Journal of Intellectual Property Studies
Vol. III (2), July 2019, pp. 4-31

THE GLOBAL PATENT SYSTEM NEEDS A REVISION, SIGNIFICANT AND SOON

ABHISHEK PANDURANGI

Having worked through the thick and thin of the patent industry for over a decade, with domestic & international parties, on legal and technical matters, I have arrived at one patent conclusion— that the patent system in the contemporary global ecosystem is far from achieving its objectives, and its provisions are outpaced by the way innovation is approached by the world today. Breeding among controversies and protests, patent filings are growing every year, but so are the concerns on their effectiveness and social impact; so much so that the patent system is being labelled 'broken'.[1] While attempts are made to address this, they are far too sparse, far too partisan and far too narrow, while more ubiquitous, equitable and fundamental reforms are sitting in a corner awaiting their chance. In this article, I, with the perspective of a patent attorney, shall deliberate upon those concerns, their causes and said reforms, escaping which would slowly yet progressively erode the very need of the patent system along with the advantages it stands to offer.

At the outset it is paramount to review the purpose of a patent system at its very core and origin before we discuss its present shortcomings. The word 'patent', etymologically draws source from the Latin language in which ‘patent’ meant open, exposed or evident, as opposed to 'latent' meaning hidden; which then sought way to usage in English where the term ‘letters patent’ signified public pronouncement of royal decrees granting exclusive rights.[2] In one of the earliest officially recorded patents dating back to 1449,King Henry VI of England awarded Inventor John Utynam exclusivity on a stained glass manufacturing process claimed by him in exchange of making the process patent, i.e. passing the specifics to the Englishmen.[3] This barter philosophy of disclosing invention in exchange of monopolistic rights, in turn meant to

[1]Adam B. Jaffe & Josh Lerner, INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS AND WHAT TO DO ABOUT IT (Princeton University Press, 2004).

[2] Robert Gunderman & John Hammond, *PATENT - A Word That Rings Clearly: A Brief History Of The Word And The Property Right*, THE LIMITED MONOPOLY(December 2013), https://thelimitedmonopoly.com/patent-fundamentals/patent-a-word-that-rings-clearly/.

[3] Marcio Luis Ferreira Nascimento, *The First Patents and the Rise of Glass Technology*, 9 RECENT INNOVATIONS IN CHEMICAL ENGINEERING, 1 (2016) .

benefit the public at large, became the backbone of the patent system attracting subscription world over. Transcending from Europe, the practice passed on to the US and South Carolina became the first among several states to pass a state level patent law titled 'An Act for the Encouragement of Arts and Sciences', eventually shaping into the US Federal Patent Act of 1790.[4]Towards the east, Japan, in its endeavour to become a technology focused regime adopted patent law in 1885 under the leadership of Korekiyo Takahashi who famously remarked, "We said, 'What is it that makes the United States such a great nation?' and found that it was patents, and so we will have patents.".[5] Other regimes followed suit and soon the patent system found its way pivoting scientific and economic interests' world over. As globalization advanced, a series of initiatives to harmonize the patent structure globally including the Paris Convention,[6] the TRIPS Agreement ("TRIPS") [7]and the Patent Cooperation Treaty ("PCT")[8] were undertaken, shaping the system to what it is today. These of course were not without its due share of controversies, debates and adjustments especially in the fields of medicines, and now software.

Contributing to the debate on patents, Roberto Mazzoleni & Richard R. Nelson observed that while the history of patents was attached to doubts and often hostilities, the larger consensus weighted towards a strong patent system that would benefit economic progress in the long run.[9] They put forward in their paper, broadly the following four purposes of a patent system:

1) 'Invention Motivation'
2) 'Induce Commercialization'
3) 'Information Disclosure'
4) 'Exploration Control'

[4]*Bill of Rights in Action*, 23(4) CONSTITUTIONAL RIGHTS FOUNDATION, WINTER http://www.crf-usa.org/bill-of-rights-in-action/bria-23-4-a-the-origins-of-patent-and-copyright-law (2008).
[5] Keith E. Maskus, '*Strengthening Intellectual Property Rights in Asia: Implications for Australia*' (Kym Anderson, ed., University of Adelaide Press), 37(3) AUSTRALIAN ECONOMIC PAPERS (2000).
[6] Paris Convention for the Protection of Industrial Property, as last revised at the Stockholm Revision Conference, Mar. 20, 1883, 21 U.S.T. 1583; 828 U.N.T.S. 305.
[7] Agreement on Trade-Related Aspects of Intellectual Property Rights, Annex 1C, 1869 U.N.T.S. 3; 33 I.L.M. 1197 (1994).
[8] Patent Cooperation Treaty, June 19, 1970, 28 U.S.T. 7645; 1160 U.N.T.S. 231; 9 I.L.M. 978 (1970).
[9] Roberto Mazzoleni & Richard R Nelson, *The Benefits And Costs Of Strong Patent Protection: A Contribution to the Current Debate*, 27(3) RESEARCH POLICY 273 (1998).

According to the first purpose, the anticipation of monopolistic rights helping an invention's business prospects and restraining competition, acts as a material incentive to invest time and resources in research, thereby building an ecosystem to prefer them. This classic theory proffered for suggesting that patents foster innovation has been endorsed by several visionaries including Abraham Lincoln who said, "Before then, any man might instantly use what another had invented; so that the inventor had no special advantage from his own invention. The patent system changed this; secured to the inventor, for a limited time, the exclusive use of his invention; and thereby added the fuel of interest to the fire of genius, in the discovery and production of new and useful things."[10]

The second purpose provides for the next leg of the innovation lifecycle when the idea is seeded from the pilot phase and branched to the consumer base. It is proposed that inventions with substance often attract those who can catapult them to a commercially rewarding market, and when such an invention is patented/patent pending, it facilitates various models of patent commercialization, injecting back money to the labs, thereby ensuring a steady cycle of research and industrial evolution.

The third purpose provides for the public side of the barter, that of receiving invention disclosure which would help avoid 'reinventing the wheel'. It is said that close to 80% of all technical literature is available only through patents,[11]and for free.

The fourth purpose incites curiosity and investigation. Referencing the example of patents on gene fragments having benefited research firms in biotechnology much before practical applications, Mazzoleni & Nelson furthered observations that broad patents on 'prospect opening' inventions or discoveries can be strongly attached to their technological advancements.

While one can enlist many purposes as a subset, I believe that the four purposes seem to holistically cover the umbrella of the objectives attributed to the patent system. In an

[10]*Lecture on Inventions and Discoveries*, ABRAHAM LINCOLN ONLINE, http://www.abrahamlincolnonline.org/lincoln/speeches/discoveries.html.

