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ARTICLES

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Amulya Purushothama

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CONTENTS

ARTICLES

- Patenting Human genes: Wherein lies the balance between private rights and public access in India and the United States?* 1
ELIZABETH SIEW-KUAN NG
- Surveying the Damage: A Study of Damages Payouts by the Delhi High Court in Trademark Infringement Cases (2005-2014)* 52
EASHAN GHOSH
- The Proposed Treaty for the Protection of Broadcasting Organizations: Old Wine in a New Bottle?* 66
NEHAA CHAUDHARI, AMULYA PURUSHOTHAMA
- Legal and Taxation Issues Concerning E-Commerce* 87
GOPAL SAXENA
- On Monopolistic Practices in Bitcoin: A Coded Solution* 106
SANYA SAMTANI, VARUN BALIGA

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**PATENTING HUMAN GENES:
WHEREIN LIES THE BALANCE BETWEEN PRIVATE
RIGHTS AND PUBLIC ACCESS IN INDIA AND
THE UNITED STATES?**

Elizabeth Siew-Kuan NG*

ABSTRACT

This article examines the patentability of human genes by evaluating where the balance should lie between the protection of private rights and public access for the promotion of further innovation and public health. The author investigates this issue by providing a comparative study on the approaches adopted in India and the United States – two highly divergent nations that offer unique contrasts in a comparative analysis of their patent regimes. The outcome of the appraisal discerns a potential convergence in the Indian and US approaches on certain aspects of human gene patent-eligibility. This interesting result reveals that contrary to intuition, the differences in the state of economic, technological and patent law developments are not necessarily inimical to the prospect of adopting a common approach on certain facets of patent law, such as, those relating to the patent-eligibility of isolated genes. Moreover, the differences in the respective constitutional mandates

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2 Patenting Human Genes: Wherein Lies the Balance between
 Private Rights and Public Access?

do not inevitably constrain these two regimes to adopt dissimilar approaches to the legal treatment of issues, at least, in the context of specific aspects of human gene patenting. The article concludes by presenting that the Indian and US approaches on the patent-eligibility of isolated genomic DNA provides the better balance between granting private rights without jeopardising public access and represents a desirable departure from the current international practices.

CONTENTS

I.	Introduction	3
II.	Function of patent law in biotechnology	5
III.	Science of genetics: A brief introduction to genes and DNA	7
IV.	What is at stake? Implications of human gene patenting	10
V.	Do Human genes fall within patent subject-matter exclusion on the grounds that they are inherently un-patentable? Or are they patent-eligible subject-matter?	13
	A. The US approach	14
	1. Overview: Prequel to the Myriad decisions	14
	2. The Myriad decisions: Overturning the long-standing practice of granting patents claiming isolated DNA sequences	15
	B. The Indian approach	23
	1. Introduction	23
	2. Are human genes excluded subject-matter under the Indian Patents Act?	24
	3. Indian case-law	33
	4. Constitutional mandate	37
VI.	Striking the balance: Wherein lies the most appropriate balance between private rights and public access?	40
	A. Proponents of gene patenting	41
	B. A reply	42
VII.	Conclusion	50

I. INTRODUCTION

The evolving biotechnology revolution poses immense challenges to the patent system, particularly on issues relating to the patenting of the Code of Life. Whilst genetic technologies have made significant contributions to the development and provision of medical services, they have generated much controversy. Major concerns on the grant of gene patents include the fear that it may impede further research and development and pre-empt future innovation in genetic advancement. Other concerns relate to their adverse impact on public health and access to healthcare services.

In June 2015, three notable events with significant impact on the development of biotechnology and patent law were commemorated. On the genetic technology front, it marks the 15th anniversary of the completion of the draft human genome sequence that had identified approximately 20,000 genes¹ comprised therein. With respect to patent jurisprudence, it commemorates two important events: First, the 35th anniversary of the US Supreme Court's landmark decision of *Diamond v Chakrabarty*² which ruled that human-made living matter is a patentable subject-matter. This decision has been credited as being instrumental in "spurring the creation of a dynamic and flourishing biotech industry"³ by promoting an expansive approach in which patentable subject-matter may include "anything under the sun that is made by man". Second, 2 years ago the US Supreme Court handed down another ground-breaking decision in *Association for Molecular Pathology v Myriad Genetics (AMP v Myriad)*.⁴ With remarkable unanimity, nine justices ruled that isolated genomic DNA, being "products of nature", are not patent-eligible unlike man-made complementary DNA (cDNA)⁵ which do not exist

1 See *Human Genome Project information* at http://web.ornl.gov/sci/techresources/Human_Genome/index.shtml (accessed 30 May 2015).

2 *Diamond v. Chakrabarty* 44 U.S. 303 (1980).

3 Jim Greenwood, President and CEO of Biotechnology Industry Organization quoted in Gene Quinn, "June 16, 2010: 30th Anniversary of *Diamond v Chakrabarty*" (16 June 2010) at <http://www.ipwatchdog.com/2010/06/16/june-16-2010-30thanniversary-of-diamond-v-chakrabarty/id=11268/> (accessed 29 May 2015).

4 *Association for Molecular Pathology v Myriad Genetics ("AMP v Myriad")* 133 S. Ct. 2107 (2013).

5 Man-made complementary DNA (cDNA) is used in this article to denote DNA sequences where the introns have been excised from its genomic nucleotide sequence by man to form an exon-only DNA sequence, as compared with naturally occurring exon-only DNA strands.

4 Patenting Human Genes: Wherein Lies the Balance between
Private Rights and Public Access?

naturally. The decision in 2013 marked a dramatic retreat from several decades of USPTO's "patent-happy"⁶ practice of granting thousands of patents on genes,⁷ including patents directed to isolated DNA.⁸

Building on these and related works of eminent scholars, this article will examine the issues relating to the patent-eligibility of human genes.⁹ It will engage in this discourse by evaluating where the balance should lie between the protection of private rights and public access for the promotion of further innovation and public health. Not surprisingly, the subject-matter is capable of dividing the world along ethical and policy lines and even self-interest. The author investigates this issue by providing a comparative study on the patent-eligibility of human genes in India and the United States – two highly divergent nations that offer unique contrasts in a comparative analysis of their patent regimes. Their differences on the economic, cultural and technological fronts require no further elaboration. On the legal aspect, the US patent system is well established while India is a relatively late starter having only re-introduced product patents for pharmaceuticals and chemical patents in 2005.¹⁰

The outcome of the appraisal discerns a potential convergence in the Indian and US approaches on certain aspects of human gene patentability, particularly the patent-eligibility of isolated genomic DNA. This interesting result reveals that contrary to intuition, the difference in these two regimes are not necessarily inimical to the prospect of adopting a common approach on certain facets of patent law,

6 See *per* Justice Elena Kagan who reportedly alluded to the USPTO as "patent-happy" at the US Supreme Court hearing of the *Myriad* case. See report in Jess Bravin, "Justices wary on gene patents" (April 16, 2013) *The Wall Street Journal* at <http://www.wsj.com/articles/SB10001424127887324485004578424782830965300> (accessed 26 June 2015); Rose-Ellen Lessy, "What's at stake in the Supreme Court decision in 'AMP v Myriad Genetics'" (June 5, 2013) *The Nation* ("Lessy").

7 Lessy, *ibid.*

8 See the Brief for the United States as amicus curiae in the *AMP v Myriad* (in the US Supreme Court).

9 Patent eligibility is only the first hurdle on the path to seeking patentability which requires the fulfilment of other criteria such as newness (novelty), non-obviousness (inventive step) and industrial applicability (utility).

10 Re-introduced by the Indian Patents (Amendment) Act 2005.

such as, those relating to the patent-eligibility of isolated genes. Moreover, the differences in their respective constitutional mandates do not inevitably constrain these two regimes to adopt dissimilar approaches to the legal treatment of issues at least in the context of specific aspects of human gene patent-eligibility.

Whilst diversity is generally preferred in conventional wisdom, there are instances where the benefits of convergence outweigh the cost. In the context of the patenting of human genes, it is argued that granting patents on isolated human genomic DNA would increase the potential risk of blocking research on the genes and downstream uses that may be necessary for further innovation and, more importantly, to safeguard public health.

This work begins with a short discourse on the function of patent law in biotechnology. It is followed by an introduction into the basic genetics of DNA before an appraisal of the Indian and US approaches on the patent-eligibility of human genes. A brief comparative review of the differences in the Constitutional mandates of these two nations will be highlighted. It concludes by presenting that the Indian and U.S. approaches on the patent-eligibility of isolated genomic DNA provides the better balance between granting private rights without jeopardising public access and represents a desirable departure from the current international practices.

II. FUNCTION OF PATENT LAW IN BIOTECHNOLOGY¹¹

A patent comprises a bundle of “exclusive rights” granted by a State for a limited period of time for the exploitation of an invention by the inventor in exchange for the sufficient disclosure of the invention.¹² It does not accord a right to practice the invention,¹³ neither does it confer any possessory right over the subject matter in a patented invention. In the context of a patent on human genes, the patent owner does not have *possession* over the genes that exist naturally in a human body. Rather, the patent owner has the right to prohibit its commercial exploitation, for example, by preventing others from using the genes.

11 This section is based substantially on this author’s earlier works in Elizabeth Siew-Kuan Ng, “Immoral inventions: Interaction between ethics and biotechnology patent law” (2010) 22 Singapore Academy of Law Journal 931 – 947 at 933 – 934.

The traditional role of the patent system remains true today. It seeks, *inter alia*, to incentivise activities that promote scientific progress and the creation of useful inventions which are beneficial to society. The typically large investments associated with R&D in the pharmaceutical and biotechnology industry has led to calls for a broader interpretation of the subject-matter eligibility and other validity criteria to be “guided [solely] by innovation goals”.¹⁴ Yet, an overly broad conception of subject-matter patent-eligibility may itself stifle further innovation as it could impede public access and unduly restrict the study of natural resources in the world.

At a more general level, the attitudes towards the goal of patents in biotechnology will continue to be shaped by the ongoing debate on whether patents promote or impede innovation and patient access. Some fear that granting patents too far upstream may be detrimental to the basic objectives of patent law which is to encourage downstream innovation to advance scientific progress. Not surprisingly, private enterprises maintain that patents are “the only things that matter” to a business that takes huge risks for undertaking massive investments in research.¹⁵

As we move towards a paradigm where patent “monopoly” appears to have assumed the “role of a legitimate reward for innovation”,¹⁶ it may perhaps be timely to examine the double-edged sword of patent protection. No one denies that patent exclusivity incentivises innovation and has spawned great public benefits. Yet, it

12 See, Philip Grubb & Peter Thomsen, *Patents for Chemicals, Pharmaceuticals and Biotechnology* (New York: Oxford University Press, 5th Ed, 2010) at p 3; Lionel Bently & Brad Sherman, *Intellectual Property Law* (New York: Oxford University Press, 4th Ed, 2014) at p 335.

13 The freedom to practise an invention may be “limited by legislation or regulations having nothing to do with patents, or by the existence of other patents”. See Philip Grubb & Peter Thomsen, *Patents for Chemicals, Pharmaceuticals and Biotechnology* (New York: Oxford University Press, 5th Ed, 2010) at p 4. Note, however, section 83 of the Indian Patents Act relating to the working of patented inventions.

14 See, for example, Arti Rai, “Diagnostic patents at the Supreme Court” (2014) 18:1 Marq. Intell. Prop. L. Rev. 1 – 9 at p 2.

15 See Gene Quinn, “Emotion and Anecdotes should not drive patent policy debate” (16 June 2010) at http://www.ipwatchdog.com/2010/06/16/emotion-and-anecdotes-should-not-drive-patent-policy-debate/id=11260/?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+Ipwatchdog+%28IPWatchdog.com%29 (accessed 2 July 2015).

16 Luigi Palombi, *Gene Cartels, Biotech Patents in the Age of Free Trade* (Cheltenham: Edward Elgar Publishing, 2009) at p xi.

may also impede the beneficial exchange of information necessary to spur future innovation or affordable access to patented products.¹⁷ In the context of human gene patenting, there are serious implications of increased healthcare costs on patient access. There is a need to bear in mind these competing objectives in the debate of whether genes should be patent-eligible subject-matter or ought to remain “free to all men and reserved exclusively to none.”¹⁸

III. SCIENCE OF GENETICS: A BRIEF INTRODUCTION TO GENES AND DNA¹⁹

Many of us are familiar with the “double helix” structure of the deoxyribonucleic acid (DNA) which was deciphered by Doctors James Watson and Francis Crick in 1953.²⁰ Yet, few (outside of the scientific community) may be acquainted with the DNA story of a lesser known scientist by the name of Friedrich Miescher who had in 1869 isolated “nuclein” (DNA with associated protein) and identified DNA as a distinct molecule²¹. Nearly a hundred years later, that was followed by the work of Oswald T. Avery, Colin MacLeod, and Maclyn McCarty²² who in 1944 demonstrated that it was DNA, and not protein (as was previously believed), which formed the “hereditary molecule”.²³ It was only a decade later that James Watson and Francis Crick’s well-known “double helix”²⁴ DNA structure was finally accepted.

17 See *Mayo Collaborative Servs v Prometheus Labs Inc.*, 132 S Ct. 1289 at 1305 (2012) (“*Mayo*”).

18 See *Funk Brothers Seeds v Kalo Inoculant Co.* 333 U.S. 127 (1948) at 130.

19 See generally, the Brief for the United States as amicus curiae in the *AMP v Myriad* (in the US Supreme Court); *AMP v Myriad* 133 S. Ct. 2107 (2013).

20 See J.D. Watson & F.H.C. Crick, “A Structure for Deoxyribose Nucleic Acid” *Nature*, 171 (1953), pp. 737–738.

21 See DNA from the beginning at <http://www.dnaftb.org/15/bio.html> (accessed 3 June 2015); Ralf Dahm, “Friedrick Miescher and the discovery of DNA” (2005) 278 *Developmental Biology* 274-288.

22 See O.T. Avery, C.M. MacLeod, M. McCarty, “Studies of the chemical nature of the substance inducing transformation of pneumococcal types. Induction of transformation by a deoxyribonucleic acid fraction isolated from pneumococcus type III” *J. Exp. Med.*, 79 (1944), pp. 137–158.

23 See Ralf Dahm, “Friedrick Miescher and the discovery of DNA” (2005) 278 *Developmental Biology* 274-288.

24 See J.D. Watson & F.H.C. Crick, “A Structure for Deoxyribose Nucleic Acid” *Nature*, 171 (1953), pp. 737–738.

It took nearly 150 years for the DNA to have “risen from being an obscure molecule with presumed accessory or structural functions inside the nucleus” to become the “icon of modern bioscience”²⁵ and probably the most hotly contested subject-matter in the law of patents globally.

The human genome comprises approximately 20, 000 - 22,000²⁶ genes within 23 pairs of chromosomes which form the “basis of human inheritance”.²⁷ Genes form the basic units of heredity in all living organisms. Each gene is made up of DNA and its size varies from a “few hundred DNA bases to more than 2 million bases.”²⁸ DNA controls nearly every aspect of a living organism’s physiology.²⁹ The DNA in a cell is referred to as “native” or “genomic” DNA. DNA encodes the instructions to make molecules known as proteins that are essential to cell structure and function. Its basic structure comprises two strands bound and twisted to form a double helix connected by “cross-bars”. Each cross-bar in the helix is joined by two nucleotides.

There are four standard nucleotides consisting of adenine (A), thymine (T), cytosine (C) and guanine (G) which are chemically paired so that “A” will always bind with “T”, and “C” will always bind with “G”. (See figure below). The predictable pairings of nucleotides make it possible to deduce its corresponding nucleotide sequence. The precise sequence of a DNA nucleotide generates the essential information which specifically encodes a linear sequence of amino acids that are necessary to build the proteins encoded by a given gene. Whilst some sections of a gene’s nucleotide sequence may encode for amino acids, the rest may comprise non-coding and regulatory sequences. The amino acid-coding nucleotide sequences are known as “exons” and the remaining non-coding nucleotides sequences are known as “introns”.

25 See Ralf Dahm, “Friedrick Miescher and the discovery of DNA” (2005) 278 *Developmental Biology* 274-288.

26 See *AMP v Myriad* (2013) 133 S. Ct. 2107; *AMP v Myriad* (2012) 689 F.3d 1303. See also *Human Genome Project information* at http://web.ornl.gov/sci/techresources/Human_Genome/index.shtml (accessed 30 May 2015); *Genetics Home Reference* at <http://ghr.nlm.nih.gov/handbook/basics/gene> (accessed 2 July 2015);

27 *AMP v Myriad* (2012) 689 F.3d 1303.

28 See *Genetics Home Reference*, *supra* note 26.

29 See the Brief for the United States as amicus curiae in the *AMP v Myriad* (in the US Supreme Court).

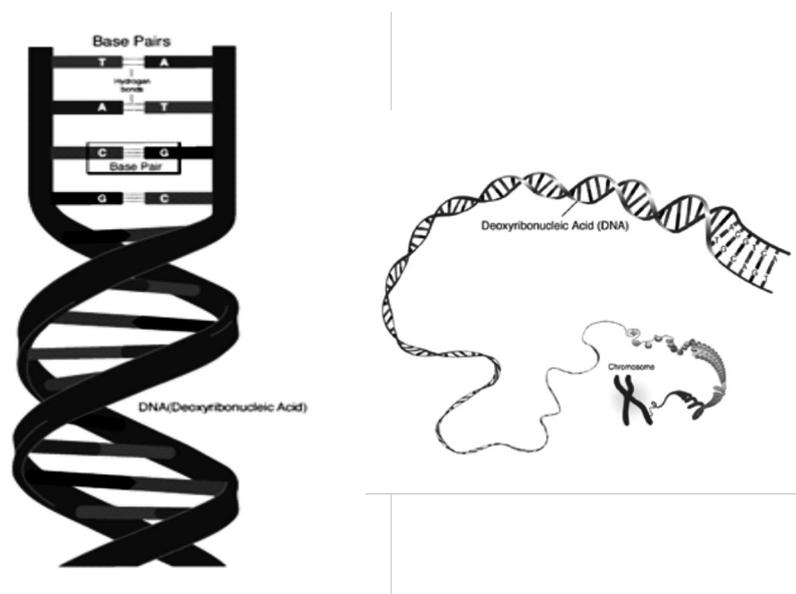


Image courtesy of Darryl Leja, NHGRI, NIH

Scientists and researchers have developed techniques to extract DNA from its natural cellular environment. The DNA that is extracted in this manner is generally referred to as “isolated genomic DNA” if the genetic sequence does not undergo any modification. Isolated genomic DNA is useful, for example, as genetic diagnostic tools and in DNA/gene sequencing.³⁰

Modifications to the isolated DNA³¹ can also be made by the scientists and researchers. This modification process will typically involve splicing and removing the non-coding introns that are generally interspersed with exon sequences in a given genetic sequence. The result is a DNA sequence made up of only exons. This resultant sequence is synthetic and is known as man-made complementary

30 See, for example, Renz L Salumbre, “Genomic DNA isolation and applications (2009) at <http://www.scribd.com/doc/13890135/Genomic-DNA-Isolation-and-Applications#scribd> (accessed 29 June 2015).

31 Isolated DNA in this article refers to isolated genomic/”native” DNA.

DNA (cDNA)³² Due to the fact that cDNA contains only protein-coding nucleotide sequences, they can, for example, be used to express specific proteins when inserted into a cell.

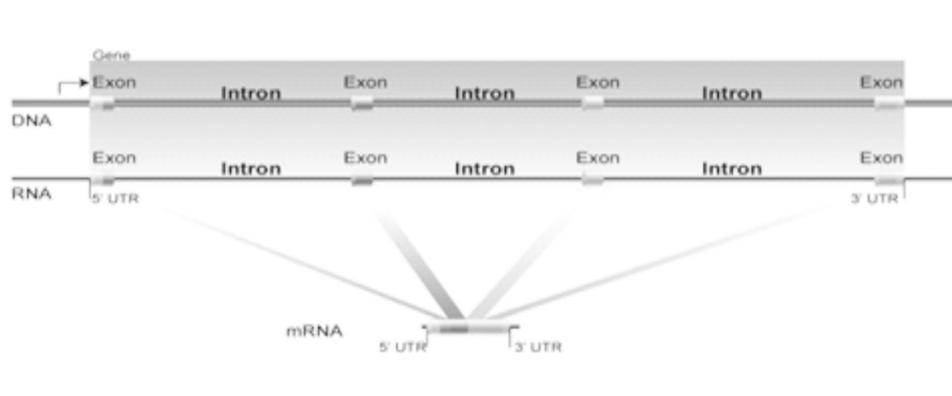


Image courtesy of NHGRI, NIH

Armed with this brief scientific background, we will now proceed to analyse the patent law issues.

IV. WHAT IS AT STAKE? IMPLICATIONS OF HUMAN GENE PATENTING

The patenting of human genes poses tremendous upstream and downstream challenges. A miscalibration may stifle innovation and unduly deprive the world of rightful opportunities to conduct further studies on genes. Where mutations of genes are correlated to diseases, an overly zealous response may have downstream adverse implications on diagnostic testing and genetic therapy. Since genetic sequences are largely derived from nature, the extent (if any) to which they should be exclusively reserved for a limited period to the inventor/investor requires careful consideration.

³² Man-made complementary DNA (cDNA) is used in this article to denote DNA sequences where the introns have been excised from its genomic nucleotide sequence by man to form an exon-only DNA sequence, as compared with naturally occurring exon-only DNA strands.

The BRCA gene saga may be illustrative. The function of the BRCA 1 gene, a tumour-suppressant, is to repair any damage to DNA. Mutation on this gene may radically increase the risk of cancer occurrence. Thus, the ability to correlate certain mutations of the BRCA gene to the increased risk of developing breast and ovarian cancer plays a vital role in prophylactic and therapeutic treatment.

This problem is compounded by the fact that breast cancer is one of the most common cancers in the US³³ as well as India,³⁴ among others.³⁵ For example, an average American woman has a 12 – 13% risk of developing breast cancer. But for women with certain genetic mutations, the breast cancer risk increases to 50 – 80% and the risk of ovarian cancer is around 20 – 50%.³⁶ Diagnostic testing of these women for the presence of mutation in the BRCA genes will play a significant part in enhancing the efficacy of clinical care and management therapy. The highly publicised case of the famous American actress and UNHCR global humanitarian ambassador Angelina Jolie Pitt is one such example.

Jolie Pitt had inherited a mutated BRCA 1 gene that carried an 87% risk of her developing breast cancer and a 50% risk of ovarian cancer.³⁷ She had lost her mother, grandmother and aunt to cancer. Armed with this knowledge, in 2013, Jolie underwent preventive double mastectomy. Two years later, she underwent a second preventive surgery to remove her ovaries and fallopian tubes.³⁸ This unique case illustrates how the discovery of the BRCA 1 gene mutation empowers some women to make choices over management of risks involving cancer associated with the BRCA mutation. The issue of whether Myriad should be conferred patent exclusivity over the BRCA genes was hotly contested globally.

33 See, for example, the US Centre for Disease Prevention & Control at <http://www.cdc.gov/cancer/breast/statistics/> (accessed 16 June 2015).

34 See Editor, “New Study shows breast cancer top killer among women, lung cancer among men in India” *The Indian Express* (29 May 2015).

35 Singapore Cancer Society at <http://www.singaporecancersociety.org.sg/learnaboutcancer/cancerfactsfigures.aspx> (accessed 16 June 2015);

36 Data is as reported in the court decisions of *AMP v Myriad* decisions, e.g. USCAFC, US Supreme Court.

37 See Angelina Jolie, “My Medical Choice” (May 14, 2013) *New York Times*.

38 See Angelina Jolie Pitt, “Angelina Jolie Pitt: Diary of a Surgery” (March 24, 2015) *New York Times*.

Whilst the BRCA 1 and BRCA 2 genes were known to exist in nature, no one had isolated them in such a manner that they could be effectively used and exploited. Myriad expended considerable effort, money and ingenuity in discovering and isolating those genes. However, the isolation techniques which they utilised were well-known and well-established. This feat has cast the spotlight on whether patents should be granted over the BRCA genes.³⁹

Some critics⁴⁰ have argued against gene patenting on the basis that the grant of patent rights on these genes will have a detrimental impact on the access to diagnostic testing, preventive and therapeutic treatment, as well as, impede future innovations in this area. It may, for example, block other diagnostic providers from offering alternative genetic tests; hinder patients' rights to second medical opinions and increase the price of diagnostic tests. Also, there are upstream implications where researchers may in certain circumstances be prevented from studying about patented genes.

The highly controversial nature of patent-eligibility for both isolated genomic DNA and cDNA is evident in the recent spate of patent lawsuits in many jurisdictions, including the United States, Australia and Canada. Indeed, at the time of writing this article, the gene patent challenge is pending before the High Court of Australia and similar lawsuits have been filed in Canada. The outcome of these litigations will determine the extent (if any) to which patent laws of different countries confer protection on the genetic sequences. Since the information encoded in a DNA sequence is necessary for the development of medical tests designed to detect certain gene mutations, the grant of patents over such a DNA sequence may adversely affect the diagnostic and treatment options available. A review of the patent law jurisprudence in India and the US may provide further illumination on this issue.

³⁹ Other reward structures may include the award of prizes.

⁴⁰ See, for example, Luigi Palombi, *Gene Cartels, Biotech Patents in the Age of Free Trade* (Cheltenham: Edward Elgar Publishing, 2009); Robert Cook-Deegan, "Gene Patents," in Mary Crowley (Ed.) *From Birth to Death and Bench to Clinic: The Hastings Center Bioethics Briefing Book for Journalists, Policymakers, and Campaigns*, (Garrison, NY: The Hastings Center, 2008), 69-72.

V. DO HUMAN GENES FALL WITHIN PATENT SUBJECT-MATTER EXCLUSION ON THE GROUNDS THAT THEY ARE INHERENTLY UN-PATENTABLE? OR ARE THEY PATENT-ELIGIBLE SUBJECT-MATTER?

Before proceeding, it may be useful to re-iterate three caveats. First, it should be emphasised that whilst human gene patenting may lie at the intersection between patent law and ethics/morality, these considerations have been adequately discussed elsewhere and will not be debated here.⁴¹ Second, this article is not concerned with method patent claims, such as, those in genetic diagnostic medicine where genetic sequences or their mutations are analysed and compared. These have been dealt with in the US Supreme Court decision of *Mayo Collaborative Services v Prometheus Laboratories*⁴². Third, the focal point of discussion in this work relates only to one specific aspect of human gene patenting, namely, whether (a) isolated genomic DNA and (b) cDNA, are patent-eligible subject matter in the US and India. This eligibility analysis is merely the first condition to claim patentability. If a given genetic sequence satisfies this requirement, a patent is granted if it also satisfies the other well-established attributes of patentability, namely, new in the light of the prior art (novelty), non-obvious to the skilled addressee (inventive step)⁴³ and capable of industrial application (utility).⁴⁴

With this in mind, the US and Indian gene patenting scenarios will be explored.

41 Elizabeth Siew-Kuan Ng, 'Immoral inventions: Interaction between ethics and biotechnology patent law' (2010) 22 Singapore Academy of Law Journal 931 – 947; N.V. Rangantha, 'Patenting Human Genes: Moral and Ethical Issues' (Preserve Articles) at <http://www.preservearticles.com/2011120618179/patenting-of-human-genes-moral-and-ethical-issues.html> (accessed 13 June 2015);

42 *Mayo* 132 S. Ct. 1289 (2012). This decision was handed down one year before *Myriad*. For an excellent discussion, see ArtiRai, 'Diagnostic patents at the Supreme Court' (2014) 18:1 Marq. Intell. Prop. L. Rev. 1 – 9.

