [41]; MacOdrum and Baudouin (n 55) s 3:11, 3–84.

159 Burk and Lemley (n 4) 1586.

160 Ibid 1623.

161 Wells (n 62), 761, 776 and n 206.

162 Burk and Lemley (n 4) 1627.

163 Wells (n 62) 761.

164 Hall (n 1) 2.

165 Isabelle Kirkwood ‘Shopify Awarded Two Merchant Patents as Company Continues to Ramp Up IP Activity’ *Betakig (blog)* (15 January 2021).

155 CIPO PN 3/11/2020.

156 *AT&T/CVON* (n 78) [40]; *HTC* (n 78) [50]–[51].

one-click patent generated an approximate \$2.4 billion in annual royalty revenue.¹⁶⁶

Notably, a major competitor of Amazon in the e-commerce industry has not pursued patents to the same extent. Shopify commenced business in 2004 in Canada and did not file its first patent until 2018.¹⁶⁷ It now has filed for approximately 45 patents,¹⁶⁸ which is still lagging significantly far behind Amazon, as well as other e-commerce companies such as Alibaba and eBay.¹⁶⁹

Outsiders to Shopify's internal strategies have criticized this as an oversight and an underestimation of the importance of having a robust portfolio of patents.¹⁷⁰ However, the success of Shopify Inc. also speaks for itself and raises the question of whether patents in this industry are even necessary for market entry and continued success.

As one journalist put it, Shopify created 'a significant moat'¹⁷¹ through other means. Calling back to the attributes of the software industry summarized in Part I of this article, it may take a copycat less time and investment than Shopify's initial R&D cost to duplicate Shopify's platform; however, one can safely assume that it would still require substantial time and resources, meanwhile the first-mover advantage lies with Shopify which has established significant goodwill in the marketplace over its e-commerce products and services. First mover advantage can be so valuable that 'even a modest amount of lead time resulting from the cost of imitation may provide enough incentive to innovate.'¹⁷²

Presumably, although a developer could create a similar platform, certain key backend elements to Shopify's platform are likely protected through secrecy, including trade secret law and non-disclosure contracts. Thus, it may be that patents, which are the flip side of trade secrets in that they are fully disclosed, are less valuable insofar as they relate to backend elements that can instead be protected by trade secret law and for which detection of infringement is quite difficult (contrasted, for example, with the high detectability and high value of the Amazon one-click patent). Further, even where reverse-engineering is possible, the trade secret approach may

still be better for some due to the first-mover advantage outweighing the cost of acquiring a patent, particularly in fast moving technological fields.¹⁷³ Therefore, Shopify is one clear illustrative example that patents over CIBMIs are not always necessary for market entry or success.

Whether patents for CIBMIs are necessary for continued market participation or dominance, however, is slightly less clear. While Shopify has nowhere near the number of patents as its competitors, it is increasing its number of patent applications in recent years,¹⁷⁴ possibly indicating that there is value in having a significant patent portfolio for continued growth and competitive stature.

Conclusion

The concerns over the quality of CIBMI patents outlined in Part I are valid when one considers the associated costs and consequences. Even though patent quality relates to more than just valid subject matter, it is the first threshold question and thus the first gatekeeper of public policy considerations and ultimate patent quality.¹⁷⁵ Based on the statutory wording examined in this paper, only if something is an 'invention' can it then be examined in terms of the other statutory requirements. While those examinations should be stringent to ensure quality patents are issued, and thus the patent bargain is balanced,¹⁷⁶ the subject-matter eligibility question should be just as carefully considered given its significance to determining what remains in the public domain as the 'building blocks'¹⁷⁷ of society and what is the scope of a patent.¹⁷⁸

The jurisdictional variations to the patent eligibility of CIBMIs discussed in Part II demonstrate the evolutionary nature of the respective patent statutes to adapt to new technologies not contemplated or fully understood at the time of their enactment and, further, that even if it is an imperfect instrument to implement change in this regard, the courts are entitled to articulate and modify principles based on public policy concerns with respect to the ultimate scope and quality of the patents which will be issued.

The Shopify-specific insights in Part III demonstrate at least one anecdotal example whereby the patent bargain does not appear to be functioning as intended. Patents

Available at <http://betakit.com/shopify-awarded-two-merchant-patents-as-company-continues-to-ramp-up-ip-activity/> (accessed 27 June 2021).

166 Hinton (n 34).

167 Murad Hemmadi 'With Amazon looming, Shopify's patent filings begin to hasten' *The Logic (blog)* (16 January 2021). Available at <https://thelogic.co/news/with-amazon-looming-shopifys-patent-filings-gather-pace/> (accessed 27 June 2021).

168 Kirkwood (n 165).

169 Hinton (n 34).

170 Ibid.

171 Hemmadi (n 167).

172 Burk and Lemley (n 4) 1585-6.

173 Perry and Currier (n 7) para 1.55.

174 Hemmadi (n 167).

175 Perry and Currier (n 7) para 6.124.

176 Ibid para 6.77.

177 Brean (n 11) 344.

178 Pila 'The Future of the Requirement for an Invention: Inherent Patentability as a Pre- and Post-Patent Determinant' (n 13) 2.

do not appear necessary to incentivize innovation in the e-commerce industry, nor do they appear necessary for market entry or success. Rather, the large transaction costs associated with patents in the software industry seem to encourage the acquisition of larger patent portfolios for strategic cross-licensing and litigation defence reasons in order for continued market participation and dominance.

Ultimately, the approaches currently followed in the UK and Canada with respect to the inherent patentability of CIBMIs appear to be striking an appropriate balance by ensuring that the respective requirements of technicality and physicality demand more than the simple integration with a computer in order to cross the initial subject matter threshold, thereby preventing the issuance of patents which generate more uncertainty and costs than benefits.