[11] Geert Asche, *80% Of Technical Information Found Only In Patents – Is There Proof Of This* ?, 48(1) WORLD PATENT INFORMATION 16 (2017).

ideal scenario, the first two purposes would enable private rewards to the inventors and investors, whereas through the third and fourth purposes, public interest is meant to get served, creating equilibrium or a 'win-win' situation as they say. In reflection, I endorse the four purposes and agree that a fitting patent system ought to achieve them progressively.

Various references indicate that the patent system successfully cater to the above purposes. Luminaries such as Thomas Edison, Alexander Bell, Alfred Nobel, Louis Pasteur, and Steve Jobs are hailed as beneficiaries of patents while counting their contribution towards science and industry. In a 2006 publication François Lévêque and Yann Ménièreattest indicate that patents do provide incentives & positive effect on R&D spending. On the aspect of disclosure enabled by patents, they also indicated that 88% of survey respondents from American, European and Japanese firms consider information sourced through patents have been helpful in implementing and designing their own R&D strategy[12]. Further, on the issue of incentivizing business around inventions, trends in patent commercialization indicate strong growth in global markets, where the receipt of international royalty and licensing fee scaled up from USD 2.8 billion in 1970 to USD 27 billion in 1990, and to approximately USD 180 billion in 2009 – surpassing the growth of global GDP.[13]

However, on the other side of the opinion table, strong arguments against the patent system and its inability to meet expected objectives have always echoed around. Providing a strong case against patents, Michele Boldrin and David K. Levine propose to abolish the patent system altogether and provide extensive reasoning for it in their very forthright paper.[14]

Countering the first purpose, they contend the lack of any reliable empirical evidence to indicate that patents increase innovation and productivity, and submit the effect of patents to the contrary as they subject future inventions to a giant hold up, with the

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François Lévêque & Yann Ménière, *Patents and Innovation: Friends or Foes*?, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=958830 (2006).

[13]*Changing Face of Innovation*, WORLD INTELLECTUAL PROPERTY REPORT, https://www.wipo.int/edocs/pubdocs/en/intproperty/944/wipo_pub_944_2011.pdf (2011).

[14]Michele Boldrin & David K. Levine, *The Case Against Patents*, 27(1) THE JOURNAL OF ECONOMIC PERSPECTIVES 3 (2013).

need to purchase several licenses and uncertainty on the ultimate value of the new invention. Among several examples, they cite that of Wright brothers locking down innovation for nearly 20 years in the flight technology using patents. Reference of the aircraft patent by Wright Brothers is commonly brought up while discussing the 'tragedy of anti-commons' said to occur when multiple parties have the right to exclude, leading to a state of exclusion for new entrants as well as existing patentees resulting in an overall under-utilization.[15]

With regards to the second purpose, Boldrin and Levine argue that it is the first mover's advantage and the competitive rents, rather than patents that facilitate industry and financial attraction to innovations, an example would be the case of Apple's iPhone. In a thoughtful deliberation, they highlight that a good amount of investment induced by patents in the US gets redirected to litigation instead of seeping in back to the innovation lifecycle, amounting to almost 14% of total R&D cost towards the end of '90s. In a more recent review, it was projected that this percentage was well over a quarter of US industrial R&D spending.[16]

Attacking the philosophy put forth by the third purpose that patents enable disclosure of invention, benefiting science and public at large, they remark "…that the extent of practical 'disclosure' in modern patents is as negligible as the skills of patent attorneys can make it. It is usually impossible to build a functioning device or software program from a modern patent application."

They also state with regard to the fourth purpose, "that the initial eruption of innovations leading to the creation of a new industry—from chemicals to cars, from radio and television to personal computers and investment banking—is seldom, if ever, born out of patent protection and is instead the fruit of competitive environment."

I find their arguments quite compelling and they do open up the question on whether the patent system can actually deliver on the assumed purposes when the reality of

[15] Giuseppe Colangelo, *Avoiding the Tragedy of the Anticommons: Collective Rights Organizations, Patent Pools and the Role of Antitrus*t, SSRN ELECTRONIC JOURNAL (2004).
[16]James E. Bessen *et al.*, *The Private and Social Costs of Patent Trolls*, BOSTON UNIV. SCHOOL OF LAW, LAW AND ECONOMICS RESEARCH PAPER, 11(2011).

politics, lobbyism and economic disparity come into the picture.

Several industries and countries that have stayed away from patents, have in fact seen a constant spur of innovation. None of the top three patent filers in the world, namely China, US & Japan, find a spot in the list of top five global performers in innovation.[17] UAE, Vietnam and Bangladesh are a few countries which are climbing up fast on the innovation ladder but have considerably low contribution in patent filings, with particularly miniscule numbers originating domestically. In terms of industries, E-commerce is a good example of an erupting global success despite little or no patent protection in most countries. The same can be said about innovations in the areas of medical procedures, culinary products and fragrances which have never seen scarcity of novelty.

Also, the theory that patents attract money and vice versa suffers a setback when one observes that majority of patents filed are never commercialized. In fact, that number scores over 90% in the US alone. The popularity and constant increase of open source/open models, particularly in the software industry provide a counter-narrative too.

Moreover, the contention that patents provide inadequate practical disclosure also has merit in it. With time, patent drafting has become more a skill of how to hide the real invention in the maze of words than to enable disclosure. It is my experience that most inventors can't grasp their own invention when they first read the patent application arising out of it. It is only after they're made familiar with the strategies of building a stronger/ wider fence for their invention, do they digest the techno-legal language with multiple embodiments and broadening of scope every possible way. An additional issue with the disclosure theory is the handicap of language which barricades the public access and absorption of technical know-how.

It is also true that the ecosystem of enforcement is not to the best of its health.. Growing litigation numbers, by trolls and the like, not only in the US but globally has certainly infected the climate. The fear of enforcement cost alone is often a deterrent to invest in

[17] *Leaders in Innovation*, WORLD INTELLECTUAL PROPERTY ORGANISATION, https://www.wipo.int/export/sites/www/pressroom/en/documents/gii_2018_infographics.pdf.

foreign patents forcing applicants/licensees to forgo the advantage of patents in many countries, thus disturbing the first and second purpose.

Amongst the reasons for failure to commercialize patents, a significant one is the time taken for registration, defeating the opportunity for commercialization. In several cases, a ready-to-market potential product will simply not be commercialised because the cautious investor wants to secure his/her money against a granted patent; which, by the time it reaches the table after an average 3-5 years, has lost its commercial relevance.

Most of the observations made by Michele Boldrin and David Levine are sound, supporting the headline that the present patent system is broken, and draw our attention to many other happenings:
Several experts are raising questions on the ineffectiveness of the present system, and some the very need for it. Protests against the ills of patents are on the increase.
While patent fees are on the rise, the quality of patents is said to be at a serious decline. A significant attestation to this came from within the system, when a large number of EPO examiners themselves expressed concerns on the patent quality issued by the office.[18]
Pharma generics and innovator companies are in an economic and political warzone.
Malicious litigations are on the rise.
Despite several measures of harmonization, particularly the PCT[19] and the Patent Prosecution Highway, securing and enforcing patents internationally is still a nightmare for many individuals, start-ups, small entities, colleges - basically anyone without deep pockets.

