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Ethics: A critique on biomedical intellectual property law from a marxist perspective

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Abstract
The Pandemic like any other great disaster before it has left us a trail of bodies, it has also shown us the utmost importance of medical care in sustaining civilization. Standing on this moment of realization an effort is made to reflect on the weakness, inequality and unethical practices present in medical care and trace the degree of involvement of Intellectual Property Law in creating these circumstances. This article will examine the relation between Intellectual Property Law, Science, Information and especially Medical Care and the effect of that relationship on human life. This examination will be conducted through the viewing glass of Marxist thought and with the aid of the Materialistic method and all the issues arising from such an examination which are in conflict with the "human" idea of justice and ethics, taking the two words in their widest and simplest sense.

Keywords: biomedical intellectual property law, marxism, ethics

Introduction

Commercialization took its shape and power after the decline of the Feudalist society and it is the invisible backbone of our current social order. There is no aspect of human life left that has not yet touched by the commercial process, each and every faculty of our life has been shaped and forged by it. One of the most important creations of the commercial process is the notion of Intellectual property, it has grown to influence information, law, science and art. Like every other major idea before and after intellectual property it has also been instrumental in shaping our material reality more than we ever have realized and also shaping itself through the process. A revisit to this idea is necessary in our times, to understand the idea of Intellectual property itself and the law governing and shielding it. The analysis of any principle is meaningless if it were done outside of the context of the place and time in which the principle acts, therefore every idea is to be evaluated within the stretch of history it exists and material conditions of that particular time. The main concerns which arise from such evaluations appeals to our sense of justice, our sense of ethics. These concerns will be addressed and evaluated here but the solutions are none the less radical.

There are numerous schools of thought from which both praises and criticisms have been levelled but the most prominent among them is the Marxist school of thought. The accuracy and detail of Marxist critiques is owed to their most famed tool of interpretation, the method of "Historical Materialism". The sphere in which law and science operate is not within courtrooms or academic circles, law and science live among the mundane activities of everyday life, among the commonest of common people. Taking this principle into heart intellectual property law must be also evaluated not within the limits of corporate boardrooms and laboratories which employ the brightest minds on the planet but within the ambit of how much it has affected the lives of the ordinary people who have little participation in the great innovations of mankind. This notion is particularly relevant in the field of biomedical intellectual property law as it has the most direct impact on human lives. The issue on whether biomedical intellectual property should be exactly treated as other pieces of intellectual property is of relevance. Does the fact that it is the most directly helpful field of science warrants special treatment and legislation specially tailored for it. Does the application of intellectual property and the ethical issues regarding its application hinder the growth and innovation in the field of Bioscience. But as there are criticisms there are also numerous theories which justify and glorify the existence of intellectual property law. The existence and confrontation of both justifications and allegations have also given way for certain revisional policies. Policies which believe the current system of law will become sufficient if certain changes are made and policies which believe the whole corpus of intellectual property must be re-written. The merits of all these different thoughts must be analyzed and the impact of intellectual property on science, innovation and civil life evaluated.

The Question on Ethics

The connection between ethics and law houses an array of different opinions, some argue ethics is the foundational idea from which law came into being and some state that law and ethics are two separate beings with enough differences between them. The issue on the identity of law and ethics is not of concern here but the view that grave issues of humanity should be of relevance to both ethics and law is shared. Since ethics carries with it more fluidity in its core, it is the first to recognize issues and to interpret them. The area of Bio-ethics is a constant presence in the field of biomedical intellectual property to identify ethical issues. Bio-ethics is the application of principles and tools in the field of bio-sciences, therefore it is specialized to handle issues arising from the special nature of that field. There are numerous issues which are caused by the influence of intellectual property but the most pressing of the bunch has been addressed by bioethics. They include issues regarding the consent of those who are involved in such research, the inherent inaccessibility to health facilities and benefits

caused by scientific progress caused by intellectual property and the degradation of human dignity and human genetic integrity.

The World Intellectual Property Organization (WIPO) stresses that some issues regarding bio-ethics is not dealt with in the international level [1]. It is also important to point out that the availability of information regarding researches and product development are made available in a disorganized manner. The information disclosed through the public system is given in such a manner relevant data such as information regarding test results cannot be evaluated effectively to ascertain bio-ethic issues. This is one of the first issues raised by WIPO – Transparency. The disclosure of information regarding patentable commodities are mainly done through documents which are made available in the patent office system. The sheer volume of such information makes ethical scrutiny a near impossible process. This need for ethical scrutiny is essential as it has been pointed out by a study dating far back as 1986 which found that studies done by institutions regarding effectiveness of drugs were largely influenced by commercial interests. The study shows that drugs which were produced by firms which sponsored the research of such institutions always were given better results almost every single time [2].

