

AN ASSESSMENT OF PROMINENT PROPOSALS TO AMEND INTELLECTUAL PROPERTY REGIMES USING A HUMAN RIGHTS FRAMEWORK

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INTRODUCTION

A number of proposals and movements aiming at alleviating the negative effects of intellectual property regimes have gained popularity during the last decade and a half. The interdisciplinary character of the discussion has made compliance with human rights a standard assessment tool. The revisions to the existing regimes are, deliberately or not, far from addressing all issues that need to be dealt with, and mostly do not aim at offering an ideal solution. For the sake of political feasibility a number of concessions have been made in the proposals to gain governmental support, some of which have been severely criticized. The aim of this article is to provide an assessment on how the current intellectual property regimes along with six major proposals and movements that aim to improve such regimes relate to human rights commitments. The discussed proposals are the Health Impact Fund, prize systems, open innovation models, strengthening South-South partnerships, the Access to Knowledge movement, and the strategic use of compulsory licensing.

A brief introduction to the nature of human rights obligations will be provided, followed by an overview of the human rights affected by intellectual property rights. Thereafter the strengths and weaknesses of each proposal will be discussed. Finally, an evaluation will be offered on how the proposals relate to three different priority criteria: potential to secure basic needs, overall compatibility with human rights law and orientation towards the interests of future people. Throughout this analysis I

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will provide a comprehensive list of conflicting items with the aim of building a map where the different stakeholders' position can be identified.

I. MAGNITUDE OF THE PROBLEM

Intellectual property rights have a far-reaching impact that not only affects the lives of producers and buyers of developed inventions, but also society at large. Keeping a vital medicine as an artificially scarce resource using exclusive rights causes public outrage, especially when the strict market orientation of private companies results in the avoidable loss of lives¹.

There are a number of urgent global problems that need to be handled. Climate change is threatening future food provision². Disease and malnutrition have an annual death toll of over 18 million people³. Increased social consciousness has crystallized in a number of organizations, institutions and individuals offering solutions. Science and technological innovation are among the institutions from which support is expected and solicited. In order for science and technology to deliver solutions that actively tackle those global problems the incentive system that drives research and development will have to be aligned to meet societal needs⁴. Shaping research agendas according to market demands as increasingly is done results in the poor often not getting the innovations they need (i.e. the availability problem). Profit-maximizing sales practices systematically leave people empty-handed (i.e. the accessibility problem).

It is often forgotten that the wide use of intellectual property rights dictates a specific type of scientific conduct that might be at odds with local customs, endangering diversity in science. Additionally, there is a general trend to favour breakthrough science at the cost of grassroots innovation. Lastly, those rights are very restrictive, limiting participation possibilities and decision-making opportunities.

Research and development in the life sciences has great potential to alleviate the disease burden and malnutrition problems of the global poor, but this potential is currently underused. This is something that we as a society have come to grips with due to the enormous existing welfare problems around the world. At the turn of the new century a wide range of promises to the global poor and ourselves

1. CRISTIAN TIMMERMAN & HENK VAN DEN BELT, *Intellectual property and global health: from corporate social responsibility to the access to knowledge movement*, 34 *Liverpool Law Review* 47 (2013).

2. WILLIAM R. CLINE, *Global warming and agriculture: impact estimates by country* (Center for Global Development, 2007).

3. THOMAS W. POGGE, *World poverty and human rights: cosmopolitan responsibilities and reforms* (Polity 2nd ed., 2008).

4. Cf. DRUGS FOR NEGLECTED DISEASES WORKING GROUP, *Fatal Imbalance: The Crisis in Research and Development for Drugs for Neglected Diseases* (Médecins Sans Frontières 2001); MICHIEL KORTHALS & CRISTIAN TIMMERMAN, *Reflections on the International Networking Conference "Ethical and Social Aspects of Intellectual Property Rights" – Agrifood and Health held in Brussels, September 2011*, 3 *Synesis* G66 (2012); *Seed policies and the right to food: enhancing agrobiodiversity and encouraging innovation* (Report presented to the UN General Assembly, 64th session, UN doc. A/64/170). (2009).

were made to reduce those welfare deficits⁵. Progress however has been miserable and the first target deadlines are approaching, meaning that we have to prepare to justify our failings⁶. Despite the urgency of these issues, we still have the duty to ask ourselves what sacrifices are too high when trying to promote efficiency in research and development aiming at alleviating those pressing problems. Any reform attempt might be in jeopardy when the progressive realization⁷ of other human rights is endangered. Perhaps one of the main lessons learned in the last century is that even for the noblest goals we should critically judge the means used for their promotion. Therefore, while pursuing access to medicines it is still essential to be able to give a clear justification if in the process some rights are being neglected or even violated. A one-sided focus on basic necessities may undermine the triumph of having being able to agree as a global society on a comprehensive list of universally recognized human rights⁸.

II. TODAY'S INTELLECTUAL PROPERTY REGIMES AND THEIR ALTERNATIVES

Intellectual property is a social construct that aims at stimulating innovation by ensuring temporary exclusive rights for those who can successfully claim authorship. Innovators gain by having the opportunity to recoup reasonable research and development costs. Society benefits from these intellectual endeavours by having a wider set of products in the market and once temporary exclusive rights elapse, also by having more knowledge entering the public domain for free further exploitation.

Especially after the Agreement on Trade-related Aspects of Intellectual Property Rights (1994, hereinafter TRIPS) started to become effective minimal protection levels became internationally standardized and binding. Thereafter many of those minimal protection guarantees have been raised through bilateral trade agreement⁹, which are automatically generalized through the “most favoured nation” rule¹⁰, as

5. Most prominently the Millennium Development Goals, in relation to food security cf. WILLEM VAN GENUGTEN et al., *Harnessing Intellectual Property Rights for Development Objectives* (Wolf Legal Pub., 2011).

6. Substantive criticism on the measurement of progress toward meeting the Millennium Development Goals is offered by THOMAS W. POGGE, *Politics as usual: what lies behind the pro-poor rhetoric* 57-74 (Polity, 2010). and THOMAS W. POGGE & MITU SENGUPTA, *Rethinking the Post-2015 Development Agenda: Eight Ways to End Poverty Now*, 7 *Global Justice: Theory Practice Rhetoric* (2014).

7. Cf. Universal Declaration of Human Rights, adopted 10 Dec. 1948, G.A. Res. 217A (III), U.N. GAOR, 3d Sess., U.N. Doc. A/RES/3/217A (1948) [hereinafter UDHR], preamble; International Covenant on Economic, Social and Cultural Rights, adopted 16 Dec. 1966, G. A. Res. 2200 (XXI), U.N. GAOR, 21st Sess, art. 2, 6, 9, 11-14, U.N. Doc. A/6316 (1966), 993 U.N.T.S. 3 (entered into force 3 Jan. 1976) [hereinafter ICESCR], art. 2.1

8. Strengths and weaknesses of having human rights justified on basis of agreements among members with different interests are discussed in CHARLES R. BEITZ, *The idea of human rights* 73-95 (Oxford University Press. 2009).