However, I would not agree with their proposal to abolish the patent system altogether.

Above and beyond the statement of Fritz Mashlup quoted in their paper,

"If we did not have a patent system, it would be irresponsible, on the basis of our

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[18] Kieren McCarthy , *Patent Quality has fallen*, *confirm Euro examiners*, THE REGISTER, March 15, 2018, https://www.theregister.co.uk/2018/03/15/patent_quality_has_fallen_confirm_euro_examiners/ (2018).
[19] *Supra* note 8.

present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it.".[20]

I would regard that patent system at its very core is true to its cause and is capable of fulfilling its objectives, but it deviated with time, and with certain changes, maybe a few radical ones even, it may be brought back to track.

If patent system were a vehicle, it comprises of many wheels further comprising many spokes, and unless we deconstruct the issues of the spokes, the wheel and the vehicle itself, the imbalance and disarray shall keep affecting the journey. In that attempt, and to arrive at actionable suggestions of change, we shall steer the discussion through the following sections:

A. Problems faced by the stakeholders of the patent system
B. The systemic reasons why those problems arose
C. Proposed actionable solutions

A. PROBLEMS FACED BY THE STAKEHOLDERS OF THE PATENT SYSTEM

With passing time, those who became parties involved in the system started claiming their stake in the way the system functioned, and each participant tried to use and adapt the system with their singular perspective and needs, eventually derailing the system as a whole. As a result, each one of them is now facing significant problems/challenges of their own. Let us look at some of the key issues faced by the following stakeholders of the patent system one by one.

1. The Applicants/Inventors
2. The Patent office/ Patent Examiners
3. The Judiciary
4. The Governments

1. <u>The Applicants/Inventors</u>

[20] US SENATE, COMMITTEE OF THE JUDICIARY, Study of the Subcommittee in Patent, Trademark and Copyright, Study No. 15, St. Res. 236.

i. Cost:

One of the biggest grievances of the applicants with the modern patent system is the exorbitant and uncertain monetary expenditure they have to incur to first secure, and then maintain their patent rights. Several surveys show that applicants often end up foregoing patenting as a result of the costs.[21] Let alone individuals/small entities, even large companies with sizable wealth have growing concerns about the cost to maximize their IP assertion.[22] The problem multiples due to the different fee buckets that demand filling up, including:

- Official fees:

The bare minimum fees of filing, examination and annuities alone are significant. With countries constantly increasing these costs, filing in multiple countries can cause an intimidating set of fee matrix for an applicant to cater to—one which needs sufficient planning that cannot skip a buffer.

- Attorney fees:

The system, so heavily dependent on the attorneys by design, and providing so little control in the hands of the applicant/inventor, has caused attorney fees to be a major reason of anxiety for the applicants, and that at every stage of the lifecycle—the due diligence, prosecution & enforcement. The nature of work being qualitative, choosing patent attorneys is not an easy bidding, particularly for foreign countries, where the system design necessitates needing an attorney for every step of the way generating a flurry of invoices. Another elephant in the room, which needs mention, is the model of business reciprocity between two attorneys of different countries which influences the foreign attorney recommendation. While not omnipresent, it is a fairly prevalent practice in the industry which means that an applicant may end up coughing up much more than otherwise to engage a foreign attorney because of the local attorney's interest in exchanging business with that attorney. The worst part is if the attorney causes any prejudice to the applicant's patent by substandard work or missing

[21] Gaétan De Rassenfosse & Bruno Van Pottelsberghe de la Potterie, *The Role of Fees in Patent Systems: Theory and Evidence*, 24 J. ECO SURVEYS. 696 (2013).

[22] Daniel Nepelski & Giuditta De Prato, Does the Patent Cooperation Treaty work? A global analysis of patent applications by non-residents, JRC Working Papers JRC79541, Joint Research Centre, revised Nov 2012.

deadlines, there is very little the applicant can do to restore the damage.

- Translation fees:

Another variable adding up to the fees is the one towards the translation of patents in respective foreign languages for foreign patent filings, contributing to a significant part of the overall fees and one that has seen steep growth with time.[23] Add to that the fees charged by firms for translating the office actions. Further, amidst all this, the applicant can barely ascertain whether the technical translations are accurate, for which the only way is to engage another translator with more fees to pay.

The mounting fees effect is that while the entire world is today an innovation lab and a market, no one can practically secure the entire geography of interest, straight away unsettling the first two said purposes directly. Particularly, increase in fees create inequity, and affects the smaller patentee severely,[24] which is anything but good for the democracy of science and the science of democracy. A common argument supporting increase in fees is that it shall help filter out lower quality patents[25] and reduce pendency[26] but trends clearly seem to indicate otherwise.

ii. Time:

The next biggest area of pain for applicants is time. While on one hand the applicant has to adhere to several short non-extendable deadlines, on the other, there is no saying how long they have to wait for getting their share from the patent system. The disquiet particularly manifests in the following areas:

- Time taken for the patent to be granted:

For someone who has created an original work of art, the law allows him/her to exercise the inherent intellectual property rights in the form of Copyright immediately. For someone who has built a brand, he/she can move to court on grounds of

[23] Park, Walter G, *On Patenting Costs*, 2 WIPO J. ANALYSIS OF INTELLECTUAL PROPERTY ISSUES 38 (2010).
[24] Gaétan de Rassenfosse & Adam B Jaffe, *Are Patent Fees Effective at Weeding Out Low-Quality Patents?*, 27 J. ECO & MGMT STRATEGY 134 (2018).
[25] Francesca Cornelli & Mark Schankerman, *Patent Renewals and R&D Incentives*, 30 RAND J. ECO 197 (1999).
[26] Alan C. Marco & James Prieger, *Congestion Pricing for Patent Applications*, SSRN ELEC J, 2009, 10.2139/ssrn.1443470.

misappropriation /passing off irrespective of registration. But for an inventor(to incentivize and encourage whom the patent system was instituted), nothing effective can be done unless the patent office says so with a stamp of grant, and that say so could take time-a lot of it.