43 It is worth noting that under Indian law, inventive step and non-obviousness are two different limbs. There is a need for a step whose inventiveness is to be tested and also non-obviousness of the inventive step with reference to the skilled addressee. [Comments of anonymous referees]

44 These are the well-established patentability criteria set out in the TRIPS Agreement.

A. THE US APPROACH

1. OVERVIEW: PREQUEL TO THE MYRIAD DECISIONS

The issue of what constitutes subject-matter which may be patented under US patent law is governed by section 101 of the US Patent Act 1952 (35 USC) which provides that:

“Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”

The precise scope of this provision within the remit of the statutory goal to promote “the Progress of Science and useful Arts”⁴⁵ has been the subject of various judicial interpretations. The US Supreme Court’s landmark decision of *Diamond v Chakrabarty*⁴⁶ in June 1980 affirmed that patents were available for “anything under the sun that is made by man”. In that case, the Court held that human-made living matter is patentable subject-matter and the fact that it embraces living matter is an irrelevant consideration on the issue of patentability under patent law. The test is whether the subject-matter is the result of human intervention. The Court ruled that the “relevant distinction was not between living and inanimate things but between products of nature, whether living or not, and human-made inventions.”⁴⁷ The Court also acknowledged the longstanding precedents which affirmed implicit exceptions, namely, that “laws and products of nature, natural phenomena, and abstract ideas” are not patentable subject-matter.⁴⁸ Rather, these were “manifestations of . . . nature, free to all men and reserved exclusively to none.”⁴⁹

45 See *Diamond v Chakrabarty* 447 US 303 (1980) at 307; *JEM v Pioneer Hi-Bred* 534 US 124 (2001) at 130; Brief for the United States as amicus curiae in the *AMP v Myriad* (in the US Supreme Court) at 2.

46 *Ibid.*

47 *Ibid* at 313.

48 The US Supreme Court cited the earlier decisions of *Parker v. Flook*, 437 U.S. 584 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972); *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130(1948); *O’Reilly v. Morse*, 15 How. 62, 112-121 (1854); *Le Roy v. Tatham*, 14 How.156, 175 (1853).

49 See *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130(1948).

Yet, the US Patent and Trademark Office (USPTO) appeared to have paid little heed to these limitations on patent eligibility. Instead, it adopted an expansive approach to the issue and granted patents on a “wide range of engineered DNA molecules”.⁵⁰ In 1982, it started to issue patents that “claimed cDNA molecules in combination with other genetic materials.”⁵¹ In subsequent years, the USPTO began granting thousands of patents to “isolated DNA” on the basis that upon isolation from their natural cellular environment, they were no longer the “product of nature”. As one commentator⁵² has highlighted, the practice ignored the implicit distinction maintained in earlier judicial decisions between patent-eligible cDNA and patent-ineligible isolated genomic DNA (gDNA).⁵³

It was not until 2009 that this long standing USPTO practice was challenged by a group of medical researchers, advocacy groups, medical doctors and patients in a case relating to patents granted to Myriad for the BRCA 1 and BRCA 2 genes. It ultimately culminated in the landmark US Supreme Court decision of *AMP v Myriad* which finally reversed several decades of USPTO’s liberal practice of issuing gene patents, including those on isolated genomic DNA sequences.

2. THE MYRIAD DECISIONS: OVERTURNING THE LONG-STANDING PRACTICE OF GRANTING PATENTS CLAIMING ISOLATED DNA SEQUENCES

THE FACTS

Myriad Genetics (Myriad) made a medical breakthrough when its scientists discovered the precise location of the BRCA 1 and BRCA 2 genes on chromosomes 17 (comprising of approximately 80 million nucleotides) and 13 (comprising around 114 million nucleotides). Myriad identified the approximately 80,000 nucleotides length of each of BRCA 1 and BRCA 2 genes. On an exon-only cDNA sequence, BRCA 1 gene is only around 5,500 nucleotides long and for BRCA 2 gene, it is around 10,200. This was an immensely valuable scientific

50 See Brief for the United States as amicus curiae in the *AMP v Myriad* (in the US Supreme Court) at p 5.

51 *Ibid.*

52 See John Conley, “Myriad finally: Supreme Court surprises by not surprising” (June 18, 2013) Genomics Law Report.

53 See, e.g. *Amgen v Chugai* 927 F.2d 1200 (1991).

contribution towards the development of medical tests for detecting mutations of these two genes in patients thereby enabling an assessment to be made on their risks of developing breast and ovarian cancer. Whilst the scientific community was aware that heredity played a significant role in the risks associated with cancers, they did not know which genes were associated with these types of cancer until Myriad's breakthrough.⁵⁴

Upon this discovery, Myriad filed and obtained several patents including those related to the isolated DNA and cDNA that encodes for BRCA 1 and BRCA 2 genes. If these patents are held to be valid, they would confer on Myriad the exclusive right to isolate the BRCA 1 and BRCA 2 genes from an individual's genome, as well as, to synthetically create the BRCA cDNA. Since isolation is an essential step in conducting genetic and diagnostic testing, Myriad tried to enforce its patents against entities that were performing the BRCA testing. If the patent is upheld, Myriad will have "solidified its position as the only entity providing BRCA testing."⁵⁵ The scientific research community may have far less scope to conduct further studies on the BRCA genes since there is "no meaningful" research exemption from patent infringement in the US law.⁵⁶

THE US DECISIONS

(a) *At the US District Court (USDC) & US Court of Appeal for the Federal Circuit (USCAFC)*

It all began when Judge Sweet of the US District Court issued his bold pronouncement that Myriad's patent claims on BRCA 1 and BRCA 2 genes were patent-ineligible and invalidated them, *inter alia*, on the ground that they were not "markedly different" from products of nature. The learned judge also rejected the analogy of genetic sequences to chemical compounds which are eligible subject-matter under patent law.

54 See *AMP v Myriad* 133 S. Ct. 2107.

55 *Ibid.*

56 See Secretary's Advisory Committee on Genetics, Health, and Society (SACGHS) (2010) *Report on Gene Patents and Licensing Practices and Their Impact on Patient Access to Genetic Tests*; John Conley, "Myriad finally: Supreme Court surprises by not surprising" (June 18, 2013) Genomics Law Report.

Not surprisingly, the case was appealed to the US Court of Appeals for the Federal Circuit (USCAFC). At the USCAFC, a divided panel reversed Judge Sweet's ruling. The judges were unanimous in ruling that man-made cDNA molecules were patent-eligible. They also held (by a delicate majority) that isolated genomic DNA was also patent-eligible. The plaintiffs appealed to the US Supreme Court. The Supreme Court vacated the USCAFC's opinion and remanded the case to the Federal Circuit for re-consideration in the light of the US Supreme Court's decision in *Mayo v Prometheus*. On remand from the Supreme Court, the same three member panel of the USCAFC basically reaffirmed its earlier decision ruling that Myriad's composite claims to isolated DNA and cDNA fell within the scope of patentable subject matter.

The central tenet of the majority decision is that the act of cleaving the DNA sequence from its cellular environment in the human body was sufficient to transform the isolated DNA into a different molecule. However, Judge Lourie and Judge Moore proffered different reasoning for their decisions:

Judge Lourie opined that isolated DNA was "markedly different" from those found in nature since the "separated portions of DNA" were non-naturally occurring new molecules (with unique chemical compositions) that never existed in that form in the human body or in nature.⁵⁷ The learned judge appeared to have adopted the chemist's viewpoint (i.e. relied on the chemical composition of the isolated DNA sequence), rather than that of a biologist which focuses on the uses (i.e. the "informational transmitting quality") of a molecule.

Judge Moore offered two main rationale for her decision. First, she expressed the view that the chemical differences highlighted by Judge Lourie alone are insufficient to support a grant. An isolated DNA could be patent-eligible only if it possesses greater utility than native genomic DNA. On this basis, she drew a distinction between shorter isolated DNA strands which may satisfy this additional utility requirement (through their use as primers and probes) as opposed to similar but longer DNA strands. Second, she assigned significant weight to the long-standing

⁵⁷ See Brief for the United States as amicus curiae in the *AMP v Myriad* (in the US Supreme Court) at p 8.

practice of the USPTO in issuing thousands of patents on such gene sequences. She was reluctant to disturb the “settled expectations and extensive property rights” that had been generated. Importantly, Judge Moore conceded that her vote might have been different if she “were deciding this case on a blank canvas.”

Isolated Genomic DNA

Judge Bryson dissented on the issue of isolated genomic DNA. He stressed that the breaking of the covalent chemical bond was inconclusive and held that isolated genomic DNA was not patent eligible as the isolated nucleotide sequence remain the same as that found in naturally occurring human genes. He proffered a “leaf analogy” as follows: merely isolating genomic DNA from the human body is not patent-eligible subject-matter in the same way that a natural leaf does not become patent eligible subject-matter just because it has been plucked from the tree. Judge Bryson opined that:

“[E]xtracting a gene is akin to snapping a leaf from a tree. Like a gene, a leaf has a natural starting and stopping point. It buds during spring from the same place that it breaks off and falls during autumn. Yet prematurely plucking the leaf would not turn it into a human-made invention ... That would remain true if there were minor differences between the plucked leaf and the fallen autumn leaf, unless those differences imparted “markedly different characteristics” to the plucked leaf.”⁵⁸

On this issue, Judge Bryson offered a kidney analogy - an isolated gene should be patent-ineligible subject-matter in the same way that a kidney which has been removed from the body is not eligible for patent protection. He stated that:

“A human kidney is a product of nature; it does not become a patentable invention when it is removed from the body, even if the patentee has developed an improved procedure for extracting the kidney, and even if the improved procedure results in some physical or chemical changes to the kidney at the points where the kidney was attached to the host body.”

58 *AMP v Myriad* (2012) 689 F.3d 1303.

The learned Judge acknowledged that the isolation of a gene involves the “alteration of a single molecule” but disputed that this alteration would be sufficient for the purpose of patentability. He concluded that it should not make a difference whether “the isolated substance is part of a single molecule, as in the case of the BRCA genes, or part of a very large aggregation of molecules, as in the case of a kidney.”⁵⁹ Judge Bryson correctly qualified that it would be an oversimplification “to say that something that can be characterized as “isolated” or “extracted” from its natural setting always remains a natural product and is not patentable.” It would depend, *inter alia*, on whether the process of isolation or extraction has resulted in a product with distinct characteristics which functions differently from the naturally-occurring state from which it was derived. Based on this analysis, the learned judge rightly concluded that:

“[N]ature has defined the genes as independent entities by virtue of their capacity for protein synthesis and, ultimately, trait inheritance. Biochemists extract the target genes along lines defined by nature so as to preserve the structure and function that the gene possessed in its natural environment. In such a case, the extraction of a product in a manner that retains the character and function of the product as found in nature does not result in the creation of a human invention.”⁶⁰

Judge Bryson’s leaf analogy was challenged by Judge Lourie (of the majority) largely on the basis that the process of isolating DNA was more difficult than simply plucking a leaf from the tree. He opined that:

“Snapping a leaf from a tree is a physical separation, easily done by anyone. Creating a new chemical entity is the work of human transformation, requiring skill, knowledge, and effort.”

With due respect to Judge Lourie, as one commentator has correctly highlighted, although the isolation of DNA may involve more skill than plucking a leaf, once the genetic sequence of the gene is known – the actual process of DNA isolation

59 *Ibid.*

60 *Ibid.*

was well-known and would not be difficult to the person skilled in the art.⁶¹ Indeed, DNA isolation processes are routinely conducted in many colleges of different countries.⁶² Moreover, the majority appeared to have focused on the skill and labour involved in the isolation process. With respect, it is submitted that this relates to the issue of non-obviousness/inventive step rather than product patent-eligibility. This is also reinforced by Judge Bryson’s kidney analogy. Although the removal of a kidney requires substantial skills and labour, no one would dispute that the surgically removed kidney cannot be patented.

The parties appealed to the highest court of the United States.

(b) The US Supreme Court decision

In June 2013, in a succinct judgment, nine Justices of the US Supreme Court accepted the position of the US Government and unanimously ruled that isolated genomic DNA are not patent-eligible subject-matter but man-made cDNA are patent-eligible.⁶³ In denying patent-eligibility to isolated genomic DNA, the Court held that Myriad had not created or altered the genetic information encoded in the BRCA 1 and BRCA 2 genes. Indeed, the order of the nucleotides in the isolated genomic sequence remained the same as that which exists in nature. In contrast, the Court was persuaded that the arrangement of the nucleotide sequence in cDNA is dictated by man rather than by nature. The Court focused on the “product of nature” exclusion and re-affirmed the implicit exception to 35 USC § 101 that laws of nature, natural phenomena and abstract ideas are not patentable.

61 See Dennis Crouch, “Gene patent debate continues: Federal Circuit finds isolated human genes patentable” (16 August 2012) Patently-O at <http://patentlyo.com/patent/2012/08/gene-patent-debate-continues-federal-circuit-finds-isolated-human-genes-patentable.html> (accessed 7 June 2015).

62 See Dennis Crouch, “Gene patent debate continues: Federal Circuit finds isolated human genes patentable” (16 August 2012) Patently-O at <http://patentlyo.com/patent/2012/08/gene-patent-debate-continues-federal-circuit-finds-isolated-human-genes-patentable.html> (accessed 7 June 2015).

63 Thomas J delivered the Court opinion, in which Roberts CJ and Kennedy, Ginsburg, Breyer, Alito, Sotomayor and Kagan JJ joined; and Scalia J concurred in part and concurred in the judgment.

The Court stressed that these are “basic tools of scientific and technological work” that lie beyond the domain of patent protection.⁶⁴ Justice Thomas (delivering the Court opinion) rightly reminded us of the importance of these exclusions when he highlighted that:

“Without this exception, there would be considerable danger that the grant of patents would “tie up” the use of such tools and thereby “inhibit future innovation premised upon them”... which would be at odds with the very point of patents, which exist to promote creation.”⁶⁵

However, the learned Justice cautioned against adopting too stringent an exclusion against patents on naturally occurring things. Since “all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas, ... too broad an interpretation of this exclusionary principle could eviscerate patent law.”⁶⁶

The US Supreme Court pointed out, what this author believes to be the crux in resolving this complex issue, that in a determination of whether human genes are patent-eligible subject-matter we should not overlook the well-established rationale that patent protection must strike:

“a delicate balance between creating ‘incentives that lead to creation, invention and discovery’ and ‘impeding the flow of information that might permit, indeed spur, invention’⁶⁷ [and access for public health]⁶⁸

Although Justice Thomas did not expressly articulate the public interest/public health factor, he alluded to the fact that Myriad’s patents (if valid) would give it the exclusive right to isolate the BRCA genes which is a necessary step in conducting

64 Per Justice Thomas *AMP v Myriad* (2013) 133 S. Ct. 2107.

65 Ibid. Per Justice Thomas quoting in part from *Mayo v Prometheus* 132 S. Ct. 1289 (2012).

66 *Association for Molecular Pathology v Myriad Genetics* 133 S. Ct. 2107 (2013) at 2108.

67 Per Justice Thomas *ibid.*

68 Words in bracket inserted by this author.

genetic testing which would in turn “solidify its position as the only entity providing BRCA testing.”⁶⁹

(c) *Reactions to the Decision*

This more conservative approach of the US Supreme Court and US Government marks a significant change in the law and practice of the US patent regime.⁷⁰ Not surprisingly the reactions to this momentous court ruling were varied and intense. Some applauded the decision as a “thrilling victory for patients”⁷¹; “great news for patients, doctors and scientific researchers”⁷²; and portended that it will promote further innovation in the biotechnology industry and encourage the creation of new entities. Others (mainly from the pharmaceutical and biotechnology industry) decried it as the doomsday of innovation.⁷³ Still others were less charitable and hurled personal attacks at the Justices, likening them to “Emperor without any clothes”; and suggesting “you would have to go out of your way to find nine less qualified people to decide issues of a technological nature.”⁷⁴

Be that as it may, the US jurisprudence on the patent-eligibility of human genes is now settled. Armed with this knowledge, let us traverse to explore the Indian landscape.

69 *Per Justice Thomas AMP v Myriad* (2013) 133 S. Ct. 2107.

70 *Lessy, supra* note 6.

71 See American College of Medical Genetics and Genomics (ACMG) statement of June 13, 2013 at <https://www.acmg.net/docs/GenePatientsDecision.pdf> (accessed May 28, 2015).

72 See Lori Andrews, “US Supreme Court liberates breast cancer genes” (June 14, 2013) IIT Chicago-Kent Faculty blog at <http://blogs.kentlaw.iit.edu/faculty/2013/06/14/andrews-u-s-supreme-court-liberates-breast-cancer-gene/> (accessed May 28, 2015). Andrews L filed amici curiae briefs on behalf of several medical organisations (including the American Medical Association, American Society of Human Genetics, American College of Obstetricians and Gynaecologists).

73 See Donald Zuhn, “Reaction to Supreme Court’s decision in AMP v Myriad” (July 1, 2013) Patent Docs at <http://www.patentdocs.org/2013/07/reaction-to-supreme-courts-decision-in-amp-v-myriad.html> (accessed May 28, 2015)

74 See Gene Quinn, “Naked emperors: A Supreme Court patent tale” (May 31, 2015) IP Watchdog blog at <http://www.ipwatchdog.com/2015/05/31/naked-emperors-a-supreme-court-patent-tale/id=58110/> (accessed 3 June 2015).

B. THE INDIAN APPROACH

1. INTRODUCTION

The Indian Patents Act 1970⁷⁵ regulates the grant of patents on inventions. This Act adopts the well-established patentability criteria set out in the TRIPS Agreement.⁷⁶

Prior to 2002, the Indian Patent Office did not grant patents for inventions relating to “(a) living entities of natural or artificial origin, (b) biological materials or other materials having replicating properties, (c) substances derived from such materials and (d) any processes for the production of living substances/entities including nucleic acids.”⁷⁷

In 2002, the High Court of Calcutta in *Dimminaco AG v Controller of Patents & Designs*⁷⁸ granted patents for the processes involved in the preparation of the Bursitis vaccine where the final product of that process contained living organisms. Initially, it was rejected by the Indian Patent office on the grounds that the process for the preparation of the said vaccine could not be considered a “manner of manufacture”⁷⁹ as its end product contained a living entity and the claimed process was a natural one. That was overturned by the High Court. Justice Asok Kumar Ganguly found that there is no statutory bar against patenting the manner of manufacture notwithstanding the end product contains a living organism.

Statutory changes followed. The Patents Act was amended in 2002 to specifically permit, *inter alia*, the patenting of biotechnological and microbiological processes. In the definition of “invention”, the “manner of new manufacture” was replaced by “new product or process involving an inventive step and capable of industrial application.”⁸⁰ In 2005, a further amendment paved the way for the grant of

75 Indian Patents Act (39 of 1970) (as amended).

76 Namely, that the invention must be new, involve an inventive step and be capable of industrial application.

77 See Indian Guidelines for examination of biotechnology applications for patent (March 2013) at p2.

78 AID No. 1 of 2001 (High Court of Calcutta).

79 This was based on the definition of “invention” under the pre-Patents (Amendment) Act 2002.

80 Prior to the Patents (Amendment) Act 2002, the reference, *inter alia*, was to “manner of manufacture”, a term used under the section 6 of the English Statute of Monopolies of 1623.

product patents in any field of technology, including those in biotechnology.⁸¹ The Patents Act also expressly enumerates a list of subject-matter which are excluded from patent protection. We now turn to examine some of the provisions which are particularly relevant to gene patenting.

2. ARE HUMAN GENES EXCLUDED SUBJECT-MATTER UNDER THE INDIAN PATENTS ACT?

Section 3 of the Indian Patents Act stipulates a list of inventions which are not patentable. Of specific relevance are:

Inventions not patentable: The following are not inventions within the meaning of this Act -

3 (b) an invention the primary or intended use or commercial exploitation of which could be contrary to public order or morality or which causes serious prejudice to human, animal or plant life or health or to the environment;

3 (c) the mere discovery of a scientific principle or the formulation of an abstract theory or discovery of any living thing or non-living substance occurring in nature;

3(d) the mere discovery of a new form of a known substance which does not result in the enhancement of the known efficacy of that substance or the mere discovery of any new property or new use for a known substance or of the mere use of a known process, machine or apparatus unless such known process results in a new product or employs at least one new reactant.

Explanation: For the purposes of this clause, salts, esters, ethers, polymorphs, metabolites, pure form, particle size, isomers, mixtures of isomers, complexes, combinations and other derivatives of known substance shall be considered to be the

81 See Indian Guidelines for examination of biotechnology applications for patent (March 2013) at p 3. See also Shamnad Basheer, "India's tryst with TRIPS: The Patents (Amendment) Act 2005" (2005) 1 The Indian Journal of Law and Technology 15-46.

same substance, unless they differ significantly in properties with regard to efficacy;

3(e) a substance obtained by a mere admixture resulting only in the aggregation of the properties of the components thereof or a process for producing such substance;

3(j) plants and animals in whole or any part thereof other than micro-organisms but including seeds, varieties and species and essentially biological processes for production or propagation of plants and animals.

The scope and impact of these sub-sections on the patent-eligibility of human genes do not appear to have been subject to any judicial consideration in India. Unlike the US, the Indian jurisprudence on the patenting of human genes has not yet been settled. Currently, the only guidance is to be found in the Indian Guidelines for Examination of Biotechnology Applications for Patents (the Indian Guidelines)⁸² and the Indian Manual of Patent Practice and Procedure (IMPPP).⁸³ It is to these that the author now turns her attention.

Before proceeding, it may be useful to highlight three main issues. First, the general ethical and moral considerations enunciated in section 3(b) of the Act will not be examined in this article as it has already received detailed treatment elsewhere.⁸⁴ Second, the author will only evaluate the impact of sections 3(c), 3(d), 3(e) and 3(j) with respect to the patent-eligibility of human genes, namely, naturally occurring DNA, isolated genomic DNA and cDNA. Third, it is unclear whether section 3(j) is applicable to human genes. We will analyse this third issue before an appraisal on its application to human gene patenting.

82 The Indian Biotechnology Guidelines were published in March 2013, just three months before the US Supreme Court released its judgment in *AMP v Myriad*. These guidelines were issued by the Indian Office of the Controller General of Patents, Designs and Trade Marks.

83 It should be noted that the IMPPP does not have the force of law. [Comments by the anonymous referees].

84 See, for example, Elizabeth Siew-Kuan Ng, "Immoral inventions: Interaction between ethics and biotechnology patent law" (2010) 22 *Singapore Academy of Law Journal* 931 – 947.

Section 3(j) Indian Patents Act

Section 3 (j) excludes from patentability any animal “in whole or any part thereof”. Its scope is ambiguous. First, it is unclear whether “animal” includes a human being. For general scientific purposes, the human species would be classified as a mammal within the animal kingdom.⁸⁵ On the other hand, this author submits that a contextual approach of section 3 suggests otherwise. A purposive interpretation of the sequence of words “human”, “animal” and “plant life” used in juxtaposition in section 3(b) would support the exclusion of human from the scope of “animal”. Furthermore, the context of the words “plant” and “animal” as they occur in section 3(j) also lend support to the conclusion.

However, for the sake of completeness, we shall proceed to evaluate the application of the section on the assumption that “any animal” includes a human. Some support for this may be found in an example provided in the Indian Guidelines which asserts that a claim for *ex vivo* educated autologous NK T cells for treating an immune-related disorder in a mammalian subject would fall within the scope of section 3(j). There is no further guidance on what constitutes a “mammal” or whether it encompasses a “human being”. Even if “any animal” were held to include humans, there is another question as to whether a genetic sequence would constitute a “part of” an animal. One commentator⁸⁶ reported that based on an interview conducted with some patent examiners of the Indian Patent Office, there appears to be an informal consensus that section 3(j) is not applicable at the molecular/cellular level involving genes. Unfortunately, no reason was enunciated for this viewpoint. It is unclear whether the interviewees were referring to the process or product at the molecular/cellular level. If it is the latter, then with due respect, this author disagrees and submits that there is nothing in the provision that requires such a restrictive interpretation. Human blood or bone marrow is as much a part

85 See Simon Nathan. ‘Collections of plants and animals - Identifying plants and animals’, TeAra - the Encyclopedia of New Zealand, at <http://www.TeAra.govt.nz/en/document/12130/classification-of-humans> (accessed 26 June 2015); See also Editor, “Classification of human species” *Factophile* at <http://www.factophile.com/show.content?action=view&pageid=3> (accessed 26 June 2015).

86 See Bhavishyavani Ravi, “Gene patents in India: Gauging policy by an analysis of the grants made by the Indian Patent Office” (2013) 18 *Journal of Intellectual Property Rights* 323 – 329 at 327.

of a human body as is a distinct organ such as a kidney. It would require overly zealous judicial activism to import distinctions based on anatomical structures, features or functions into the simple phrase, “any part” thereof.⁸⁷

It is the author’s submission that human genes are likely to fall outside section 3(j) on the grounds that an “animal” does not include a human based on the reasons enunciated above. However, in the event that the Indian courts come to an opposite conclusion, we need to consider its application to human genetic sequences.

With this in mind, we will now proceed to analyse the effects of sections 3(c), 3(d), 3(e) and 3(j) on the patent-eligibility of human genes, namely, naturally occurring DNA, isolated genomic DNA and cDNA.

(a) Naturally occurring DNA

It seems clear that the mere identification of the location of a human gene, or part of a gene, as it exists within a chromosome in nature is not patentable. It will be excluded under section 3(c) as a “discovery” of a naturally occurring living thing. This approach is largely similar to the “product of nature” exclusion under the US law.

It will also be excluded under section 3(j) as “part of an animal [human]”, if the provision applies to human genes.

(b) Isolated genomic DNA

What is less clear is whether isolated genomic DNA would fall within the scope of the exclusions under sections 3(c) and/or 3(j). Prior to 2013, the Indian Patent Office had granted patents that claim isolated genetic sequences. However, under its 2013 Indian Biotechnology Guidelines, nucleic acid sequences, proteins, enzymes, compounds etc. which are “directly isolated from nature” will be treated as a discovery and are not patentable subject-matter.⁸⁸ Based on these Guidelines, it

⁸⁷ See Directive 98/44/EC of the European Parliament and of the Council of 6 July 1998 on the legal protection of biotechnological inventions.

⁸⁸ For example, a claim to an isolated *Bacillus* occurring in nature which will be treated as a discovery of a living matter occurring in nature and hence, not patentable under section 3 (c). See Indian Biotechnology Guidelines.

would seem that isolated genomic DNA which are “directly isolated from nature”⁸⁹ will also be excluded from patentable subject-matter on the basis that they are discoveries under section 3(c). However, this is not without controversy.⁹⁰ If the courts adopt the Guidelines, the legal position will seem to be aligned to the US approach.

Consideration may also be given to the impact of section 3(d) on the patent-eligibility of isolated genomic DNA. If the term “substance” includes human genes, then the genomic DNA sequence in its “isolated form” may be broadly considered as a “mere discovery of a new form of a known substance”. If this is correct, then it may be excluded under section 3(d) unless it results in the “enhancement of the known efficacy of that substance”. What constitutes “enhanced efficacy” in the context of isolated human genes is unclear? Nonetheless, since the precise arrangement of the nucleotide sequence in the isolated genomic DNA remains the same as that which occurs in nature, it may be difficult to establish that the mere act of isolating the genomic DNA is sufficient to result in the “enhanced efficacy” of the genetic sequence. Hence, it seems likely that isolated genomic DNA may be excluded from patentability for the reasons enunciated above.

Likewise, isolated genomic DNA may also be excluded under section 3(j) on the basis that an unmodified element isolated from the human body would still constitute a “part of an animal [human]” under section 3(j), if the provision applies to human genes. The mere act of isolation is insufficient to transform the unmodified isolated element into a non-human part.

If the Court accepts the outcome of the above evaluation, then the Indian approach relating to the patent-eligibility of isolated human genomic DNA may seem to be aligned to that of the US.

89 See Mrinalini Gupta, “India: Are gene patents a hindrance to innovation?” (26 June 2013) Mondaq at <http://www.mondaq.com/india/x/247166/Life+Sciences+Biotechnology/Are+Gene+pat+ents+a+hindrance+to+Innovation> (accessed June 8, 2015).

90 See Sreenivasulu N.S., *Law Relating to Intellectual Property* (2013) at p 362 where it is opined that India having ratified the TRIPS Agreement which mandates patent protection for biotechnological inventions, in India microorganisms, plants, animals, and isolated human genetic material including the products of such genetic materials such as proteins are patentable. Similarly, it is stated (at p 360) that “products of biotechnological process produced through some technical interference to natural process are non-natural hence patentable.