9. See PETER DRAHOS & JOHN BRAITHWAITE, *Information feudalism: who owns the knowledge economy?* 85-107 (New Press. 2003).

10. Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments - Results of the Uruguay Round, Arts. 22-24, 1869 U.N.T.S. 299, 33

any concession related to intellectual property made to one country has to be also granted to all other signatory member states.

Criticism of the new trade regime has been severe and various stakeholder groups are searching for alternatives¹¹. The parties aiming for a change are far from being a homogeneous mass that shares the same interests and concerns. Disagreement already manifests itself in the choice of basic strategy. One group of advocates identifies a significant gap between what the TRIPS agreement actually requires countries to implement and the level of protection national legislation grants. Taking copyright as an example, while TRIPS requires a minimum protection of “no less than 50 years from the end of the calendar year of authorized publication”¹², common are protection terms of up to 70 years after the author’s death¹³. Adjusting national laws so that they just meet TRIPS minimal requirements would reduce significantly the negative effects of intellectual property. A second group aims at abrogating TRIPS altogether, or in a softer variant, to abolish patents in the field of medicine or those affecting food security. The third group takes the TRIPS agreement for granted, and this either by agreeing that with an addition that compensates some negative effects it will be much better than other alternative regimes, or simply, because they believe that such a kind of addition is the only improvement attainable. This last group aims at building proposals that stand in a positive relation to the TRIPS agreement by complementing it with necessary additions.

Much of the criticism toward the TRIPS agreement and intellectual property in general uses the human rights language. There is strong divergence on how human rights law is interpreted and on how invasive human rights are on the free exercise of intellectual property rights. We will dedicate the next two sections to discuss this interaction.

III. ON THE NATURE OF HUMAN RIGHTS OBLIGATIONS

The UN Committee on Economic, Social and Cultural Rights defines three levels of obligations: to respect, protect and fulfil. The obligation to respect is seen as prohibiting states interfering directly or indirectly with the enjoyment of a particular human right, while the obligation to protect requires state action when third parties are interfering human rights guarantees. Under the obligation to fulfil states are required to pursue actions that facilitate, provide and promote human rights¹⁴.

I.L.M. 1197 (2004) [hereinafter TRIPS], art. 4: “With regard to the protection of intellectual property, any advantage, favour, privilege or immunity granted by a Member to the nationals of any other country shall be accorded immediately and unconditionally to the nationals of all other Members...”.

11. KORTHALS & TIMMERMAN.

12. TRIPS, art. 12

13. Cf. CHARLES R. BEITZ, *The Moral Rights of Creators of Artistic and Literary Works*, 13 *Journal of Political Philosophy* (2005).

14. UN Committee on Economic, Social and Cultural Rights General Comment No. 14: The right to the highest attainable standard of health (article 12 of the International Covenant on Economic, Social and Cultural Rights) (2000).

Those principles should guide states to implement the different articles of the two Covenants in the spirit of the Universal Declaration. Here we should keep in mind the genealogy of intellectual property rights. Under human rights law the current intellectual property regimes should be seen just as means states have made to implement article 15.1 of the ICESCR¹⁵.

As far as human rights obligations are concerned, the debates on how far states have obligations outside their borders will be left aside. Further, it will be taken for granted that we can agree on a very minimal welfare threshold line below nobody should stand as a matter of human rights. The extent of the debate around sufficientarianism¹⁶ makes it clear that an answer on where this line is drawn cannot be provided within this context. We should however note that no society can secure the objects of human rights absolutely, an attempt to do so would take up practically all of society's resources and still fail to fully guarantee all rights. Society can merely hope to sufficiently secure human rights¹⁷.

The emphasis will be put on a different discussion. For this article it is more interesting to identify the crucial differences between standard human rights violations and softer interferences in someone's enjoyment of a human right. Under the idea of soft interferences, borderline cases will be focussed on, such as routinely discouraging people to make use of freedoms guaranteed by human rights or giving another party an additional advantage that will completely demotivate people to make use of some of their freedoms. Such a type of intervention will however have to occur systematically to qualify as a human rights violation¹⁸. Single cases, interferences from one person to another, do generally not fit this category.

Discouraging scientists to research in areas where infringing patents is almost inevitable in order to not be vulnerable to costly lawsuits can be interpreted as limiting scientific freedom. Taking a very broad understanding of the right to take part in cultural life (encompassing scientific life) would be at odds with acknowledging that some areas of science are already seized. Participation possibilities would be restrained for people who are not able to persuade the holder of exclusive rights to grant a license.

15. An official UN comment distinguishes: "Human rights are fundamental as they are inherent to the human person as such, whereas intellectual property rights are first and foremost means by which States seek to provide incentives for inventiveness and creativity, encourage the dissemination of creative and innovative productions, as well as the development of cultural identities, and preserve the integrity of scientific, literary and artistic productions for the benefit of society as a whole". UN COMMITTEE ON ECONOMIC, SOCIAL AND CULTURAL RIGHTS, *General Comment No. 17: The Right of Everyone to Benefit from the Protection of the Moral and Material Interests Resulting from any Scientific, Literary or Artistic Production of Which He or She is the Author (Art. 15, Para. 1 (c) of the Covenant, E/C.12/GC/17*) at [www.unhcr.org/refworld/docid/441543594.html]. §1

16. Cf. LIAM SHIELDS, *The prospects for sufficientarianism*, 24 *Utilitas* (2012).

17. Cf. THOMAS W. POGGE, *The international significance of human rights*, 4 *The Journal of Ethics* 45 (2000).

18. Phrased in Pogge's words, human rights violations have to be "in some sense official" to count as such, see *id.* at 47

More challenging to frame as human rights violations are systematic attempts to demotivate the economically poor to participate in science or being actively involved in decision-making that determines the role technology should have in their lives. The challenge does not merely consist in overinflating the concept of a human rights violation, but in the subjective nature of what may qualify as a demotivation. That what counts as demotivation for some, does not necessarily have the same effects on others.

There are some natural undeserved advantages that are clearly out of the scope of what is covered by human rights law. However, action has to be taken when the opportunity to make use of those advantages are not distributed randomly, but are concentrated in certain population segments.

Disadvantages are also a result of poverty, e.g. reduced intellectual capacities due to malnutrition during childhood. Since addressing those disadvantages entail the allocation of limited resources I will not discuss them further here¹⁹. Important for the main argument is that some disadvantages can be traced to certain technological solutions being artificially scarce. As this is a direct effect of intellectual property policies design we will dedicate more attention to it in the next sections of this article. Here access to scientific literature is probably one of the most prominent cases, hindering the possibility to follow up-to-date discussions in cultural life (especially science) and politics²⁰.