A report released by Centre for the Protection of Intellectual Property (CPIP) on the global patent pendency problem declares that the time to get patents in some countries are so long that a patent simply becomes irrelevant in those countries.[27]In a world where innovation cycles are reducing from decades to years and years to months, average time for patent approval runs far beyond. Such is the case that two to three years as an average for patent grant in some developed countries, is considered rather fast, while prominent emerging economies such as Thailand & Brazil average over 10 years! The report which uses data from 2008 to 2015, indicate that the United States Patent &Trademark Office (USPTO), European Patent Office (EPO) and the Japanese Patent Office (JPO), representing the most evolved patent ecosystems in the world, take an average of 3.5 years, 5.5 years and 5.3 years respectively and the combined loss caused by their each year's backlog costs the global economy over USD 10 billion/year. The report exemplifies inventions which had got long obsolete by the time patents were granted for it. This means that despite filing the application and paying the fees to the patent office, if there were any infringement, history witnessed no legal action but only patience by the applicant, from a system which promised him/her patent rights against the disclosure and fees. The report accordingly observes that in face of such extreme delays, the ongoing debates on the finer aspects of patent system seem irrelevant in comparison.

- Time provided for filing internationally:

Rendered as a major curtailment in maximizing IP opportunities globally, the limited and -non-extendable period of 12 months for making an international application can cause grave injury to an applicant's intended rights and interest. Even with fast moving technologies, the average time for trials, both scientific and industrial, that would be needed to gauge the commercial prospects of an invention would exceed 12 months. It is regarded that it takes an average of over four years for a regular business to stand on

[27] Mark Schultz & Kevin Madigan, *The Long Wait for Innovation: The Global Patent Pendency Problem*, Oct 24, 2016, CENTER FOR THE PROTECTION OF INTELLECTUAL PROPERTY.

its feet[28] or for the commercialization of an invention, [29]which in case of a new pharmaceutical product would require over a decade.[30] However, it is expected of the applicant that in that limited time of 12 months, within which there isn't even an official search report provided, he/she must assertively decide to go international, arrange funds for it and then execute it, failing which that right is taken away forever. It was to address this rather scanty time period for which the PCT[31] was administered, but that is more of a short relief rather than remedy, as the extension of time to 30/31 months from priority date is still considerably below the average time for the commercial visibility. In fact, at times, the applicants feel pressurized having to bear the additional expense for PCT and ask for why this time extension is not accorded to conventional application directly, and the answer, "due to diplomatic and legal reasons" is neither well understood nor well digested.

iii. Ambiguity & Uncertainty:

Next we shall discuss the several patches of ambiguity and uncertainty around the patent system and how it affects the applicants.

- The patent content itself:

When the patent system started, disclosures would be in a few pages supported by a few necessary drawings, more or less to the point. Thomas Edison's articulately detailed patent for the incandescent bulb US223898 comprises of 3 pages including one of drawing. With evolution of advanced patent drafting techniques, patents of that size are long gone and patents giving out such exact details are rare. Rather today, the broader the patent, the more generic the description and more camouflaged the actual enabling details of the invention, the better it is considered for the applicant. There are some inviting satirical cartoons by Maddy & Stu Rees[32] that take a light dig on this point of

[28] Will Schroter, *How long will it take to have a successful startup*, *16 Oct 2018*, https://www.startups.co/articles/how-long-will-it-take-for-my-startup-to-be-successful (2018).

[29] Roger Svensson, *Commercialization of Patents and External Financing During the R&D-Phase,March 1 2007*, 36. RESEARCH POLICY, IFN Working Paper No. 624 (2007).

[30] RoïEisenkot Gail A. Van Norman, *Technology Transfer: From the Research Bench to Commercialization: Part 1: Intellectual Property Rights—Basics of Patents and Copyrights*, 2. JACC: BASIC TO TRANSLATIONAL SCIENCE 85 (2017)

[31] *Supra* note 8.

[32] Stu's views, *Law Cartoons*, http://www.stus.com.

language and style of patent drafts. In one, a patent attorney's reference dislodges that of an optimist and a pessimist on the half full/half empty glass when he claims it to be liquid H_20 bisecting an open cylindrical vessel. As a patent attorney I immediately looked at aspects in that expression which could be broadened further -why H_20? Why cylindrical vessel? and that is when the joke hit me proving its point. But this observation is not limited to cartoons and jokes. In their book, Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk, James Bessen & Michael Meurer[33] highlight the same and critically question the language used in drafting patents that are often too broad and vague. The book also highlights a statement by the US Supreme Court on the same subject:

"Some persons seem to suppose that a claim in a patent is like a nose of wax, which may be turned and twisted in any direction, by merely referring to the specification, so as to make it include something more than, or something different from, what its words express."

As I shared earlier, when the techno-legal draft of patent application gets prepared, often the inventors themselves express confusion while going through it. They rely on their patent attorney's advice and skill on bargaining the broadest possible claims for them, assuming it is in their best interest. In my assessment, this prevalent approach in the grand scheme of things is one of the key crucifiers of a healthy patent system, and in fact, is adverse to the interests of applicants, for the following reasons:

- Likelihood of more time & expenditure towards grant: Without conciseness and clarity of claims, the prosecution of the patent gets burdened and tails longer. Broader the patent and more the salvaging dependent claims, heavier are the bouts of office actions & responses, likely to increase the number of exchanges, and consequently, the time and the fees. Also, in modern times insufficiency of disclosure has crept up to become another significant objection in examination reports. Multiply that to tens of thousands of applications, each of which drafted by attorneys trained in modern drafting techniques, and you arrive at the present

[33] Bessen, James & Michael J. Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk*, Princeton University Press 352 (2008).

situation of pendency and delays, which in turn affects the applicants the worst.

- Increasing the chances of invalidation: A broad patent certainly increases the prospects of infringement, but it also does the same to the chances of the patent claims being struck down, and this is attested by numerous examples of successful opposition/invalidation/IPR proceedings.
- Defeats the purpose of disclosure: On a systemic level if patents deviate from the duty to purposefully provide enabling disclosure, then the system so fostered infact deprives the very patent applicants/inventors as well from access to enabling technical literature that they would have otherwise utilized, creating a negative spiral.
- The tragedy of anticommons: With a nuanced elaboration of this point, Carl Shapiro reflects upon how getting broad patents create patent thickets with overlapping rights, which in turn end up restricting the very patentees from practicing what they originally intended to. For example, in the space of Semiconductors, companies with strong patent portfolios like IBM, Motorola, Intel were compelled to stop making key products due to broad patents granted on microprocessors and semiconductor.[34] There are alternatives of cross licensing and patent pools but they come with limited participation and other issues.[35]

- The 18-month publication period:

As discussed earlier, the term 'patent' means making public. Accordingly, one of the main objectives of the patent system is disclosure of technical literature for progressive research and preventing the duplication of research, i.e., 'reinventing the wheel.' However, patent applications when filed, await 18 months before getting published, unless the applicant pays additional fee for early publication. As a matter of law, no actionable rights are accrued in favour of the applicant before the publication, which causes uncertainty and vacuum in the ecosystem. When asked by clients on the rationale for this policy which either ends up delaying their rights or requiring

[34] Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, 1. NBER Chapters,in: Innovation Policy and the Economy 119 (2001).