The most commonly and widely discussed ethical issue concerning bio-ethics is the issue of consent. The verdict in *Moore* v. *Regents* had opened up the scope of using genetic materials as inputs for research and patentable innovations. When the use of such genetic material is allowed it opens up a question regarding consent. Even if there is clarity in consent while obtaining genetic material from the subject for treatment and subsequent research, does that consent extend to patenting of the end product of such research. This question is answered in favour of the developers by view of the established legal position. The validity of such reasoning should be questioned in the rights that it takes away a person's right to their own body in favour of commercial interests and in a sense alienates man from his own autonomy. This issue is only a secondary one when we consider the fact that even primary consent is not properly obtained in most cases. To cite an example from a report of the *observer,* where a British doctor who enrolled a old lady in drug trial without her consent. She was given a lot of medications and was subjected to lot of blood draws which turned her arms to purple. The only condition the women had and for which is sought treatment for was elevated blood pressure. On further investigation it was found that pharmaceutical giants Astra Zeneca, GlaxoSmithKline and Bayer were involved in giving medical practitioners such as this doctor a "Finder's Fee", an incentive in enrolling patients in clinical trials [3]. At the time of this incident an amount of £1000 was given as Finder fee for one patient and the alleged doctor had received an amount of £100,000 over five years as Finder's fee. This incident is in no ways a isolated incident, the amount of £1000 has prompted many medical professionals to turn a blind eye towards consent. The incident took place in 2003, it is logically deducible that finder's fee now in the market is much more than £1000 meaning that unethical practices will also increase in severity in proportionate to the Finder's fee. The evidence for such a situation is present in India, according to the data collected by Swasthya Adhikar Manch (SAM) the number of people who died during drug trials and research between January 2005 and November 2017 are 4967. The number of cases where the families were compensated was only 187, SAM claims India 's large population of poor people who are unaware of their own rights are being exploited for drug trials which saw a dramatic increase after 2005 when the Indian Government relaxed testing laws [4]. The practice of forging consent forms is also a prevalent practice [5] which makes the issue of consent an insidious danger, especially in a country like India where a large portion of people are illiterate and economically desperate which will make them prime candidates for being used as guinea pigs. There is presence of laws in the field of intellectual property field which makes consent mandatory such as the article 6 of the Universal Declaration on Bioethics and Human Rights (UDBHR) which makes express prior consent a mandatory requisite for scientific research. The interest of tribal communities and indigenous is at the heart of Convention on Biological Diversity (CBD) which made prior informed consent a necessary condition to access genetic material of plants, animals or microbial origin. The laws are still not effective in tackling ethical issues present in intellectual property, such as in the case of the Hagahal people. The Hagahal, an indigenous community in Papua New Guinea carried within their blood a retrovirus that normally caused T-cell leukemia but members of the tribe were immune to it. Researchers patented a cell line developed from the blood of the Hagahal which caused a long line of debates concerning its ethics. The debates ended as debates leaving no changes to the world. The only thing which could make a change, the word of law was silent in this case. The Indian scene is not that much different, but on the other hand the graded inequality present in the Indian society makes things easier in this regard. A study published shows that informed consent and other ethical practices were not strictly followed when health interventions were carried out within the Scheduled Tribes community [6]. The Indian society or law is silent regarding this as the inequality embedded within the society makes it not worth our attention and sympathy.

The Issue of the Neglected

"The law makes both parties equal on paper…..the real economic position of both- that is not the law's business"

This is the observation about law made by Friedrich Engels in his famous work "*The Origin of Family, Private Property and State"* almost 140 years ago, it is safe to say that there is no change to this fundamental aspect of law. The affairs and power dynamics happening behind the jurist's curtain has still not found a way into the letter of law. Intellectual property law has still kept a blind eye towards the most grueling effect it has given life to – the issue of equality on benefits and access. This problem qualifies to be more than a simple ethical issue on paper, it is an evil which still ravages the less fortunate. The issue has been raised in many times in relevant stages. There are various international conventions and declarations which has put forth legal principles regarding this. The UDBHR put forward the recommendation that third world countries should be given special attention, but these principles and attention has little to no influence on the state of things. The increase of patenting on the field on bio-sciences is the evidence of the realization that intellectual property in the particular filed guarantees minimum commercial benefit. This increased proclivity to commercialize health sciences influences research as the research which is more profitable is funded

and encouraged then the research which can actually save lives. This particular trend can not only influence innovation (which will be discussed later on) but also automatically creates the problem of access, as the economic divide which separates people are carried over to their availability of healthcare.

The law is not at all innocent in this matter as it can be seen as the initiating force in this. The increased amount of patenting is attributed to three factors [7] – the first one is the research done by Stanley Coher and Herbert Boyer which made transfer of DNA possible. This led to stunning developments in the field of bio-science as it tremendously helped with the understanding of microbial organisms and in vaccine development. The second reason is a legal one which also came as a result of the scientific research cited as the first reason. The possibility of patenting a living organism was opened up as result of the case *Diamond* v. *Chakrabarty* which was decided by the U.S Supreme Court. This judicial decision gave birth to a new commercial possibility in the country attracting lot of potential investments, therefore the same stance was later incorporated into Europe. The Europeans mimicked the legal position in order rob the United States of any competitive advantage over them. This is an excellent example which provides truth to the claim that intellectual property laws are liberal in an industrial responsive manner. The role of the law is not limited to this only, the third reason is cited as a handful of legislative actions which originated in the United States. The most important of the lot is the Bayh-Dole Act and Stevenson-Wydler Act which enhanced the commercial impact of intellectual property. The Bayh-Dole Act allowed universities to obtain patents for the fruits of their research even if the research was funded by the public. This led premier educational institutions to reverse their attitude and policy towards intellectual property as in when Yale university which had stated that patenting of medicines which could be used for public good must be avoided was seen sharing a patent with Bristol Myers on an anti-AIDS drug. This drug is believed to be in disadvantage of eight-thousand people who die in Africa each day from AIDS [8]. The Stevenson-Wydler Act allowed Government Laboratories to obtain patents for their research. These legislative policies were adopted by most of the western countries then by most of the world due to international treaties and industrial pressure. Laws such as these alienate man from the fruits of their own labour and contribution by allowing such public research to be patented.