IV. CATALOGUE OF RIGHTS AFFECTED BY THE EXISTING INTELLECTUAL PROPERTY REGIMES

Intellectual property affects human rights in multiple ways. To a similar extent, commonly held conceptions of justice clash with a reckless use of exclusive rights. Criticism of the post-TRIPS intellectual property regimes comes from a wide array of stakeholders and affected parties with diverse disciplinary and cultural backgrounds representing a broad spectrum of interests. Not surprisingly, the language used in the discussion and interpretation of intellectual property regimes and alternatives has a corresponding heterogeneity. Further, in discussions around the TRIPS agreement, it is difficult to identify who is judging the juridical virtues of the TRIPS agreement itself and who is unable (or unwilling) to critically assess the wording of the agreement without taking the realities of the world for which it was meant into consideration. Extreme inequalities in terms of power, wealth and legal expertise have an enormous effect on how an agreement will ultimately be implemented. That many liberties foreseen in the TRIPS agreement were signed away through bilateral trade agreements is a clear sign of these power plays.

19. On the normative aspects of fighting poverty, see PAULETTE DIETERLEN, *La pobreza: un estudio filosófico* (Fondo de Cultura Económica, 2003).

20. Online newspapers have greatly facilitated access to current day political discussions all around the world. Open access publishing of scientific literature is still relatively rare, likewise in the arts, particularly music.

Additionally, intellectual property regimes are only one of the many factors that affect the establishment of an international cooperative environment that promotes fruitful scientific enterprises. Labour law, migration control, freedom of speech, as well as gender, social or racial discrimination are all elements that affect a well-working scientific environment. International law generally takes this broader perspective when protecting science as a tool to promote social and economic development²¹.

Consequently, a very broad interpretation of rights will be taken in the following to help us understand real and apparent conflicts between the existing regimes, the proposed alternatives, commonly held notions of justice and interpretations of human rights law. As mentioned, intellectual property regimes and the proposals for reform are not only criticized by a variety of private and public actors, but also by advocates of different – one could say often competing²² – proposals, which makes it particularly important to have as broad an interpretation as possible to understand where real differences are present and which conflicts are merely due to misunderstandings.

A. BENEFITING FROM ONE'S OWN INTELLECTUAL WORK

Innovators moral and material interests have to be safeguarded according to UDHR article 27.2. Those private interests however have to be balanced with public interests and needs²³. Intellectual property as currently conceived is not protected as a human right²⁴. Human rights law demands from states merely to have a regulatory framework that will facilitate innovators the protection of their moral and material interests²⁵. Here we have to realize the limitations of existing intellectual property law: patent rights allow only *some* innovators to protect the material interests of *some* of their inventions²⁶. Geographical indications, which can be used to protect knowledge that is beyond the scope of patent protection have, as the name states, territorial limitations and are limited to collective innovation²⁷. As far as moral

21. Cf. International Covenant on Economic, Social and Cultural Rights (1966), art. 11.2 (a) and art. 15; Charter of Economic Rights and Duties of States (1974), art. 13 and generally YVONNE DONDEERS, *The right to enjoy the benefits of scientific progress: in search of the state obligations in relation to health*, 14 *Medicine, Health Care and Philosophy* 371 (2011).

22. There is harsh mutual criticism among the advocates of different proposal: for Knowledge Ecology International's review of the Health Impact Fund, cf. [<http://keionline.org/HIF>].

23. TRIPS, Article 7.

24. UN Committee on Economic, Social and Cultural Rights, UN COMMITTEE ON ECONOMIC, *General Comment No. 17: The Right of Everyone to Benefit from the Protection of the Moral and Material Interests Resulting from any Scientific, Literary or Artistic Production of which he or she is the Author (Art. 15, Para. 1 (c) of the Covenant, E/C.12/GC/17)*, especially §§ 1-3, 35.

25. Cf. UDHR (1948), art. 27.2 and ICESCR (1966), art. 15.1(c)

26. Cf. PHILIPPE CULLET, *Human rights and intellectual property protection in the TRIPS era*, 29 *Human Rights Quarterly* 403 412 (2007).

27. Cf. MADHAVI SUNDER, *The invention of traditional knowledge*, 70 *Law and Contemporary Problems* (2007); KAL RAUSTIALA & STEPHEN R. MUNZER, *The Global Struggle over Geographic Indications*, 18 *European Journal of International Law* (2007).

interests are concerned, intellectual property law only recognizes two moral interests as such: attribution of authorship and being able to control the integrity of one's work²⁸. Other interests that are moral in nature, such as concerns about the licensing behaviour of one's employer over one's inventions are not legally protected.

For better or worse, much creative intellectual activity still remains beyond the scope of what can be protected by patent rights. Some scientific productions do not meet the non-obviousness requirement of patentability as they consist in a series of small-scale increments. Innovations that are not uniform and stable cannot apply for patents or plant varieties protection²⁹. Rediscovery, even when assisted by scientific methods, is in principle not patentable.

Natural law recognizes a right to benefit from intellectual labour. However some intellectual labourers are able to gain from intellectual endeavours more than others, and this not due to the social utility of their effort nor by having undertaken more painstaking work, but merely by their type of work matching better the requirements set by the established innovation incentive system. Here we can talk about an undeserved advantage, which – given that the patent regime is a societal tool to stimulate innovation – puts an obligation on society to explain this differential treatment.

A defence to justify this differential treatment is however missing. At most, we can understand the human rights articles that aim at securing basic needs, such as food and health care, as dictating a certain preference for one type of innovation over other, less urgent ones. The relation between scientific knowledge and social utility is indeed addressed in human rights law. In relation to food production, ICESCR article 11.2(a) foresees that “States Parties [...] individually and through international co-operation [...] [shall take measures to] improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources”. Official UN comments on the right to food and the right to health make similar provisions³⁰. We are however, as mentioned earlier, far from having innovation aligned with societal needs, especially when taking a wider cosmopolitan conception of justice³¹.

28. Cf. CARLOS AUGUSTO CONDE GUTIÉRREZ, *Copyrights y derechos morales de autor: la experiencia del common law en el Reino Unido*, 15 *Revista La Propiedad Inmaterial* (2011).

29. In agriculture, farmers' plant varieties, especially those coming from indigenous communities are unstable and in permanent evolution, which disqualifies them from most types of intellectual property protection, see OLIVIER DE SCHUTTER, *The right of everyone to enjoy the benefits from scientific progress and the right to food: from conflict to complementarity*, 33 *Human Rights Quarterly* 304 317 (2011).

30. Cf. UN Committee on Economic, Social and Cultural Rights General Comment 12. *The right to adequate food (Article 11)* (E/C.12/1999/5). (1999). § 26 (on appropriate technology), § 36 (international cooperation) and UN Committee on Economic, Social and Cultural Rights General Comment No. 14: *The right to the highest attainable standard of health (Article 12 of the International Covenant on Economic, Social and Cultural Rights)*, § 45 (on technical cooperation).

31. Cf. PETER SINGER, *One world: the ethics of globalization* (Yale University Press 2nd ed. 2004); ESTELLE DERCLAYE, *Eudemonic intellectual property: Patents and related rights*

Similarly, any theory that links ownership to notions of desert would have to explain why luck can play such an enormous role in determining the yield of harvestable benefits from an invention as is the case with intellectual property³². The inventor who brings out the same invention independently a day later is not entitled to any benefits³³. In general we can say that intellectual property law does not recognize effort in any special way.