[35] Shai Jalfin, *The Good, Bad and Ugly of Cross-Licensing Your Technology Patents*, IPWATCHDOG.COM, (December 15, 2017) https://www.ipwatchdog.com/2017/12/15/good-bad-ugly-cross-licensing-technology-patents/id=90954.

additional fee to secure them, I have not been able to find any to their, or my satisfaction. A typical reason given is that the period provides a window of opportunity for those who wish to withdraw the application before it is published, which appears incongruous to the very purpose of the patent system and to the intended rights of applicants, as the balance of presumption towards an applicant filing a patent ought to be that of continuance rather than that of withdrawal. In practice, sizable proportion of applicants do not opt for early publication. This not only creates delayed accrual of rights, but also hampers clarity in patent searches and due diligence. A patent applicant or his attorney can never be reasonably sure of a patent's prospect because there might be a similar patent already filed but unpublished at the time. It also creates a blind spot in freedom to operate study (FTO) in which one checks for potential IP hurdles before launching a product and decides to proceed on finding no patent being potentially infringed. It would be egregious if after the product launch, it became known that there was in fact an invisible patent whose claims would be infringed but the FTO could not forewarn since the patent was unpublished when the search was conducted. The delayed publication also empowers and enables the subsistence of patent trolls and submarine patents.

- The language barrier:

A rather small but in no terms insignificant concern is the anxiety applicants have due to not being able to read or check the contents of patent specification or patent office communications in foreign languages. While applicants choose foreign attorneys after careful due diligence or strong recommendations, in business; trust is only the next alternative to transparency. At times a minor inaccuracy in translation of the specification could make a big difference to the outcome of the applicant's endeavour.

- Court's interpretation & Claim construction:

Cost is not the last concern in litigation. It is often the approach the courts would take in interpreting the claims while asserting infringement. With constantly evolving jurisprudence, expecting patent litigation outcomes are not always easy. Add to that a set of variables including technical expertise of court, inadequate or sometimes contradictory examination guidelines, use of pith & marrow/ doctrine of equivalents and influential public pressure, the uncertainty further inflames.

iv. Difficulty to commercialize:

Corresponding to the second purpose proposed by Mazzoleni & Nelson,[36] patents are a commercial instrument in the hands of an inventor. A property, in name and under law, IP is supposed to be tradable with a value, and several applicants strive to get a patent in pursuit of getting it licensed or sold to the industry. However, the commercialization ecosystem across the world is dim and very few patents, even deserving ones actually cross that stage, with most commercially active patents being derived in-house. Below are some key issues faced by applicants in this context:

- As discussed earlier, the prospects of a pending patent application getting commercialized are low and by the time they get granted, the patents lose commercial weight.
- Most countries do not have mechanisms, either government supported or private, to facilitate commercialization, and the applicants are pressed for time, resources, skill and network on reaching out to prospective licensees/assignees making them hit the roadblock after a point. The United States is one of the few countries which has a private ecosystem for commercialization with patent brokers and patent licensing firms, despite which most of the commercially active patents are those that are within existing companies.[37]
- Those of which go forward often get stuck during negotiations due to disagreements on numbers in the absence of standardized rates of royalty or yardsticks of valuation unlike the other tangible forms of property. Since there is no standard agreed upon patent valuation technique in existence,[38] so much subjectivity flows in valuation exercises that two different valuation experts would seldom arrive at the same valuation for a patent in question.
- There is very little policy level or industry level intervention to create models to enable sustainable commercialization ecosystems bridging those with the money and

[36]Shai Jalfin, *supra* note 9.

[37]Svensson, Roger, *Commercialization of Swedish Patents – A Pilot Study in the Medical and Hygiene Sector*, , (Research Institute of Industrial Economics Working Paper Series 583.2002).

[38] Malcolm T. Meeks &&Charles A. Eldering, *Patent Valuation: Aren't We Forgetting Something? Making the Case for Claims Analysis in Patent Valuation by Proposing a Patent Valuation Method and a Patent-Specific Discount Rate Using the CAPM*, 9 NW. J. TECH. & INTELL. PROP. 194 (2010).

those with the patents deserving it, not just in terms of mere connection but towards the entire lifecycle of patent commercialization. The few broking and IP exchange models that are present have failed to produce desired traction as a result.

- The above is also applicable for the pharmaceutical industry where there is a dire need to bridge and balance the interests of the generics and the innovators, to quench the unrest and public opposition that has only escalated decade after decade.
- Lack of global consensus on the structure around SEPs (standard essential patents) and FRAND (Fair, reasonable and non-discriminatory) terms on global interoperable technologies contributes to the friction against patents in software/ electronics/ telecommunication and related advance technology fields.[39]

2. The Patent office/ Patent Examiners

i. The growing workload on the examiners

American Economist Josh Berner observes that bad patents are inevitable as the patent examiners are having to deal with a large and growing workload.[40] With patent filings swelling and constantly evolving case laws and guidelines, the patent examiners have a tough task at hand. The pressure of pendency and timelines are so tight that while examining convoluted patent drafts, conducting prior art searches, preparing office actions, reviewing correspondences, conducting interviews and hearings, the examiner gets to spend only an average of nineteen hours on a single application.[41] In addition, the back and forth on multiple patent applications and other tasks that come with the job puts a higher risk of losing focus and attention to detail, which is bound to eventually affect the quality of examination.

ii. Pressure of instructions

In the absence of well laid examination procedures, many times examiners are pressurized to side step the line and abide by instructions from the top management

[39] Benjamin C. Li, *The Global Convergence of FRAND Licensing Practices: Towards "Interoperable" Legal Standards*, 31 BERKELEY TECH. L.J. 429 (2016).

[40] Josh Lerner, *The Patent System in a Time of Turmoil*, 2 W.I.P.O.J.,28Issue 1 (2010).

[41]Frakes, Michael & Wasserman, Melissa F., *Is the Time Allocated to Review Patent Applications Inducing Examiners to Grant Invalid* Patents? *Evidence from Micro-Level Application Data*, REVIEW OF ECONOMICS AND STATISTICS, July 16, 2014;(Northwestern Public Law Research Paper No. 14-39); (Northwestern Law & Econ Research Paper No. 14-16); (Illinois Program in Law, Behavior and Social Science Paper No. LBSS 14-39; Illinois Public Law Research Paper No. 14-44).

causing an overall distress in the system. The examiners are at times pressurized to grant more patents as highlighted by letters from the EPO examiners, or sometimes in the other direction as mentioned by Gene Quinn for the USPTO.[42]

iii. Lack of information on the status of prosecution of family members

While assessing the novelty of the patent during examination, it would be useful for an examiner to have access to patent application examination reports of family members of the patent being examined to reduce time where possible. However, that information is not always or easily available to the examiners. The Patent Prosecution Highway is meant to furnish that information but such disclosure would happen only at the behest of the applicant, and only for the accepted patents.

iv. Difficulty with foreign language prior art references

The uncertainty caused by foreign language publications as prior art references affects the examiners and their output significantly.