(c) cDNA

Turning to the more challenging issue of whether cDNA is patentable subject-matter, it may be worthwhile to repeat that we are not dealing with *naturally-occurring* short exon-only DNA sequences that exist in nature. These are likely to be excluded from patentability under sections 3(c) and 3(j). Neither are we concerned with recombinant/genetically engineered DNA sequences. Instead, we are considering an exon-only genetic sequence that is left after the introns have been removed from an isolated genomic DNA sequence by man. There seems to be a lack of useful guidance on this specific subject in the Indian Guidelines and IMPPP. The author will seek to assess this issue by analysing the exclusions set out in sections 3(c), 3(d), 3(e) and 3(j).

Section 3(c)

The Indian Guidelines provide that this section covers products that have been “*directly isolated*” from nature. It also acknowledges that modified products which do not constitute discovery of living things occurring in nature are patentable subject-matter. Beyond this, it is silent on the requisite degree of modification that would be required.

On a broad reading of section 3(c), it may be possible to argue that an artificially created exon-only sequence is no more than a “discovery” notwithstanding the human excision of the introns. After all, the precise arrangement of any nucleotide sequence of exon-only man-made cDNA has its equivalent in naturally occurring DNA sequences too.⁹¹ Indeed, the informational content encoded in the exon-only genetic sequence of the man-made cDNA would be identical to another exon sequence found in its “natural state”.

⁹¹ At the first oral argument, the US Government illustrated its position by using a “magic microscope” test. According to this test, “if an imaginary microscope could focus in on the claimed DNA molecule as it exists in the human body, the claim covers ineligible subject matter. The government thus argued that because such a microscope could focus in on the claimed isolated BRCA1 or BRCA2 sequences as they exist in the human body, the claims covering those sequences are not patent eligible. In contrast, the government contended, because an imaginary microscope could not focus in vivo on a cDNA sequence, which is engineered by man to splice together non-contiguous coding sequences (i.e., exons), claims covering cDNAs are patent eligible.” See *Lourie J in AMP v Myriad (USCAFC)* at p 41.

On a narrower construction of the word “discovery” in section 3(c), an argument could be advanced that a given strand of man-made cDNA is not a discovery *per se* since it is not “directly isolated” from nature. Rather it is a product artificially derived by man from work done on a naturally occurring substance. Indeed, cDNA may be more accurately referred to as a product that has been indirectly derived from a product directly isolated from nature. Based on this interpretation the excision of the introns may be said to have transformed the subject of the “discovery” into an invention. Thus, it would appear that the human modification may suffice to take cDNA out of the scope of section 3 (c). This may also be consistent with one of the illustrative examples in the Guidelines which intimates that an isolated peptide that is structurally equivalent to a cupredoxin or cytochrome protein would fall under section 3 (c) if a claim does not clearly indicate what “modifications/alterations/deletions” had been made to the wild-type native peptides. No guidance is provided on the extent of modification required. Similarly, another illustrative example (albeit under “industrial application”) suggests that a “polypeptide in *substantially* isolated form comprising ...” may be patentable if the claim is sufficiently enabled and its use properly established”. Again, it does not provide any elucidation, for example, on what is the distinction between a “*directly* isolated” product and a “*substantially* isolated” one.

Section 3(d)

Another provision which may be applicable in the context of the patent-eligibility of cDNA is section 3(d). If this provision applies to human genes, then cDNA may be excluded from patentability if it constitutes a “mere discovery of a new form of a known substance which does not result in the enhancement of the know efficacy of that substance”. Several factors may be worth considering. First, does cDNA constitute a “new form” of a known genomic DNA sequence? Second, is the excision of the introns to artificially create an exon-only cDNA sequence considered as a “mere discovery”? Even if these two questions are answered in the affirmative, the issue of whether cDNA will be excluded from patentability under this provision will also be contingent on whether it results in “enhanced efficacy”. In the context of human gene patentability, it is unclear what constitutes “enhanced efficacy”. For example, would the creation of an exon-only cDNA where the

precise arrangement of its nucleotide sequence has its equivalent in the genomic DNA sequences as it occurs in nature (without any modification) result in “enhanced efficacy”? Moreover, it should also be highlighted that merely establishing a “new use” for the known sequence is not sufficient to fall outside this exclusionary provision since “new use for a known substance” is also excluded from patentability under section 3(d).

Section 3(e)

This provision deals, *inter alia*, with substances obtained by a “mere admixture resulting only in the aggregation of the properties of the components thereof”. According to the Indian Biotechnology Guidelines, this provision “reflects the legislative intent on the law of patenting of combination inventions in the field of chemical as well as biotechnological sciences.” If this provision is applicable to human genes, then several issues are worth emphasising. First, it is unclear whether cDNA constitutes a substance that is obtained by a “mere admixture”. On a broad reading, it may be possible to consider the creation of an exon-only cDNA through the excision of the introns from the genetic sequence as a “mere admixture” of genetic sequences. Second, even if it can be regarded as a “substance obtained by a mere admixture”, it will only be excluded under section 3(e) if it results only “in the aggregation of the properties of the components thereof”. To put it another way, if the “mere admixture” results in some “synergistic properties”, then it may fall outside the section 3(e) exclusion. This interpretation is supported by the Indian Biotechnology Guidelines which provides that the “mere placing side by side of old integers so that each performs its own proper function independently of any of the others is not a patentable combination, but that where the old integers when placed together has some working interrelation producing a new or improved result, then there is patentable subject matter in the idea of the working inter relations brought about by the collocation of the integers.”⁹²

Section 3(j)

Equally challenging is the issue of whether cDNA will fall within the section 3(j) exclusion, if the provision applies to human genes.

92 See Indian Biotechnology Guidelines at p 13.

Although an example in the Indian Guidelines asserts that educated autologous NK T cells would fall within the scope of section 3(j), this may be of limited utility. It does not elucidate the extent of alteration required for it to fall outside the scope of section 3(j).

Similarly, although the IMPPP contains a reference to permissive claims directed at genetically modified sequences,⁹³ there is no further guidance on what constitutes “genetic modification” or the extent of modification required. For example, would the mere excision of introns from the genomic DNA sequence constitute sufficient “genetic modification”? The IMPPP also contains another reference to the fact that where a patent application discloses “sequence listing of nucleotides and/or amino acid’ it shall be filed in electronic form.⁹⁴ To the extent that this procedural provision implicitly confirms that genetic sequences are not *per se* excluded from patentability, it adds little.

In view of the dearth of guidance on this issue, the author will attempt to analyse it from two perspectives.

First, on a broader interpretation of section 3(j), it may be argued that cDNA sequence would not be patentable as it still forms “a part of an animal” albeit in modified state. Although it may have been artificially constructed by man, in the sense that man had excised the introns from the genomic DNA to form an exon-only DNA strand, this man-made exon-only cDNA strand is nonetheless still a “part of an animal” since the information transmitting qualities of this exon-only strand remains the same as its exon counterpart in nature. Another way of looking at this is to say that, the human intervention of excising the introns from the genomic DNA strand is not sufficient to transform it into a “non-human part”.

Second, a narrower construction of section 3(j) would yield a different conclusion. Based on this narrower interpretation, it may be argued that “a part of an animal” under section 3(j) should be confined to a “part of an animal” as it exists in nature,

93 See Indian Manual of Patent Practice and Procedure (2011) para 08.03.07 stating that “a genetically modified Gene Sequence/ Amino Acid Sequence claims may be directed to a Gene sequence / Amino Acid sequence, a method of expressing the sequence, an antibody against that protein / sequence, a kit containing such antibody / sequence.” This part appears under the topic of “unity of invention” (instead of patentability).

94 See Indian Manual of Patent Practice and Procedure (2011) para 03.04.06.

i.e. in its naturally existing or predominantly unaltered state. Under this narrower interpretation, man-made cDNA where the introns have been excised by man would no longer form a “part of an animal” since it does not exist in that state in nature. Rather it has been created artificially by man.

(d) Summary

Based on the outcome of the appraisal above, this author submits that naturally occurring human DNA and isolated human genomic DNA are likely to be excluded subject-matter under section 3 of the Indian Patents Act. If the Indian courts choose to adopt this approach, then there would surprisingly appear to be some commonality in the Indian and US approaches in this dialogue on human gene patent-eligibility. To test the veracity of this possible outcome, an evaluation of the Indian case-law and Constitutional mandate may provide further illumination

3. INDIAN CASE-LAW

Whilst there does not appear to be any case-law dealing directly with this issue, two cases may be worth highlighting.

The first is the decision of the High Court of Delhi in *J. Mitra v Kesar Medicaments*.⁹⁵ That case involved a patent infringement suit over a diagnostic kit for detecting antibodies to Hepatitis C virus (HCV) in human serum and plasma. The patent was challenged on the grounds that it lacked novelty, inventive step, patent-eligibility, and sufficiency of patent specification. The Court found that a *prima facie* case of infringement had been made out by the plaintiff and granted a temporary injunction on the basis of a balance of convenience. Although the full merits of the issues including the patent eligibility issue was not fully addressed, the claim involving diagnostic devices was not contested. It would seem that the patent-eligibility of medical devices presents less controversy in India.

The second decision is *Emergent Genetics India v Shailendra Shivam*.⁹⁶ The case deals, *inter alia*, with copyright issues pertaining to genetic sequence information

⁹⁵ *J. Mitra v Kesar Medicaments* (2008), CS(OS) No. 2020/2006

⁹⁶ *Emergent Genetics India v Shailendra Shivam* (2011) (47) PTC 494 (Del).

of hybrid seeds. Although it did not directly address the patenting of genetic sequences, the High Court of Delhi's judgment did allude to gene patents and may be instructive of its general approach to IP issues in genes. Justice Bhat (in that case) rejected the plaintiff's claim for copyright infringement on the grounds, *inter alia*, that the gene sequence lacked originality. The learned judge opined that the genetic sequence was "not an "original" expression of ideas but mere reproduction of something found in nature." Justice Bhat emphasised that:

"The microbiologist or scientist involved in gene sequencing "discovers" facts ... Such scientists merely copies – from nature-genetic sequence that contains codes for proteins ... So long as a researcher constructs a DNA sequence based on a sequence discovered in nature, there is no independent creation, no minimum creativity and thus no originality."

Whilst these pronouncements were made in the context of copyright law, some inference may be drawn in relation to patent law.⁹⁷ For example, would a discovery of a genetic sequence or its "construction" based on a sequence as exists in nature - which does not involve any "independent creation" nor "minimum creativity" - be sufficient to constitute an "invention" under patent law? Based on Justice Bhat's elucidation, it would seem likely to be insufficient.

Interestingly, Justice Bhat also alluded to section 3(j) of the Patents Act 1970, when he articulated that the originality of genetic sequence has:

"[T]o be seen from the background that the *process* by which those gene sequences are created, or isolated, or an improved or unique variety is developed, *does not receive any intellectual property protection, and is expressly denied patent ... protection* by reason of Section 3 (j) of the Patents Act 1970 . If the process – despite its novelty and industrial application, and other attributes of patentability - is denied patent protection, *it is inconceivable that the observation and compilation of the consequence of that process, which*

⁹⁷ It should be stressed that there are differences between the concepts of "originality" under copyright law and "invention" under patent law.

is a natural consequence, can receive an extremely wide protection as a “literary” work.” [Emphasis added]

It bears re-emphasising that Justice Bhat was not dealing with the patent-eligibility of genes in that case. Yet, the learned judge’s reference to “process” seems to indicate that he may have been referring to the exclusion in section 3(j) on “essentially biological processes for the production of plants and animals” and extending it to the consequences or compilation resulting from that process. It may be useful to re-state section 3(j):

3 (j) plants and animals in whole or any part thereof other than micro-organisms but including seeds, varieties and species and essentially biological processes for production or propagation of plants and animals;

If this assumption is correct, then it would appear that the learned judge may have treated the processes by which genes are created, isolated or modified as one involving a *biological* process (rather than a micro-biological process) which is excluded from patenting by virtue of section 3(j). If this argument is followed through, then it may lend some support to this author’s earlier observation that section 3(j) may apply to gene sequences, contrary to the viewpoint expressed by one commentator that it does not apply to molecular/cellular level involving genes⁹⁸.

Of greater applicability for present purpose, may be Justice Bhat’s articulation based on policy and constitutional arguments. Although these were articulated in relation to the important agricultural industry in India, they may act as useful beacons in the biotechnology patent law context. After acknowledging that an “inventor or innovator undoubtedly should be provided a fair regime which protects his creative efforts and rewards him,” the learned judge cautioned that we should not lose sight of the broader perspective that:

“The Courts, are enjoined to interpret the law and the Constitution ... By Article 39(1) the State ... is enjoined to ensure: “(b) that the ownership and control of the

98 See Bhavishyavani Ravi, “Gene patents in India: Gauging policy by an analysis of the grants made by the Indian Patent Office” (2013) 18 *Journal of Intellectual Property Rights* 323 – 329 at 327.

material resources of the community are so distributed as best to subserve the common good”.⁹⁹

The learned judge clarified that Parliament enacted section 3(j) of the Patents Act to ensure that the people of India were not subjected to one kind of intellectual property monopoly, i.e. patents in relation, *inter alia*, to “method of agriculture”. The judge also proffered examples of material resources, such as, water and rivers; petroleum and natural gas; forests; essential commodities and foodstuffs; electricity generation and distribution. These have all been held by the Indian Supreme Court to be of public importance and to which the State has to “assure equitable access and availability to the greatest numbers.”¹⁰⁰

Another Constitutional provision of importance which enjoins the Indian State “to reflect identical concerns, and guides state policy in that direction” is Article 47. It requires the State to “regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties”¹⁰¹

In conclusion, Justice Bhat warned of the dangers in the Court’s acceptance of a “ritualistic enforcement of intellectual property” approach which can potentially “implicate access to vital material resources ... which is vastly detrimental to public and national interest.”

The author finds Judge Bhat’s dicta to be a very timely reminder of the need to interpret the Indian Patents Act, in particular the list of exclusions set out in section 3, in accordance *inter alia* with the directive principles of the Constitution. It emphasizes the need to ensure that ownership and control of material community resources are distributed for the common good which includes access to the greatest numbers, particularly where it may impact on public health.

A more detailed examination of these directive principles enshrined in the Indian Constitution may cast further light on this.

99 *Emergent Genetics* at para 38.

100 *Ibid.*

101 *Ibid.*

4. CONSTITUTIONAL MANDATE

In this section, a brief comparative review of the constitutional mandate in India and the US may provide useful guidance in approaching this controversial issue relating to gene patenting. Whilst the patent regimes of both countries have constitutional bases, there appears to be variations in their orientation and mandate.

First, under the U.S. Constitution there is a specific mandate for the grant of intellectual property rights to promote the progress of Science and the useful Arts. The Constitution of the US provides under Article I (section 8) that:

The Congress shall have the Power ... To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.

Although there is no specific reference to intellectual property under Article I (section 8) of the US Constitution, it is the long established basis for authorising copyright and patent protection for authors and inventors.¹⁰²

In contrast, the Constitution of India presents intellectual property rights in the Union List “devoid of an express vision”¹⁰³ on its role and mandate. The relevant provisions are set out as follows:

Article 245 (1) Subject to the provisions of this Constitution, Parliament may make laws for the whole or any part of the territory of India, and the Legislature of a State may make laws for the whole or any part of the State.

Article 246. (1) ... Parliament has exclusive power to make laws with respect to any of the matters enumerated in List I in the Seventh Schedule (in this Constitution referred to as the “Union List”).

List I – Union List in the Seventh Schedule incorporates:

(49) Patents, inventions and designs; copyright; trade-marks and merchandise marks.

¹⁰² See the Constitution of the United States, Article I section 8, explanatory note.

¹⁰³ [Comment of the anonymous referees].

Second, the US Constitution appears to lean more towards a pro-economic innovation stand by stressing the importance of promoting “progress of science and the useful arts”. There seems to be no specific mention in the US Constitution of “improvement of public health” for its people other than a reference to “general welfare” in the Preamble of the US Constitution that:

We the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America.

This can be contrasted with the Indian Constitution which seems to tilt towards public welfare and the promotion of “socioeconomic justice”¹⁰⁴. Moreover, the Indian Constitution also provides, *inter alia*, for Directive principles which seem to play an important role in judicial interpretation. These were alluded to by the learned judge in the *Emergent Genetic* case. For completeness, a brief discussion will be made on them.

Indian Constitution: Directive principles

The important role of the Directive principles in judicial interpretation was enunciated succinctly by the Supreme Court of India in *Suresh Kumar & Dalmia Cement (Bharat) Ltd. v. Union of India*¹⁰⁵, where the Court held that:

“The Directives would serve the court as a beacon light to interpretation. Fundamental Rights are rightful means to the end, viz., social and economic justice provided in the Directives and the preamble. The Fundamental Rights and the Directives establish the trinity of equality, liberty and fraternity in an egalitarian social order and prevent exploitation.”

The importance of these principles were also succinctly articulated in the Supreme Court of India’s landmark decision in *Kesavananda Bharati v. State of Kerala*

104 See *Dalmia Cement (Bharat) Ltd. v. Union of India*, (1996) 10 SCC 104 where “justice” is used “in broad spectrum to harmonise individual rights with the general welfare of the society.”

105 (1996) 10 SCC 104.

which described Part III (fundamental rights) and Part IV (directive principles) of the Indian Constitution as the “conscience of the Constitution”¹⁰⁶ which direct the State to build a welfare state.¹⁰⁷

Indeed in the *Emergent Genetic* case, the learned judge alluded to the importance of two Directive principles which may impact on intellectual property interpretation, namely, Articles 39 and 47, under Part IV of the Indian Constitution.¹⁰⁸ These set out the State policy as follows:

Article 39 stipulates several policy principles, more specifically subsection (b) provides that the “State shall, in particular, direct its policy towards securing ... that the ownership and control of the material resources of the community are so distributed as best to subserve the common good”.

Article 47 then imposes a duty on the State to improve public health by specifying that the “State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties”

The term “material resources of the community” under Article 39(b) has been interpreted broadly to mean “all things which are capable of producing wealth for the community”¹⁰⁹ and encompasses “everything of value or use in the material world”¹¹⁰ whether public or privately owned. Although the Courts do not appear to have suggested specifically that intellectual property rights constitute a “material resource”, nonetheless there seems to be some indication in the dicta of Justice Bhat in the context of section 3(j) of the Patents Act, that the Parliamentary intent was to ensure that the people of India were not subjected to one kind of intellectual property monopoly, i.e. patents in relation, *inter alia*, to “method of agriculture”.

Be that as it may, it has been highlighted that one should not presume, without further investigation, that these Directive principles may necessarily be used as a

106 See *KesavanandaBharati v. State of Kerala*, AIR 1973 SC 1461, (1973) 4 SCC 225 at para 1058.

107 *Ibid.* para 634.

108 Part IV of the Indian Constitution is entitled “Directive Principles of State Policy”.

109 *Sanjeev Coke Mfg. Co. v. Bharat Coking Coal Ltd.*, (1983) 1 SCC 147, AIR 1983 SC 239

110 *State of Karnataka v. Ranganatha Reddy*, AIR 1978 SC 215, (1977) 4 SCC 417.

tool of statutory interpretation in the context of determining whether “a certain subject-matter enjoys property rights”¹¹¹. This issue is no doubt an important one, but unfortunately this is not the place to debate them.

At the end of the day, the author submits that a careful consideration on the most appropriate balance to be struck between private rights and public access would fulfil the Constitutional mandate of both countries. This approach was also commended by the Supreme Court of India when it cited with approval¹¹² the conclusions of Granville Austin in his book *The Indian Constitution: Cornerstone of a Nation* as follows:

“By establishing these positive obligations of the state, the members of the Constituent Assembly made it the responsibility of future Indian governments to find a middle way between individual liberty and the public good, between preserving the property and the privilege of the few and bestowing benefits on the many in order to liberate the powers of all men equally for contributions to the common good.”¹¹³

Indeed, this question of balance or finding of the “middle way” forms the crux of the gene patenting issue.

VI. STRIKING THE BALANCE: WHEREIN LIES THE MOST APPROPRIATE BALANCE BETWEEN PRIVATE RIGHTS AND PUBLIC ACCESS?

The issue of whether and to what extent (if any) should human genes be patent eligible subject-matter is a complex one for which there is no global consensus.

Many developed countries appear to treat human genes as patent eligible subject-matter. Take, for example, Europe (including the UK), Australia (subject to reversal by the High Court of Australia in an appeal that was pending at the time of writing this article), Japan and Canada among others. Indeed, the European

111 [Comments of the anonymous referees]

112 See *Kesavananda Bharati v. State of Kerala*, AIR 1973 SC 1461, (1973) 4 SCC 225 at para 1375.

113 Granville Austin, *Indian Constitution: Cornerstone of a Nation* (1966, Clarendon) at p 52.

Biotechnology Directive expressly permits patent eligibility of genes by stating that:

“An element isolated from the human body or otherwise produced by means of a technical process including the sequence or partial sequence of a gene may constitute a patentable invention, even if the structure of that element is identical to that of a natural element”.¹¹⁴

Yet, a contrary approach seems to be emerging in the US (and possibly India) that isolated genomic DNA sequences are not patent eligible subject-matter. This position stands in stark contrast to that of other developed jurisdictions.

Why have different jurisdictions taken divergent positions in this struggle to resolve the human gene patent conundrum? Perhaps a review of the arguments for and against patents on genetic materials may illustrate this difficult challenge.

A. PROPONENTS OF GENE PATENTING

Proponents of gene patenting may mount several convincing arguments including:

1. Incentive theory by alluding to the importance of patent protection to incentivise research and development and investment therein. The reward conferred by the patent exclusivity spurs further investments in research as it offers investors a secure manner to recoup costs and to offset the risks associated with the research and commercialisation.¹¹⁵ It has often been cited¹¹⁶ that investors will only provide sustainable funding of the huge investment in this field if patents are available and able to offer sufficient exclusivity and security to investors.
2. A restrictive approach towards, or a prohibition against, gene patenting may drive investing companies to seek trade secrets protection instead.

114 See the European Biotechnology Directive 98/44/EC of 6 July 1998 which was passed by the European Parliament and enacted in the Implementing Rules of the European Patent Convention (EPC): Rule 23(e)(2) EPC.

115 See Centre for International Economics *Final Report: Economic Analysis of the Impact of Isolated Human Gene Patents* May 2013

116 See, for example, T.R. Sivaramjani & Samir K. Brahmachari, “Human genome studies and intellectual property rights: Whither national interest?” (1997) 72 (10) *Current Science* 708-716.

42 Patenting Human Genes: Wherein Lies the Balance between
 Private Rights and Public Access?

The secrecy engendered by this option will be detrimental to innovation or increase the risks associated with the lack of accountability. Worse, it may inhibit progress and development in this fast changing area of technology. Hence, patent exclusivity in exchange for the disclosure of information is the better way forward.

3. Any public health concerns arising from lack of access due to the high cost of diagnostics and the inability of other researchers to conduct studies on the patented subject-matter are often caused by factors that are external to the patent system. These external factors include exclusive licensing strategies, complexity of the technology involved and the business development aspect of the patented product.¹¹⁷
4. Many developed countries recognise the patent-eligibility of isolated gene sequences and hence, a consistent and harmonized approach should be adopted.¹¹⁸
5. Genes are basically chemical compositions and hence, its patent eligibility should be treated no differently from other chemical compounds which are generally regarded as patent-eligible subject-matter. Hence, genes can be patented so long as they fulfil the other criteria of patentability, namely, novelty, non-obviousness and utility/usefulness.¹¹⁹

B. A REPLY

1. No one denies that the patent owner deserves to be rewarded for the extensive investment and effort in research and development. Indeed, the enormous effort of Myriad's scientists in mapping the BRCA 1 and BRCA 2 genes to their chromosomal locations have been highlighted in the discussion above. The author acknowledges the importance of the role the incentive theory plays in spurring innovation and investment.

117 See Centre for International Economics *Final Report: Economic Analysis of the Impact of Isolated Human Gene Patents* May 2013.

118 *Supra* note 111.

119 See, for example, MalathiLakshmikumar, "Patenting of Genetic Inventions" (2007) 12 *Journal of Intellectual Property Rights* 45-56 where there it is argued that the protection of 'genetic inventions will foster development and will augur well for the society because it is the society which will ultimately reap the benefits of genetic inventions."

2. Yet, patent law cannot be called upon to underwrite the risks of extensive effort and investment. Justice Thomas in the *Myriad* case rejected relevance of extensive research efforts in patent-eligibility determination and rightly ruled that “extensive efforts alone is insufficient”.¹²⁰ There is neither sound basis nor support for the argument that subject-matter that is the product or process of extensive investment and effort is *per se* patent-eligible. Patent law does not (and should not) embrace “discoveries” as patent eligible subject-matter no matter how costly the discovery process may be. The patentability of a subject matter is a question of law and fact. This would appear to lend support to the suggestions by some commentators that other reward structures, such as, prizes,¹²¹ may be more appropriate for such discoveries.
3. The question of whether genetic sequences should be considered as chemical compositions; or whether the focus should be on its information-transmitting qualities based on its nucleotide arrangements is the subject of a long standing debate that is unlikely to abate. There are supporters and detractors for both views. The US Supreme Court has alluded that the answer may be dependent on what is being substantively claimed in the patent. Does it claim the informational content or the specific chemical composition of the genetic sequence? Whilst the claims would no doubt be of primary importance, we should heed the caution which has been repeatedly sounded by the US Supreme Court that patent-eligibility should not turn on “clever drafting” or camouflage.¹²² Indeed, the Supreme Court

120 See *AMP v Myriad* (2013) 133 S. Ct. 2107. . The learned Justice also reinforced the concept that “ground-breaking, innovative, or even brilliant discovery does not by itself satisfy” the patent-eligibility inquiry. This would appear to lend support to the suggestions by some commentators that other reward structures, such as, prizes

121 Take, for example, Joseph Stiglitz who proposed that the prize system (which basically offers a prize to the person who makes a discovery then widely disseminates that knowledge, using the power of the market to reap the benefits) would have major advantages without the inequality-increasing disadvantages of the intellectual property system; see Joseph Stiglitz, “The Great Divide: How Intellectual Property Reinforces Inequality” (July 14, 2013) *The New York Times* (The Opinion pages). See also Thomas Pogge, Matthew Rimmer and Kim Rubenstein (Eds.), *Incentives for Global Public Health: Patent Law and Access to Medicines* (Cambridge University Press, 2010).

122 See, for example, *AMP v Myriad* 133 S. Ct. 2107 (2013).

44 Patenting Human Genes: Wherein Lies the Balance between
 Private Rights and Public Access?

of India (albeit in a non-patent law case)¹²³ has also issued a similar caution that clever drafting that create “illusions” should be “nipped in the bud”.

Although the distinction between chemical composition and informational content may be useful in informing this debate on gene patenting, it should not be over-emphasised as it is only “one factor” in the complex gene patenting calculus. The US Supreme Court has acknowledged the existence of information content in both isolated genomic DNA and cDNA. Yet, as one commentator has correctly highlighted, this may be of limited utility as the Court concluded that only cDNA was patent eligible without proffering sufficient elucidation on this issue.¹²⁴

4. Ethical and moral debates¹²⁵ against the patenting of human genes are also persuasive. As human genes are the common heritage of mankind and humanity, the common viewpoint is that private ownership threatens to jeopardise the dignity and integrity of man. This argument finds support in the Universal Declaration on the Human Genome and Human Rights (1997), particularly by Articles 1 and 4 which stipulates that:

Article 1 - The human genome underlies the fundamental unity of all members of the human family, as well as the recognition of their inherent dignity and diversity. In a symbolic sense, it is the heritage of humanity.

Article 4- The human genome in its natural state shall not give rise to financial gains.

123 See, for example, *T. Arivandandamvs T. v. Satyapal & Another* 1977 AIR 2421, 1978 SCR (1) 742

124 See Arti Rai, “Diagnostic patents at the Supreme Court” (2014) 18:1 Marq. Intell. Prop. L. Rev. 1 – 9.

125 See, for example, Elizabeth Siew-Kuan Ng, “Immoral inventions: Interaction between ethics and biotechnology patent law” (2010) 22 Singapore Academy of Law Journal 931 – 947; T.R. Sivaramjani & Samir K. Brahmachari, “Human genome studies and intellectual property rights: Whither national interest?” (1997) 72 (10) Current Science 708-716; Matthew Rimmer, “The Empire of Cancer: Gene Patents and Cancer Voices” (2012-2013) 22(2) Journal of Law, Information and Science 18-55.