The ICESCR recognizes in article 11.1 a right to the continuous improvement of people's living conditions. There is however no mention that this right ceases to be valid once one surpasses a certain threshold level. This right can be seen as a liberty that should be respected in itself, regardless of whether or not others are in a worse situation. The propensity to improve one's position, e.g. through science and technology development, can be seen as something intrinsic to human nature.

Yet, whatever claims one might have in being able to improve one's situation, a distinction between full and just remuneration still has to be drawn³⁴. Taxpayers contribute to the establishment of a necessary research infrastructure. Various investments in public education and research facilities increase the chances people have in taking part in scientific enterprises. Further, inventions rely on previous knowledge, the production and conservation thereof having taken place all around the world. The fact that all have participated in the production and conservation of knowledge, to a greater or lesser extent, precludes that one country could justly claim being the full owner of a given piece of knowledge³⁵. Thus, under principles of fairness inventors, by having used previous knowledge, owe a certain social return to people all around the world³⁶.

Finally, allowing others to benefit from one's work should not be seen as something deplorable. As JAMES WILSON rightly notes in relation to innovators: "The fact that others can [...] benefit from their work need not provide a disincentive for them, and if they are even moderately altruistic may provide an incentive"³⁷. The non-rivalrous nature of knowledge allows its simultaneous enjoyment by a number of people.

as engines of happiness, peace, and sustainability, 14 *Vanderbilt Journal of Entertainment and Technology Law* (2012). And, for a general overview on philosophical justifications, cf. CRISTIAN TIMMERMAN, *Limiting and facilitating access to innovations in medicine and agriculture: a brief exposition of the ethical arguments*, 10: 8 *Life Sciences, Society and Policy* (2014).

32. Cf. EDWIN C HETTINGER, *Justifying intellectual property*, 18 *Philosophy & Public Affairs*, 40-43 (1989).

33. For criticism see ROBERT NOZICK, *Anarchy, state, and Utopia* 182 (BLACKWELL, 1974).

34. Cf. PETER K. YU, *Reconceptualizing Intellectual Property Interests in a Human Rights Framework*, 40 *University of California Davis Law Review* 1039 1129 (2007).

35. A well known example is knowledge related to plant breeding, cf. JACK KLOPPENBURG & DANIEL LEE KLEINMAN, *The Plant Germplasm Controversy*, 37 *BioScience* (1987).

36. HERBERT SIMON estimates that social capital produces at least 90% of the income in richer societies like the United States or North-Western Europe. On moral ground a social return may match this rate, cf. HERBERT A. SIMON, *UBI and the Flat Tax*, in *What's Wrong with a Free Lunch?* (Philippe van Parijs et al., eds., 2001).

37. JAMES WILSON, *Ontology and the regulation of intellectual property*, 93 *The Monist* 450 455 (2010).

B. BENEFITING FROM SCIENTIFIC ADVANCEMENT

The advancement of science brings about a series of innovations from which human-kind may benefit. Science however follows research agendas and incentives that have been more or less deliberately set³⁸. The objects made newly available are partially determined by the direction science takes. We can however change this direction; some would even argue that we are obliged to do so in order to benefit people who are in direr needs³⁹. Therefore, benefiting from scientific advancement can be understood as not only meaning access to the objects that science brings out, but also a fairer allocation of research efforts.

Moral (or in some cases legal) obligations to make objects of innovation available are determined by three main factors: uniqueness of the object, dependency upon it and on how urgently access is needed.

Uniqueness of objects. An object may be considered unique if there are natural or semantic constraints that impede the provision of an alternative. From a less strict perspective, an object may also be considered unique if reasonable efforts will not produce an alternative within the time the object of innovation is protected by exclusive rights. Lastly, a broader concept of “unique” will consider an object of innovation as unique if at present no alternative products exist.

In the first case availability of the object of innovation will depend mostly on the licensing behaviour of the holder of exclusive rights. Here responsible behaviour can be demanded, as the patentee is in control of the single existing solution. This responsibility diminishes the more alternatives are available or would become available if action was taken. The more alternatives are feasible, the more the responsibility is shared with civil society, which could also have engaged in similar endeavours to come up with solutions.

Dependency. An additional criterion is to analyse how dependent the fulfilment of a human right is on the availability of the object of innovation. Are there alternative ways to fulfil the human right in question other than using the object of innovation? Can we reach the same goal through other means? Mostly this is the case. Even in the instance of health we can question whether medicines are the sole conduit to better health. With preventive measures, especially through improvements of sanitary infrastructures, we can often avoid having to rely on medicines.

A common objection to this reasoning is to say that we are dependent on the object of innovation given the circumstances in which we find ourselves. The

38. Cf. PAULA E. STEPHAN, *How economics shapes science* (Harvard University Press, 2012); BRUCE MACFARLANE & MING CHENG, *Communism, Universalism and Disinterestedness: Re-examining Contemporary Support among Academics for Merton's Scientific Norms*, 6 *Journal of Academic Ethics* (2008).

39. Generally, utilitarians would mostly take such a standpoint, e.g. for this type of argumentation see PETER SINGER, *Practical Ethics* 218-246 (Cambridge University Press, 2nd ed., 1993).

horrible state of deprivation in which a third of the world population lives makes us dependent on remedies and fixes.

Urgency. While temporary for society as a whole, exclusive rights are often permanently exclusive for single individuals. In the case of medicines, late access can mean death, injury or inefficacy. Less dramatic cases involve situations where an invention could considerably improve people's lives. We may think of innovation in water procurement methods that will make the carrying of water supplies over long distances redundant. This would increase the quality of life of women who are disproportionately burdened with this task. The need/want distinction is much more difficult to maintain than might appear at first sight, especially when there is no agreement on minimum welfare standards citizens are entitled to.

Besides asserting claims on the objects of innovation themselves, a fairer distribution in the targets of research efforts can be argued for. A possible interpretation of the right to benefit from the advancement of science amounts to an entitlement to a share of global research efforts. We are far from such a fair distribution. Prominent in the intellectual property and global justice debate is the so-called 10/90 gap in pharmaceutical research⁴⁰ (other areas show similar inequalities)⁴¹. Herewith the deplorable situation where 90% of global health resources are spent to address the problems of 10% of the world's population is called to attention. Implicit in this criticism is that there is such thing as a fair share of research time to be distributed globally. This can be interpreted to entail that the amount of dedication to a particular problem should be proportional to its urgency – a particular welfare issue has to be measured in number of people affected and intensity of the suffering or disadvantage involved. Allocation of research efforts has to be distributed accordingly. Another possible interpretation is to say that everyone is entitled to having a vote on which targets research should be aimed at. Related to this is the general question on how much has to be spent on science and technology development altogether.

A general disagreement emerges when we ask ourselves in how far do people not only have a claim on what science provides but also in what science could plausibly provide for if research agendas and resources were directed to meet such targets.