3. The Judiciary

i. Subjectivity and discretion

It is an unpleasant reality that frequently courts have overturned the decisions of the patent office and judgments of other courts. As a result of open-ended avenues provided by the patent law, different judicial forums use different standards of claim interpretation and enforcement, also leading to venue shopping of plaintiff favouring courts, ultimately creating a disruption within the arms of judiciary itself. This was also highlighted in the Hruska Commission report, US congressional commission, which noted "patent law is an area in which the application of the law to the facts often produces different outcomes in different courtrooms in substantially similar cases.".[43]

ii. Legal interpretation of technical aspects

Being a techno-legal discipline, adjudicating patent matters require the courts to interpret and sort out questions of science & technology. When applying the doctrine of

[42] Gene Quinn, *Are patent examiners instructed to issue frivolous rejections?*, IPWATCHDOG.COM, (July 18, 2016) https://www.ipwatchdog.com/2016/07/18/patent-examiners-frivolous-rejections/id=70999/.

[43] 1 Janice M. Mueller, Mueller on Patent Law, Volume I: Patentability and Validity (2012).

equivalents or the pith & marrow principle, the courts have to undertake this responsibility of interpretation even further. The problem is that in many countries, the courts are ill-equipped with technical prowess to submerge into the depths of the questions.

iii. Reviewing matters of economics instead of law

Many a times, courts have to decide on compensatory amounts or royalty percentages in infringement matters. When valuation subjectivity is an issue with the patent valuation experts themselves, the courts would be far from possessing appropriate competence therein. However, since there are no standard metrics of arriving at the figures, the courts have to address the issue and spell out the numbers once the case reaches the docket, using subjective and unpredictable models which are particularly difficult to apply in complex and high technology products in question.[44]

4. The Governments

i. Safeguarding the interests of domestic players

While countries want their laws to adapt to international conventions, their sovereign interests and internal issues always steer the same. For example, India, with a thriving domestic generic Pharma industry, created a higher threshold for granting patents on pharmaceutical inventions with the famous/infamous Section 3(d) of its Patents Act constricting eligibility for patents claiming new forms or new use of known substances.[45] In return, there has been substantial global pressure from countries with opposite sovereign interests— those with an entrenched branded drug/innovator Pharma industry, on India to make the regime more patent friendly, including and particularly for pharmaceutical patents. The resultant effect of such tugs of war diverges from central interests and makes patent harmonization difficult.

ii. Keeping contrasting interest groups happy

Politics is the art of diplomacy and politicians through their policies, need to keep all groups happy or at least contained. Accordingly, policy and its manifestation are

[44]Christopher B. Seaman, *Reconsidering the Georgia-Pacific Standard for Reasonable Royalty Patent Damages*,, BYU L. Rev. 1661, (2010).

[45]Novartis v. Union of India, AIR 2013 SC 1311.

moulded to assuage restlessness of opposing interest groups just enough to avoid a breakdown. A glaring example of this is the policy approach towards software and business method patents. On one hand, the statutory provisions, examination guidelines and the case laws signify restrictions on patents in these disciplines, but in ulterior practice those patents keep getting granted under the same provisions, ensuring buoyancy for both interest groups. This has been observed as much with evolved patent ecosystems like USA[46], as for a developing one like India.[47]This inherent approach leads to broad and vague policy instruments that add entropy to the system. Particularly in context of copyrights and patents, Professor Tom W. Bell observes, "Due to public choice problems, moreover, we can expect no better from lawmakers than indelicate imbalances in favour of certain lobbies."[48]

iii. Keeping the lawyers happy

While this submission is based more on corridor talk than on literature, it is affirmative that governments cannot comfortably bring changes in the system that hurt lawyers as fair number in the high offices come from the same fraternity. So is the case with the patent system, which in time got designed to make the lawyers/patent agents as central - if not more - as the applicants and inventors in guiding policy. In fact, Dr. Árpád Bogsch, former Director General of WIPO observed that while governments were deciding to become party to the PCT, a key factor in play was that patent agents feared they would make less money as a result.[49] In a research paper on patent attorneys, it is noted that the system is tuned in a way that the strength of a patent is 'surprisingly' more dependent on the quality of attorney than it is on the quality of the invention.[50] In so far as policy makers are concerned, when facilitators to a system end up being prioritized over the actual beneficiaries, the shape of policy is bound to get deformed.

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[46]Mark Summerfield *How the Fate of Software and Business Method Patents Has Turned on USPTO Directors and the Courts*, PATENTOLOGY, HYPERLINK "https://blog.patentology.com.au/2017/01/how-fate-of-software-and-business.html" https://blog.patentology.com.au/2017/01/how-fate-of-software-and-business.html.

[47]Abhishek Pandurangi, *India's CRI patent examination guidelines: three revisions, three visions* KHURANA & KHURNANA ADVOCATES AND IP Attorneys https://www.iam-media.com/law-policy/indias-cri-patent-examination-guidelines-three-revisions-three-visions.

[48] W Bell ,*Indelicate Imbalancing in Copyright and Patent Law* SSRN https://ssrn.com/abstract=984085/

[49] The First Twenty-five Years of the Patent Cooperation Treaty (PCT) 1970-1995World Intellectual Property Organization.

[50]Rassenfosse, Gaétan de et al. *"Getting international patents: does the quality of patent attorney matter?"* (2018)https://webcache.googleusercontent.com/search?q=cache:u4UTc68BtAEJ:https://pdfs.semanticscholar.org/649f/35cbe17531f5e7776e9ab6d3ae3ed01dc6e0.pdf+&cd=1&hl=en&ct=clnk&gl=us&client=firefox-b-d.