The ethics of what to be patented and what should not be patented is a problem which is intimately linked with the field of bio-sciences. The ethical dimensions and views in regard to this issue is pretty clear but the problem is that as always ethics has failed to amass political action in this regard. The World Intellectual Property Organization (WIPO) has itself stated that the patenting and licensing of diagnostic tools raises ethical issues. It also takes a look at the ethics behind the means of enforcing such rights through practices such as restriction technologies which are viewed as strictly unethical. The laws in many countries differ in regard to intellectual property but in the case of medical sciences there is a tendency to restrict the things that can be patented, this is a good thing but does it always work. It is observed that due to poor wording most prophylactic, diagnostic and therapeutic inventions and diagnostic tools can be patented in most countries [9]. The reason for poor wording is due to the difference in fluidity between law and science. The rigidity in law is part of its character and function law can never accommodate changes as science does, the field of science undergoes changes by the minute which in turn influence intellectual property. The law which governs this intellectual property cannot change itself according to its subject matter, but this rigidity of law is necessary for the serious role it plays in civilization. There is room for improvement and we must improve to properly articulate the facts and developments in science to make our legislations effective.

The act of improving our legislations and policies is of no use, if the law itself serves no purpose to achieve equality. The philosophy of Marxism purports that the strive towards equality is one of the basic instincts of mankind and the struggle for it is necessary as long as civil society exists. This notion of equality or the effort to achieve equality is lacking in the field of intellectual property. The number of people who have the inability to access lifesaving drugs is up to 2 billion or almost 30% percent of the world's population and 10 million people die because of this issue [10]. The highest number of people who face this problem are from developing countries and their problem is not only caused by access but also availability. There are numerous tropical diseases or Third-world diseases from which millions of people suffer and the reason they suffer is because drugs which can save their lives are not profitable enough to be developed. People of the developing countries who are poor and belong to economies ravaged by war, civil unrest and monopoly of western corporates simply don't have the money to purchase patented drugs which are expensive. The investments put forward by sponsors are in expectation of profit which will be achieved by exercising their absolute rights obtained over the drug they produce, by selling them at a profitable margin because only they can do so. This for-profit approach simply makes developing drugs for Third-world diseases a no-profit affair. The people and governments of such developing countries found a way around this, even though it only offered limited help. The example for this can be found in India and its once prosperous market of Generic medicines, some countries like India didn't offer product patents especially products relating to bio-medicine. This enabled India and countries alike to manufacture Generic variants of patented medicines which can be made available in a rate which is affordable to its poor population. This industry of Generic medicines and the act of reverse engineering came to a halt when the TRIPS agreement came to force. The TRIPS agreement a minimum standard agreement compelled countries who are members of the WTO to provide product patents along with process patents. This was done to maintain a minimum standard of intellectual property and the law aimed to protect the interests of those who are concerned with such intellectual property. The concern for the life of nearly 2 billion people never made the cut for legal protection. If we imagine for a moment that this issue regarding availability is solved, if we imagine a government has procured the means for saving the lives of its citizens, even then only half of the problem is eradicated. The moment the problem of availability ends the problem of access sets in, as seen in many African states where drugs were made available through charitable actions. The poor infrastructure and weak distribution system present in most Third-world countries

made equal access an impossible feat, the economic divide between section of the society made the task an even harder one.

There have been attempts to achieve equal access made by governments such as Advanced Market Commitments or AMC's, through this method governments and other non-profit organizations incentivize researchers to develop new drugs by agreeing to purchase them if the developed product meets requirements. The effectiveness of this method, however have been questioned as the very nature of medical research is uncertain. The promise of incentive depends upon the possibility of the meeting of pre-determined requirements thus it is limit upon the effectiveness of the system [11]. Another system in place in the field of bio-medical intellectual property law is the system of Health Impact Fund (HIF), under this system developers can register their property with the HIF instead for opting for ordinary intellectual property rights. The rewarding system in place is dependent on how much their product has contributed in reducing the Global Burden of Disease (GBD) index, however this plan is also not without flaw. The measurement upon the effect of the particular product in reducing GBD cannot be accurately completed as the reduction can be the result of not only the drug but multiple other factors which are at play [12]. There are remedies which can be done through the current system of intellectual property law that is through licensing. The provision for compulsory licensing under section 92 of the Indian Patents Act is such a measure, but there are pre-requisite conditions for using the power of compulsory licensing. The power of compulsory licensing is most used upon intellectual property from the field of medicine. There is also a practice of licensing called "Humanitarian Licensing" widely adopted by universities, they follow broad policies and provide license according to necessity. The existence of such practices and effort made to devise them is comforting but nevertheless such practices can only qualify as "charity" and remembering the words of Mary Wollstonecraft "*it is justice not charity, that is wanting in the world".*

On Information as a Commodity

The notion that information or intellect can be considered as commodity or property is at the heart of the concept of intellectual property law. The fundamental aspect of property is that property rights can be exercised over it, thus shielding it from rest of the society. This exercise of individual sovereignty over intellect or information makes it similar to any other property like land, goods and other material possessions. Marxism as one of the most prominent schools of social critique has its own view on the commodification of information and on the lines of thought which defends such commodification and thereby The notion that information or intellect can be considered as commodity or property is at the heart of the concept of intellectual property law. The fundamental aspect of property is that property rights can be exercised over it, thus shielding it from rest of the society. This exercise of individual sovereignty over intellect or information makes it similar to any other property like land, goods and other material possessions. Marxism as one of the most prominent schools of social critique has its own view on the commodification of information and on the lines of thought which defends such commodification and thereby defend intellectual property.

The initial position of Marxists regarding information was that it was a mere surplus of production, they considered it to have only mere influence on the forces of production which shapes the society. This stance has however changed, information cannot be viewed merely as a surplus in today's society. The role of information on production according to Marxists can longer be seen as mere surplus. The high dissemination of information in to the society has been observed to cause deskilling and therefore information is means of capitalist control. These pessimistic views regarding information is not the only result out of the Marxist thought, Marxists have been the first to recognize a very unique property of information- it's malleability [13]. The inherent flexibility present within information and its ability to spread to the wider and lower sections of the society provides the subject with a control over its purpose. This recognition made information a potential tool to counter the hegemonic control of the capitalist society [14]. The increase in value of information has caused it to become a far more superior kind of production than other means as stated by Marx himself that in every society a specific form of production which predominates the rest will exist, the rank of other means pf production will depend upon their relation with that specific form of production. One of the fundamental things that production depends upon is in today's world is the effectiveness of labour more than the time or amount of it. The effectiveness of labour is hugely dependent upon the development of science in the particular state of the society, thereby science and intellect become valuable to the current system.