An additional factor that has to be brought to attention is that the exclusivity granted by intellectual property rights not only serves to recoup research and development costs, but also advertisement expenses. This calls the general cost-effectiveness of intellectual property rights as a method to incentivize innovation into question. Money spent on marketing may pay better off than money spent on further innovation. It has been claimed that pharmaceutical companies are spending

40. Cf. DRUGS FOR NEGLECTED DISEASES WORKING GROUP and TIMMERMANN & BELT, *Intellectual Property and Global Health*.

41. Research in tropical agriculture has been similarly neglected, see Seed policies and the right to food: enhancing agrobiodiversity and encouraging innovation (Report presented to the UN General Assembly, 64th session, UN doc. A/64/170). § 34.

twice as much on marketing and administration as on research and development⁴². To these inefficiencies we have to add patent application, maintenance and litigation costs – all costs that reduce the budget of actual innovation⁴³.

The use of research monies for non-scientific purposes can with good reason be condemned, especially keeping the urgent need for pro-poor innovation in mind, which demands a more efficient use of resources.

C. PARTICIPATION

The most prominent readings of UDHR article 27 tend to ignore the participation in science component. However, especially the UNESCO has been eagerly promoting active participation possibilities⁴⁴. Intellectual property rights affect scientific participation in multiple dimensions:

Openness. Intellectual property regimes may hinder openness in direct and indirect ways. Trade secret laws limit the freedom many scientists employed in industry have to discuss current findings, often even after employment ends. Patent requirements demand that knowledge on an invention has not been publicly disclosed prior to filing for exclusive rights, thus promoting a scientific culture that evades early disclosure of research results. Copyright laws allow also a publishing behaviour that is enormously restrictive in permitting access to literature and supporting datasets.

Lack of openness impedes the possibility to give feedback; this applies to input that serves self-interest as well as that which is altruistically motivated⁴⁵.

Relevance of state-of-the-art. The advantage break-through science has over achievements made by incremental improvements has been criticized⁴⁶. Here we have to distinguish between deserved advantages and benefits gained by external circumstances. It might be acceptable that people suffer some disadvantages from being antiquated or because they refuse to use new techniques, but suffering the full range of handicaps for not being able to adjust to new trends seems too hard a penalty. As a further factor, one has to keep in mind that people who continue autochthonous practices conserve tacit knowledge and are vital to recover past know-how. Practising traditional medicine and partaking in seed exchange programs play an important role for the conservation of biodiversity. Society as a whole benefits from such undertakings.

42. See MARCIA ANGELL, *Excess in the pharmaceutical industry*, 171 *Canadian Medical Association Journal* 1451-1452 (2004).

43. Cf. JOSEPH E. STIGLITZ, *Economic Foundations of Intellectual Property Rights*, 57 *Duke Law Journal* 1693 (2008).

44. UNESCO, *The Right to Enjoy the Benefits of Scientific Progress and its Applications* (UNESCO 2009), and CRISTIAN TIMMERMANN, *Sharing in or benefiting from scientific advancement?*, 20 *Science and Engineering Ethics* (2014).

45. On alternative feedback models, cf. DAVID KOEPEL, *Back to basics: how technology and the open source movement can save science*, 24 *Social Epistemology* (2010).

46. See PAUL B. THOMPSON, *Is Our Agricultural Technology Innovation System Up to 21st Century Challenges?*, 24 *Science Progress* (2010), for agricultural innovation.

Intellectual property gives researchers who are able to match the novelty requirement of patentability a considerable advantage by giving them the opportunity to recoup reasonable research and development costs. And, as mentioned before, intellectual property rights make it also possible to recoup costs of extensive marketing campaigns that further increase sales. Those who cannot match this requirement are facing multiple disadvantages.

Malleability. Increasingly holders of exclusive rights dictate the conditions under which the object of innovation can be used or modified. This has created so much outrage in the software community that it helped to nurture the open source movement, which aims at restoring past freedoms. The effects those constraints have on scientific participation are multiple. Setting specific terms under which people are allowed to contribute may limit both the number of opportunities to contribute and the number of potential contributors. Some innovators may also be deterred to contribute since the format their input has to be in does not suit their personal needs. Others may simply refuse to cooperate once the terms are unattractive or deemed unacceptable.

A restriction on modification possibilities limits the users' control of the object (so that they are not able to change and modify it as they see fit) – while such control is something that is intrinsically valued. There is a widespread interest to own an object (as a piece of property), not merely lease it. Article 17 of the Universal Declaration of Human Right identifies the right to own property as a fundamental human right⁴⁷. Liberties that are traditionally associated with property rights include the ability to modify or even destroy⁴⁸ an item, a liberty progressively undermined by licensing developments in the music, movie and software industry. Exclusive rights on industrial seed varieties expand this trend by limiting traditional farming practices such as the replanting of seeds from past harvests, informal seed exchanges and further attempts to improve these varieties⁴⁹.

Diversity of input possibilities. Inaccessibility of information is one of the many barriers the poor face when they want to cooperate in existing scientific endeavours. The digital divide and language barriers are still strong obstacles. More than natural language, technical jargons amount to a significant barrier. Patent documents have to be drafted in a specific scientific-legal language that increasingly only a few legal experts master. Contributions to science also have to be made using a specific language.

47. A right to own property has also wide support in philosophical quarters; e.g. people are entitled to hold property (land and movable goods) under Martha Nussbaum's central human capabilities list, cf. MARTHA C. NUSSBAUM, *Creating capabilities* 34 (Harvard University Press, 2011).

48. Cf. LIOR JACOB STRAHILEVITZ, *The right to destroy*, 114 *The Yale Law Journal* 781 (2005).

49. Cf. NIELS LOUWAARS, *Seeds of confusion: the impact of policies on seed systems* (PhD thesis, Wageningen Universiteit, 2007); JACK KLOPPENBURG, *Re-purposing the master's tools: The open source seed initiative and the struggle for seed sovereignty*, *Journal of Peasant Studies*.

Patent offices only accept patent documents that are drafted in specified natural and technical languages. Some advocates of freedom of speech would go so far as to consider this a method to limit the freedom to express oneself. Having such types of requirements are commonplace in the social and natural sciences. Certain standardizations facilitate the exchange of information between a wide array of stakeholders and individuals. What becomes harder to defend however is when particular groups of society are routinely hindered to partake in a dialogue because they lack the ability to communicate in the required language. This is the more unacceptable, when some of the remaining partners in the dialogue benefit from this lack of inclusion.

Reciprocity. Willingness to share and participate in certain endeavours is often affected by the perceived justness of a system. A successful cooperative enterprise demands that all partners are deemed worthy to cooperate with. Perceived unfairness or misconduct in the past have to be addressed before it is possible to regain widely shared enthusiasm for cooperation⁵⁰. Exclusive rights by nature leave many individuals without the benefits of science, something that is difficult to assimilate with certain intuitions of justice, as the wide global public support to access to essential medicines clearly exemplify⁵¹. The non-rivalrous consumption of intellectual goods makes artificial scarcity objectionable.