B. SYSTEMIC REASONS WHY THESE PROBLEMS AROSE

While there are several factors that have led to the abovementioned problems, the following ones I believe are the systemic reasons that are largely responsible for them.

i. The opposing samples extrapolation framework:

Earlier we saw how policy is often aimed at balancing the interests of opposing groups and keeping everyone from being unhappy. To achieve this policy makers, create something that I like to call 'opposing sample extrapolation framework', in which the policy manifestation structure is designed to create samples to satisfy opposing expectations which can then be extrapolated to signal both sides that the system is aligned to their point of view. This entails introducing broad, subjective and sometimes vague policy fabric. Such is the case in patents as well. If I were voicing an opinion that patents foster innovation or easily commercialized, I will find examples to back it up, while at the same time the opposite voice will find empirical evidence too, as we have already seen earlier in this article. One may say this is a far too simplistic a theory and not always true, to which I agree but particularly in case of the patent system, I believe,it has been evolved on this framework from the very beginning and thus kept fostering both positive and negative examples of its working. The subjectivity brought in the system due to inclusions of inter alia ‘the test of obviousness’, ‘claim construction variables’, ‘Markush structures’, ‘sufficiency of disclosure’, ‘doctrine of equivalents’, interpretation of which differs from every first person to the next, complicates and drains the system continuously.

ii. Treatment of patents as a created contractual right instead of an inherent/natural property right

Spanning across history and geography, ‘property’ under law has been accorded to extend natural and inherent rights to its owner.[51] It means once you own the property you have inalienable rights over it and in the value vested in it naturally. Wm. E. Simmonds, Ex-commissioner of Patents (1891-93), USPTO explained that a natural right

[51] Edward Nichols, "*Inherent Property Rights, Devise and Descent*." 20 VA. L. REV., 91, (1914).

is a right instinctively and universally recognized.[52] With regards to 'Intellectual production', he observed that to be treated as a subject matter of 'property' it must be capable of reduction to possession and have value in exchange, and 'Intellectual production' has both of these qualities to the full, and is therefore 'property' in every sense. He concludes that in theory, exclusive natural right to inventions is a correct thing, subject to necessary suppressions. However, in the present scheme of things, patents, although bracketed under 'property'/ 'movable property', are not customarily treated as one. For example, once I pay the money to purchase a movable property, say a camera or a car and acquire ownership of it, then it is considered my property de facto across the world without having to acquire ownership on it from each government in whose jurisdiction I intend to use it. It may be required to, at best, pay certain duty or acquire local license for its usage but I would not require to purchase it over and over again from separate governments paying the entire cost, nor do I need to initiate the entire process of purchasing from the very beginning in that jurisdiction. This is in fact true even for copyright, in that, copyright arises naturally once the work is created and is effective for enforcement across the world on evidence of ownership, subject to national laws on validity. However, in case of patents, even after procuring ownership on the patent rights in a particular jurisdiction - after complying with all requirements and paying entire sum of fees to purchase those rights, the said rights have no validity or value anywhere else in the world. To procure which you have to start the entire cycle of ownership for that jurisdiction from the very beginning and pay to purchase the rights repeatedly in each of the countries/regions independently. This resembles more the contractual rights of monopoly extended by the governments to patent applicants in exchange of disclosure and fees, including annuities that have to be submitted every year to maintain ownership of the rights in that country. It is often argued that annuities are akin to property tax over intellectual property which is contradictory to legal premise for properly tax which is calculated and collected as a predefined fraction of the value of property, while the patent annuities are independent of the value vested in the patents. Also, this is different from the notion of patent being a social contract between the applicant and the people. In this case the contract is effectively taking place between the applicant and the patent issuing authority, and the role of sovereign states becomes not that of a facilitator for enabling balanced advantage to innovators and public but

[52] Wm. E. Simmonds, *Natural Right of Property in Intellectual Production*, 1 YALE L.J., 16. (1891).

that of a principal and material beneficiary of the system to aid its own needs and ends. Every year patent offices across the world, including inter alia developed ones like the USA[53] and developing ones like India[54] & Brazil[55] generate revenues outscoring the expenditure and pass on the gains to the government's treasury, at the expense of the patent systems' need of resources. This design creates multiple parallel pay posts and the applicant must either replicate fees and logistics for every country burdening the entire system with cost and numbers, or compromise on his rights which were otherwise meant to have been served by the patent system under the first and second purposes proposed by Mazzoleni & Nelson.[56] The counter argument is that this system allows sovereign control over what can be granted and what cannot. To that, my submission is it can still be done, by creating national validation provisions deemed fit by the state, on an already granted patent rather than at the stage of filing, just as practiced in case of copyrights where exceptions to enforcements in terms of fair use/fair dealing are reserved with governments through their respective national copyright laws while according enforceable rights to all other.

Turning the pages of history on the subject, Edward C. Walterscheid highlights how both patents and copyright were argued over the years on one hand to have inherent/natural rights and on the other with an opposite view of a created one, particularly in context of limited time period of ownership and enforceability.[57]

Further, one of the possible derivatives of not recognizing patents as inherent and natural movable rights is the lack of economic and regulatory policy on value assertion to patents and associated transactions, as regimes usually do for other commodities and goods. As a result, no actionable framework has been created globally for SEPs and FRAND terms even in the most significant of the industries, let alone for individual -non-

[53]Tim Cushing, *The USPTO Regularly Turns A Profit but Is Still Forced to Suffer Through Every Sequestration And Shutdown*, TECHDIRT, https://www.techdirt.com/articles/20131001/04341324709/uspto-regularly-turns-profit-is-still-forced-to-suffer-through-every-sequestration-shutdown.shtml.

[54]*ANNUAL REPORT*, (2017), IPINDIA, http://www.ipindia.nic.in/writereaddata/Portal/IPOAnnualReport/1_94_1_1_79_1_Annual_Report-2016-17_English.pdf.

[55]ACTIVITY REPORT, (2017), NATIONAL INSTITUTE OF INTELLECTUAL PROPERTY, http://www.inpi.gov.br/sobre/arquivos/relatorio-de-atividades-inpi-2017-english-version.pdf.

[56]*See* Mazzoleni & Nelson, *supra* note 9.

[57]Edward C. Walterscheid, *Defining the Patent and Copyright Term: Term Limits and the Intellectual Property Clause*, 7 J. INTELL. PROP. L. 315 (2000).

standard essential patents.

iii. Doing away with the working model systemin letter and spirit

Initially, the patent system had a condition pre-requisite that a working model or a prototype of the patented product must accompany the application. This practice followed since 1790, was nine decades later set aside causing it to evaporate from the procedure, both in letter and spirit.[58] As long as there was a requirement of the working model/prototype of the invention, the specifications and claims were tied to it, and the patent thus granted was given for that invention per se and the arrangement/working of the invention was practicably disclosed to the people. However, it was recommended to eliminate the physical models as they take up a lot of space and threaten to prove a serious public convenience. This proposal was however coupled with a supposition that the drawings and specifications retained would ensure that their removal shall cause no prejudice to any interest, public or private as a result.[59] In effect, it was assumed that in absence of the physical models, the disclosure shall carry out their purpose.

However, in time the system relaxed the patent disclosure requirement to be 'enabling' or 'sufficient' for a 'person skilled in the art' to carry out or practice the claimed invention, which has been regarded as pregnant with ambiguity,[60] deviating from the original requirement under the US Patens Act of 1790 - of delivering description with 'models' 'so exact' that a 'workman' or other person skilled in the art could 'make, construct or use' the same. Consequently, the current practice allows patents often over-claiming with far too generic descriptions, which according to Oskar Liivak should be rendered a criminal act on the applicant's part.[61]

As a direct result of this, the following issues have mushroomed and seeped in deep within the system:

- increased office action time, directly affecting patent pendency

[58] Christopher A, Cotropia, *Physicalism and Patent Theory*, 69 Vanderbilt. L. REV., 1543 (2016).