Based on this notion of “common heritage and common ownership”, it is contended that human genes should not be patent-eligible. Although gene patenting was not specifically dealt with in the TRIPS Agreement,¹²⁶ nonetheless Article 27.2 permits member states to exclude from patentability inventions “the commercial exploitation of which is necessary to protect *ordre public* or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment”. Some countries, including India, Singapore, Europe, have incorporated such exclusions in their patent legislation¹²⁷. However, there is a lack of consensus on moral standards. For example, in Europe, the arguments advanced based on the immorality of gene patenting was rejected by the Board of Appeal of the European Patent Office in a patent case relating to the genetic sequence of the H2-Relaxin gene.¹²⁸ This approach has been seemingly confirmed by the European Biotechnology Directive (as discussed above).¹²⁹

5. At least some proponents of gene patenting have conceded that the patenting of genetic materials may pre-empt future research¹³⁰ by blocking access to knowledge required for future innovations, as well as, access of diagnostic genetic tests and therapies for public health. It bears repeating that the issue of access is a multi-factorial one which has a public health, as well as, pro-innovation facet:

126 See the WTO Agreement on Trade related aspects of intellectual property rights (TRIPS Agreement) which was negotiated under the auspices of GATT/WTO and is binding on WTO members.

127 Take, for example, section 3(b) Indian Patents Act which excludes from patentability any invention “the primary or intended use or commercial exploitation of which could be contrary to public order or morality or which causes serious prejudice to human, animal or plant life or health or to the environment”.

128 See Relaxin/Howard Florey Institute T0272/95 (23 October 2002).

129 See the European Biotechnology Directive 98/44/EC of 6 July 1998 which was passed by the European Parliament and enacted in the Implementing Rules of the European Patent Convention (EPC): Rule 23(e)(2) EPC.

130 This point was re-iterated by the US Supreme Court in *Mayo Collaborative Services v Prometheus Laboratories* 132 S. Ct. 1289 (2012). For an insightful discussion, see Arti Rai, “Diagnostic patents at the Supreme Court” (2014) 18:1 Marq. Intell. Prop. L. Rev. 1 – 9

First, the prohibition of gene patenting may be viewed as being supportive of innovation since access to the disclosed genetic information will allow other scientists and researchers to utilise the genetic materials and its information-transmitting qualities to spur future innovations. Indeed, one commentator has succinctly argued that the US Supreme Court's *Myriad* decision could be explained from a pro-innovation perspective.¹³¹ She argues that since the patenting of isolated genomic DNA could potentially interfere with a "broad range of downstream uses", permitting patent-eligibility for cDNA where the claim involved a "narrower application specific to therapeutic development" could thereby promote innovation in the form of worked around "for other purposes".

Second, access to genetic sequences is needed to ensure that alternative and/or better genetic diagnostic tests can be developed and made available to the rich and poor patients alike for the promotion of public health for the public good. As Joseph Stiglitz has rightly emphasised "The right to life should not be contingent on the ability to pay."¹³² The grant of patents on human genes will have implications on the patentability of downstream diagnostics and their public access. This will pose potential impediment for patient access to alternative testing options utilising isolated genomic sequences. The importance of access to second medical opinions and alternative tests has been illustrated in the example of Angelina Jolie Pitt where preventive measures could be taken based on genetic testing. Indeed, as one commentator has rightly highlighted, the "upshot of the [US Supreme Court] decision is that certain patents generally associated with diagnostic medicine (gDNA) are invalid, but patents typically associated with therapeutics (cDNA) are valid."¹³³

131 See Arti Rai, "Diagnostic patents at the Supreme Court" (2015) (18:1) *Marq. Intell. Prop. L. Rev.* 1-9.

132 See Joseph Stiglitz, "The Great Divide: How Intellectual Property Reinforces Inequality" (July 14, 2013) *The New York Times* (The Opinion pages).

133 See Arti Rai, "Diagnostic patents at the Supreme Court" (2015) (18:1) *Marq. Intell. Prop. L. Rev.* 1-9.

The discourse above illustrates the difficulties in resolving the gene patenting conundrum. A clear delineation (whether expressed by statute or implicit in long-standing precedents) on the scope of excluded patent subject-matter and the other criteria of patentability¹³⁴ will be vital in providing greater certainty to the various stakeholders, such as, businesses, researchers, and healthcare providers, of the biotechnology patent system.

Moving forward, this author submits that where the line should be drawn may be premised on where the most appropriate balance lies between providing the incentive through grant of private rights on one hand, and public access to promote knowledge dissemination, future innovation and public health, on the other.¹³⁵

Whilst there is no one answer that will fit all nations, this author submits that in the context of the patent-eligibility of naturally occurring DNA and isolated genomic DNA, the potential convergence in the approaches adopted in the US and India gleaned from this appraisal may serve as a good guide. That two highly divergent nations with different constitutional orientations may have adopted a possible common approach, at least in relation to the patent-eligibility of naturally occurring DNA and isolated human genomic DNA, is illuminating – even though this postulation¹³⁶ is weakened by a lack of judicial consideration in India.

Be that as it may, the author contends that there are several avenues for addressing this issue of balance in human gene patenting generally, including:

- a. Implementing express or implied subject-matter exclusions to clearly demarcate the subject-matter that is eligible for patenting;

134 Namely, newness (novelty), non-obviousness (inventive step) and industrial applicability (utility).

135 See, for example, Matthew Rimmer, “The Empire of Cancer: Gene Patents and Cancer Voices” (2012-2013) 22(2) *Journal of Law, Information and Science* 18-55 at <http://www.austlii.edu.au/au/journals/JLInfoSci/2012/28.pdf> (accessed 13 June 2015); Elizabeth Siew-Kuan Ng, “Balancing Patents and Access to Medicine” (2009) 21 *Singapore Academy of Law Journal* 457-484; see generally, Thomas Pogge, Matthew Rimmer and Kim Rubenstein (eds), *Incentives for Global Public Health: Patent Law and Access to Medicines* (Cambridge University Press, 2010).

136 The appraisal is based on the author’s statutory interpretation of certain provisions of section 3 of the Indian Patents Act, the Indian Biotechnology Guidelines and the IMPPP.

- b. Developing a robust standard of patentability criteria, such as, novelty, non-obviousness, utility.¹³⁷ Critics against gene patenting posit, *inter alia*, that genes are not novel as they are naturally occurring; and cannot fulfil the non-obviousness criteria as they utilise well established techniques in gene isolation. Also, gene patents may lack the requisite level of specificity of function to satisfy the utility or usefulness attribute of patent law;
- c. Consideration may also be given to carefully craft the scope of such patents. One possibility is to confer limited purpose-bound patents where the protection is restricted to the specific use disclosed in the patent application.¹³⁸ Alternatively, as one commentator¹³⁹ has rightly suggested, such genetic sequences could be considered under a narrow interpretation of a “product-by-process claim”.¹⁴⁰
- d. Instituting adequate safeguards, in the form of defences and exceptions, such as, research exemptions, compulsory licences etc.¹⁴¹ These would also mitigate the incidence of undesirable patent enforcement, for example, patent trolling as was seen in some of the information technology cases.¹⁴² The Myriad case may serve as another timely reminder.¹⁴³ If Myriad had

137 See, for example, Dipika Jain, “Gene-patenting and access to healthcare: Achieving precision” (2014) 36 *Houston Journal of International Law* 101-146.

138 See, for example, Report from the Commission to the Council and the European Parliament - Development and implications of patent law in the field of biotechnology and genetic engineering (SEC (2005) 943) COM (2005) 312. Note, however, that India does not grant “use” claims. [Comments of anonymous referees]

139 See Justine Pila, “Patents for genes and methods of analysis and comparison” (2010) 126 *Law Quarterly Review*.

140 See, for example, *Biogen v Medeva* [1997] R.P.C. 1 where Lord Hoffmann treated a “recombinant product is a product-by-process in contrast to a product”. See Justine Pila, “Patents for genes and methods of analysis and comparison” (2010) 126 *Law Quarterly Review*. Such claims would generally be regarded as product claims in many jurisdictions including India.

141 These safeguards have already been instituted in some countries, including India. For more details, see Elizabeth Siew-Kuan Ng, “Balancing Patents and Access to Medicine” (2009) 21 *Singapore Academy of Law Journal* 457-484; see generally, Thomas Pogge, Matthew Rimmer and Kim Rubenstein (eds), *Incentives for Global Public Health: Patent Law and Access to Medicines* (Cambridge University Press, 2010).

142 See, for example, Elizabeth Siew-Kuan Ng, “Patent Trolling: Innovation at Risk” [2009] *European Intellectual Property Review* 593-608.

143 Other situations where the US Supreme Court has taken a strong stance against such undesirable patent enforcement strategies can be seen in patent trolling scenarios.

won, and adopted an aggressive and undesirable patent enforcement strategy, it would have retained sole control on access to the BRCA genes. This would have prevented other medical service providers from conducting research and/or offering alternative diagnostic testing which would impact on public health. Women, especially the poor and those who were not covered by medical insurance for the expensive Myriad BRCA tests, would be denied the opportunity to access cheaper alternatives and/or be prevented from obtaining second and subsequent medical opinions on the test results.

Where this balance should be struck between the competing interests of the various stakeholders would depend on the national and public interests of each nation. Some countries, such as, the United Kingdom and Australia, appear to have veered more towards instituting safeguards through “back-end” mechanisms coupled with a relatively robust standard of patentability. Others, like the US, appear to rely on implied exceptions to patent-eligibility coupled with an increasingly more robust standard of patentability criteria. Still others, such as India, appear to have adopted a multi-prong approach based on many of the avenues suggested above. Indeed, the Supreme Court of India issued a timely reminder when it wisely opined that:

“Law is the manifestation of principles of justice, equity and good conscience. Rule of law should establish a uniform pattern for harmonious existence in a society where every individual would exercise his rights to his best advantage to achieve excellence, subject to protective discrimination. The best advantage of one person could be the worst disadvantage to another. Law steps in to iron out such creases and ensures equality of protection to individual as well as group liberties ... [and] endeavour needs to be made to harmonise the individual interest with the paramount interest of the community keeping pace with the realities of ever changing social and economic life of the community envisaged in the constitution.”

VII. CONCLUSION

This article has sought to investigate the patenting of human genes from the perspective of subject-matter exclusion. Whilst the effect of the Myriad decision on public access to the BRCA gene patents is limited,¹⁴⁴ its implications on the patent-eligibility of isolated DNA will continue to ripple within the US and perhaps beyond its shores.

Interestingly, right after the US Supreme Court decision, some countries that have been more liberal in granting patents on human genes are beginning to see legal challenges to the validity of some gene patents. There are two cases in point. One is the recent gene patent challenge filed in Canada by the Children's Hospital of Eastern Ontario to invalidate the gene patents held by the University of Utah in relation to the Long QT syndrome (a rare heart disorder). The other is the Myriad gene patent case currently pending before the High Court of Australia.¹⁴⁵

In this nascent field of genetics, there is merit in diversity of approaches on how the balance should be struck between the need to incentivise innovation and maximising public access to promote further innovation and the interests of public health. Yet, the benefits of convergence on specific aspects of human gene patenting cannot be discounted. A concurrence based on the delineation of clear limits informed by doctrinal and policy considerations is preferable to one that adopts a *de minimis* conception on the nature of inventions.¹⁴⁶ The latter has been said to have failed to fully appreciate the important role that the requirement of invention plays in patent law.¹⁴⁷ As the secrets of the Code of Life are still largely an unexplored territory, the risk of impeding research and downstream uses for future innovation, as well as, patient access is both grave and real. It is important that isolated genomic DNA that form the Code of Life should remain "free for all men and reserved exclusively to none". Therefore, achieving consensus on this specific aspect of human gene patenting merits consideration.

144 BRCA1 and BRCA2 genes are set to expire in August 2015 and December 2015 respectively; see Hunt & Hunt, "Patentability of genetic materials – where does it stand today?" Australian Intellectual Property Law Bulletin (newsletter) (2013) 26:3.

145 See Riley Sparks, "5 things to know about the Canadian gene patent case" (November 3, 2014) The Toronto Star Newspaper.

146 See, for example, the European Patent Office. See also Justine Pila, "Patents for genes and methods of analysis and comparison" (2010) 126 Law Quarterly Review.

Whilst the patent regimes of many jurisdictions in the developed world uphold the patent eligibility of isolated genomic DNA,¹⁴⁸ this author submits that the better approach is that adopted by the US Supreme Court and that of the Indian Office of the Controller General of Patents, Designs and Trade Marks. That these two contrasting nations seem to have come down on the same side in this balance between competing objectives is remarkable. This potential unity between a developed nation (that has consistently adopted pro-economic & innovation stance in tailoring its patent system) and a developing nation (that has constantly emphasised the importance of promoting public welfare) gives further credence to this author's view that their approach indeed strikes the better balance between granting private rights without jeopardising public access.

Like the Lion,¹⁴⁹ India has laudably persisted in tailoring a patent regime that is best suited to its national interest and yet compliant with its international obligations. Similarly, Judge Sweet, Circuit Judge Bryson and the nine US Supreme Court Justices were not only not overwhelmed by several decades of patent practice but showed admirable aplomb to overturn it when the merits deserve a change.

Will any other nation stand with them in adopting this better approach?

147 *Ibid.*

148 See, for example, E Richard Gold and Julia Carbone, 'Myriad Genetics: In the Eye of the Policy Storm' (2010) 12 *Genetics in Medicine* S39; Matthew Rimmer, "The Empire of Cancer: Gene Patents and Cancer Voices" (2012-2013) 22(2) *Journal of Law, Information and Science* 18-55.

149 India's official emblem.

**SURVEYING THE DAMAGE:
A STUDY OF DAMAGES PAYOUTS BY THE DELHI
HIGH COURT IN TRADEMARK INFRINGEMENT
CASES (2005-2014)**

Eashan Ghosh*

ABSTRACT

A comprehensive ten year study of damages awarded by the Delhi High Court in trademark infringement cases reveals the remarkable extent to which the quantum of damages can be correlated to the presence of certain factual criteria. It brings into sharp focus exactly how far the reasoning behind awarding and quantifying damages – often the biggest takeaway and most powerful deterrent in trademark infringement cases – has been rendered an afterthought. Commencing with a critical commentary on the headline damages payouts by the Delhi High Court in 1, I break down the significant statistical outcomes of damages awarded based on key criteria, including aggravating and mitigating factors considered and litigant profile, in 2. I then employ these findings in 3 as the basis for a proposed basic minimum checklist for quantifying damages in such cases going forward – an area where judicial reasoning has been strikingly and disappointingly thin in the past decade.

1 THE HEADLINE DAMAGES PAYOUTS IN TRADEMARK INFRINGEMENT CASES BY THE DELHI HIGH COURT

The early history of damages in trademark infringement cases was marked more by the range of justifications offered for sustaining a damages payout rather than the adherence to any one individual reason. Most notably, infringement by

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defendants amounting to fraud on the public,¹ calculated to increase the likelihood of deception,² the presence or absence of *bona fide* use³ or other *bona fide* conduct by the defendants⁴ were all employed by the Delhi High Court in the early decades as markers for attracting damages.

These markers quickly expanded over the first few years of this century to incorporate most aspects of infringing defendants' conduct, even though the explicit correlation of these factors to damages payouts was largely non-existent.

1.1 TIME INC

Despite the prevalence of several fairly well-reasoned contemporaneous alternatives,⁵ *Time Inc*⁶ has become the equivalent of the Big Bang in the modern Indian law on damages in trademark infringement cases – the agreed-upon starting point to which practically all significant damages awards over the last decade have traced their antecedents. This ubiquitous nature of *Time Inc* over the following decade makes it a convenient and accurate starting point for the present paper. The cases considered in this paper are limited to final judgements by the Delhi High Court – another largely straightforward qualification, given this Court's virtual stranglehold on cases discussing and awarding damages for trademark infringement following *Time Inc*⁷ and the lack of reliable public information on out-of-court settlement amounts in such cases. The ten year time period is long enough to provide substantial case coverage while still maintaining comparability in terms of preserving the money value⁸ of damages awarded by Courts at the beginning and the end of this time period.

1 *Wearwell* 5 (1969) DLT 469.

2 *Prina Chemical Works* (1974) ILR 1 Del 545; *Century Traders* AIR 1978 Del 250.

3 *Amar Soap* 1985 (5) PTC 85 (Del); *Hindustan Pencils* AIR 1990 Del 19; *Ciba-Geigy* 1998 (18) PTC 545 (Del).

4 *Walter Bushnell* 1999 (19) PTC 667 (Del).

5 See *Adidas-Salomon* 2005 (30) PTC 308 (Del), *NASSCOM* 2005 (30) PTC 437 (Del), *Microsoft* 2005 (30) PTC 245 (Del), *Cartier* CS(OS) 1208/2003 (22.07.2005), *Scotch Whisky Association* 2006 (32) PTC 656 (Del), all of which resulted in hefty damages payouts against infringing defendants.

6 2005 (30) PTC 3 (Del).

7 Honourable mention must, however, be made of a clutch of recent Bombay judgements by Justice Kathawalla, awarding damages after returning findings on deceptive similarity. See *Arviva* 2013 (54) PTC 199 (Bom), *Asian Paints* 2013 (54) PTC 433 (Bom), *Lupin* 2014 (2) ABR 325, 2014 (2) ABR 326 and *Biochem* 2014 (3) ABR 54.

8 All numerical references to damages payouts hereinafter are in INR (Lakhs/100,000), denoted by 'L'. The US Dollar exchange rate at the time of final judgement in *Time Inc* was around US\$1:INR 43.5, which has since shifted to around US\$1:INR 63.5, as of December 2014, which is the time period of the most recent judgement considered in this paper.

A reasonably straightforward deceptive similarity finding crystallized by a 5L⁹ damages award, *Time Inc* stands out primarily for its exploration of the theories behind awarding damages. Discussing compensatory and punitive damages in detail, the judgement attracts little argument insofar as it identifies the essentially restitutive nature of the former and the essentially penal/deterrent intention behind the latter, openly targeting the financial viability of trademark defendants for the first time.¹⁰

Bizarrely, though, Justice Chopra relied heavily on the 2003 US Court of Appeals decision in *Mathias*. *Mathias* affirmed a jury award of punitive damages against an American motel company in a civil negligence claim based on the motel's failure to prevent them from being bitten by bedbugs in US\$100+ per-night rooms. The decision is conspicuous by its rather left-field inclusion in an Indian trademark case and the passage relied upon in *Time Inc* is worth quoting in full (italics mine):

“When punitive damages are sought for billion-dollar oil spills and other huge economic injuries, the considerations that we have just canvassed fade. As the Court emphasized in *Campbell*, the fact that the plaintiffs in that case had been awarded very substantial compensatory damages — \$1 million for a dispute over insurance coverage — greatly reduced the need for giving them a huge award of punitive damages (\$145 million) as well in order to provide an effective remedy. Our case is closer to the spitting case. The defendant's behavior was outrageous but the compensable harm done was slight and at the same time difficult to quantify because a large element of it was emotional. And the defendant may well have profited from its misconduct because by concealing the infestation it was able to keep renting rooms. Refunds were frequent but may have cost less than the cost of closing the hotel for a thorough fumigation. The hotel's attempt to pass off the bedbugs as ticks, which some guests might ignorantly have thought less unhealthful, may have postponed the instituting of litigation to rectify the hotel's misconduct. *The award of punitive damages in this case thus serves the additional purpose of limiting the defendant's ability to profit from its fraud by escaping*

9 INR Five Lakhs or 500,000; see note 4, *supra*.

10 *Supra* note 6, at 7, 8.

*detection and (private) prosecution. If a tortfeasor is 'caught' only half the time he commits torts, then when he is caught he should be punished twice as heavily in order to make up for the times he gets away."*¹¹

To use this passage as authority for the view that a trademark defendant should be punished "twice as heavily in order to make up for the times he gets away"¹² because "it is very difficult for a plaintiff to give proof of actual damages suffered...as the defendants who indulge in such activities never maintain proper accounts of their transactions [which] they know...are objectionable and unlawful"¹³ is as ingenious as it is reductive. It offers an extremely thin trademark-specific justification for punitive damages – indeed, it suggests that the role of punitive damages is to plug gaps that compensatory damages cannot by, in a sense, overcompensating plaintiffs with punitive largesse that is merited on account of financially disorganized defendants. Further, it cripplingly and unfairly caricatures all defendants in trademark infringement suits as unprofessional small traders who knowingly violate trademark law and, equally harmfully, offers plaintiffs no basis to claim proportionally higher damages against bigger defendants based on their scale of business.

The Court's gung ho affirmation that its punitive damages award was restricted to "only" 5L because the Plaintiff limited itself to such amount made headlines while the pegging of punitive damages to the flagrancy of the infringement – perhaps the only trademark-exclusive metric in the entire judgement – slipped almost furtively into precedent.

1.2 HERO HONDA

Time Inc was revisited eleven months later in *Hero Honda*.¹⁴ With non-contesting defendants becoming the rule rather than the exception, Justice Kaul tempered the vigilantism of *Time Inc* with a bit of common sense regarding the harm that damages awards sought to fortify plaintiffs from. As with *Mathias*, this passage has also been subsequently misapplied and is worth reproducing in full (italics mine):

11 *Mathias* 347 F 672 (7th Cir, 2003), at 13.

12 *Supra* note 6, at 8.

13 *Supra* note 6, at 8.

14 *Hero Honda* 2006 (32) PTC 117 (Del).

“I am in agreement with the [submission] that damages in such cases must be awarded and a defendant, who chooses to stay away from the proceedings of the Court, should not be permitted to enjoy the benefits of evasion of court proceedings. Any view to the contrary would result in a situation where the defendant who appears in court and submits its account books would be liable for damages, while a party which chooses to stay away from court proceedings would escape the liability on account of failure of the availability of account books. A party who chooses to not participate in court proceedings and stay away must, thus, suffer the consequences of damages as stated and set out by the plaintiff. *Of course, this would not imply that the plaintiff would be entitled to any figure quoted by it, which may be astronomical. The figure of Rs. 5 lakhs as damages can hardly be said to be astronomical keeping in mind the nature of deception alleged by the plaintiff which not only causes direct loss to the plaintiff, but also affects the reputation of the plaintiff by selling sub-standard goods in the market where the public may be deceived in buying the goods thinking the same to be that of the plaintiff.* There is a larger public purpose involved to discourage such parties from indulging in such acts of deception and, thus, even if the same has a punitive element, it must be granted. [Justice Chopra] has very succinctly set out in [*Time Inc*] that punitive damages are founded on the philosophy of corrective justice. *That was the case where the publishers of Time Magazine had come to court and one of the factors which weighed while awarding punitive damages was that the readers had been sufferers of the infringement of the mark of the plaintiff. The only difference is that in the present case it is the consumer of the products of the plaintiff, who have suffered as a consequence of the infringement of the mark and logo of the plaintiff by the defendant.*”¹⁵

The logic for punishing non-contesting defendants, while understandable from a rudimentary equity perspective, is itchily contradictory, given the problem identified. Surely it stands to reason that punishing contesting but infringing defendants ought to be a bigger priority than imposing damages on non-contesting

15 *Ibid*, at 18.

and frequently untraceable fly-by-night infringers for whom such damages are no more than symbolic. Nevertheless, *Hero Honda* stands out for laying down a veritable stream of relevant factors to aid in the damages inquiry – quantifiable losses to plaintiffs, effects on plaintiffs’ reputation, the similarity of the marks and the likelihood of confusion and overall effects on consumers primary among them.

The *Hero Honda* passage has been quoted increasingly frequently to support damages awards as defendant absenteeism continues to grow. Shockingly, though, the italicized parts, where Justice Kaul’s real contribution shines through, have been progressively sawed off,¹⁶ gifting plaintiffs nothing less than a hunting license for plaintiffs to line up *ex parte* defendants with damages awards in their pockets. *Microsoft*,¹⁷ *The Polo/Lauren Co*,¹⁸ *KeePharma*,¹⁹ *Cadila Healthcare*,²⁰ *Pfizer*,²¹ *Jockey*,²² *Pepsi*,²³ *Disney*,²⁴ *Atlantic Industries*²⁵ and *Nestlé*²⁶ have all benefited from this alarming revisionism in recent years.

1.3 THE BIG PAYOUT TRILOGY: MICROSOFT, LACHHMAN DAS AND RECKITT BENCKISER

By July 2007, Delhi’s judicial patience with non-contesting defendants had reached a breaking point. The release came in the form of Justice Sistani’s hard-hitting 20L damages award in *Microsoft*.²⁷ Three things stand out about the judgement. First, it demonstrated that non-contesting defendants were not just anomalies who could be made examples of *a la Time Inc*– it was clearly becoming “a trend”²⁸ to the point

16 A process ironically commenced by Justice Kaul himself in *The Heels* CS(OS) 1385/2005 (29.03.2006) and recognised recently by Justice Singh while imposing a 5.2L award against small-time counterfeiters in *Cisco* 2014 (59) PTC 356 (Del), at 23.3, 24.

17 *Microsoft* 2007 (35) PTC 415 (Del).

18 *The Polo/Lauren Co* CS(OS) 163/2005 (19.12.2011).

19 *Kee Pharma* 2012 (50) PTC 501 (Del).

20 *Cadila Healthcare* 2014 (58) PTC 650 (Del).

21 *Pfizer* 2014 (59) PTC 537 (Del).

22 *Jockey* 2014 (59) PTC 437 (Del).

23 *Pepsi* 2014 (59) PTC 275 (Del).

24 *Disney* 2014 (59) PTC 217 (Del).

25 *Atlantic Industries* MIPR 2014 (2) 344.

26 *Nestle* AIR 2014 Del 156.

27 *Microsoft* 2008 (36) PTC 697 (Del).

28 *Ibid*, at 22.

that it was becoming “a systematic attempt to jettison the relief sought by the plaintiff”,²⁹ something that the judiciary was getting extremely worried about. Second, it painted punitive damages as the judicial equivalent of breaking the emergency glass while deftly burying the act of avoidance of judicial proceedings by defendants under an avalanche of contemptuous language, imputing everything from flagrancy of conduct to reckless shenanigans.³⁰ Third, it marked a significant improvement on *Time Inc* in terms of relying on international precedent supporting punitive damages awards in intellectual property cases, though even this remained more an *ersatz* list of cases³¹ with corresponding damages awards than engagement with substantive legal standards of any description.

However, the eventual calculation of damages was a simple estimate of the total revenue generated by the defendants, arrived at by a crude ‘number of infringing units sold multiplied by price per unit’ formula. This resulted in a gross estimate of 127.8L, which had to be capped at 20L, since that was the extent of the plaintiff’s claim.

September 2007’s *Lachhman Das*³² did little to contribute to trademark jurisprudence on damages but returned an award two-and-a-half times higher – 50L plus costs, payable at 9% interest – but based on a calculation that was no more sophisticated than *Microsoft*. Justice Ahmed drew a straight line between a drop in sales of the plaintiff and the amount of damages they were entitled to, reasoning that “it may well be that had the activities of the defendants [doing business under a trademark identical to the plaintiff’s] not taken place, the increase in the sales [of the plaintiff] might have been more but there is no conclusive evidence as to the exact quantum of the loss that has been caused to the plaintiff. There is ample evidence however of the fact that loss had been caused to the plaintiff by the defendants.”³³

Even setting aside the difficulties involved in projecting plaintiff’s business revenue independent of its competitors, it is surely fallacious in the extreme to impute *all*

29 *Supra* note 27, at 22.

30 *Supra* note 27, at 22.

31 This, of course, included the now-obligatory reference to *Mathias*, continuing judges’ inexplicable fascination with the passage quoted at 1.1 above.

32 *Lachhman Das* 2007 (35) PTC 693 (Del).

33 *Ibid*, at 5.

losses suffered by the plaintiff to the defendant's activities, especially given the admitted lack of evidence led by the plaintiff on losses it suffered. The final figure of 50L (split into 25L each for compensatory and punitive damages) – a compromise between the plaintiff's supposedly demonstrated losses of 100L and its suit claim of 20L – is equally mystifying, based possibly on the recognition that the plaintiff was entitled to more than its original claim of 20L but not to the extent that it later claimed on affidavit.³⁴ No reasons whatsoever were forthcoming on why the damages award was not capped by the plaintiff's claim of 20L nor was there any explanation for why punitive damages were deemed appropriate.