D. SELF-DETERMINATION

Related to the issue of participation is the right to self-determination, a right that plays a central role in human rights law. The two Covenants (1966) concede a right to self-determination to peoples in their first articles. It is alleged that opening up participation possibilities for scientific enterprises will foster more democratic decisions for research agendas⁵². In principle, democratic decision-making for setting research agendas requires only a minimum scientific education and not necessarily active participation at the most advanced levels of research. Provided this is true, efforts to enable people to have a say in research agendas would not have to be linked to advocating more inclusive scientific research endeavours. Transparency in science and technology development would suffice.

Self-determination would however demand some type of decision-making mechanism that includes votes of people from all social and geographic segments. As mentioned earlier, research agendas are nowadays primarily shaped by market incentives – in a world with such huge inequalities a highly undemocratic system.

Further, some research that looks promising is often abandoned once research managers realize that exclusive rights cannot be obtained and this despite potential

50. Cf. GORIK OOMS, *Why the West is perceived as being unworthy of cooperation*, 38 *Journal of Law, Medicine and Ethics* 594 (2010).

51. Cf. AMY KAPCZYNSKI, *The Access to Knowledge Mobilization and the New Politics of Intellectual Property*, 117 *Yale Law Journal* 804 (2008).

52. FARIDA SHAHEED, *Report of the Special Rapporteur in the field of cultural rights* (United Nations (A/HRC/20/26) 2012).

social benefits or utility⁵³. Research institutes and private companies are continuously pushed toward delivering saleable patentable products; social utility and scientific freedom are rapidly relegated toward a secondary plane.

Research spending per capita differs strongly among countries⁵⁴. Discrepancies in research spending are defensible if contribution rates are set according to capacity to pay (discounting maybe special needs). However when countries in a similar position differ so drastically in the budget they allocate for research and development, giving citizens from different countries the same weighting of their votes becomes hard to justify on principles of fairness.

V. STRENGTHS AND WEAKNESSES OF THE DIFFERENT PROPOSALS

There is widespread agreement that current intellectual property regimes collide with ideas of justice and human rights on a wide range of issues. Unfortunately, beyond this shared conviction, there is little the different stakeholder groups are unanimous about. There is no conceptualized ideal solution that could serve as a yardstick from which to measure deviations. We can only hypothesize on how a world with a different incentive system would work.

However, among the different groups that have drafted the alternative proposals to be discussed below, an additional commonality can be found. There is a certain consensus that we live in a world of extreme inequalities dominated by very powerful players to which some concessions have to be made. None of the depicted proposals can be considered completely utopian and unaware of current realities. The extent however to which these limitations are taken as intransigent, varies strongly among the different proponents.

Proposals to alleviate the negative effects of exclusive rights do generally not aim at tackling all the problems raised by the IP regime and existing global inequalities. Instead, we have a wide spectrum of solutions, some with very modest targets, others being only satisfied with a complete changeover. The aims of the proposals differ according to what advocates recognize as problems and the level of urgency that they assign to them. Addressing political feasibility, advocates grant concessions to make the various proposals more attractive to governments and industry.

A further problem ensues from the circumstance that the discussion on what is feasible and what is not is highly polarized. This is due to the ambiguity of the concept of “feasibility” and its wide applicability. It allows to rule out certain proposals that cannot be implemented in practice, but also facilitates comparative assessment⁵⁵. In how far we are willing to classify something as feasible or not, depends in part on what we consider an undeniable characteristic of political reality

53. DAVID LEA, *The expansion and restructuring of intellectual property and its implications for the developing world*, 11 *Ethical Theory and Moral Practice* 37 46 (2008).

54. Cf. Global Investment in R&D. UIS Fact Sheet (UIS/FS/2012/22). (2012).

55. Cf. PABLO GILBERT & HOLLY LAWFORDE-SMITH, *Political feasibility: A conceptual exploration*, 60 *Political Studies* 809 (2012).

or essential to human nature. Since notions thereof are subjective, disagreements on what is feasible are inevitable.

The room for disagreement is further expanded, if we consider that many proposals are feasible only if one expands one's room for future capabilities by undertaking specific political strategies⁵⁶. As this demands long-term discipline, differences of opinion increase further. Long-term commitments do not only fail because of lack of discipline, but also due to disputes on how far we can bind future freedoms to present-day decisions. There are strong disagreements on the question if we are entitled to limit the freedom of those who are not present while we decide on future agendas⁵⁷. Complexity is added in questions around climate change or pollution control, since lack of action today amounts to constrained room for action in the future. As a society we are accountable for both not having taken precautionary measures and bad planning.

To gain an oversight of the different solutions supported by various stakeholder groups, six major proposals with their strengths and weaknesses will be sketched. I will briefly note how these proposals relate to the four conflicting human rights discussed earlier: the right to benefit from one's own intellectual work, the right to benefit from science, the right to participate in the advancement of science, and the right to self-determination.

A. HEALTH IMPACT FUND

The idea behind the Health Impact Fund (HIF) is to gather a large sum of money to compensate developers of new medicines according to their capacity to increase quality-adjusted life years (QALYs)⁵⁸. Companies or institutions that develop new medicines and provide them at cost price may opt for the Fund's reward. Participating in the Fund is voluntary, although opting out is only possible after a certain time elapses. Patent holders are not required to give up their patents, thus retaining a certain control over follow-up innovation⁵⁹.

The Health Impact Fund is designed to secure access to medicines. While later amendments make it possible to receive Fund's rewards by proving the efficacy and adequate use of traditional herbal medicines⁶⁰, the Fund has been drafted with the main purpose of promoting health with Western-style pharmaceutical medicines. Based on the principles behind the Health Impact Fund, other types of funds

56. PABLO GILABERT, *The feasibility of basic socioeconomic human rights: A conceptual exploration*, 59 *The Philosophical Quarterly* 659 (2009); HOLLY LAWFORD-SMITH, *Understanding Political Feasibility*, *Journal of Political Philosophy* (2012).

57. Cf. AXEL GOSSERIES & LUKAS H. MEYER, *Intergenerational justice* (Oxford University Press 2009).

58. AIDAN HOLLIS & THOMAS W. POGGE, *The Health Impact Fund: Making New Medicines Accessible for All* 18-20 (Incentives for Global Health 2008).

59. *Id.* at 22.

60. JOY MENDEL & AIDAN HOLLIS, *The Health Impact Fund and traditional medicines*, IGH Discussion Paper No. 8 at [http://healthimpactfund.org/files/DP8_Mendel_and_Hollis.pdf].

have been suggested to propagate climate-friendly technologies⁶¹. A similar fund to foster pro-poor agricultural innovation is also conceivable.

The HIF asks from innovators to pass a certain hurdle (among other conditions) to be able to claim the Fund's rewards – in the case of medicines the market approval by a major biosafety regulation agency like the US Food and Drug Administration (FDA)⁶². The cost-effective measurement of QALYS requires standardization and minimum variations in efficacy between medicines of different manufacturers, making industrial mass production mandatory⁶³.