[59] *Commissioner of Patents*, THE SCIENCES, https://www.scientificamerican.com/article/commissioner-of-patents-1858-02-06/.

[60] Brian P. O' Shaughnessy, *The False Inventive Genus: Developing a New Approach for Analyzing the Sufficiency of Patent Disclosure Within the Unpredictable Arts*, 7 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 147 (1996).

[61] Liivak, Oskar, *Overclaiming is Criminal*, Cornell Legal Studies Research Paper, 16-35 (2016).

- progressive deterioration of overall patent disclosure quality despite growing numbers
- patent trolls
- creation of overlapping rights
- massively high non commercializable patents
- the tragedy of anticommons
- complex claim construction issues
- increased invalidation of patents[62]
- antitrust implications due to increased settlements, cross licensing and patent pools owing to uncertain or probabilistic patents[63]

iv. Lack of assertive & regular harmonization between countries

Being a subject of growing importance, governments have shifted significant effort and resources towards national policies on patents and innovation. However, very little attempt has been made in recent times by countries to come together to harmonize the practices and settle open issues according to present developments in the system. Many patent offices have individually implemented successful programs which have not spread their benefits to other patent regimes due to lack of harmonization.

In his report, NK Mohanty, Controller of Patents at the Indian Patent Office, has provided noteworthy details on the historical and legal progress of global patent harmonization[64] and highlights how much more needs to be done in that direction. It is appalling to note that after the TRIPS agreement dating back to 1995, not a single substantive harmonization agreement between countries has been concluded. Accordingly, I resonate with the views of William Barber who said, "There is much to be done to streamline patent processing around the world, and the Offices are way behind the times."[65]

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[62] Henkel, Joachim & Zischka, Hans., *Why most patents are invalid - Extent, reasons, and potential remedies of patent invalidity (WITHDRAWN)*, 2015 ACADEMY OF MANAGEMENT PROCEEDINGS, (2017).
[63] Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 JOURNAL OF ECONOMIC PERSPECTIVES, 75 (2005).
[64] Nalini K. Mohanty, *The Advantage/Disadvantage of the Harmonization of the Patent System*, (2008).
[65] William G. Barber, *Global Patent Harmonization: An Idea Whose Time Has Come*, 44 INTERNATIONAL REVIEW OF INTELLECTUAL PROPERTY AND COMPETITION LAW, 1 (2013).

C. PROPOSED ACTIONABLE SOLUTIONS

In view of the above discussion, I would like to submit the following proposed actions/policy items that I believe shall ameliorate the condition of the present system which is quite desperately in need of some constructive changes. However, the proposed suggestions are not exhaustive, and some of them are postulates which may require further research and modelling to predict the nature of output on implementation:

<u>Changes of Procedural Nature</u>

1. The default 18-month publication period should be reduced to bare minimum period such as in days or instantly after filing the complete specification. This will enable the researchers and patent applicants while weeding out submarine patents and patent trolls at the same time.
2. The deadline for international filing to be increased to at least four years instead of one.
3. There should be a mandatory burden on the applicant to disclose known prior art references to the patent office and establish novelty and non-obviousness therewith across all patent offices. This will make the examination faster and effective, and the resultant patent stronger.
4. The Patent Prosecution Highway is a productive initiative and should be further encouraged and harmonized seamlessly across all participants of Paris Convention. On similar lines, mechanisms have to be installed that allow examiners to get information even about the refused patent application and be able to save time on search to find relevant prior art if already done by another office elsewhere. One of the ways is to put the burden on the applicant to share that information, as imposed by the Indian Patent Office. However, the Indian system requires frequent and repeated updates which is unduly taxing on the applicant but that can be substituted by a single update by invitation just before the examination begins.
5. All countries should cause to globally harmonize and adopt the 'Third Party Preissuance Submissions' model, which has been seen to yield positive results in the USA. A report on the system's impact showed that it was regarded to be useful by ~52% of surveyed USPTO examiners. It also has shown to extend the benefit of

strong non-patent prior art references being highlighted to the examiners, which is not an area of strength with the databases used by them.[66]

Changes of deliberative and systemic nature:

1. The disclosure standard should be escalated beyond the 'enabling' and sufficient threshold to a working model equivalent. This could even be executed by encouraging virtual models submitted in forms of videos of working or computer simulations,[67] which are likely to provide a more nuanced understanding of the invention clarifying the scope and working of the invention.
2. Extending recognition of patent grant in single country to all others subject to exceptions reserved by countries for local validation to help safeguard sovereign interests, similar to copyright. This will help eliminate duplication of examination thereby reducing pendency at the patent offices and substantially saving cost and time of the applicant. The apprehension of a weak patent granted by different jurisdiction can be addressed by creating controls such as substantive examination by local patent office before infringement litigation.
3. The world is observing a growing discussion over doctrine of equivalents/pith and marrow approach in patent litigation. If regulated and harmonized with clarity and detailing, it could enable a predictable approach in patent litigation and claim construction, thereby strengthening the patent system
4. The governments must establish and harmonize a robust system involving standard essential patents and FRAND terms for licensing, not just for the ICT & advance technology industries but for others too.
5. The governments must also play a role in engineering and incentivizing models bridging the interests of both sides of the patent fence to balance the IP incentive and anti-trust principles. This is of particular relevance in the pharmaceutical industry, i.e. the branded/innovator drug companies on one side and the generics on the others, to ensure balance of rights. Some measures have been incorporated in legislation like compulsory licensing, price control etc. and some adopted within

[66] Sheldon, Brianna Lynn, *An Assessment of the Impact of Pre-Issuance Submissions on the Patent Examination Process* (2013).

[67] Rajendra K. Bera, *Patent Examination Reforms*, https://www.uspto.gov/sites/default/files/documents/etacomment_f_bera_13jan2017.pdf.

industry such as Gilead Pharma multi-non-exclusive licensing model,[68] but none have translated into a solution-based model.

Whether one or more of the above suggestions are implemented, is secondary to the need of the political will required to be shown by those who can shape and influence policy for the better. If this need is disregarded, the dilution of the patent system will continue down the slope, every step of which can have a domino effect thereto. It is thus my hope that the concerns highlighted are taken up for deliberation and the patent system gets revised, significantly and soon.

Disclaimer: The opinions provided here are so done in personal capacity. If there are any differing views, errors or inconsistencies I request them to be pointed out.

[68] Murphy Halliburton, *India and the Patent Wars: Pharmaceuticals in the New Intellectual Property Regime*, Cornell University Press, (2017).