The commodification of information has brought significant changes to the market situation. According to De Long and Froomkin, information as a commodity challenges the three pillars of the market: Excludability, Rivalry and Transparency. The immaterial nature of information has challenged excludability and there upon undermining the concept of rivalry. The high-tech market of the current world made it difficult for seller and buyer to have all the relevant information thus challenging transparency of the market [15]. A resource undergoes a huge change when its availability is in question, the interests of capitalists is best served by treating information as a scarce resource. The idea of intellectual property is to a degree dependent of the treatment of information as a scarce commodity, therefore it is relevant that cultural hegemony is to be maintained by capitalism in order to preserve the sanctity of intellectual property. This smokescreen has been successfully broken and sanctity of intellectual property has been violated as in with the "free-software movement". The creation of the Free Software Foundation by Richard Stallman in 1985 is in response to the control exercised on the internet. The foundation which was created to stand against this capitalist hegemony has now deviated from the ideas which it was founded upon, however the foundation led to a startling invention, the General Public License or the "Copyleft". The GPL can be applied in every field where the Copyright has applicability that is in books, images and music. Like any other machinery the GPL must also be examined in light of the impact it has created in our material circumstances. The testament of the GPL's success is LINUX – the most popular product which rolled out of the GPL system. The popularity and success of LINUX is not only due to its functional characteristics but also due to another unique feature it's Accessibility. The immense

following the software has gathered identifies this quality with the product itself. This fundamental property of LINUX embodies the people's reaction against the commercialization of technology and their frantic attempt to regain attempt. This identification of a feature with the product itself, this attempt to hold a certain specificity of a commodity in a higher value than the product itself is not a mere spontaneous reaction but rather a huge historic process at work. LINUX has aided various Third World countries in developing their technology infrastructure from almost nothing and still plays a active role in such environments. This level of accessibility not only brings forth equality but also unity – a software for all, a software for free, a software which can be changed free of restrictions, the ability to pass it over to another person after improving it further – all of these were not achieved naturally but by counter acting the basic norm of intellectual property it's exclusivity. This counter-action and struggle unites people from all regions, backgrounds and classes, thus bringing forth the sense of "Community", this sense of "Community" is the greatest achievement of GPL and the movement against commodification of information.

On Innovation

The progression of mankind from ancient times to today is a result of progression of science. The development of human lifestyle is synonymous with our scientific growth, but can all developments of science be viewed the same. The answer is no according to Thomas Kuhn, who is considered as one of the prominent scientific philosophers of the twentieth century. In in his most famous work "*The Structure of Scientific Revolutions"* he introduces the concept of the "Paradigm Shift", in simple words science is not a field of linear developments. The lifecycle of scientific thought is in phases which can be classified into normal science and scientific revolutions. These revolutions or paradigm shifts change the foundations upon which humans view the world around them and makes it impossible to evaluate science with the scales of the past. These revolutions alter the assumptions upon which future research is conducted and when these revolutions take place they change society along with science. Every field of human endeavour is connected with each other and all have significant impact upon the forces of production prevalent at that point of time. This connection works both ways because every body of knowledge is in turn influenced by the social forces operating in society during that time, an example for this was the stunning development of medical science experienced during times of the world wars. So it can be understood that paradigm shifts which are the epitome of innovation are not only a result of scientific efforts but also a result of favourable circumstances created by other societal forces with which it shares its time. The role of law cannot be neglected in this regard, laws are the masters of conduct and conduct is the creator of results. The matter to be examined here is the role of intellectual property law in breeding and facilitating these brilliant moments of innovation.

One of the oldest arguments in favour of intellectual property is that it provides the necessary incentives which provides the motivation. These motivations which are of a financial nature leads to innovation and development of the science as a whole. The merit of this argument needs to be examined and there is no better time to do so than in the time of this pandemic, when all of the world looks upon science to become their saviour. The first thing which one has to understand about innovation is that it doesn't happen out of nothing, it is not a lonely moment of brilliance nor a once in a time genius brain in work, it is the culmination of long time effort, it is simply the act of standing upon the shoulders of the ones who came before you. Using the terms of Thomas Kuhn, paradigms shifts take place on the foundation laid by normal science and it can only occur with the sufficient input of information and resources. What happens if these inputs become a scarce commodity or a private property and access to this property is severely limited by law. In these circumstances it is safe to say innovation will be a hard thing to achieve and intellectual property has such a similar effect. The promise of incentives not only creates motivation to achieve innovation but also a stronger impulse to safeguard it. This inhibiting effect of property rights upon innovation was first pointed out in a famous scientific principle known as the "Tragedy of the Anti-Commons" [16]. The theory of anti-commons was developed by Michael A Heller and Rebecca S Eisenberg in 1998 mainly focusing upon the effects of patents in deterring biomedical research. The title of the paper is a play on the much older concept of "Tragedy of the Commons" developed by Garrett Hardin through which he argues that common ownership of scarce resources can cause underutilization of the same. Heller and Eisenberg establish the counter point to Hardin's theory, through their paper they put forward the fact that too many property rights can lead to underutilization of resources and impeding of development. The argument rests on the demand that the system of giving patent rights on research inputs must be prohibited since this kills the chance of any further development and innovation. An example given by Heller and Eisenberg is patents on concurrent gene fragments, when a product requires access to multiple concurrent gene fragments it can even stop its development. The fact that this theory and its influence is dangerous to the market responsive nature of the field has prompted many to undertake studies to disprove the theory. The numerous studies conducted to disprove the theory of anti-commons have not been fruitful or effective even though they claim to be [17]. On the other hand there important studies which prove the theory to be correct and sheds light in to the circumstances created by it.