The January 2014 decision in *Hindustan Unilever*³⁵ revisited some of these issues, though in the context of product disparagement. The conclusion of the Division Bench, enhancing to 25.7L a 5L damages award challenged in appeal for product disparagement through an advertisement by a competitor, was based primarily on the deliberate nature of the defendant's actions. The decision involves some excellent discussion of factors such as the effects of repeated infringement *via* publication/airing and the defendant's overall conduct but transfers disappointingly little into an actual calculation of damages.

1.4 ARDATH TOBACCO AND PHILIP MORRIS

Standing somewhat forlornly against this line of big payouts is *Ardath Tobacco*.³⁶ It articulates a succinct set of factual circumstances – the small scale of the defendants' roadside vending business, the absence of any accounting records or storage space where infringing material could be stored, miniscule sales (and thus, presumably, correspondingly minor actual losses caused) when compared with the plaintiffs – to support the conclusion that not only was a heavy damages award not merited but it would also have been meaningless in an enforcement sense given the inability of the defendants to pay such amounts. Two similarly small payoffs to Philip Morris in March 2014³⁷ raise hopes that this approach to small infringers could prevail in the long term.

³⁴ *Supra* note 32, at 6.

³⁵ *Hindustan Unilever* 2014 (57) PTC 495 (Del).

³⁶ *Ardath Tobacco* 2009 (39) PTC 208 (Del).

³⁷ *Philip Morris* 2014 (58) PTC 317 (Del), 209 (2014) DLT 1.

2. KEY STATISTICAL TAKEAWAYS FROM DAMAGES PAYOUTS BY THE DELHI HIGH COURT

2.1 AVERAGE DAMAGES AWARDED AND OTHER REMEDIES

The overall average payout in all trademark infringement cases proceeding to full judgement where damages have been awarded in the time period in question is about 5.9L. However, it is notable that in 6% of all cases, despite showing an inclination to do so, courts have awarded no damages whatsoever on account of plaintiffs' failure to demonstrate a basis for the claim for damages. Taking into account these cases where plaintiffs have failed to make the threshold for claiming damages, the overall average dips to 5.6L.

To be sure, the three slightly *outré* awards discussed in 1.3 above deserve to be red-flagged here – as such, they are highly unlikely to feature in such calculations going forward and ought to be disentangled from the vast majority of cases included in the study. Eliminating these three awards, the average corrects to a much more representative 5.2L (and further to 5.08L, taking into account the 6% of empty awards).

Moving to allied awards, costs of the proceedings have been awarded to successful plaintiffs in 51% of such cases overall. However, in only one-fifth of these cases have costs been quantified in the judgement itself, while almost none of these judgements seek to explain the thinking behind the quantum of costs awarded. A further 7.2% of cases have explicitly made the damages award payable within a specified time period and/or with penal interest and a small fraction of cases (3.8%) have even separately quantified awarded legal fees.

2.2 EX PARTE AWARDS

Another striking feature is that an overwhelming 88% of these cases were decided entirely *ex parte*, with the damages payout to plaintiffs in fully contested proceedings shrinking to 1.7L. This adds statistical ammunition to questioning the logic that non-contesting defendants should be punished more severely, since it is evidently a dangerous evasion of priorities if it has the consequence of not punishing those defendants who do put in appearances.

This reticence in punishing contesting defendants could be possibly be partly explained by lingering doubts over the get-out clause provided by Section 135(3) of the Trade Marks Act, 1999. Sections 135(3)(b) and 135(3)(c), in trademark infringement and passing off cases respectively, provide a safe harbour for a contesting defendant, contingent on the defendant demonstrating that that it was unaware or had no reasonable ground to believe that the plaintiff was the proprietor or authorised user of a trademark/registered trademark³⁸ and that it ceased its own use of the trademark on becoming aware of the plaintiff's rights in the same.³⁹

In such cases, a minimum expectation would be that the employment or contemplation of Section 135(3) be backed by some kind of evaluation of whether the defendant fulfilled the conditions to trigger its applicability. Unfortunately, this has simply not been the case and instances of judges employing and explaining Section 135(3) as a mitigating factor in the damages award are extremely rare.⁴⁰

2.3 AGGRAVATING, MITIGATING AND NEUTRAL FACTORS IN DAMAGES AWARDS

The standout finding in this specific sub-section is that cases involving infringement findings on deceptively similar marks (as opposed to identical marks), which account for about one-fourth of all damages awards, result in an average payout of only 2.8L, which is a hugely significant 44% lower than the overall average.

Other, more foreseeable aggravating factors include contempt by defendants of *ex parte* injunction orders (where the average award spikes to 7.2L, +41% above the overall average), using infringing trademarks on counterfeit products (6.6L, +30%) and copying of well-known acronyms in the same class of products (6.7L, +33%).⁴¹

Conversely, several mitigating factors also stand out. These include use of the same or similar trademark in relation to a different class of products (where the

38 S. 135(3)(c)(i), and S. 135(3)(b)(i), Trade Marks Act, 1999.

39 S. 135(3)(c)(ii) and S. 135(3)(b)(ii), Trade Marks Act, 1999.

40 *Nestlé* 2009 (39) PTC 129 (Del); *J&P Coats* 2014 (59) PTC 175 (Del).

41 Another aggravating factor recently recognised by Courts, though not yet conclusively correlatable with damages payouts, has been the defendant's priors in terms of trademark squatting, filing trademarks with false use claims and other *mala fide* acts. See Justice Sistani's 5L award in *Forme Communications* 2014 (59) PTC 518 (Del), at 34, Justice Singh's 8.5L award in *Rolex* 2014 (60) PTC 131 (Del), at 47.

average award reduces to 3.03L, -40% below the overall average),⁴² copying of numerals (2.8L, -43%) and domain name infringement cases (3.5L, -31%).

Surprisingly, there is no significant difference in the damages awards based either on the extent of preliminary engagement by infringing defendants with the judicial process after injunction orders. Indeed, suits partially contested at various preliminary stages (initial appearance, cooperating with investigations/court-appointed Local Commissions, filing a written statement) account for no more than a 5% swing in the overall average damages payout. Equally remarkably, there appears to be no discernible difference in the judicial treatment of potentially public interest-facing disputes such as pharmaceutical products cases, where average damages awarded are merely +2% off the overall average.

2.4 LITIGANT PROFILES

About one-half of cases proceeding to final judgement and a damages award in the time period in question have been instituted by Indian plaintiffs and it is telling that the damages awarded to them on average are a touch under 3.3L per award, which is a full 35% lower than the damages awarded on an average to foreign plaintiffs. Further, on most occasions where a foreign plaintiff has been awarded damages below the overall average, there appears to have been a mitigating factor close at hand. Thus, judges have inevitably reduced payouts where damages have not been properly articulated⁴³ or pressed⁴⁴ or supported by proof⁴⁵ by plaintiffs, where the marks have been deceptively similar and not identical,⁴⁶ where some

42 The reasoning in this sub-classification of cases is often shaky, as demonstrated by Justice Singh's 2L punitive damages award despite the admittedly plaintiff proving actual damages in *Sasken Communication* 2009 (41) PTC 523 (Del), at 21.

43 *General Electric* 2009 (39) PTC 541 (Del); *Pfizer* 2011 (46) PTC 401 (Del).

44 *Toyota* 2011 (45) PTC 465 (Del).

45 *Glaxo* 2007 (34) PTC 109 (Del).

46 *Intel* 2006 (33) PTC 345 (Del); *P&G* 2011 (45) PTC 541 (Del); *Novartis* 2011 (47) PTC 349 (Del); *Nestlé* 2011 (48) PTC 152 (Del); *Smithkline and French* CS(OS) 1775/2008 (24.11.2011); *Siemens* CS(OS) 1986/2013 (10.11.2014).

47 *Jane Norman* MIPR 2014 (2) 363.

48 *L&T* 2011 (46) PTC 385 (Del).

contesting defendants have admitted liability or settled,⁴⁷ have been out of the reach of the court⁴⁸ or operating on such a small scale that losses have been minor.⁴⁹

This begs the thorny question of whether this considerably lighter trigger in cases involving foreign plaintiffs is deliberate. It is a question with no clear-cut answer, and a classic instance of the judiciary being caught between the proverbial legal rock and policy hard place. Nevertheless, it bears mention that the odd judgement on the subject has not been shy in openly siding with foreign plaintiffs. Justice Jain's March 2011 opinion in *Tata* (*en route* to awarding an Indian plaintiff 2L plus costs in damages) is a case in point:

“Our country is now almost in the league of advanced countries. More and more foreign companies are entering our markets, with latest products. They would be discouraged to enter our country to introduce newer products and make substantial investments here, if the Courts do not grant adequate protection to their intellectual property rights. [...] Most of the products sold by these companies are branded products, the marks on them having trans-border reputation and enjoying tremendous brand equity. It is, therefore, becoming increasingly necessary to curb such trade mark piracies (*sic*), lest they drive away the huge foreign investment our country is attracting.”⁵⁰

3 TOWARDS A JUDICIAL CHECKLIST FOR QUANTIFYING DAMAGES IN TRADEMARK INFRINGEMENT CASES

The various approaches followed by the Delhi High Court in the last ten years in awarding damages have occasionally complicated the task of picking a minimum

49 *Philip Morris* 2014 (58) PTC 317, 209 (2014) DLT 1.

50 *Tata* 2011 (46) PTC 244 (Del), 28.

51 Most recently, *Disney* CS(OS) 3466/2012 (20.02.2014).

52 In the same vein, courts may also look to incorporate, wherever appropriate, the user principle and the possibility of defendants doing business in non-infringing alternatives. The yardsticks for these factors were fruitfully explored in *Force India* [2012] EWHC 616 (Ch) and fine-tuned in *32Red* [2013] EWHC 815 (Ch) to include an assessment of the strengths and weaknesses of the parties' positions in arriving at a fair damages award. See Bonita Trimmer, “A Guide to Damages Calculations for Trade Mark Infringement”, <http://www.managingip.com/Article/3358604/A-guide-to-damages-calculations-for-trade-mark-infringement.html> (last accessed December 29, 2014) and Walker Morris, “Assessment of Damages in IP Infringement Cases”, <http://www.walkermorris.co.uk/assessment-damages-ip-infringement-cases> (last accessed December 29, 2014).

consensus path in arriving at such awards but have, in aggregate, covered most factual considerations that ought to be relevant.

These factors could be usefully refashioned in the form of a basic three question post-infringement inquiry.

- (1) **Where does the infringement fall to be located on the deceptive similarity continuum?**

This could conceivably be worked on a percentage or point scale to judge how adjacent the rival marks are and how likely they are to cause consumer confusion.

- (2) **What is the estimated annual capacity of the infringer's business and how long has the infringer has been in business?**

Pressure points in this specific inquiry could be addressed by considering reliable evidence of adoption and use (ideally, from a legal document such as a trademark application). In cases where evidence is not forthcoming on these factors on account of non-contesting defendants, courts should still require plaintiffs to fulfill minimum evidentiary thresholds by furnishing market intelligence or expert affidavits on infringers' business.

- (3) **Speaking primarily to the punitive element, is the infringement of a flagrant or brazen nature?**

While a cynical view would suggest that the insistence on the *absence* of a flagrant and brazen infringing act means little when the positive standard is so ambiguously defined, there is precedent⁵¹ to suggest that there is enough meat to this standard to at least merit inclusion in a *pot pourri* of factors to be considered in arriving at a damages award.

A percentage value of (1) multiplied by a realistic financial estimate of (2) compounded by the punitive element embodied by (3) should, at the very least, offer a useful baseline around which other aggravating and mitigating factors can be arranged. Potential factors that could populate such an inquiry have, as evident

53 *Ellora Industries* 1981 PTC 67.

from 2.3 above, already form a part of the judicial calculus on the quantum of damages.⁵²

To this, however, it would be remiss not to incorporate – within the punitive damages assessment at the very least – some consideration of the infringers' business profile. More specifically, the centrality of the infringing mark to the infringer's overall business and, especially in a counterfeit context, the commercial environment of the infringer's business are evidently extremely germane factors.

The potential pitfalls of relying on a plaintiff-driven estimate of losses caused as a consequence of infringement are evident post-*Lachhman Das*. Sidestepping a theoretically taxing but ultimately ancillary debate on the rule of law, it may fairly be asserted that deterrence is likely to work only where potential infringers are confronted with a gradient of consequences and to fall back, as so many judgements have, on the mythical default position that all infringers are deterred by the law would merely be judicial bluster. Lastly, all such calculations should, of course, add costs of the suit where plaintiffs claim them through evidence but overall awards should always be capped by the amount claimed.

This sort of inquiry could possibly be dovetailed with another encouraging, if slightly antiquated, Delhi High Court practice – using inherent powers to customize relief to the needs of the case. This could include evolving factors to determine when defendants are required to submit accounts of profits,⁵³ requiring litigants to furnish security amounts against injunctive relief⁵⁴ and setting standards for whether and to what extent defendants consenting to injunctions should mitigate relief.⁵⁵

The possibilities are endless and it is vital to mould these numerous considerations into a consensus judicial checklist to ensure that the damage done to trademark-dependent businesses on both sides of the litigation divide is fairly, accurately and swiftly accounted for.

54 *Mehboob Productions* 10 (1974) DLT 299; *S Karam Singh* 1981 PTC 260.

55 *Rai Toys Industries* 1982 PTC 85.

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**THE PROPOSED TREATY FOR
THE PROTECTION OF BROADCASTING
ORGANIZATIONS: OLD WINE IN A NEW BOTTLE?**

Nehaa Chaudhari and Amulya Purushothama*

ABSTRACT

This article analyses the proposed WIPO Treaty for Protection of Broadcasting Organizations (“Broadcast Treaty”) and argues that (a) The need for the Broadcast Treaty has not been fully established and b) even if there were such a need for the Broadcast Treaty (purportedly to help counter signal piracy), the proposed draft of the treaty deviates from this approach towards a ‘rights-based’ approach, creating a ‘para-copyright’ regime, potentially creating chilling effects on legitimate end uses of copyrightable material.

PRELIMINARY: NEED FOR THE BROADCAST TREATY

The basis of international law on the protection of intellectual property rights can be traced back to the Berne Convention for the Protection of Literary and Artistic Works, 1886 (“**Berne Convention**”)¹ that grants substantive rights to authors. The Berne Convention particularly vests with authors the rights of reproduction,² translation,³ adaptation,⁴ and communication to the public,⁵

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1 The Berne Convention for the Protection of Literary and Artistic Works, 1886.

2 Article 9, The Berne Convention for the Protection of Literary and Artistic Works, 1886.

3 Article 8, The Berne Convention for the Protection of Literary and Artistic Works, 1886.

4 Article 12, The Berne Convention for the Protection of Literary and Artistic Works, 1886.

5 Article 11, The Berne Convention for the Protection of Literary and Artistic Works, 1886.

broadcasting and cable transmission⁶ and the right of resale⁷ of their works. Further, in case of dramatic or musical works, authors also have the right to authorize public performances or any other communications of their work.⁸

However 'broadcast right' as a specific neighbouring right to copyright was first recognized and protected in international intellectual property law in the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, 1961 ("**Rome Convention**")⁹. While the Rome Convention came into place primarily to protect the rights of performers and producers of phonograms, it also protected the rights of broadcasting organisation with regard to the right to authorize rebroadcasting, fixation, reproduction and communication of their broadcasts, but not cable distribution of broadcasts.¹⁰ Further it protected the right of performers to prevent public broadcasting or communication of their performances, right to fixation of their unfixed performances and right to reproduction of a fixed performance in certain cases.¹¹

This was done because broadcasters' rights were seen as being derived from literary and artistic rights that were already protected by the Berne Convention, so while broadcasting organisations are rarely involved in the creation of content themselves, they do invest in the broadcasting and distribution of content and it became important to incentivize broadcasting and to protect their economic interests in light of signal theft.¹²

6 Article 11, The Berne Convention for the Protection of Literary and Artistic Works, 1886.

7 Article 14, The Berne Convention for the Protection of Literary and Artistic Works, 1886.

8 Article 11(1), The Berne Convention for the Protection of Literary and Artistic Works, 1886.

9 Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, 1961.

10 Article 13, the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, 1961.

11 Article 7, the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, 1961.

12 Shyamkrishna Balganes, *The Social Costs of Property Rights in Broadcast (And Cable Signals)*, *Berkeley Technology Law Journal*, Vol. 22, 2007, p. 1309-1312; Patricia Akester, *The Draft WIPO Broadcasting Treaty and its Impact on Freedom of Expression*, *Copyright Bulletin*, April-June 2006, p. 5-6, available at: <http://unesdoc.unesco.org/images/0014/001464/146498E.pdf> (Last visited February 1, 2015); Protection of Broadcasting Organizations: Terms and Concepts, WIPO, SCCR/8/INF/1, August 16, 2002, p.12.

The Brussels Convention Relating to the Distribution of Programme - Carrying Signals Transmitted by Satellite, 1974 (“**Brussels Convention**”) later filled in gaps left by the Rome Convention with regards to satellite signals and protected broadcasting organisations from signal theft and piracy.¹³

The WIPO Copyright Treaty, 1996 (“**WCT**”) provided authors with the right to authorize the distribution and copies of their works including the right to rental, the WCT also vested with authors of literary and artistic works the right to communication even over the internet.¹⁴ The WCT also protected the authors’ rights with regards to circumvention of technological measures and alteration of electronic rights management information.¹⁵

The WIPO Performances and Phonograms Treaty, 1996 (“**WPPT**”) provided performers with the rights of reproduction, distribution, and distribution of their performances fixed in phonograms¹⁶; provided producers of phonograms with the rights of reproduction, distribution and rental of their phonograms¹⁷; and most importantly provided both performers and producers with the right of remuneration for public broadcast or communication of their performances/phonograms.¹⁸

The Beijing Treaty on Audio Visual Performances, 2012 (“**Beijing Treaty**”) provides performers with rights to authorize broadcasting and communication, right to fixation and the right to communication to the public.¹⁹ The Beijing Treaty also vests within performers the right to direct and indirect reproduction of performances in audio visual fixations²⁰ and the right to authorize the distribution of copies of their performances.²¹

13 Brussels Convention Relating to the Distribution of Programme - Carrying Signals Transmitted by Satellite, 1974, available at: http://www.wipo.int/treaties/en/text.jsp?file_id=283796 (Last visited November 20, 2014) (Hereinafter, **The Brussels Convention**).

14 WIPO Copyright Treaty, 1996, Articles 4-8.

15 WIPO Copyright Treaty, 1996, Article 11-12.

16 WIPO Performances and Phonograms Treaty, 1996, Articles 6-10.

17 WIPO Performances and Phonograms Treaty, 1996, Articles 11-14.

18 WIPO Performances and Phonograms Treaty, 1996, Article 15.

19 Beijing Treaty on Audio Visual Performances, 2012 (Hereinafter, **Beijing Treaty**), Article 6, Article 11.

20 Beijing Treaty, Article 7.

21 Beijing Treaty, Article 8(1).

The concept of broadcasting rights as neighboring rights has therefore become increasingly important over the years. In 1998, the WIPO Standing Committee on Copyright and Related Rights (SCCR) decided to include in its agenda deliberation on treaty proposals for the protection of broadcasting organisations.²² Negotiations regarding the same have been taking place for the past 17 years. The proposed Broadcast Treaty is stated to be necessary to combat signal piracy.²³

The draft non paper for this treaty circulated by the WIPO²⁴ states that the need for this treaty stems from the need to update international rules keeping in mind technological developments²⁵. A study sanctioned by the WIPO enumerates the different ways in which signal piracy can take place and the harmful effect it has on revenues of the broadcasting organisations.²⁶ This, the study says may result in dis-incentivizing broadcasting organisations from continuing their work which would in turn affect public interest adversely as important programmes would no longer be broadcast.²⁷ The study also analyses how the Broadcast Treaty will positively affect different stakeholders like copyright holders and broadcasting organisations due to an additional layer of protection²⁸

However, no justification has been put forth as to why this additional layer of protection is *necessary*. Indeed no reasoning has been provided as to why the protections provided to copyright holders and to broadcasting organisations and authors and performers under international instruments so far are *inadequate*

22 Standing Committee on Copyright and Related Rights, First Session, Geneva , November 2-10,1998, SCCR/1/9, p. 35, available at: http://www.wipo.int/edocs/mdocs/copyright/en/sccr_1/sccr_1_9.pdf

23 Protecting of Broadcast Organisations- Background Brief available at: <http://www.wipo.int/pressroom/en/briefs/broadcasting.html>

24 Draft Non-Paper on the WIPO Treaty on the Protection of Broadcasting Organisations, March 8, 2007.

25 See also WIPO Background Brief, Available at: <http://www.wipo.int/pressroom/en/briefs/broadcasting.html> (Last visited November 19, 2014).

26 WIPO in the report of the secretariat entitled “*Study on Socioeconomic Dimension of the Unauthorized Use of Signals-Part II: Unauthorized Access to Broadcast Content- Cause and Effects: A Global Overview*”, SCCR 20th Session, Geneva June 21-24, 2010, SCCR/20/2Rev.

27 WIPO in the report of the secretariat entitled “*Study on Socioeconomic Dimension of the Unauthorized Use of Signals-Part III: Study on the Social and Economic Effects of the Proposed Treaty on the Protection of Broadcasting Organisations*”, SCCR, 21st Session, Geneva November 8-12, 2010, SCCR/21/2.

28 *Id.*

70 The Proposed Treaty for the Protection of Broadcasting Organizations

when it comes to comparing curbing unauthorized use of broadcast signals if they are implemented properly.

It has not been proved that the Broadcast Treaty fills any gaps left behind by the existing international law on the issue.

Therefore the reasons provided so far for the need -for the Broadcast Treaty do not justify the *necessity for the additional protections* provided in the treaty in the strict sense.

The conceptual problem here is that the Broadcasting Treaty is designed in essence, to combat problems with implementation that arose from the earlier treaties,²⁹ but insofar as those problems are not caused due to a lacuna in the law but due to poor implementation of those laws, the fact of rampant signal theft is not so much an argument for a new treaty as it is for better implementation of the international conventions that already exist.

SHIFT TO A RIGHTS-BASED APPROACH

Even if a new Broadcast Treaty were necessary to combat signal theft, it would seem that the protections granted by the Broadcast Treaty are excessive and indicate a shift to a rights based approach, thereby creating a para-copyright regime.

The non-paper put out by the WIPO in 2007 avows to adopt a “signals-based” approach, in fulfilling the same following the WIPO General Assembly decision in 2007.³⁰

However, this article argues that it can be observed that there is a subtle shift in the language of the Broadcast Treaty³¹ which tends towards a “rights-based”

29 *Supra* note 27, the study posits the idea that it would be easier for broadcasters to enforce their rights and catch instances of unauthorized use than it would be for individual copyright holders as a justification.

30 Non Paper on the WIPO Treaty on the Protection of Broadcasting Organization, April 20, 2007, available at: http://www.wipo.int/edocs/mdocs/copyright/en/sccr_s2/sccr_s2_paper1.pdf.

31 For the purposes of this discussion, we will be using the latest draft of the Broadcast Treaty: Working Document for a Treaty on the Protection of Broadcasting Organisations Prepared by the Secretariat, Standing Committee on Copyright and Related Rights, 27th Session, Geneva, April 28- May 2, 2014, SCCR/27/2/REV.

approach as opposed to an approach focused on the narrow problem of signal theft. Therefore, the protections and rights granted by the draft Broadcast Treaty are in excess of what would be mere signals protection and in cases extends to covering the content underlying the signal as well. It is further argued that this is particularly problematic as it can be observed that the need for signal protection above and beyond what is already granted by international conventions has not been justified.

To prove this we will undertake a clause by clause comparison of the Broadcast Treaty with other international treaties mentioned above in order to prove the shift to a more “rights based approach” and the higher level of protections offered to broadcasters.

The shift in the language of the draft Broadcast Treaty to a rights based approach can basically be observed in two important places- the first being the broadening of definitions in the Broadcast Treaty as compared to international instruments on the subject so far, and the second being the rights and protections granted to broadcasters that are analogous to rights already granted to authors and performers in international instruments so far, therefore adding an additional layer of protection over the same content.

BROADENING OF DEFINITIONS IN THE BROADCAST TREATY³²

Inter alia, there are seven main areas where we can observe a broadening of definitions in the Broadcast Treaty as compared to other international treaties and relevant documents the Broadcast Treaty. These include the definitions of a signal, broadcast, broadcasting organization(s), retransmission, communication to the public and rights management information. In each of these instances, it is observed that the definitions in the Broadcast Treaty are wider than those in existing international instruments.

32 Nehaa Chaudhari & Amulya Purushothama, *CIS Submission to the Expert Committee: Comment on the Broadening of Definitions in the Proposed Broadcast Treaty Compared to other International Conventions*, available at: <http://cis-india.org/a2k/blogs/the-broadening-of-definitions-in-the-proposed-broadcast-treaty-compared-to-other-international-conventions>.

72 The Proposed Treaty for the Protection of Broadcasting Organizations

In the case of a “signal”, the Broadcast Treaty speaks of an “electronically generated carrier consisting of sounds or images or sounds and images or representations thereof whether encrypted or not”³³, which could potentially include content that the signal carries as well.

A “broadcast” under the Broadcast treaty is “transmission of a signal by a broadcasting organization for reception by the public”³⁴; an alternative to this excludes signals sent over computer networks from the definition of a broadcast,³⁵ another alternative defines broadcasting as “the transmission by wireless means for the reception by the public of sounds or of images or of images and sounds or of the representations thereof” .This definition includes satellite transmissions, wireless transmissions of encrypted signals where the means for decrypting are provided to the public by the broadcasting organization or with its consent. Transmission over computer networks is excluded from this definition as well.³⁶ This mirrors definitions of broadcasting set out in the WPPT³⁷, the Rome Convention³⁸ and the Beijing Treaty

Under the proposed Broadcast Treaty, a broadcasting organization is “the legal entity that takes the initiative for packaging assembling and scheduling program content for which it has, where necessary, been authorized by rights holders and takes the legal and editorial responsibility for the communication to the public of everything which is included in its broadcast signal.” Or alternatively³⁹, it considers broadcasting organisations and cablecasting organisations as one and the same and defines them as “the legal entity that takes the initiative and has the responsibility

33 Article 5, Alternative A, 5(a), the Broadcast Treaty.

34 Article 5, Alternative A, Article 5 (b), The Broadcast Treaty.

35 Article 5, Alternative A, Alternative to (b), The Broadcast Treaty.

36 Alternative B for Article 5, Article 5 (a) The Broadcast Treaty.

37 See Article 2(f) of the WIPO Performances and Phonograms Treaty, 1996.(Hereinafter, **WPPT**) that reads as: “broadcasting” means the transmission by wireless means for public reception of sounds or of images and sounds or of the representations thereof; such transmission by satellite is also “broadcasting”; transmission of encrypted signals is “broadcasting” where the means for decrypting are provided to the public by the broadcasting organization or with its consent”.

38 See Article 3 (f) of the Rome Convention, 1961 (Hereinafter, **The Rome Convention**), that reads as: ““broadcasting” means the transmission by wireless means for public reception of sounds or of images and sounds.’

39 Alternative B for Article 5, Article 5 (c) The Broadcast Treaty.

for the transmission to the public of sounds or of images or of images and sounds or of the representation thereof and the assembly and scheduling of the content of the transmission.” This definition is also by far the most technologically neutral and ensures adequate protection for broadcasting organisations on all broadcasting platforms which is potentially problematic and overreaching.

The proposed Broadcast Treaty defines “retransmission” as “the transmission by any means by any person other than the original broadcasting organization for reception by the public whether simultaneous or delayed”;⁴⁰ or alternatively defines rebroadcast as “the simultaneous transmission for the reception by the public of a broadcast or a cablecast by any other person than the original broadcasting organization”; even simultaneous transmission of a rebroadcast is understood to be a rebroadcast under this definition.⁴¹

Under a further alternative⁴² retransmission is defined as “the simultaneous transmission for the reception by the public by any means of a transmission ... by any other person than the original broadcasting or cablecasting organization” this definition of retransmission also includes simultaneous transmission of a retransmission.