The rewarding and financing mechanism of the HIF can only work if the system is transparent. However, exactly this has great potential in attracting the involvement of a wide array of research consortia, since transparency of capital inflow will increase trust among the different partners. We can also imagine that with an operative HIF companies will emerge that will focus solely on carrying out clinical trials for established consortia. Open innovation models that work with licenses that oblige their users to make modifications to the objects taken from the commons available to research partners could secure future funds by applying for the HIF rewards with their inventions⁶⁴.

The Health Impact Fund aims at making the benefits of scientific advancement more broadly accessible. It also works towards a fairer allocation of research effort in order to make medicines for neglected diseases available. The profitability of intellectual work in pharmaceutical research is maintained.

Criticism. Countries where neglected diseases are most prevalent will have direct access to pathogens, local knowledge on how the disease is propagated, and contact with affected populations. Advantages gained by this forerunner position might be easily lost when we consider the vast superiority of laboratories belonging to established pharmaceutical companies or their research partners. No guarantees are given to increase the participation of researchers from poorer countries⁶⁵. The proposal is like the current patent regime a winner-takes-all system, thus leaving any creative worker that was somewhat behind empty-handed.

61. CRISTIAN TIMMERMANN & HENK VAN DEN BELT, *Global justice considerations for a proposed "Climate Impact Fund"*, 4 *Public Reason* 182 (2012); CRISTIAN TIMMERMANN & HENK VAN DEN BELT, *Climate change, intellectual property rights and global justice*, in *Climate Change and Sustainable Development: Ethical Perspectives on Land Use and Food Production* (THOMAS POTTHAST & SIMON MEISCH, eds., 2012), and THOMAS W. POGGE, *Keynote Address: Poverty, Climate Change, and Overpopulation*, 38 *Georgia Journal of International and Comparative Law* 525 (2010).

62. AIDAN HOLLIS & THOMAS W. POGGE, *The Health Impact Fund: Making New Medicines Accessible for All*. Supplements and Corrections at [www.yale.edu/macmillan/igh/files/HIF_supplementsNov09.pdf].

63. The negative effects of this measure are described in TIMMERMANN & BELT, *Climate Impact Fund*.

64. Cf. CRISTIAN TIMMERMANN, *The Health Impact Fund and the right to participate in the advancement of science*, *European Journal of Applied Ethics* 1(1) (2012).

65. TIMMERMANN & BELT, *Climate Impact Fund*.

Democratic decision-making on which research paths should be developed remains unaddressed. Thus little is done to improve people's right to self-determination.

The huge sum needed to set up the Health Impact Fund is seen as an impediment. KATHLEEN LIDDELL compares the 6 billion dollars annually needed to set up the Health Impact Fund with the total United Nations operating budget, which is approximately 30% less than what the fund needs and recalls the problems the United Nations faces to make countries pay their contributions⁶⁶.

B. PRIZE SYSTEMS AND ADVANCED MARKET COMMITMENTS

In certain ways the Health Impact Fund can also be identified as a prize system, but there are other prize systems that have a completely different type of architecture. Some prize systems work with pre-identified targets, incentivizing companies to develop products with certain characteristics and functions. Advanced market commitments are one example of such type of prize systems and have already been put into practice for the development of some vaccines⁶⁷. The idea behind advanced market commitments is that a central agency commits itself in advance to buy a certain number of end-products that meet predefined characteristics.

Another alternative is to stop providing patent protection for clearly specified research areas that are vital to secure human rights. The incentive to engage in research and development would be created by direct government funding. This strategy has been suggested for vital medicines⁶⁸. A range of targets is identified and rewards set according to urgency and estimated development costs.

Generally prize systems aim to make the benefits of scientific advancement accessible and to orient science toward making solutions for wider societal problems available, while recognizing that innovators should be fairly remunerated. Prize systems have the potential to increase the self-determination of people. The characteristics and functions an invention should have can in principle be decided democratically.

Prize systems can be designed to reward second- or third-ranked options, alleviating the problem of a winner-takes-all system.

Criticism. Having predefined targets comes with the cost that there is little incentive in developing a product that surpasses the minimum characteristics specified⁶⁹.

66. KATHLEEN LIDDELL, *The Health Impact Fund: a critique*, in *Incentives for Global Public Health. Patent Law and Access to Essential Medicines* 161 f. (THOMAS W. POGGE et al., eds., 2010).

67. For a critical note cf. ANNE-EMANUELLE BIRN & JOEL LEXCHIN, *Beyond patents: The GAVI Alliance, AMCs and improving immunization coverage through public sector vaccine production in the global south*, 7 *Human Vaccines* 291 (2011).

68. Cf. JAMES LOVE & TIM HUBBARD, *The Big Idea: Prizes to Stimulate R&D for New Medicines*, 82 *Chicago-Kent Law Review* 1519 (2007).

69. Cf. THOMAS W. POGGE, *The Health Impact Fund: Enhancing Justice and Efficiency in Global Health*, 13 *Journal of Human Development and Capabilities* 537-549 (2012).

The agency specifying the requirements that the object of innovation must meet has to have a fairly good knowledge of what it can reasonably expect, thus making good estimates only feasible when the potential product is already in a later stage of development. Potential products whose research has been vastly neglected would be bad candidates for such a system⁷⁰. The modularity of the different prize systems makes it also easy for governments and funding agencies to cancel individual periodical prize contests without evoking the resistance of large stakeholders groups.

Prize systems do not actively encourage wider scientific participation, except when addressed to specific groups (e.g. young scholars' awards, municipal prizes).

C. OPEN INNOVATION MODELS

Open innovation does not consist in a single clearly defined proposal, a number of innovation models fall under this category. Here the concept will be used in an even broader manner by also including ideals prevalent in the open access and open source movement. As central to this trend we can identify the availability of at least one "kernel" that is openly accessible and works as a starting point for further innovation. The central aim is to facilitate outside contribution possibilities⁷¹. Following this basic principle, the "open-movement" can be ramified into different sub-movements.

One sub-movement is the open access initiative. A series of public institutions, think tanks and NGOs have committed themselves to increase the number of freely available publications⁷². Not only the outrage triggered by rising journal subscription prices, but also an increasing acknowledgement that information should be accessible to all without discrimination, has made this movement increasingly popular. Two inventions have boosted the potential of this movement. One is technical – the Internet and its immense potential to make huge amounts of information accessible and identifiable. The second invention is of a legal nature, and consists in a wide array of newly developed licenses, as illustrated, for example, by the Creative Commons models. Those licenses allow authors to retain only the legally entitled rights they want to make use of⁷³.

A diversity of opinions can be found regarding which rights one should be allowed to keep. Some groups allow all but commercial use, others don't reserve any rights at all. Similarly with the integrity of the creative work, opinions change in how far one may freely alter a created object. In how far one wants to have the

70. Criticism based on the case of medicines is offered by HOLLIS & POGGE, *The Health Impact Fund: Making New Medicines Accessible for All* 106 f.