A study conducted by J walsh and W Cohen [18] it was observed that there was widespread infringement prevalent in the field of biosciences. This study focused on the fields of genomics and proteomics which had large level patenting activity and the study collected data from 1000 researchers. The researchers in order to continue with their research had to infringe intellectual property laws and violate patent rights because otherwise it was impossible to obtain the access to information which was crucial to their research. This shows how widespread enforcement of property rights has led to its own demise and this problem points out a flaw in intellectual property law. The flaw is not the failure to enforce and protect patents but the flaw of enforcing liberal market values into the field of science which ultimately inhibit progression of knowledge. Another problem pointed out by this study also need to receive attention, that is the influence of intellectual property laws in selection criteria of research projects. The study showed that 7% of researchers considered that patent free inputs was important reason to

choose a project and 3% considered to much patented inputs was valid reason to abandon a project, even though the numbers are low they will only keep on increasing and will be different in different legal systems. The area of science is also important when it comes to the anti-commons problem, a study conducted by Mildred Cho confirms the presence of anti-commons problem in the field of DNA diagnostics [19]. According to the study the act of patent infringement is prevalent in order to conduct and sustain research. In most research areas basic research patents are not enforced because product development is a long way off, but in the area of DNA diagnostics enforcement becomes a profitable affair. In light of this study, it is said that patenting activity in the area of DNA diagnostics has a inhibiting effect on the developments of technological capabilities and certain kind of knowledge which have the potential to save lives [20].

The importance of DNA diagnostics to health care is growing from day to day, another field of similar importance or even more importance which also suffers patent induced problems is the field of pharmaceutics. The incentivizing effect of patents have led to high number of efforts to develop new drugs which is a welcomed effect, but the problem lies like always in the procurement of capital. The investments for such developments can only be obtained on the promise of profit and patents provide the way for that promise. This incentivizing effect of intellectual property rights has given birth to a new problem – the problem of "me-too" drugs. These drugs which are different in name, colour, shape, and size have the same therapeutic effect of an already existing drug which has patent rights of their own. It is stated that between 1990 and 2004, 77% of the drugs approved by the USFDA were duplicative drugs or me-too drugs [21]. The emergence of this trend is not a display of scientific innovation but commercial innovation to exploit the intellectual property system. The law becomes helpless due to its ignorance of the material conditions created by the law itself and since humanity progresses along with the progression of science, intellectual property law might well be the reason for impeding the growth of mankind.

Community

John Locke, who is considered to be the "Father of Liberalism" believed that a man through an act of appropriation upon a natural resource gains a right of ownership over it, that it is fruit of his own labour [22]. This idea was later developed to be known as the "Labour Theory of Property" which establishes that a man's right to property originates from his exertion of labour upon a resource. This rule of individual property is also applied in the field of intellectual property law and is used to justify the existence of intellectual property. This principle serves as the basic norm from which the intellectual property rights are sought and are enforced. When we view biomedicine or science through this narrow lens, we encounter a problem. The problem is that scientific research is a communal enterprise or in other words new developments are impossible without relying on the footwork laid by the prior generations. Earlier it was shown that how intellectual property rights inhibited innovation in certain fields of science and now we must see how it effects the "Communal Spirit" of science.

A study conducted by Eric G Campbell which primarily focused on researchers working in the field of genetics provided curious information [23]. The study showed that 27% of geneticists withheld information such as methods, instruments and results from fellow scientists to protect the interests of their industrial sponsors. The same study also showed that 21% of geneticists withheld information to protect the commercial value of their research. The primary observation from this is how intellectual property law and the commercial interest that it protects influence the conduct of citizens and how it forces a person to modify their conduct to meet the commercial interests of their sponsors. The effect of such practices not only effects innovation but also the communal spirit of science itself. The communal spirit of science is not a mere idea or value, it is an actual material force which has significant effect on the realm of scientific research. A force which was widely developed and examined by the school of "Scientific Communism" and one of its chief proponents Robert Merton. He believes that intellectual property destroys the communal values that promote science and knowledge is a gift for all. Merton claims that science stands upon four pillars: Universalism, Communism, Disinterestedness and Organised Scepticism and intellectual property rights effect all four of these pillars especially communism. The basic principle behind the pillar of communism is that all substantive findings of science are a product of social collaboration and are assigned to the community [24]. Merton and his studies changed the public perception of scientific achievements as individual fruits of labour and showed that they were a product of whole community or structure. The interdependence of scientists within the community to carry on research and to produce results led Merton to state that scientific knowledge was "a common heritage in which the equity of the individual producer is severely limited" [25]. The process of innovation and discovery needed open access and collaborative effort and due to that Merton argued "the communism of scientific ethos is incompatible with the definition of technology as 'private property' in a capitalistic economy" [26]. The role of the law in establishing this individualistic and private property oriented approach in the scientific realm is important. The American Supreme Court in the case of *United States v. American Bell Telephone Co.* laid down that the inventor is someone who has discovered something of value and such invention is his absolute property, he can also withhold the knowledge of it from public [27]. This intervention of law and other entities in scientific research has amended the structure of scientific research in to a form which can be easily manipulated according to commercial interests. Analysing such effect in respect to the biomedical field, the study by Richard Davidson in respect 107 published papers should be examined once more here, it was found that the drug created by the sponsor of the research always did better in every single case [28]. This when viewed under the circumstances and conditions created by our economic and legal system cannot be taken as a mere coincidence. This influence of commercial interests are shown in an another study by Stelfox in relation to published papers concerning a particular drug, where it was found that 96% of the authors of favourable articles to the drug had financial connections with the drug manufacturer [29]. These examples are not isolated incidents or stray circumstances they are a product of a system which is now existing in the realm of scientific research. This system of commercial scientific research is forced upon all through various international conventions and institutions such as the IMF and WTO in the name of free trade.