To contrast with this, the Rome convention defines rebroadcasting simply as the simultaneous broadcasting by one broadcasting organization of the broadcast of another broadcasting organization.⁴³ Clearly, a higher level of protection is granted to broadcasting organisations under the proposed Broadcast Treaty; one that was so far not guaranteed to them by international conventions, and clearly this is because of a shift towards a rights based approach.

The proposed Broadcast Treaty defines communication to the public as “any transmission or retransmission to the public of a broadcast signal or a fixation thereof by any medium or platform”.⁴⁴ Or alternatively as “making the transmissions ... audible or visible or audible and visible in places accessible to the

40 Article 5, Alternative A to Article 5(d) The Broadcast Treaty.

41 Alternative to Article 5(d), The Broadcast Treaty.

42 Alternative B for Article 5, Article 5 (d), The Broadcast Treaty.

43 Article 3(g), The Rome Convention, 1961.

44 Article 5, Alternative A to Article 5 (f), The Broadcast Treaty.

public.⁴⁵ Whereas the WPPT defined communication to the public as “the transmission to the public by any medium, otherwise than by broadcasting, of sounds of a performance or the sounds or the representations of sounds fixed in a phonogram... including making the sounds or representations of sounds fixed in a phonogram audible to the public.”⁴⁶ The Beijing Treaty defined communication to the public as “the transmission to the public by any medium otherwise than by broadcasting, of an unfixed performance or of a performance fixed in an audio visual fixation... Communication to the public” includes making a performance fixed in an audiovisual fixation audible or visible or audible and visible to the public.”⁴⁷ Clearly the definition has been broadened under the proposed treaty, which makes it plausible for the protection granted to broadcasters to cover the content underlying the signal as well.

The proposed Broadcast Treaty defines rights management information as “information that identifies the broadcasting organization, the broadcast, the owner of any right in the broadcast, or information about the terms and conditions of use of the broadcast and any numbers or codes that represent such information when any of these items of information is attached to or associated with the broadcast or the pre broadcast signal or its use in accordance with Article 6.”⁴⁸ Clearly the current treaty extends the protection offered to rights management information to pre-broadcasting signals in addition to broadcast signals, this represents a higher level of protection granted to broadcasters under the proposed Broadcast Treaty as compared to any other international treaty including the WIPO Copyright Treaty, 1996,⁴⁹ the WPPT⁵⁰ and the Beijing Treaty.⁵¹

RIGHTS GRANTED IN THE BROADCAST TREATY⁵²

The nine areas with regards to rights and protections where there is an observable shift in the language of the Broadcast Treaty toward a more rights based approach

45 Alternative B for Article 5, Article 5 (e), The Broadcast Treaty.

46 Article 2(g), WPPT.

47 Article 2(d), The Beijing Treaty.

48 Article 5 (h), The Broadcast Treaty.

49 Article 12(2), WIPO Copyright Treaty, 1996.

50 Article 19(2), WPPT.

51 Article 16(2), Beijing Treaty.

52 Nehaa Chaudhari & Amulya Purushothama, *supra* note 32.

granted in the treaty are: the right of performance, the right of fixation, the right of communication to the public, the right of retransmission, reproduction, distribution, the protection of rights management information, the term of protection, and limitations and exceptions to protections.

In this part we will compare the rights granted to broadcasting organisations in the Broadcast Treaty, to the Berne Convention, the Rome Convention, the Brussels Convention, the WCT, the WPPT and the Beijing Treaty.

Performance

Under the proposed Broadcast Treaty, broadcasting organisations have an exclusive right to authorize performances of their signals for commercial purposes in places available to the public.⁵³ This right of public performance and of communication to the public of a performance with respect to dramatic or musical works rests with the copyright holder under the Berne Convention.⁵⁴ The Rome Convention protects performers' rights to prevent public broadcast and communication of their performances "except where the performance used in the broadcast is already a broadcast performance or is made from a fixation".⁵⁵ Under the WPPT, a similar right is granted to performers.⁵⁶ And finally performers have a similar right under the Beijing Treaty.⁵⁷

Clearly the right of performance has been adequately granted to authors/performers/ copyright holders under the earlier international conventions and the provision of this right to broadcasters in the proposed treaty unnecessarily adds an extra layer of protection for the same content which is problematic as it betrays a shift to a rights based approach and goes above and beyond mere protections against signal theft.

53 Article 9 (1) (ii) (Alternative A), the Broadcast Treaty.

54 Article 11, the Berne Convention.

55 Article 7(1)(a), the Rome Convention.

56 Article 6(i), WPPT.

57 Article 6 (i) and Article 11, the Beijing Treaty.

Fixation

The proposed Broadcast Treaty grants broadcasting organisations the exclusive right to authorize fixations of their broadcasts.⁵⁸ As fixation is defined as an “embodiment of sounds or images or representations thereof from which they can be perceived reproduced or communicated through a device”,⁵⁹ this would realistically cover content underlying the signal as well. The Rome Convention states that the protection provided for performers by this convention possibly includes the preventing of fixation without their consent of their unfixed performances”.⁶⁰ Further, broadcasting organisations already enjoy the right to authorize or prohibit the fixation of their broadcasts under the Rome Convention.⁶¹ The Brussels Convention limits this obligation to prevent distribution of signals in case of derived signals that are taken from signals which have already been distributed by a distributor for whom the emitted signals were intended. Derived signals are signals whose technical characteristics are modified whether or not there have been one or more intervening fixations. This allows for some limitation on the right of fixation granted by the Rome Convention.⁶² The WPPT provides performers with the right of authorizing the fixation of their unfixed performances.⁶³ This is mirrored in the Beijing Treaty.⁶⁴

Clearly, the right of fixation has already been adequately covered by international conventions. The provisions of the proposed Broadcast Treaty simply extend this right to possibly cover the content underlying the signal. This would add an extra layer of protection as performers and authors already are vested with a right to fixation under earlier international conventions and treaties. Further, the granting of this right to broadcasters could potentially grant them control of content underlying their signals as well. Therefore, the provision under the Broadcast Treaty betrays a shift towards a rights based approach and not mere protection against signal piracy.

58 Article 9 (1) (i) (Alternative B), the Broadcast Treaty.

59 Article 5(e) (Alternative A) and 5(f) (Alternative B),

60 Article 7(1) (b), the Rome Convention.

61 Article 13(b), the Rome Convention.

62 Article 2(3) read with Article 1(v), the Brussels Convention.

63 Article 6(ii), WPPT.

64 Article 6(ii), the Beijing Treaty.

Communication to the Public

The proposed Broadcast Treaty defines “communication to the public” as “making the transmissions... audible or visible.”⁶⁵ Further, it guarantees the exclusive right to authorize the communication to the public of their broadcasts to broadcasting organisations.⁶⁶ The right of communication to the public has also been guaranteed to authors of literary and artistic workers who can authorize the broadcasting of their works and communication of their work to the public by any means including rebroadcasting under the Berne Convention.⁶⁷ The Rome Convention grants a similar right to broadcasting organisations when the broadcast is made in places accessible to the public for a fee.⁶⁸ However, the Brussels Convention limits this right and excludes situations where the signals emitted by or on behalf of the originating organization are intended for direct reception from the satellite by the general public.⁶⁹ Further, under the WCT, the right to authorize communication to the public is vested with authors of literary and artistic works⁷⁰ and under the WPPT, performers enjoy a similar right to authorize broadcasting and communication to the public of their unfixed performances except where the performance is already a broadcast performance.⁷¹ In the Beijing Treaty, performers enjoy the exclusive rights of authorizing the broadcasting and communication to the public of both their unfixed performances except where the performance is already a broadcast performance.⁷² Here, their performances are fixed in audiovisual fixations.⁷³

As is obvious, the right to communicate to the public and even the right to broadcast are adequately guaranteed by the existing international conventions already - the proposed Broadcast Treaty, by vesting a similar right in broadcasting organisations, merely adds an extra layer of protection for the same and doesn't

65 Article 5 (e) (Alternative B), the Broadcast Treaty.

66 Article 9(1) (iv) (Alternative B), the Broadcast Treaty.

67 Article 11 bis, the Berne Convention.

68 Article 13(d), the Rome Convention.

69 Article 3, the Brussels Convention.

70 Article 8, WIPO Copyright Treaty, 1996 (hereinafter, WCT).

71 Article 6 (i), WPPT.

72 Article 6 (i), the Beijing Treaty.

73 Article 11, the Beijing Treaty.

78 The Proposed Treaty for the Protection of Broadcasting Organizations

actually fill any existing gaps in the current international intellectual property regime.

Retransmission

Under the proposed Broadcast Treaty, broadcasting organisations enjoy the exclusive right of retransmission of their broadcast by any means including rebroadcasting, by wire or over computer networks, includes simultaneous retransmission or otherwise⁷⁴; the right to authorize broadcasting of their works to the public including any communication to the public by wire or by rebroadcasting the broadcast of the work is vested with the authors of literary and artistic works in the Berne Convention,⁷⁵ The Rome Convention already guarantees that broadcasting organisations have the right to authorize and prohibit the rebroadcasting of their broadcasts⁷⁶ and the Brussels Convention⁷⁷ enjoins contracting states to “take adequate measures to prevent the distribution of any Programme-carrying signal by any distributor for whom the signal emitted to or passing through the satellite is not intended on or from its territory”.

Therefore, the right of retransmission was well vested with broadcasting organisations and authors. However, the proposed Broadcast Treaty has expanded the said right to include simultaneous retransmission, transmission over computer networks, cablecasting etc., providing a higher level of protection to broadcasters.

Reproduction

The proposed Broadcast Treaty vests the right to authorize direct and indirect reproduction in any manner or form of fixations of their broadcasts with the broadcasting organization.⁷⁸ The right to authorize reproduction of copyrighted work⁷⁹ and the right to adaptation and alteration⁸⁰ is granted to authors of literary

74 Article 5 (d) (Alternative A) read with Article 9(1) (i) (Alternative A) and 9(1) (iii) (Alternative B), the Broadcast Treaty.

75 Article 11 bis, the Berne Convention.

76 Article 13(a), the Rome Convention.

77 Article 2(1), the Brussels Convention

78 Article 9(1) (ii) (Alternative B), the Broadcast Treaty.

79 Article 9, the Berne Convention.

80 Article 12, the Berne Convention.

and artistic works under the Berne Convention; the Rome Convention allows for the protections provided for performers to include the preventing of reproduction of a fixation of their performance if the original fixation is made without the consent or if the reproduction is made for purposes different from those for which consent was begot, the reproduction is made for purposes that aren't in accordance with Article 15, of a fixation of their performance.⁸¹ It further provides for broadcasting organisations to enjoy the exclusive right to authorize or prohibit the reproduction of fixations made without their consent of their broadcasts⁸² and for producers of phonograms to enjoy the right to authorize or prohibit the direct or indirect reproduction of their phonograms.⁸³ Performers enjoy the exclusive right of authorizing direct or indirect reproduction of their performances fixed in phonograms in any manner or form under the WPPT,⁸⁴ and producers of phonograms have the exclusive right of authorizing the direct or indirect reproduction of their phonograms in any manner or form under the WPPT.⁸⁵ Lastly under the Beijing Treaty, performers enjoy the exclusive right authorizing the direct or indirect reproduction of their performances fixed in audiovisual fixations in any manner or form.⁸⁶

As is evident, the right of reproduction has vested with authors and performers and producers of phonograms under several international treaties, the extension of this right to broadcasting organisations adds another layer of protection thereof, but fulfills no lacuna in the existing international intellectual property framework. Further, the granting of this right to broadcasters could potentially grant them control over content underlying their signals as well.

Distribution

Under the proposed Broadcast Treaty, broadcasting organisations enjoy the exclusive right to make available to the public, the originals and copies of the fixations in such a way that they can access them from a time and place chosen by

81 Article 7 (1) (c), the Rome Convention.

82 Article 13(c), the Rome Convention.

83 Article 10, the Rome Convention.

84 Article 7, WPPT.

85 Article 11, WPPT.

86 Article 11, the Beijing Treaty.

them individually,⁸⁷ in addition to making such a fixation available through sale or any other means of transfer of ownership.⁸⁸

The WCT vests the right of distribution of artistic or literary works with their authors;⁸⁹ performers enjoy an equivalent right under the WPPT,⁹⁰ as do producers of phonograms,⁹¹ and further, performers enjoy the exclusive right of distribution of their performances in audiovisual fixations under the Beijing Treaty.⁹²

Therefore, the right of distribution has been adequately protected by earlier conventions, the Broadcast Treaty, by extending this right to broadcasting organisations adds another layer of protection for the same right and doesn't necessarily fill any gaps in the international intellectual property framework.

Protection of Rights Management Information (“RMI”)

Under the proposed Broadcast Treaty, RMI could be attached to 1) the broadcast or the signal prior to broadcast, 2) the retransmission, 3) transmission following fixation of the broadcast, 4) making available of a fixed broadcast or 5) a copy of a fixed broadcast.⁹³ One alternative provides for an obligation on contracting parties to provide for “adequate and effective legal protection against unauthorized(a) decryption of an encrypted broadcast or circumvention of any technological protection measure (“TPM”) having the same effect as encryption, (b) manufacture, importation, sale or any other act that makes available a device or system capable of decrypting an encrypted broadcast and (c) removal or alteration of any electronic RMI used for the application of the protection of broadcasting organization.”⁹⁴ Another alternative provides for the same protection only against “(a) unauthorized decryption of an encrypted broadcast, (b) removal or alternation of any electronic RMI for the application of the protection of the broadcasting organisations.”⁹⁵ Further, one alternative also provides that states

87 Article 9 (1) (v) (Alternative B), the Broadcast Treaty.

88 Article 9 (1) (vii) (Alternative B), the Broadcast Treaty.

89 Article 6, WCT.

90 Article 8, WPPT.

91 Article 12, Article 14, WPPT.

92 Article 8, the Beijing Treaty.

93 Article 13(2), the Broadcast Treaty.

94 Article 12, Alternative A1, the Broadcast Treaty.

95 Article 12, Alternative A2, the Broadcast Treaty.

must ensure “adequate legal protection and effective legal remedies against the circumvention of effective technological measures used by broadcasting organisations in connection with the exercise of their rights under this treaty that restrict unauthorized acts in respect of their broadcasts”,⁹⁶ while another provides for this in addition to a provision that states “without limiting the foregoing, contracting parties shall provide legal protection against (i) unauthorized decryption of an encrypted broadcast signal and (ii) removal or alternation of any electronic RMI relevant for the application of the protection of the broadcasting organisations.”⁹⁷

The definition of RMI has been adopted from earlier conventions such as WCT⁹⁸ and WPPT⁹⁹ except for the inclusion of RMI attached to pre-broadcast signal. Under the WCT¹⁰⁰ and the WPPT¹⁰¹, contracting parties have an obligation to provide for legal protection and effective legal remedies against circumvention of effective technological measures used by authors or performers or producers of phonograms in connection with exercise of their rights under these treaties to restrict the unauthorized and unlawful use of their work. Under the WCT,¹⁰² the Berne Convention and the WPPT,¹⁰³ contracting parties have an obligation to provide for “adequate and effective legal remedies against any person knowingly performing (i) removal or alteration of any electronic RMI without authority or (ii) distribution or import for distribution or broadcast or communication to the public without authority works or copies of works knowing that electronic RMI has been removed or altered without authority knowing or with respect to civil remedies having reasonable grounds to know that it will induce, enable, facilitate or conceal an infringement of any right”. Similar provisions are made for the protection of RMI attached to audiovisual fixations under the Beijing Treaty.¹⁰⁴

96 Article 12, Alternative B 1 and B2, the Broadcast Treaty.

97 Article 12, Alternative B2 (2), the Broadcast Treaty.

98 Article 12(2), WCT.

99 Article 19(2), WPPT.

100 Article 11, WCT.

101 Article 18, WPPT.

102 Article 12 (1), WCT.

103 Article 19, WPPT.

104 Article 15, Article 16, the Beijing Treaty.

82 The Proposed Treaty for the Protection of Broadcasting Organizations

Article 16(2) on rights management information identifies the performer, the performance of the performer or the owner of any right in the performance or information about the terms and conditions of use of the performance, and any numbers or codes that represent such information, when any of these items of information is attached to a performance fixed in an audiovisual fixation.

Thus, the provisions proposed in the Broadcast Treaty provide for a protection of RMI that is significantly higher than protection of RMI in earlier convention. Not only does it now extend to pre broadcast signals, retransmission, transmissions following fixation of the broadcast making available of a fixed broadcasts or a copy of a fixed broadcasts, it also extends to decryption and encryption of these signals. Clearly, a higher level of protection is granted to broadcasters through this provision.

Term of Protection

The proposed Broadcast Treaty provides for a term of protection that lasts for a minimum of 20-50 years computed from the end of the year in which the broadcast signal was broadcast.¹⁰⁵ The Berne Convention provides for a term of protection “life of the author and fifty years after his death” in case of literary and artistic works and 50 years after the work has been made available to the public or in case it hasn’t been made available to public, fifty years after the making of the work in case of cinematographic works.¹⁰⁶ Under the Rome Convention the term of protection is calculated as a minimum of 20 years from when the broadcast first took place for broadcasts.¹⁰⁷ Under the WPPT, the term of protection granted to performers is at least 50 years from the end of the year in which the performance was fixed in a phonogram. The term of protection granted for producers is at least 50 years calculated from the end of the year in which the phonogram was published, if unpublished, 50 years from end of the year in which fixation of phonogram was made.¹⁰⁸ And under the Beijing Treaty, term of protection to be granted to performers is at least until the end of a period of 50 years from the end of the year in which the performance was fixed.¹⁰⁹

105 Article 11 (Alternative A), the Broadcast Treaty.

106 Article 7 (1), the Berne Convention.

107 Article 14(c), the Rome Convention.

108 Article 17, WPPT.

109 Article 14, the Beijing Treaty.

As is evident, the term of protection envisioned under the Broadcast Treaty extends protection to copyrighted works, as it is not calculated from when the first broadcast of the signal took place but from when the last broadcast took place. This could potentially lead to ever-greening of copyright protections as broadcasting organisations could simply renew their rights by simply broadcasting their signals again and again. Clearly terms of protection already envisioned under other international conventions protected any content underlying the signal adequately; this provision simply provides an additional layer of protection and doesn't really fill any gaps in the current international intellectual property framework. Further this provision could potentially vest with broadcasters' rights over the content underlying the signal that goes above and beyond those guaranteed to authors and performers.

Limitations and Exceptions to Protections

The proposed Broadcast Treaty provided for exceptions and limitations for "(i) private use, (ii) use of short excerpts in connection with reporting of current events, (iii) use solely for purposes of education and scientific research and (iv) ephemeral fixation by a broadcasting organization by means of its own facilities and for its own broadcasts."¹¹⁰ And for the same or other limitations as are applied in connection with copyrighted works as long as they are confined to special cases that do not conflict with normal exploitation and do not unreasonably prejudice the legitimate interests of the broadcasting organization. Under an alternative, the limitations and exceptions for protection of broadcasting signals can be similar to those for protection of literary and artistic works, provided they are confined to certain special cases that do not conflict with normal exploitation of work that doesn't unreasonably prejudice the legitimate interests of the broadcasting organization.¹¹¹ Under a further alternative, limitations and exceptions may extend to all this but further, exceptions of (a) private use, (b) excerpts in connection with reporting of current events (c) ephemeral fixation by a broadcasting organization by means of its own facilities and for its own broadcasts, (d) solely for the purpose of teaching or scientific research, (e) use to promote access by persons with impaired sight or hearing, learning disabilities or other special needs, (f) use by libraries, archivists or educational institutions to make publicly available

¹¹⁰ Article 10, Alternative A, the Broadcast Treaty.

84 The Proposed Treaty for the Protection of Broadcasting Organizations

copies of works that are protected by any rights of the broadcasting organization for preservation, education or research And (g) use of any kind in any manner or form of any part of a broadcast where the program or any part of it which is subject of the transmission is not protected by copyright or any related right, is presumed to constitute special cases that don't conflict with normal exploitation of the work and don't unreasonably prejudice the legitimate interests of the rights holder.¹¹²

The Berne Convention first laid down the "three step test" which stated that "countries of the Union can choose to permit the reproduction of such works in special cases, provided that such reproduction doesn't conflict with a normal exploitation of the work and doesn't unreasonably prejudice the legitimate interests of the author"¹¹³. Under the Rome Convention these exceptions could include (a) private use, (b) use of short excerpts in connection with reporting of current events, (c) ephemeral fixation by a broadcasting organization by means of its own facilities and for its own broadcasts and (d) use solely for the purposes of teaching or scientific research, limitations on protection of copyright in literary and artistic works or compulsory licenses to an extent that is compatible with this convention keeping in mind the three step test.¹¹⁴ Under the Brussels Convention limitations and exceptions to protection of signals include (i) short excerpts of the programme consists of reports of current events , but only to the extent justified by the informatory purpose of such excerpts, (ii) quotations, or short excerpts of the programme carried by the emitted signal, provided that such quotations are compatible with fair practice and are justified by the informatory purpose of such quotations or (iii) the distribution is solely for the purpose of teaching including teaching in the framework of adult education or scientific research in a developing country.¹¹⁵ Further, contracting states are not limited from applying domestic law to prevent abuses of monopoly in this regard.¹¹⁶ The WCT follows

111 Article 10, Alternative B, the Broadcast Treaty.

112 Article 10, Alternative C, the Broadcast Treaty.

113 Article 9, the Berne Convention.

114 Article 15, the Rome Convention.

115 Article 4, the Brussels Convention.

116 Article 7, the Brussels Convention.

the three step test formula for literary and artistic work¹¹⁷ and the WPPT allows for similar limitations for protection of performers and producers of phonograms keeping in mind the three step test.¹¹⁸ Similar provisions exist under the Beijing Treaty as well.¹¹⁹

Clearly, the limitations and exceptions to protections under the Broadcast Treaty could possibly be narrower than those in other international conventions.

Therefore, the protections offered under the Broadcast Treaty are either (a) unnecessary as the underlying right is already protected in earlier international conventions or are (b) excessive and offer a higher level of protection than previously offered by international conventions, betray a shift to a rights based approach and therefore must be justified.

Therefore, be it through the definitional provisions or through granting rights and protections that are excessive and unnecessary, the language of the broadcast treaty betrays a tendency toward a rights based approach as opposed to a pure signals based approach, these provisions go above and beyond simple protection from signal piracy and they arguably come at too great a social cost.

CONCLUSION

Therefore, it is clear that the Broadcast Treaty in its current form is excessive and not *necessary* to achieve the professed goal of preventing signal theft. No need for the Broadcast Treaty has yet been shown.

But even if a treaty regarding broadcasters rights were necessary to prevent signal theft, the current Broadcast Treaty by providing broadcasters with rights over content underlying the signal has in fact adopted a rights based approach and has gone above and beyond the General Assembly mandate. This is problematic simply because broadcasters aren't part of the creative process, they haven't contributed to creation of the content, and their rights must be limited to their contribution-distribution of content and manufacture of signal.

117 Article 10, WCT.

118 Article 16, WPPT.

119 Article 13, the Beijing Treaty.

To provide broadcasters with these rights may impinge on legitimate uses of copyrighted material as transaction costs to utilize the material would increase because more permissions and licenses would be required to use copyrighted material and this could possibly have a chilling effect on free speech.¹²⁰

Further the Broadcast Treaty leaves out spaces for abuse by broadcasters, particularly with regards to term of protection being calculated from the last broadcast- broadcasters could simply rebroadcast the program every 50 years and thereby keep renewing their rights over the signal and possibly the content leading to ever greening of copyright.¹²¹

It is also clear that no valid justifications have been provided for the need for a Broadcast Treaty let alone the heightened protections under the proposed draft, and no impact assessment studies have been conducted to test whether the Broadcast Treaty would even prevent signal piracy if implemented.

Therefore it is clear that at the very least further study must be done on what has led to increase in signal piracy and the Broadcast Treaty must be redrafted to directly answer the problem without making a shift to a rights based approach.

120 Shyamkrishna Balganes, *supra* note 12, at p. 1321.

121 Patricia Akester, *supra* note 12, at p. 35-36.

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LEGAL AND TAXATION ISSUES CONCERNING E-COMMERCE

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ABSTRACT

The Internet has evolved from a network of computers to a global social phenomenon. Once a medium that offered access only to a few, the smartphone and mobile network revolution has thrown it open to a much wider and more varied audience. In the process it is transforming itself from a place where people exchange information to a place where people conduct business as well. The convenience provided by online business transactions – e-commerce – is the reason why more and more users are turning to the Internet for their buying and selling. This is not only changing the face of retailing and rewriting the rules of the game but also throwing up new challenges to the legal, policy-making and taxation fraternity at a pace that they are ill-equipped to deal with. This paper presents some of the major conceptual characteristics of e-commerce and the legal and taxation challenges that arise therefrom. It then suggests the approach that could be adopted for tackling these legal and taxation issues.

“If your business is not on the Internet, then your business will be out of business”

Bill Gates

Founder of Microsoft Corporation

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From its humble beginnings as a network connecting computer networks (a network of networks, hence *Inter-Net*), the Internet has changed beyond recognition, and if there is one company that arguably has contributed most to the transformation of the Internet, it is surely Google. Therefore it would be apt to use the words of Google's former CEO and now Executive Chairman Eric Schmidt to describe the modern Internet. In his book "The New Digital Age" co-authored with Jared Cohen, Director of Google Idea, he states that the Internet has transformed from a means of "electronic information transmission" to

*"... an omnipresent and endlessly multifaceted outlet for human energy and expression. It is at once intangible and in a constant state of mutation, growing larger and more complex with each passing second. It is a source for tremendous good and potentially dreadful evil, and we're only just beginning to witness its impact on the world stage"*²

More interestingly, from the legal point of view they go on to say:

*"The Internet is the largest experiment involving anarchy in history. Hundreds of millions of people are, each minute, creating and consuming an untold amount of digital content in an online world that is not truly bound by terrestrial laws. The Internet [is] the world's largest ungoverned space"*³

The "ungoverned space" aspect of Internet has gained a lot of importance in legal circles due to its implications on jurisdiction, applicability of laws of different countries and law enforcement. Indeed in the early days after the Internet was thrown open to private commercial use by the United States government, many commentators and academics pronounced that it would be beyond the reach of the legal system of any nation, a "wild west" which would evolve its own laws and norms.

2 Schmidt, Eric & Cohen, Jared. (2013). *The New Digital Age: Reshaping the Future of People, Nations and Business*. John Murray (Publishers), UK.

3 *Ibid.*

For a medium that is so closely intertwined with society, it is but natural that the Internet should also be used for conducting business, i.e. e-commerce. Since business involves not only a legal mechanism but taxation as well, it is of great interest to policy makers. However, business is a fairly complex entity as it is, and when it is conducted in an environment described as the “world’s largest ungoverned space”, the complexity is even greater. For authorities in India that are just about coming to grips with the complexities of governing the Internet, this added complexity of regulating e-commerce is aggravating an already tough challenge.

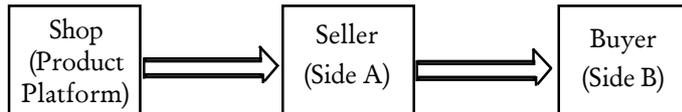
The common perception of e-commerce is that it is in an online shop similar to the shops we are familiar with in real space. However it is much more than that, and therefore it is appropriate to lay out the basic concepts of the technology involved. In this paper the author lists out the different e-commerce models and their characteristics and then discusses the legal and taxation issues that arise.

PLATFORMS

For business transactions to take place on the Internet, an enabling technology solution has to be in place. This is provided by the “platform”. A platform is a product, service or system providing a technological environment that allows different types of users and complementary business partners to interact and benefit from the platform’s underlying functionality. The business partners are called **complementors**.