The issue in front of us is to change this structure and to free scientific research from the commercial interests of the people who are funding it. This is where the scientific community should take initiative to do a particular function it has long reluctant to do and that is to take "political action". As laid down by Marx himself "Philosophers have only interpreted the world, the point, however is to change it" [30], this principle has been taken into heart by scientific communism. The major idea put forward by it is the social reorganization of scientific research which can only be achieved through political action. James R Brown points out such an initiative by an group of editors known as the "Uniform Requirements for Manuscripts Submitted to Bio-Medical Journals", which tries to prevent the use of the publications and journals as mere tools for achieving economic benefits. The independence and un-biased perception of the paper is ensured by enforcing certain conditions for publication and the main ones are:

1. The full disclosure of authors in regard to any financial ties which might bias their work
2. Researchers should not enter into agreements that restrict in any way their access to the full data, nor should they be restricted in contributing to the interpretation and analysis of that data
3. Journal editors and referees should similarly avoid conflicts of interest. in the peer review process [31]

These initiatives to take political action are far away from tackling the already existing practices prevalent in medical research which are un-ethical in every sense of the word. The principles put forward by scientific communism provide radical but none the less necessary measures in our current times.

Scientific communism and its principles require attention and gains importance in our times especially in regard to the field of biomedicine, because this field carries the potential to save lives. Scientific communism tries to achieve the perfect stage of "Socialized Research", where like in the view of Merton everybody can enjoy its benefits. This strive for equality puts forward the suggestion that

- Intellectual property rights especially patents should be eliminated from the field of medical research
- Adjust public fundings to the appropriate levels [32].

James Brown points to the example of the success of Canada when compared to the United States in regard to the public health system [33]. After considering all this we may raise the question of motivation, in the absence of the patent system in medical research how will we achieve motivating effects to boost innovation. The answer is some what simple and obvious – financial motivation isn't the only form of motivation. The thrill of curiosity, the promise of good salaries and the pursuit of peer recognition supplies necessary motivation to achieve innovation. We must look back and see that the most brilliant works in physics, maths and evolutionary biology are all patent free.

The attack on the communal spirit of science is achieved through a different avenue as well, a serious threat also to the innovative process of science. Science is a process in which the result is achieved through a continuing cycle of trial and error, this experimental nature of science is necessary to its existence. The use of patented material or materials secured by intellectual property law for academic purposes might some time prove to be necessary in the process of scientific enquiry. This academic or "non-commercial" use of patented materials now lie at a legal grey area, even though in a traditional sense intellectual property law offers protection against the commercial use of materials. It is observed that this narrowing distinction between commercial and non-commercial use is resulting in the decreasing scope of experimental use [34]. The legality of experimental use was first laid down in *Whittemore* v. *Cutter* in regard to common law [35], this judicial view in favour of experimental use continued. The courts used the help of William Robinson's "*The Law of Patents for Useful Inventions"* to rule in favour of experimental use and it soon became the backbone of the experimental use defence [36]. The importance of experimental use of science was recognised as it satisfied curiosity, amusement and was necessary to carry on enquiries and did not in any way infringe intellectual property rights. This view of experimental usage didn't last long and soon enough the distinction between commercial and non-commercial use blurred. The main reason for the change of opinion was traced to the increasing commercial nature of scientific research [37]. The beginning of such change can be found in the judgement of *Madey* v. *Duke University*, duke's use of patented laser technology for enlightening students and faculty was in the eyes of the law a commercial application [38]. The view and application become narrower and even stated that intellectual property law left no room for any excuses for infringement even experimental use in *Embrex inc.* v. *Service Engineering Corp* [39]. This cutting down of the so called "excuses" can lead to the universities which are few havens of public funded research to be handicapped. If materials and procedures necessary to investigate a particular theory are strictly patented, then in some cases it can lead to the tensing up of the underlying theory themselves [40]. This effect of law which can cause the mummification of scientific theory itself must be seriously discussed and evaluated. The restriction of scientific inputs in the name of intellectual property rights can lead to the dying out of scientific enquiries into the development of alternative theories. This can lead up to the enforcement of a unifactorial approach to science on everyone and will only serve to reinforce the commercial interests in the field of scientific research. The role of law in protecting the commercial interests embedded in scientific research can lead to the death of the communal nature of scientific research by a thousand cuts and can kill the next major scientific paradigm shift in its womb.

On Medical Care

We have seen how intellectual property rights effect the various avenues of our life and science but none are more important than the avenue of medical care. The aspect of medical science has come a great way since the dawn of civilization, from witch doctors to medical professionals, from religious and magic practices to sophisticated surgical procedures based on nanotechnology, we have come a long way. The development in medical science is a huge factor in increasing the average human life expectancy and one of the most important changes it brought into human life was the replacement of fear with care. The act of caring was always present in human history but the material circumstances surrounding our way of life hasn't always supplemented our inclination to take care of each other. The famous anthropologist Margaret Mead said that the first sign of

civilization was a healed femur (thighbone) [41] which could only be possible if the injured person was taken care of by another human being. This identification of the process of giving aid as a fundamental element of human civilization gives us a glimpse of how important mutual aid is to social development. One of the famous figures in the Anarchist Communist movement Peter Kropotkin who was also a prominent naturalist views the act of mutual aid as a fundamental building block to human civilization. Kropotkin analyses the concept of co-operation and care through a scientific view and opposes the idea that of "survival of the fittest" put forward by social Darwinism as the only catalyst in aiding evolution. The theory does not put forth any romantic ideas of love or sympathy has the root motivation of such mutual aid, it argues that such process of care only came into existence due to the benefits it provided for survival. Kropotkin states that "There is an immense amount of warfare and extermination going on amidst various species ; there is at the same time as much or perhaps, even more of mutual support, mutual aid and mutual defence…….sociability is as much a law of nature as mutual struggle"[42]. This element of sociability, of mutual co-operation, of care which has existed alongside the forces of conflict in our society from the time of its birth is also the foundation upon which medical care is build.

It must be asked does this compassionate form of mutual care still exist in modern medicine. The answer to that question is simple and you only need to look around to answer it. Medical care like every other aspect discussed in this paper is not an island, is not an isolated entity but is also the product of the material forces of our times. The time of the Covid pandemic is the time when many of the common folk realized the impact of commercialization upon their local hospitals and many governments were forced to regulate the charges that can be imposed by private facilities and also to control the prices of medical commodities in the market. The pandemic also served as an eyeopener to many governments and societies of their need to facilitate and develop public health infrastructure. Even in the United States of America which has an economy and a culture which embraces capitalism to the fullest extent saw a strong call for affordable medical care and a political backed call for action upon corporate corruption in the medical field [43]. The inadequacy of capitalist machinery in handling the pandemic was pointed out and the solution put forward or the only solution which was possible was a strong movement towards socialism [44]. In this context, in this time of crisis when the masses embrace the once radical, the once unthinkable ideology of socialism is the best time to examine the ideas put forward by the most attacked political philosophy in human history in regard to medical care.

The Marxists view the right to medical care as one of the basic rights of a human being along with his right to free education, shelter and work. The crown jewel of Marxist thought the Union of Soviet Socialist Republics (USSR) recognised the right to free health care in its constitution of 1936 but the most important factor about the Soviet Union is that this right just didn't remain only on paper but acted as the swooping material motivation to make the Soviet health system as one of the most efficient health systems to ever exist. The amount and depth of literature analysing the effectiveness and efficiency of the Soviet public health system is vast and enormous and all of them will tell you one think in particular which contributed to the success of the system and that is ACCESS FOR ALL. The Soviet system was unified and it provided facilities not only in urban areas but also to the remote rural areas as well [45]. The health system was decentralized and focused on the working classes up to the extent that departmental hospitals were established for specific group of workers and also provided specialized care for children [46]. The success of the soviet system is not a "special case" or a product of specific governmental policies, the success of the system was due to the ideology under it was established. The ideology of Marxist health care or which is popularly dubbed as "Social Medicine" was and is still is the driving force behind the health systems in socialist countries. The idea of "Social Medicine" was propagated by Rudolf Virchow but its origins can be traced back to the founders of Marxism namely Friedrich Engels. The idea of social medicine was developed by the process of viewing health care through the viewing glass of the material forces around it. Engels in his work "*The Condition of the English Working Class"* links the various diseases and ailments suffered by the proletariat to the social inequalities under which they exist [47], this aspect of study is necessary to medicine in modern times. The very idea of "Social Medicine" rests upon the premise that the problems of the health system is not merely its individual problems but the reflection of the problems of the existing social order, therefore the solution to the problem cannot be achieved only through medicine but through political action to rewrite the social order. We had seen earlier that the call for political action was a necessary ingredient to free science of its issues, the same can be said in relation to medical care. The main contributor of Social Medicine Rudolf Virchow observed that a good health system incorporated socio-political changes along with pathological treatment [48]. The process of tracing diseases and epidemics to the social conditions which permitted them to come into existence was viewed as dangerous idea which cannot be tolerated by the conservative governments of the time which feared the "takeover" of Marxism and therefore the movement was supressed in Europe. The defeat in its birthplace did not halt the progression of the idea, it spread and flourished in different parts of the world which needed it more than Europe. This idea of socialized medicine was implemented in the Soviet Union by Lenin, in Cuba by Che Guevara and in Latin America by Salvador Allende.

The Marxist view of medicine played an important role in the evolution of modern medicine, it has served the role of the critic during the times of milestone developments. One such example is the view that the "Germ Theory" has been given more credit than it deserves in the development of medical care, Marxists point out that the introduction of better sanitation, better nutrition and improved social circumstances was also a contributing factor [49]. The most important idea to originate from Marxist thought is the analysis of capital in the health care system and how the composition of capital in the medical field produces various complications. The research done by Spanish sociologist Vincente Navarro points out that the health system mirrors the social class structure in which it exists [50], the key factor for it is the aspect of control. The elite class through their capital have a degree of control over the health system by the means of private health organisations, mean while the working class are only represented by the public health infrastructure. This concentration of capital and the responsiveness of the medical system to industrial stimuli

gave way to extensive studies and led to the development of the "Medical Industrial Complex". The effect of such merging of corporate interests with medical care has made the exploitation of illness for private profit a primary factor in capitalist countries [51]. One of the effects of such practices is of our interest and that is the practice of "Patent – Price Collusion" and what it basically does is act as a mode of control to alienate ordinary people from their treatment, from the institution of their treatment and basically of their labour. The law in this regard when observed under the principles of hegemony makes the health system a dispensing ground of hegemony which strengthen and reinforce the capitalist ideology [52]. This tendency of law to reinforce the dominant ideology in the field of medicine and science promote idea which are only consistent with existing social order and will supress any alternative remedies. This effect of law on the health system has caused a peculiar practice to emerge in the medical system which now can be hardly differentiated with the practice of medicine itself and that practice is the unifactorial approach to disease. It is the practice of attributing a single cause of origin to diseases present in the society and the role intellectual property law in this practice is important.