In the past, companies typically engaged in producing and selling products or services. But with the advent of the Internet and cloud computing, more and more companies are implementing application ideas that allow communities of participants to interact and transact business. Well-known examples are Facebook, Skype, Google Maps and PayPal, while newer ones like Uber (which connects customers with individual taxi operators), Airbnb (which connects accommodation seekers with people who wish to let out rooms) are mushrooming every day. Not surprisingly, some of them are facing legal scrutiny. To better understand this phenomenon let us examine different types of platforms that operate in real space and cyberspace:

In the real world shops provide a facility for customer to purchase goods as depicted in the following figure:

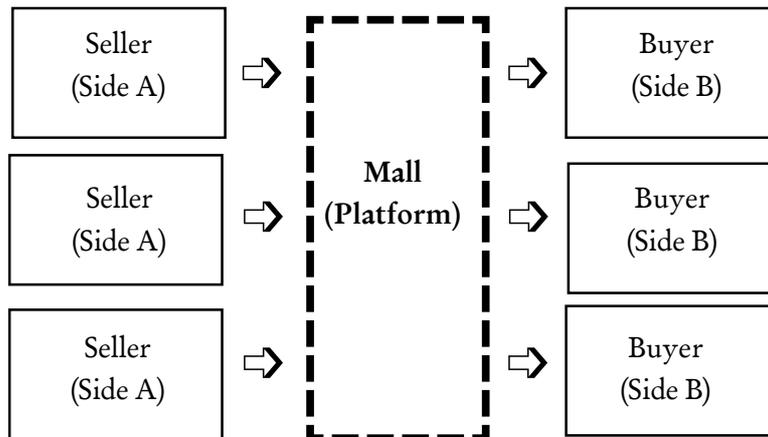


Another way at looking at the above relationship is that shops are platforms that provide a valuable input to the seller, i.e. they provide a means for the seller (side A) and buyer (side B) to conduct transactions between themselves. There is only a one-is-to-one relationship and therefore traditional shops are an example of a **One-Sided Platform** also called a **Product Platform**. Only one side (Side B in this case) is the customer who transacts with the other side, i.e., Side A, while the platform only serves as a facilitator.

This relationship is similar if the platform (i.e. the shop) is used by a retailer who resells products manufactured by someone else. This relationship, depicted in the following figure, constitutes a **Reseller Platform**. Note that only one side is the customer in this platform – in this case the manufacturer (side A).

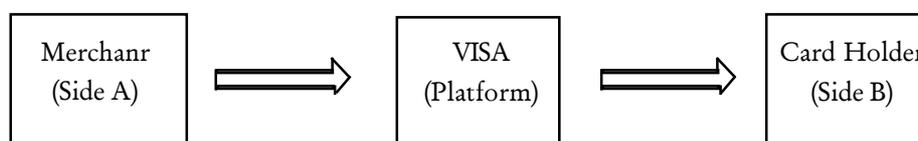


Shopping Malls provide a different type of platform as depicted in the following figure:



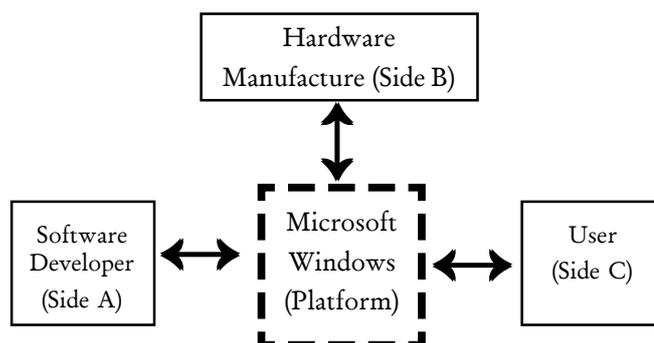
Here multiple sellers hire retail space from the Mall (platform), and are therefore customers for the Mall. The other side i.e. the buyer transacts only with the seller of his choice but is not the customer of the platform. Therefore this is also another form of a one sided transaction because the platform makes money only from one side – side A the seller.

Now let us consider the case of a credit card company like Visa or MasterCard. The transaction flow is as follows:



Here VISA provides the means for a buyer and merchant to transact by providing a platform for payment. For this both the sides pay a fee to the platform for the service that it provides, the cardholder by way of card fees and the merchant by way of commission on sales. This is an example of a **two-sided platform**.⁴

Similarly, there can be **Multi Sided Platforms (MSPs)** in real space that provide a means for different users to transact business that results in multiple revenue streams from multiple players. The ‘Microsoft Windows’ platform is an example of a multi-sided platform in real space, since it provides a platform where users (buyers) can transact with application developers (sellers) and hardware suppliers. All the sides generate revenue streams for the platform and are therefore customers of the platform. The structure is as follows:



⁴ Note that even if the credit card company provides the credit card service free, i.e. does not charge monthly or annual fees from the cardholder, the latter still has a customer relationship with the credit card issuing company because he/she consumes the service provided by the credit card company.

From the above schematic, we notice that there are two essential characteristics that define a multi-sided platform:

1. The platform facilitates a direct interaction between the two or more participants (sides).
2. Each side or group of participants is a customer of the platform in a meaningful way, irrespective of whether it is paying or non-paying.

E-COMMERCE BUSINESS MODELS

MSPs are not very common in commercial transactions in real space, but in cyberspace they are widespread and possess different degrees of complexity. This is because the technology of the Internet is very conducive to the design and operation of MSPs. Therefore some commentators have voiced the opinion that the latest era of the Information Age could well be termed as the Age of Platforms, due to the explosive growth in cyberspace of markets defined by platform competition rather than product competition. In other words, more and more companies operating in cyberspace are offering platforms where consumers and providers can interface and conduct transactions directly without the need for traditional middleman. For example the Google Android system provides an MSP where smartphone makers, app makers, service providers (mobile and Internet) and the customers come together to create an ecosystem to transact business.

With this background let us examine the different e-commerce business models that exist in cyberspace.

ONLINE SHOPS

This business model closely resembles its counterpart in real space i.e. the traditional shop. The seller physically stocks the products he sells and uses an online presence (i.e. website) to display their products, book orders, and collect payments. Most manufacturers who directly sell their products follow this model. From the taxation perspective this type of e-commerce is the simplest to handle because it mirrors the situation in real space and is amenable to existing laws.

ONLINE MARKETPLACES

An online marketplace is an e-commerce platform which enables multiple complementors to display their product, pricing and inventory information so that customers can place orders. The platform operator provides the means for processing the orders. Order fulfilment is done by the respective complementor. There are two types of business models followed by online marketplaces:

Open Marketplaces. These marketplaces only connect buyers and sellers, leaving the mechanics and logistics of the transactions to the respective counterparties i.e. the buyers and sellers. A number of big online retailers follow this business model, the most prominent being eBay, the world's largest ecommerce platform and Alibaba, the Chinese retail giant and Indian start-up OLX.com. Alibaba has created an e-commerce platform that enables small businesses and branded manufacturers alike to connect with potential buyers. It does not participate in the sale transaction, does not sell anything directly to the customer and does not provide any warehousing facilities to its complementors.

Managed Marketplaces. These marketplaces are more akin to traditional retailing in the sense that the platform operator maintains "fulfilment centres" which aggregate orders and despatch the goods on behalf of the complementor. Sometimes the goods may also be repacked before despatch. Amazon, the world's largest online retailer follows this model.⁵ It has established very large distribution centres which not only handle its own products but also act as facilitation centres for its complementors.

INDIAN LAWS ON E-COMMERCE

In India retailing is governed by state and central acts that define the various stakeholders in the supply chain and stipulate appropriate levies on the transactions. More importantly, foreign direct investment (FDI) in retail has been strictly controlled. Although in 2013 the government had allowed FDI in multi-brand

5 O'Connor, Clare. *Wal-Mart Vs. Amazon: World's Biggest E-Commerce Battle Could Boil Down To Vegetables*. Forbes Business. April 24, 2013. <http://www.forbes.com/sites/clareoconnor/2013/04/23/wal-mart-vs-amazon-worlds-biggest-e-commerce-battle-could-boil-down-to-vegetables/>

retail, the change of government in 2014 injected some ambiguity in this issue. The official position vis-à-vis FDI pertaining to E-commerce is contained in the Consolidated FDI Policy Circular of 2015⁶, which allows:

- i) 100% FDI in Cash & Carry Wholesale Trading/Wholesale Trading (including sourcing from MSEs). Wholesale trading would include resale, processing and thereafter sale, bulk imports with ex-port/ex-bonded warehouse business sales and B2B e-Commerce.
- ii) 100% FDI in E-commerce activities i.e. buying and selling by a company through the e-commerce platform.

However, the FDI policy permits only Business to Business e-commerce and prohibits e-commerce based retail trading in any form by companies with FDI which are engaged in the activity of single-brand or multi-brand retail trading.

Owing to these legal restrictions on retailing companies with foreign investment, they have tried to adopt strategies to circumvent the rules. Flipkart.com is essentially an Indian owned and operated e-commerce company having foreign venture capital. It was initially operated through a front company WS Retail, but later shifted to the marketplace model. Amazon earns money by allowing its vendors to sell their products via its website and makes a cut on the sale.⁷ One could argue that this is no different from Walmart's business model because Walmart also allows vendors to sell their products via its stores and makes a cut from every sale. The difference is that while Walmart buys the product and sells it to the end customer, Amazon claims that it only charges vendors for the use of the Amazon website, an ingenious way of circumventing the FDI in retail restrictions.

6 See the Consolidated FDI Policy Circular of 2015 effective from May 12, 2015 available at http://dipp.nic.in/English/Policies/FDI_Circular_2015.pdf

7 *Flipkart top seller WS Retail to separate logistics arm Ekart into wholly-owned unit*. Economic Times, Jan 21, 2015. http://articles.economictimes.indiatimes.com/2015-01-21/news/58306262_1_ekart-ws-retail-logistics-arm. Also see *Here's how Flipkart is planning to reduce its dependence on WS Retail*. Business Insider May 12, 2015. <http://www.businessinsider.in/Heres-how-Flipkart-is-planning-to-reduce-its-dependence-on-WS-Retail/articleshow/47252934.cms>

The other issue concerns the applicability of existing commercial tax laws on ecommerce transactions. There is some confusion and uncertainty on the issue of whether e-commerce attracts the same tax regime as traditional retailing. For example, according to India's Minister of State for Commerce⁸, the same laws apply for e-commerce as well but the pull back by Karnataka regarding Amazon's activities seems to suggest uncertainty in the government. Till date the government has based their actions on extension of the existing laws and definitions to e-commerce companies, leading to some disputes. To examine this further let us first consider the different provisions of the statutes governing the conduct of business in India. The Central Sales Tax Act, 1956 gives the following definitions for the various terms used in connection with commercial taxation, such as 'business', 'dealer', 'place of business' and 'interstate sale'.

The Sales Tax regime in India stipulates that all sales within a State attract VAT (Value Added Tax) while Central Sales Tax or CST is applicable on inter-state sales. This may be superseded by the proposed Goods and Services Tax that the government intends to introduce in the coming months.

Some important issues arise when these laws are applied to ecommerce. Firstly let us examine the Amazon mode of ecommerce which is based on the managed marketplace model. It has "facilitation centres" such as the one in Bangalore, Karnataka, where they stock goods that are sold through their ecommerce portal. However the goods are not invoiced to Amazon, but remain the property of the sellers. When an item is purchased online, the seller's invoice is raised directly in the name of the buyer and the item is despatched. Officially, the actual transaction is between the seller and the buyer, while Amazon collects a commission for the services it offers. Another pertinent detail is that Amazon generates the invoice, despatches the goods and collects the payment, all on behalf of the seller. It then passes on the payment to the seller after deducting its commission.

8 *FDI rules for multi-brand retail to apply to e-commerce: Nirmala Sitharaman*. Business Standard, Aug 22, 2014. http://www.business-standard.com/article/companies/fdi-rules-for-multi-brand-retail-to-apply-to-e-commerce-nirmala-sitharaman-114082200455_1.html

Applying existing tax laws to the above online transaction throws up many challenges. Firstly there is the problem of identifying the “dealer” and his “place of business” for the purpose of registering under the commercial tax regime. Amazon claims that the dealer is the seller and his place of business is the facilitation centre. Therefore hundreds of sellers are registered as dealers at the facilitation centre. Furthermore, the place where the goods are stored and despatched from is operated by Amazon, which also collects the proceeds of the sale. As per Explanation 1 to clause 2(b)⁹, such a person is deemed as the dealer and therefore it is liable to pay VAT. Amazon, on the other hand, claims that it is not involved in the commercial transaction between the buyer and the seller. It only acts as a facilitator by allowing the seller to take advantage of its ecommerce portal. This is the crux of the dispute between Amazon and the Karnataka government.

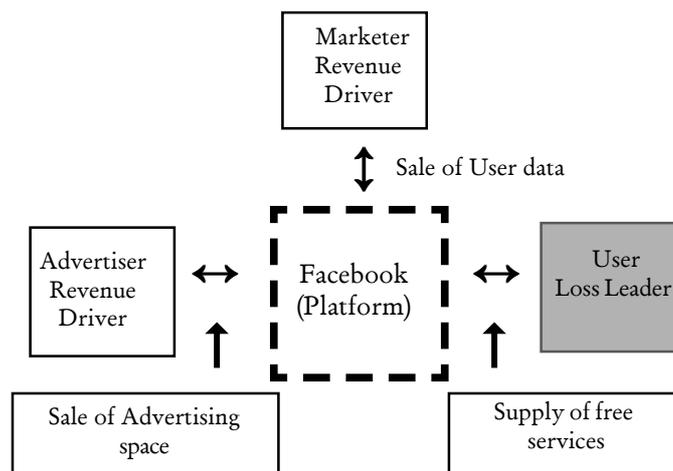
LOSS-LEADERS AND REVENUE-DRIVERS

Since MSPs by definition have more than one possible revenue generation possibilities the platform providers have the freedom to price their offering differently for the different sides. This assumes importance because of another characteristic of platforms, i.e. their utility and consequently their revenue generating potential grows exponentially as more and more users adopt them. This property called network externality, demonstrates the power of networks. For platforms to succeed they need to harness the full power of network externalities by accumulating the maximum number of users in the shortest time. Therefore their pricing models are such that one of the sides becomes a loss-leader while the other side or sides generate revenue.

For companies like Amazon, Flipkart and Alibaba the user is the loss-leader because they generally do not charge them for services. The revenue generating side is the commercial side where they make money from each transaction conducted. However the situation becomes a bit hazy with platforms such as Facebook, or Google search engine where the loss leader is the user who utilizes the service free

⁹ Central Sales Tax Act, 1956.

of charge and revenue is driven either by advertising or by sale of user data to marketers. The figure below depicts the various relationships:



The above raises a number of legal and taxation issues:

TAXATION ISSUES

The issue of taxation in cyberspace is a very complex one and therefore most Internet companies have managed to substantially avoid taxation, especially in India. The complexities involved are as follows:

1. The “free” services to the user are not entirely free because the platform collects valuable data about the user in exchange for the service. The use of the data so collected is governed by the EULAs that more or less give a free hand to the service provider¹⁰
2. The definition of the Service Provider is ambiguous in terms of taxation. Is he a “dealer” of goods (since it deals in selling of valuable goods i.e. consumer data); or a “service” since he provides service to the user; or is he both? This ambiguity allows companies such as Facebook and Google to avoid paying any tax to Indian authorities despite a robust presence in

¹⁰ Cf. *Bragg v Linden Research, Inc. and Philip Rosedale*. No. 06-4925, USDC (E.D. Pa., May 30, 2007)

India. Both these companies are multi-platform service providers and therefore they have one relationship with the customers to whom they provide social connectivity (Facebook) or search facility (Google) and another with the advertisers and marketers to whom they sell customer data. While the latter service is considered taxable the former is not.¹¹

3. Whether the provision of a “free” service as referred to in the above point can be considered truly free and therefore exempt from any form of sales tax (VAT or GST). Should this transaction be considered a “sale” where the service provider “sells” the service for a “consideration” that is the value of the consumer data collected?
4. For the purpose of taxation it is important to a) evolve a method for identifying and recognising revenue in multi-sided platforms; and b) quantifying this revenue for the purpose of taxation.
5. Should all the sides of an MSP be considered for taxation?
6. Can a platform provider such as Amazon claim that the fee it charges the sellers is a “royalty” or “technical licence fee” for the use of its platform (which is nothing but application software software) and not a commission?

It is pertinent to refer to certain international tax issues that have arisen under Double Taxation Avoidance Agreements (DTAAs)¹² in the context of e-commerce.

11 Interestingly B. D. Ahmed and S Mridul JJ, while hearing a PIL (*Govindacharya v Union of India & Ors*, W. P. 3672/2012) observed “How is Google paying (service tax), but not Facebook? How is Facebook exempted? We are finding it difficult to understand,” and went on to ask whether the government was “alive” to the issues of sale of data by social medial sites as well as the service of targeted advertisement provided by them. The government response was that Facebook Inc. has no office here while Facebook India has an office in a Special Economic Zone from where it is exporting services and thus, they are exempted from paying service tax. The bench also sought information from the government on what remittances were being made to Facebook from India and whether the transactions between the website and various Indian companies were in the nature of services. Unfortunately since the WP was regarding opening of online accounts by minors the final order did not address the taxation issue.

12 Countries enter into Double Taxation Avoidance Agreements to resolve the conflict between ‘source’ vs. ‘residence’ taxation so as to ensure that the same income is not taxed twice, though different aspects of the same income may be taxed in different jurisdictions.

Normally, under DTAA's business profits earned by the resident of one Contracting State through business carried on in the other Contracting State are taxable only in the State of residence, unless the resident has a 'Permanent Establishment' (PE) in the other Contracting State. A PE is defined as a fixed place of business through which the business of an enterprise is wholly or partly carried on. It does not have a separate legal identity of its own; it is a projection of the identity of the enterprise in a foreign land. The concept of a PE is wider than simply having a tangible space for carrying out business operations. E-commerce not only involves sale of goods/services *simpliciter* but also involves hiring of agents and marketing / advertising. These aspects have separate tax implications of their own. Since the internet is entirely seamless, business conducted over the internet gives rise to certain issues as to what can be considered a "fixed place of business through which the business of an enterprise is wholly or partly carried on."¹³

In case of e-commerce, a foreign enterprise need not require physical presence at all in a country for carrying on its business as a virtual presence may do the job. If this is the case, the definition of a PE in the DTAA's may be required to be amended to cover an intangible presence as well. This again gives rise to a question as to what constitutes a 'virtual' or an 'intangible' presence. While a mere website cannot be construed to be a PE, the presence of a web server in the tax jurisdiction may result in a PE. Indian courts have been grappling with these issues recently and two of the most relevant cases are listed below:

- i) *eBay International AG vs. ADIT*¹⁴- Mumbai ITAT held that revenue earned from operation of India-specific websites by a Swiss company, for facilitating the purchase and sale of goods and services to users based in India, was not taxable in India under the Indo-Swiss DTAA. Though the Swiss company had entered into marketing support agreements with two sister concerns in India, the Indian entities could not be considered as 'dependent agents' of the Swiss company so as to constitute a PE in India.

13 This definition appears as Article 5 of DTAA's. Cf. Article 5 of The UK/India Double Taxation Convention, signed Jan 25, 1993. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/412067/india-dtc.pdf

14 *eBay International AG vs. ADIT* TS-734-ITAT-2012(Mum).

- ii) *ITO v. Right Florists P. Ltd*¹⁵– Kolkata ITAT held that Google (Ireland) and Yahoo (USA) cannot be taxed in India in respect of sums received by them from an Indian florist for the purpose of online advertising. ITAT found that Google and Yahoo did not have web servers in India and thus there was no PE in India, since a website does not constitute a PE unless the servers on which websites are hosted are also located in the same jurisdiction.

It is important for e-commerce businesses to consider these issues as well, for the nature and scope of their operations is such that they may not even realize the revenue impact they have on taxing jurisdictions. A related issue is the question of Base Erosion and Profit Shifting (BEPS). This refers to tax planning strategies that exploit gaps and mismatches in tax rules to artificially shift profits to locations where there is little or no economic activity or value creation. Some prominent US corporations, notably Apple, Google, and Caterpillar have applied this tax avoidance technique very effectively.¹⁶ E-commerce is by nature global it offers some scope for BEPS, but examining these issues would exceed the scope of this paper.

LEGAL ISSUES

The fact that MSPs operate in a virtual environment raises a number of ambiguities in terms of the applicability of laws of real space to their activities. Should platforms be considered just as connectors and hence absolved of all responsibility of what happens there? After all U.S. and Indian law exempts intermediaries of liability. However, there are some important differences that bear attention. For example, companies such as Airbnb, which connects accommodation seekers with people with rooms to let, has been investigated by New York authorities for violation of zoning laws. There have been cases of violence and assault among people who

15 *ITO v. Right Florists P. Ltd* TS-137-ITAT-2013(Kol)

16 *Moving Profits to Cut U.S. Taxes*. Bloomberg Quicktake, Aug 4, 2015. <http://www.bloombergtax.com/quicktake/profit-shifting-avoid-tax>. Also see *Ireland Declares 'Double Irish' Tax Scheme Dead*. Forbes, October 15, 2014. <http://www.forbes.com/sites/kellyphillips/2014/10/15/ireland-declares-double-irish-tax-scheme-dead/>

connected through Airbnb. Similarly Pennsylvania authorities are concerned that the activities of companies like Uber and Lyft may be illegal.¹⁷

For long Internet companies have made money by posing a simple “middlemen”, with little responsibility for the actions that take place on their platforms. This has allowed them to operate with a skeleton staff with most of the heavy lifting being done by the software. This raises the following issues:

1. Should platforms be considered as employers for the purpose of labour laws? For example should Uber be considered as the principal employer of the taxi operators and hence responsible for their employees’ benefits?¹⁸
2. Can the platform claim immunity from the actions of its users? Can Airbnb be held responsible for an assault by the landlord on the tenant who had connected through their platform?

17 Uber is a platform that connects taxi operators with customers and Lyft connects people needing a car ride with people who are willing to give them a lift. *Pa. lawmakers dive into ride-sharing debate about regulations for Uber, Lyft*. Triblive.com, June 12, 2015. <http://triblive.com/state/pennsylvania/8547228-74/regulations-uber-industry#ixzz3i3yzt3L3>. Recently both got approval from the Pennsylvania state authorities to operate in the state. Lyft Joins Uber in Getting Final OK for Pennsylvania Service. Insurance Journal, February 13, 2015. <http://www.insurancejournal.com/news/east/2015/02/13/357457.htm>
Also *AirBnB Flat Owner Jailed For Raping US Tourists*. SkyNews, Dec. 19, 2014. <http://news.sky.com/story/1395006/airbnb-flat-owner-jailed-for-raping-us-tourists>

18 Some US Courts are demonstrating a shift in favour of considering operators as employees. Cf. California Labor Commissioner in *re Barbara Berwick* holding that “Defendants [e.g. Uber] hold themselves out as nothing more than a neutral technological platform, designed simply to enable drivers and passengers to transact the business of transportation [T]he reality, however, is that Defendants are involved in every aspect of the operation. Drivers cannot use Defendants’ application unless they pass Defendants’ background and DMV checks. Defendants control the tools the drivers use. Defendants monitor the Transportation Drivers’ approval ratings and terminate their access to the application if the rating falls below a specific level.” Uber has appealed. Uber and rival Lyft also face other lawsuits in California. Cf. Forbes Mar 11, 2015. *Juries To Decide Landmark Cases Against Uber and Lyft*. <http://www.forbes.com/sites/ellenhuet/2015/03/11/lyft-uber-employee-jury-trial-ruling/>. The observations of Vince Chhabria, J. in the Lyft case put the dilemma into perspective: “At first glance, Lyft drivers don’t seem much like employees.... [b]ut Lyft drivers don’t seem much like independent contractors either.” And also stated that “The jury in this case will be handed a square peg and asked to choose between two round holes. The test the California courts have developed over the 20th Century for classifying workers isn’t very helpful in addressing this 21st Century problem.”

3. Should EULAs that disclaim any liability of the platform be considered valid in law?
4. Platform providers are intermediaries and therefore protected by law in the U.S. (section 230 of the Communications Decency Act and section 512 of the Digital Millennium Copyright Act), as well as in India (Information Technology (Reasonable security practices and procedures and sensitive personal data or information) Rules, 2011 (G.S.R. 313(E)) and the Information Technology (Intermediaries guidelines) Rules, 2011 (G.S.R. 314(E)). These guidelines generally refer to content posted on the Internet. Should the law differentiate between users posting content and users entering people's homes and cars?

POLICY CONCERNS

The response of the legal system to the challenges posed by the explosion of activity on the Internet has been to try and apply existing laws of real space to cyberspace as well and in the process evolve precedents, legal tests and analogies to deal with new situations. However, as Chhabria J. has telling observed in *Lyft* “*The test the ... courts have developed over the 20th Century for classifying workers isn't very helpful in addressing this 21st Century problem.*”¹⁹ Till date the response of the courts and policy makers has ranged from a plethora of new laws enacted by the US to policy guidelines and opinions as issued by the EU. In India there is one over-arching act, the Information Technology Act that attempts to cover all issues connected with the Internet. These are buttressed by guidelines and Rules issued by the Government of India. In the absence of comprehensive Internet-specific laws the executive as well as judiciary have attempted to apply existing real space laws to cyberspace also, which have sometimes led to situations like the Amazon-Karnataka Government confrontation and the compliance issues faced by ecommerce portal Flipkart, discussed earlier, which are reminiscent of Judge Chhabria's remark about fitting square pegs in round holes.

With regard to ecommerce in particular applying existing rules and definitions to online transactions is bound to lead to some untenable situations. Ecommerce is a

¹⁹ *Ibid.*

new and efficient way of conducting business and subjecting it to existing policies and laws would negate its advantages, effectively stifling this technological innovation. However, as with any technological innovation, ecommerce also has both negative and positive outcomes, and care has to be taken to formulate laws and policies that combat negatives without affecting the positives. For example, let us consider the case of Uber which has revolutionised the way people hire taxis. Taxi services are heavily regulated in many cities such as Boston and New York where the city controls taxi licenses. As a consequence a taxi medallion in New York City can cost up to a million dollars (slightly less in Boston). An Uber taxi does not have to invest this amount and is not subjected to the same regulations as traditional taxis. Not surprisingly Uber has faced law suits from traditional taxi unions.²⁰ While there is need for a level playing field, subjecting Uber taxis to the same licensing procedures would effectively kill the innovation and deny the user the tremendous convenience that it provides. Furthermore, a typical Uber taxi operator earns about three times as much as a traditional operators and yet the service costs less than a ride in a traditional taxi of comparable specifications.²¹ Similarly an ecommerce site such as Amazon or Flipkart provides much greater customer convenience and lesser price than what is generally offered in a traditional retail shop.

The way forward is to consider ecommerce comprehensively from the technological and business perspective and frame regulations accordingly. For example, instead of trying to decipher whether Amazon should be considered a “dealer” or not under the existing rules or whether it violates FDI in retail guidelines, it would be better to accept that the managed marketplace model of ecommerce with or without facilitation centres is a legitimate and distinct way of doing business. After that comes the question of tax revenue. The VAT regime aims to tax only the value added at each stage of a commercial transaction. However, Amazon may claim that it is only providing a service and is therefore only liable for service tax on its

20 Cf. *Taxi Drivers Are Trying to Take Down Uber*.

21 This figure reflects the Indian situation for Uber taxi operators. Cf. comparison given in Economic Times report *How the ban hurts Uber drivers who earned at least Rs 45,000/month*, Harsimran Julka & Vasudha Venugopal. Dec 13, 2014. Also, Lawler, Ryan. *Uber Study Shows Its Drivers Make More Per Hour And Work Fewer Hours Than Taxi Drivers*. Techcrunch.com. Jan 22, 2015. <http://techcrunch.com/2015/01/22/uber-study/>.

commission. It may even claim immunity from service tax by terming its fees not as a commission for service but as a royalty or licence fee for use of its technology, which is only subject to tax deductible at source (TDS).

Instead of deliberating or litigating as to whether service tax or VAT or income tax is applicable, it is advisable to determine the amount of tax that should be recovered from ecommerce transactions, after being called by any name deemed appropriate and levied. This would remove all ambiguities regarding definitions of status and amount and nomenclature of taxation. Following the implementation of the Goods and Service Tax in India, it is possible that some more clarity may emerge.

Similarly in the case of taxi operators, the implication of labour laws, licencing requirements and any other repercussions (e.g. safety and security of passengers and liability of ecommerce company) can be considered and appropriate legislation, rules or guidelines be issued which specifically address the circumstances of online taxi operators. Other questions raised earlier in this paper regarding overseeing of EULAs, immunity of intermediaries etc. need to be debated and addressed without killing technological innovation. It should be specially borne in mind that there will be opposition from existing “brick and mortar” companies who would perceive a threat to their livelihood. However from the policy making perspective it is important to recognise that ecommerce is the future and trying to ignore it would be a retrograde step. “Brick and mortar” companies too need to acknowledge this reality and start adapting.

Of course, protection of consumer interests is an equally important legal issue and there should be a framework in place that specifically addresses consumer protection in the context of e-commerce. Transparency in commercial transactions is one aspect and that includes complete and accurate disclosure of the business/goods, after-sale redressal mechanisms, etc. But another aspect that perhaps requires more attention is that of privacy. India has no privacy laws in place as of now and consumer information is highly vulnerable. So while focussing on the impetus to be provided for ecommerce activities, it is desirable that a suitable law be enforced to regulate the use and storage of consumer information exchanged over the internet. Reference may be had to the Organization for Economic Cooperation and Development (OECD) Guidelines for Consumer Protection in the Context

of Electronic Commerce, 1999 that “reflect existing legal protections available to consumers in more traditional forms of commerce. Their aim is to encourage: fair business, advertising and marketing practices; clear information about an online business’s identity, the goods or services it offers and the terms and conditions of any transaction; a transparent process for the confirmation of transactions; secure payment mechanisms; fair, timely and affordable dispute resolution and redress; privacy protection; and consumer and business education. They are technology-neutral, encourage private sector initiatives that include participation by consumer representatives, and emphasise the need for co-operation among governments, businesses and consumers.”²²

Above all, it is important to accept that e-commerce is the future of doing business and therefore should be encouraged by all branches of governance. One policy that would definitely be regressive would be to subject e-commerce to archaic or impractical laws that would limit its growth.

22 Available at <http://www.oecd.org/sti/consumer/34023811.pdf>. The Guidelines are currently under revision and due in 2017.

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ON MONOPOLISTIC PRACTICES IN BITCOIN: A CODED SOLUTION

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ABSTRACT

The underlying values inherent in the creation of bitcoins are those of decentralization and accessibility. The horizontal power structure is an integral part of bitcoins' architecture – this paper seeks to find a feasible alternative to status quo in order to preserve these characteristics. First, we look at the harms of monopolies and how the concentration of bitcoins is exceptionally harmful to its continued existence. Second, we expose the inadequacies of the existing regulatory frameworks, and discuss how status quo militates against the foundational ideology of bitcoin as a non-institutional cryptocurrency. Third, we undertake a comparative study of the existing regulatory regimes to identify legal and regulatory issues surrounding bitcoins. Finally, we propose a solution to the concern of centralization by discussing the relationship between law, code and the market, and discussing existing coded solutions that may be further improved upon to prevent such monopoly.

Before the advent of pervasive state regulation, the intrinsic value of currencies was driven by scarcity. Money was thus made of animal bones, skins or precious metals.¹ In the contemporary era, its value is derived from the government and its narrative of stability, rule of law and legitimacy. The shortcomings of this trust-based model was the rationale for Satoshi Nakamoto's cryptocurrency, allowing reversible transactions across a communications channel *sans* a trusted third party

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1 Joshua J. Doguet, *The Nature of the Form: Legal and Regulatory Issues Surrounding the Bitcoin Digital Currency System*, 73 LOUISIANA LAW REVIEW 1119, 1120 (2013).

institution.² Not only did he find the current model cost and time inefficient, but also entailed vesting government regulators with excessive powers – that in the recent past, have been deeply politicized. Bitcoins, instead, would be based on cryptographic proof.³ Double spending would be prevented by a public block chain, i.e., the transactional history of the currency that was earlier entrusted solely with the government mint.⁴ Decentralization, a fiercely horizontal power structure and a robust code, is what drives the world’s first currency entirely outside state control.

The architecture of the bitcoin system merits regulation because, as we argue, it is especially susceptible to monopolization, particularly by mining pools. Some argue that the public block chain and constant vigilance maintained by the bitcoin community represent an improvement from the “trust-based model” of reliance on banks and financial intermediaries – trusted third parties.⁵ The argument goes that the reduced costs and privacy of the architecture of bitcoin offers outweighs the purported benefits of state regulation.⁶ Mining pools are entities that are made up of shared resources of different users who then equally split the reward from such mining based on the amount of work they have put in.⁷ Recent instances of GHash, a mining pool, hovering around the 45% range witnessed sharp criticism for coming close to the 50% threshold. The counter-argument runs that once any single entity exercises control over more than 50%, it has the power to legitimize suspect, and has irreversible,⁸ transactions powers that subvert bitcoin’s decentralized functioning.⁹ The fear of centralization triggered a concomitant fall

2 Satoshi Nakamoto, *Bitcoin : A Peer to Peer Electronic Cash System*, <https://bitcoin.org/bitcoin.pdf> (Last visited June 19,2014.)

3 *Ibid*, at 2-3.

4 *Blockchain*, at <https://blockchain.info/> (Last visited June 19, 2014).

5 Joshua, *supra* note 1, at 1123-1126.

6 Kevin V. Tu and Michael W. Meredith, *Rethinking Virtual Currency in the Bitcoin Age*, 90 WASHINGTON LAW REVIEW 271, 279-282 (2015).

7 *Bitcoin mining pools : What is Bitcoin Mining*, at <http://www.bitcoinmining.com/bitcoin-mining-pools/> (Last visited March 16, 2015).

8 Anita Ramasastry, *Should Mt. Gox be Bailed Out?*, JUSTIA.COM (March 11, 2014) <https://verdict.justia.com/2014/03/11/mt-gox-bailed> [Last visited on July 21, 2015].

9 Anita Ramasastry, *Bitcoin: If You Can't Ban It Should You Regulate It? The Merits of Legalization*, JUSTIA.COM (February, 2014), <https://verdict.justia.com/2014/02/25/bitcoin-cant-ban-regulate> [Last visited on July 19, 2015].

in the value of bitcoin and selling by some of the currency's developers, like Peter Todd.¹⁰ This fear of a single mining pool reaching 51% is well-founded. A group of determined miners can block the entire system with their numbers, apart from engaging in double spending, manipulation of the block chain and devaluation, all of which would be legitimized by the networks controlled by this mining pool. The strength of bitcoin lies in its distributed network – but with the unanticipated prominence of mining pools, networks are steadily coming under the control of single entities.¹¹ Therefore, while 51% is a grave threshold, the aggregation of these networks represents the more egregious, existential threat to the bitcoin community.

Nonetheless, mining pools are greatly advantageous. They enhance computing power; consequently the ability to mine more bitcoins. This incentivizes more miners to join since greater profits are shared equally within the group. Concomitantly, the group gains control of more networks.¹² Now, mainstream *fiat* currencies rely on a central authority to prevent fraudulent transactions. The bitcoin community depends on itself, premised on the independence and vigilance of miners. Therefore, the public updated block chain identifies fraud, such as the use of spent bitcoins (double spending) or fake bitcoins. However, it ignores the possibility of mining pools working in sync. Therefore, today an overwhelming majority of bitcoins are not controlled by independent miners but by pools.¹³ This steady centralization is ironic, since the idea behind cryptocurrencies was to escape from it. Further, it also has pernicious consequences for the relationship of trust that it shares both within the community and with the economy. The future of bitcoins, its valuation and use all depend on the level of trust. Governments enjoy a presumption of trust but bitcoins' trust is grounded in the miners, and

10 Peter Todd, *Why I just sold 50 of my bitcoins*, June 13, 2014 http://www.reddit.com/r/Bitcoin/comments/281ftd/why_i_just_sold_50_of_my_bitcoins_ghashio/ [Last visited June 19, 2015].

11 Dan Goodin, *Bitcoin Security Guarantee Shattered by Anonymous Miner with 51% Network Power*, <http://arstechnica.com/security/2014/06/bitcoin-security-guarantee-shattered-by-anonymous-miner-with-51-network-power/> [Last visited June 19, 2015].

12 *Mining Pools v. Solo Mining*, *Devtope*, http://www.devtope.com/doku.php?id=mining_pools_vs_solo_mining [Last visited June 19, 2015].

13 Michael McSweeney, *Coinminers dogged by mining pool security flaws*, <http://www.coindesk.com/coin-miners-dogged-mining-pool-security-flaws/> [Last visited June 19, 2015].

the robustness of the transactions. For a nascent currency, even a prospect of compromise would have irreversible harms.

In this essay, we argue that the reality is an approximation of the two and perhaps, even more extreme. The 51% threshold is dispositive, but often functions as a smokescreen for the more important debate – that of centralization. Concentration of bitcoins and computing power in a limited number of entities, as shown above, pivots the bitcoin system more towards the “trust-based model” that Nakamoto eschewed. It is pertinent to note that GHash conducted an attempted double spending transaction when it was well below 51%. Thus, how can the horizontal power structure of bitcoins be protected along with its characteristic features? Andreas Antonopoulos opines that the 51% attack hypothesis goes against the fundamental incentives that bitcoin miners have and this makes the attack unlikely.¹⁴ Others have called for reactionary, *ad-hoc* mechanisms such as breaking up groups that reach 51%.¹⁵ The calls for regulation stem from the need to protect the interests of bitcoin investors, the average consumer and the broader economy.¹⁶ At the outset, we argue that both the incentive-based model, premised on the purported incentives of the bitcoin community, and ad-hoc hierarchical measures, such as regulating bitcoin in current regulatory frameworks,¹⁷ are flawed and inadequate. We further compare regulatory regimes across jurisdictions and conclude that regulation targeting the architecture of bitcoin is most likely to be effective in the long-run.¹⁸ For instance, a robust code-based solution strikes the balance between the competing interests outlined so far.

The two broad responses to this problem as they stand, the incentive-based and consequentialist models, merit attention. The incentive-based model relies on the self-interest of the principal stakeholders of bitcoins in protecting the currency.

14 Andreas Antonopoulos, *L.A. Bitcoin Meetup 2014*, January 9, 2014, <https://www.youtube.com/watch?v=bTPQKyAq-DM#t=2942> [Last visited June 19, 2015].

15 Alex Wilhelm, *51% fears rattle the bitcoin community*, <http://techcrunch.com/2014/06/15/51-fears-rattle-the-bitcoin-community/> [Last visited June 19, 2015].

16 Patrick Kirby, *Virtually Possible: How to Strengthen Bitcoin Regulation Within the Current Regulatory Framework*, 93 NORTH CAROLINA LAW REVIEW 189, 206 [2014].

17 For example Kelsey L. Penrose, *Banking on Bitcoin: Applying Anti-Money Laundering and Money Transmitter Laws*, 18 NORTH CAROLINA BANKING INSTITUTE 529 [2014].

18 *Contra* Nikolei M. Kaplanov, *Nerdy Money: Bitcoin, The Private Digital Currency and the Case Against Its Regulation*, 25 LOYOLA CONSUMER LAW REVIEW 111, 167-169 [2012].

For instance, GHash itself stopped new membership and witnessed an outflow of members as it approached 50%. Its press release clarifies that it didn't intend to reach 51% "*as it will do serious damage to the Bitcoin community, which we are part of.*"¹⁹ We argue that that this model is problematic at three levels. *First*, it presumes that all stakeholders have a vested interest in the future of bitcoin. This is not necessarily true. By eluding state regulation *in toto*, bitcoin represents the biggest threat to state monopoly over economic life. Moreover, bitcoin openly challenges state policies. When government pressure compelled Visa and PayPal to block transactions involving Wikileaks, bitcoins were the alternative means of payment. Therefore, the government, which is also a critical bitcoin stakeholder, has an incentive to subvert it from within. Further, the farrago of thefts and fraudulent transactions²⁰ mean a presumption of good faith is at best, fanciful. *Second*, it ignores the possibility of short-term gain. Phenomena like insider trading, predatory pricing and artificial currency devaluation have destabilizing consequences on the financial system but are still popular since they yield high short-term gains for individual stakeholders. This behaviour would and has been mirrored in crypto currencies.²¹ *Third*, a system that is contingent on the benevolence of actors is inherently weak. Any system of accountability is not based on the assumption that the actors are benign, but in the need to curtail the actions of malevolent ones. For instance, even in terms of institutional governance, constitutions are drafted on the basis of the principle of constitutionalism, which stipulates that there be a charter of limitations to governmental power – although the setting up of the government may be a *bona fide* act. Thus for bitcoin to develop, GHash's press release should be inconsequential to say the least.

19 *Bitcoin mining pool GHash.IO is preventing accumulation of 51% of all hashing power*, https://ghash.io/ghashio_press_release.pdf?_ga=1.178723236.1232532447.1402571644 [Last visited June 19, 2015].

20 See for example Joon Ian Wong, *Over \$11 Million Lost in Bitcoin Scams Since 2011*, *Coin Desk*, <http://www.coindesk.com/research-11-million-lost-bitcoin-scams-since-2009/> [Last visited on August 1, 2015]; Nicky Woolf, *Bitcoin 'Exit Scam': Deep-Web Market Operators Disappear with \$12 M*, *The Guardian* <http://www.theguardian.com/technology/2015/mar/18/bitcoin-deep-web-evolution-exit-scam-12-million-dollars> [Last visited on August 3, 2015]; Dante D'Orazio, *Former Mt. Gox CEO Arrested on Claims of Stolen Bitcoins*, *The Verge*, <http://www.theverge.com/2015/8/1/9083989/mt-gox-ceo-arrested-in-tokyo> [Last Last visited on August 3, 2015].

21 *Ibid.*

The consequentialist model calls for intervention after monopolistic actions have taken place. For example, a group that reaches 51% will be compelled to break up before further transactions are allowed. However, a consequentialist reaction is often merely a stop-gap measure and is hardly an adequate response to a principled issue with the system. Legal regulation is consequentialist, as the law comes into force only after a situation demanding regulation arises. Even in the sense of compliance based regulation, for such guidelines to be legislated upon, a situation requiring such legislation may have arisen – or can be predicted to arise in the near future. In that sense, we argue that post-facto fire-fighting is ineffective in the long run, as there will constantly be ways in which code may be used to subvert such regulation. Michael Lewis highlights Regulation NMS that, he argues, not only failed to curb fraudulent trades but also strengthened the position of market intermediaries allowing for unscrupulous high frequency trading. The gap between technology and law would be further widened by rigid consequentialist approaches.

In order to understand emerging trends in regulation of cryptocurrencies, and to highlight the potential issues that may arise, we have undertaken a comparative study of the status of bitcoins in countries that have provided regulatory responses to it.²²

The first pool of countries stands at the twilight of acceptance/regulation of bitcoin. Israel recognized it as a ‘virtual currency’, apt for payments.²³ The Belgian government has legalized but not incorporated it as a valid currency.²⁴ The Hong Kong Monetary Authority decided against regulation of this ‘virtual commodity’.²⁵ Further, Turkey,²⁶ Columbia²⁷ and Denmark prohibit financial institutions from

22 Kashmir Hill, *Bitcoins Legality Around the World*, <http://www.forbes.com/sites/kashmirhill/2014/01/31/bitcoins-legality-around-the-world/> (Last visited on June 19, 2014).

23 Niv Elis, *Bank of Israel mulls regulating, recognizing Bitcoin virtual currency*, <http://www.jpost.com/Business/Business-News/Bank-of-Israel-mulls-regulating-recognizing-Bitcoin-virtual-currency-333894> (Last visited on June 19, 2014).

24 Danny Bradbury, *Belgium’s Finance Minister has no objection to bitcoin*, <http://www.coindesk.com/belgiums-finance-minister-has-no-objection-to-bitcoin/> (Last visited on June 19, 2014).

25 Alan Wong, *In Hong Kong, Placing Their Bets on Bitcoin*, New York Times, at http://dealbook.nytimes.com/2014/03/19/in-hong-kong-betting-big-on-bitcoin/?_php=true&_type=blogs&_r=0 (Last visited on June 19, 2014).

trading in cryptocurrencies while individuals face no such restriction. This might change as Denmark prepares standards that protect users from potential risks.²⁸ Germany allows bitcoins to be used for trade and tax, although recognizing bitcoins as “private money”.²⁹

The second pool is of nations with a stringent tax liability mode of regulation. Countries such as Australia intend to establish tax guidelines for bitcoin use.³⁰ Brazil³¹ and Finland³² tax bitcoin transactions as capital gains. Bulgaria, on the other hand, treats bitcoins as financial instruments, thus taxing it at the same rate as ordinary income.³³ Norway treats bitcoins as an asset, attracting wealth and sales tax.³⁴ Canada has issued a statement that details the treatment of bitcoins in the same manner as barter transactions, as well as the applicability of the existing anti-money laundering legislation.³⁵ The UK similarly levies VAT if bitcoins are

26 *Regulation of Bitcoin in Turkey*, <http://www.coinstech.com/regulation-of-bitcoin-in-turkey/> (Last visited on June 19, 2014).

27 Pete Rizzo, *Colombia Stops Short of Bitcoin Ban, Bars Banks From Industry*, <http://www.coindesk.com/colombia-stops-short-bitcoin-ban-bars-banks-sector/> (Last visited on June 19, 2014).

28 Frances Schwartzkopff, *Bitcoins Spark Regulatory Crackdown as Denmark Drafts Rules*, <http://www.businessweek.com/news/2013-12-17/bitcoin-rules-drafted-in-denmark-as-regulator-warns-against-use> (Last visited on June 19, 2014).

29 Matt Clinch, *Bitcoin recognized by Germany as ‘private money’*, <http://www.cnn.com/id/100971898> (Last visited on June 19, 2014).

30 Jon Southurst, *Australia Will Set Official Tax Guidelines on Bitcoin This Year*, <http://www.coindesk.com/australia-official-tax-guidelines-bitcoin-this-year/> (Last visited on June 19, 2014).

31 Kenneth Rapoza, *Brazil Follows IRS, Declares Bitcoin Gains Taxable*, <http://www.forbes.com/sites/kenrapoza/2014/04/07/brazil-follows-irs-declares-bitcoin-gains-taxable/> (Last visited on June 19, 2014).

32 Nermin Hajdarbegovic, *Bitcoin Classified ‘Commodity’ by Finland Central Bank*, <http://www.coindesk.com/bitcoin-classified-commodity-finland-central-bank/> (Last visited on June 19, 2014).

33 Pete Rizzo, *Bulgarian Bitcoin Tax Guidance May Leave Money-Laundering Loophole*, <http://www.coindesk.com/bulgarian-bitcoin-tax-guidance-may-leave-money-laundering-loophole/> (Last visited on June 19, 2014).

34 Saleha Mohsin, *Bitcoins Fail Currency Test in Scandinavia’s Richest Nation*, <http://www.bloomberg.com/news/2013-12-12/bitcoins-fail-real-money-test-in-scandinavia-s-wealthiest-nation.html> (Last visited on June 19, 2014).

35 Tim Kiladze, *Canada to regulate bitcoin in war on dirty money*, THE GLOBE AND MAIL, <http://www.theglobeandmail.com/report-on-business/canada-to-regulate-bitcoin-in-war-on-dirty-money/article16812195/> (Last visited on June 19, 2014).

bought and sold, as well as capital gains tax on profits.³⁶ The USA's fragmented approach, where the IRS treats bitcoins as property and subject to capital gains tax, whilst the Treasury treats it as a currency, renders bitcoins subject to anti-money laundering and anti-terrorist financing legislation.³⁷

The third pool is characterized by overcautious regulation, bordering on antagonism. China and Japan, have banned financial institutions from trading in bitcoins within the country while individuals remain exempt from it.³⁸ Taiwan has warned against the use of bitcoins, and prevented a bitcoin ATM from being built.³⁹ Russia pejoratively terms bitcoins "money substitutes" in a classic institutional response to bitcoin that considers the system to be a segue into criminal networks.⁴⁰ The Reserve Bank of India stated it has no plans to regulate while retaining the extensive right to do so.⁴¹ In a 2014 statement, the Indonesian government declared that bitcoins stand in contravention of extant legislation.⁴² Along similar lines, Iceland prohibits foreign exchange trading in crypto currencies; however Iceland has itself adopted Auroracoins, an 'authorized' crypto currency.⁴³

A comparative jurisdictional approach yields the following issues that plague attempts at state regulation. *First*, the defining characteristic of bitcoin is that it is

37 KMR LLP, *Current US Regulatory Developments*, <http://www.mondaq.com/unitedstates/x/277850/Financial+Services/Bitcoin+Current+US+Regulatory+Developments> (Last visited on June 19, 2014).

38 Joe Weisenthal, *China May Be Preparing Harsh New Regulations On Bitcoin*, <http://www.businessinsider.in/China-May-Be-Preparing-Harsh-New-Regulations-On-Bitcoin/articleshow/33130585.cms> (Last visited on June 19, 2014) ; NerminHajdarbegovic, *Japan decides against bitcoin regulation for now*, at <http://www.coindesk.com/japan-decides-bitcoin-regulation-now/> (Last visited on June 19, 2014).

39 Aries Poon, *Taiwan Rejects Bitcoin ATMs*, <http://blogs.wsj.com/chinarealtime/2014/01/06/taiwan-rejects-bitcoin-atms/> (Last visited on June 19, 2014).

40 Ellis Hamburger, *Russia Bans Bitcoin*, <http://www.theverge.com/2014/2/9/5395050/russia-bans-bitcoin> (Last visited on June 19, 2014). ; Shie Lynn-Lim, *Malaysia's Central Bank Warns of Bitcoin Risks*, WALL STREET JOURNAL, <http://online.wsj.com/news/articles/SB10001424052702303640604579298421040674870> (Last visited on June 19, 2014).

41 Joel Dalais, *India Under Bitcoin Regulation? Or Not?*, at <http://bitcoinmagazine.com/10537/india-bitcoin-regulation/> (Last visited on June 19, 2014).

42 Joon Ian Wong, *Indonesia Central Bank warns against bitcoin use*, at <http://www.coindesk.com/indonesia-central-bank-warns-bitcoin-use/> (Last visited on June 19, 2014).

43 *Crypto: Iceland To Adopt Crypto-Currency*, <http://financialcrimeasia.org/2014/02/12/crypto-iceland-to-adopt-crypto-currency-while-hackers-attack-bitcoin-and-ny-regulations-loom/> (Last visited on June 19, 2014).

a decentralized, accessible currency. The nature of municipal law necessitates an institutional approach to regulation that entails a hierarchical power structure. Such an institution would have the power to restrict circulation or ban bitcoins altogether, thus diminishing its accessibility. *Second*, the regulatory regimes' treatment of bitcoins as a commodity, rather than a currency, betrays a reluctance to engage with decentralized currencies. *Third*, there is a vast information gap on the purposes for which bitcoins are used, which lends itself to suspicion and overcautious regulation. Finally, the clearest issue that emerges is that of incompatibility – that each country has different views on what sort of measures to impose on bitcoins and what sorts of laws they might be subject to, thereby creating no space for compossibility.

Thus there is a dissonance between law's concreteness and certainty, and technology's constant state of innovation. This throws up new challenges for legal regulation that may not be solved simply through the proliferation of new legislations or through the expansion of those in existence. Lawrence Lessig's 'Code' provides a compelling framework in which this constructive may be based.⁴⁴ He lays out four factors, which presently determine to what extent and how cyberspace is regulated: the law; the norms of the society; the market; and the architecture of cyberspace. Lessig argues that in cyberspace, it is not only regulation by law, but the very design of the technology that is the framework for regulation the limiting or regulatory framework. Lessig terms this as the 'architecture of control' of the digital world. He argues that the law exists to regulate the market, and although it has an impact upon technology, code forms the architecture of the system and may subvert the regulatory framework that the law has imposed upon it. For cyberspace to continue existing as it is, it must embody certain values that netizens hold dear – such as free speech, individual control and anonymity.⁴⁵ Since cyberspace is created by servers in different geographical locations, its regulation is complex and cannot be done by one country alone.⁴⁶ Further the application of national laws to different servers, based on their territorial location leads to further complications with regard to say, liability for harmful content, accessed from

44 Lawrence Lessig, *CODE V. 2.0*, 2006.

45 Lawrence Lessig, *Code is Law*, HARVARD MAGAZINE, at <http://harvardmagazine.com/2000/01/code-is-law.html> (Last visited on June 19, 2014).

46 Andrew D. Murray, *THE REGULATION OF CYBERSPACE: CONTROL IN THE ONLINE ENVIRONMENT* (2007).

another territorial location. By virtue of being deeply entrenched in state institutions, law is principally based on different grounds as opposed to the digital space.⁴⁷ Lessig acknowledges this and states that the uniqueness of the interaction that we have through cyberspace, is difficult for the law to adequately regulate. Therefore, in light of Lessig's framework, we propose a two-pronged, principle-based solution that will speak to the idea that the law can exist as a mere tool to correct states of imbalance, as they exist, between the market and code.

The most prevalent issues, as outlined above, are those of centralization and monopolization. Although mining pools provide certain advantages, the threat of monopoly looms large, and questions the survival of the bitcoin project in the first place.⁴⁸ Thus, the first prong of the solution that we propose is that the code itself be altered in order to prevent monopoly creation. For instance, monopolistic behavior such as tending towards 51% would result in being locked out of the bitcoin system altogether. The sanction can operate on a sliding scale depending on the egregiousness of the transgression. Rather than proposing a situation where there exists no system of regulation at all (deregulation), we propose that the primary task of regulation of a complex piece of technology must lie with the creators and coders of the same, so as for them to preserve the values that Nakamoto envisioned.⁴⁹

The second prong is a move towards a threshold that may be introduced within the code, in order to automatically break mining pools the moment they reach a particular limit. This model would only require the code to break mining pools once they reach a particular limit. We are proposing this on a principled level, and are aware that any sort of threshold set would be arbitrary in nature. However, we argue that this is necessary as it would tackle the actual problem of concentration in mining of bitcoins, by keeping it significantly below the level of survival required for bitcoins to continue to remain within circulation, as a cryptocurrency. There exist coded solutions in this form, such as the P2Pool.⁵⁰ P2Pool miners create

47 H.L.A Hart, *THE CONCEPT OF LAW* (1961).

48 Alex Hern, *Bitcoin currency could have been destroyed by 51% attack*, *THE GUARDIAN*, <http://www.theguardian.com/technology/2014/jun/16/bitcoin-currency-destroyed-51-attack-ghashio> (Last visited on June 19, 2014).

49 *Supra* note 1.

50 P2Pool, at <http://p2pool.in/> (Last visited on June 19, 2014).

their own blocks, however share the rewards amongst the entire pool. An internal coded mechanism has been created – each share is assembled into a share chain, in order to maintain fairness and prevent fraud. Thus those miners who do not follow these rules get excluded from the main chain, thereby ensuring that such rules of fairness are followed.⁵¹ This solves the issue of decentralization, as no single person is in charge of the distribution of rewards, as well as retains the autonomy of individual miners who can choose which transactions they want to enter into. Further there exists no reliance upon pool operators and such entities, for payment to miners, as miners get paid directly.⁵²

The two principal ideas in this essay are the harms of centralization in bitcoin coupled with the inevitable institutionalization that accompanies state regulation. We clearly demonstrate that any form of traditional regulation that entails a vertical power structure militates against the very idea of bitcoin itself. Is it possible to protect bitcoin from monopolistic practices while retaining its horizontal, decentralized structure? The balance that is to be struck is that of code, law and the marketplace. Lessig provides the ideal framework to understand how this balance would play out. It speaks to both the futility of centralized regulation in the digital space as well as the dire need to protect its most cherished values. We also add nuance to this balance by proposing two possible solutions, each functioning in a different paradigm. Therefore, we show that it is not only viable but also vital for bitcoin to find this balance, before, to borrow from Douglas Adams, it becomes necessary to wave the towel “*in emergencies as a distress signal, and of course dry yourself off with it if it still seems to be clean enough.*”

51 P2Pool, *Bitcoin wiki*, at <https://en.bitcoin.it/wiki/P2Pool> (Last visited on June 19, 2014).

52 *What is the P2Pool, Bitcoin Stack Exchange*, <http://bitcoin.stackexchange.com/questions/3626/what-is-the-p2pool> (Last visited on June 19, 2014).