The profitability generated from intellectual property rights plays substantial role in generating or encouraging this unifactorial approach to diseases. As we seen earlier the only research worth investing in is the research that pays you back even more through patent rights, research's which cannot be patented are financially useless. The development and patenting of drugs is there by the most profitable of the bunch and the profitability of such drugs is ensured by promoting them as the only answer. In regard to how to approach a disease or ailment there are two ways: one through drugs and the other through the environment surrounding the patient. Among the above two approaches only the first one is taken and the reason is simple it is the one that can be patented. James Brown cites important studies which show the effect of exercise, diet and other activities on diseases such as diabetes and depression [53]. Brown also notes that the public's tendency to favour easy solutions over putting in effort to improve health through exercise and diet has also contributed to the favouring of drug-based research [54]. The public attitude can be changed if they get exposed to public information regarding the health benefits of exercise and safe environment instead of private advertisements which make miracle claims on drugs, so public funding provides an answer for this unifactorial approach [55].

This is where the control over health institutions become important, a fair share of public capital and working class representation will help to a degree to relieve the stress of commercial medical research which is forced upon us all. This impact of the profitability created by intellectual property rights has made some areas of research non-profitable and has led to their extinction [56]. This diabolical effect of private capital has led to the abandonment of enquiries based on environmental remedies and thus has halted the efforts of mankind to discover alternative theories solely because they are not profitable. The political relevance of such alternative theories is very much important as their scientific relevance, such theories will result in a change of social circumstances which lead to the creation of such diseases. In a 15 year old study of aging as cited by the Department of Health, welfare and Education points out that work satisfaction and happiness was the major two factors of longevity while factors such as medical care, genetic inheritance only came after it [57]. The importance of simple factors such as work satisfaction and general happiness to a long, healthy life points out that how much the system and lifestyle of the humans plays a vital role.

These alternative remedies can only be achieved through the change of lifestyle, a change of social structure which is dangerous to the capitalist economy which needs to reinforce a certain lifestyle on others to sustain itself. The unifactorial approach thus also acts as a hegemonic tool which diverts attention from the capitalist environment and shifts the focus to drugs and micro-organisms. The current medical system also does an similar task of making health care and remedies an individualistic enterprise other than an collective effort. Marxism itself provides a counter to this thought in the form of "Historical Materialist Epidemiology", it is a thought of Marxist health care which focuses on the collective effort. It is the principle which relates death and disease to the political, economic and social structures of the society [58]. It shifts the focus from the Disease-Drug approach to the historical patterns of illness and the environment in which man work and live, thus it shifts the burden from the individual to the society in which he lives. The other main thing materialist epidemiology does is the continuous assertion that mere research is not enough, it upholds the Marxist principle of "praxis", a ideal combination of research and practice that is study and work [59].

The problems caused by intellectual property doesn't end here, the promise of profitability ensured by it has led to another interesting practice in the field of medical care and that is the practice of creating new diseases. The traditional approach of creating the drug for the disease still exists but along with the new way of creating the disease for the drug. Brown cites an interesting example for this practice by a firm named Eli Lilly which promoted a drug called Sarafem which treats the disease called Premenstrual Dysphoric Disorder (PMDD), an mental disorder similar to the already popular disorder known as PMS. The symptoms of PMDD as listed in DSM-IV of the American Psychiatric Association is very vague and common to the point that a person suffering from a bad mood could satisfy. So to find the answer for reason of existence of Sarafem, we must look at another drug, a quite popular drug produced and marketed by Eli Lilly itself – Prozac. The drug Prozac is a widely prescribed antidepressant, which was nearing the time of losing patent protection. The chemical content of both drugs Prozac and Sarafem was same 20mg of Flouxetine Hydrochloride and therefore delivered the same therapeutic effect, the only difference was that Prozac was green in colour while Sarafem was lavender. The need for Sarafem and the difference of it with Prozac was that PMDD was not identical to Depression. So, the reason for the creation of Sarafem was simple to procure the intellectual property rights to Flouxetine Hydrochloride which was soon to be lost through Prozac and the law grants intellectual property rights to a existing entity for a new distinct use [60]. This practice is also the reminder that how intellectual property rights develop innovation in marketing instead of medical research and Sarafem is an example on how clever marketing can create a new disease.

Conclusion

The developments noted here may not appeal to all in the same degree, some may view this as a necessary sacrifice and small price to pay to maintain the equilibrium of the economy, some may not even think this to be a sacrifice and only will see it as the "way of life" created by our "system". The objectivity cherished by academicians can only view this as the side-effects of the intellectual property system but that clouded objectivity which sits upon the high pedestal must be ignored and the opinion 'these are too the effects of intellectual property law' must be given space. How long can the law be ignorant to its own creation, how long will it take to recognise the law is not just the shepherd anymore but also the hand which leads the wolf. The radical idea of abolition of intellectual property rights or implementation of socialism may not be the most attractive or the quickest ideas that can be introduced, but it is of no doubt that the challenges put forth by the times we live in can only be tackled by introducing a degree of socialism in our system. This spirit of socialization or communal ownership is necessary especially in the field of healthcare, the remedies for the ailments of the human body should not be dependent on the economical capacity of the individual. The moment when the availability, accessibility or quality of medical care becomes dependent on the economic status of the individual, all the scientific and innovative developments we boast of will amount to nothing. The integrity of modern medicine will fall beneath levels of witch-craft and sorcery as long as the shadows of industrial greed fall upon it. The time is near for the law to take up the task of exorcising the foul spirit of greed that has possessed the field of medical care.

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