71. On the benefits of openness in general, cf. YOCHAI BENKLER, *Coase's Penguin, or, Linux and The Nature of the Firm*, 112 *The Yale Law Journal* 369 (2002).

72. Cf. Budapest Open Access Initiative, February 2002, Bethesda Statement on Open Access Publishing, June 2003, and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, October 2003, cf. MANON A. RESS, *Open-Access Publishing: From Principles to practice*, in *Access to Knowledge in the Age of Intellectual Property* (GAËLLE KRIKORIAN & AMY KAPCZYNSKI, eds., 2010).

73. E.g. for educational materials, cf. JAVIERA ATENAS et al., *Opening teaching landscapes: The importance of quality assurance in the delivery of open educational resources*, 6 *Open Praxis* (2014).

created object attributed to one's authorship is also an issue where opinions diverge.

The movement has increased its outreach by making templates of different licenses publicly available⁷⁴. Tutorials have made those licenses accessible for those who are not legally literate⁷⁵.

The second sub-movement is the open source movement. Again, here a standard charter does not exist and we can identify great variations of this movement. We may say that this movement was sparked by people who are interested in inventing or in problem-solving more generally, and do not want to be limited by intellectual property restrictions. Distinctive is that many advocates of this movement tend to refer to it as a restoration of past standards and not so much as a revolution⁷⁶. Not only a balance between private and public interests is aimed at, but also a balance between interests of initial and follow-on innovators is sought for⁷⁷. Open source models are especially keen in securing malleability of research outputs.

The architecture of open source projects permits the creation of new sub- or parallel workgroups. A project leader who does not fulfil the expectations of collaborators runs the risk of losing contributors to side-projects that do match common interests. Success of any project is dependent upon each project leader's capacity to attract collaborators⁷⁸.

Somewhat different than in other movements, many open source collaborators identify themselves as part of a community. In how far users are expected to reciprocate by also sharing their contribution is something each open source platform decides on its own (either democratically or unilaterally). Some communities have developed policies that make the sharing of improvements to the community mandatory. This however generally counts only for improvements that have been made public. There are no duties to share improvements made for personal use only. Thus while aiming at certain standards of reciprocity, open source communities do not go as far as aspiring to fully share any improvement that came into existence.

In how far inputs are rewarded or not, depends on the research entities, thus limiting to a certain extent the possibilities to materially benefit from one's work.

In sum, the open innovation enthusiasm is chiefly about enabling participation. It is hoped that wider participation will also make the necessary innovation available, and a greater number of participants also increases the democratic legitimacy of innovation systems.

74. Cf. [<http://creativecommons.org/>].

75. Ibid.

76. Cf. GUIDO NICOLosi & GUIDO RUIVENKAMP, *Re-skilling the Social Practices: Open Source and Life - Towards a Commons-Based Peer Production in Agro-biotechnology?, Science and engineering ethics* (2012), or in terms of repossession cf. JACK KLOPPENBURG, *Impeding dispossession, enabling repossession: Biological open source and the recovery of seed sovereignty*, 10 *Journal of Agrarian Change* 367 (2010).

77. Cf. JANET HOPE, *Open Source Genetics: A Conceptual Framework*, in *Gene patents and collaborative licensing models* 171 (GEERTRUI VAN OVERWALLE, ed., 2009).

78. Ibid. at 181.

Criticism. Extreme inequality demands a system that delivers the products of innovation to the most needy. Open innovation could lead to technical solutions that are only apt for the technologically skilled. Open innovation advocates mainly freedom for research and development. The type of outcomes plays a secondary role; the emphasis is put on there being an outcome. Naturally, most innovators will tend to develop solutions for problems they encounter. However, those who have the liberty to innovate are most likely not the worst-off and also encounter a different set of problems. An active engagement with the problems of the poor will still have to be separately incentivized. Similarly, openness alone is not enough to allow the very poor to participate in science. Without access to basic infrastructure and education most people will not be able to participate.

The flexibility innovators have to move further to other projects comes at the price that additional incentives will be needed to maintain interest in finishing tedious long-term projects. This will require further resources, something that open innovation models in general have little capacity to sufficiently generate.

The issue of accessibility remains insufficiently addressed. Not having to pay for expensive licenses will certainly reduce the price of the objects of innovation, however extreme poverty also demands that those objects are cheaply reproducible, which however has to be incentivized through other means.

D. SOUTH-SOUTH PARTNERSHIPS

Establishing networks that connect innovative capacities amid different regions of the Global South is another initiative to alleviate the negative effects of the current intellectual property regime. People who live in similar environmental conditions share many of the same problems and often the same spare resources. Therefore, it seems natural that people who have been cognitively stimulated by comparable sets of problems have a great potential to learn from one another. Further, it has been noted that some people are so poor that they can only benefit from technological innovations if these can be reconstructed using spare local resources⁷⁹.

One of the networks that aim at making grassroots innovators' knowledge more widely known and recognized is the Honeybee Network in India⁸⁰. Much can be learned from a network that has shown great success in a country with such enormous cultural diversity within its borders and amounting to a sixth of the global population. The Honeybee Network is far from representing a negative attitude towards Western technology. It primarily encourages local innovators to participate in technological innovation to offer alternatives. But the same goes for the use of local technologies;

79. Cf. ANIL K. GUPTA, *Grassroots Green Innovations for Inclusive, Sustainable Development*, in *The Innovation for Development Report 2009-2010*, Strengthening Innovation for the Prosperity of the Nations (AUGUSTO LOPEZ-CLAROS ed. 2010).

80. ANIL K. GUPTA, *From sink to source: the Honey Bee Network documents indigenous knowledge and innovations in India*, (summer) *Innovations* 46 (2006).

it invites industry and farmers to become acquainted with local innovation. It does however recognize the vulnerability of grassroots innovators when it comes to protecting their knowledge. Here legal counselling is offered to help indigenous innovators secure their material and moral interest⁸¹. While making sure that innovators receive their share in any monetary benefits raised by their intellectual creation, the Network also focuses on securing the moral interest of innovators. Names, pictures and origin are information often shared if the inventor so wishes. And this also in cases where little or no material benefits can be expected. We can identify a particular ideal in this initiative: the recognition and promotion of local expertise. To honour this ideal a variety of outreach endeavours have been started, including computerized networked kiosks that allow inhabitants of rural areas to browse for innovations in multiple languages and an extensive radio and television coverage of local innovation⁸².

This type of initiative seeks to make available solutions for people who are in similar conditions as the inventors. The chances that such innovations become accessible to those in need are thus far greater. Since the inventor/user divide is small or non-existent, innovations are more focused on people's urgent needs. Inventions for everyday matters that do not attract much attention by the international scientific community, like improvements in sanitation systems, are more likely to be developed.

South-South partnerships aim at empowering people who are currently underrepresented in the scientific community to be able to participate in scientific enterprises. Wider participation increases the chances that voices of now excluded people are heard.

Criticism. On moral grounds, there is little one can criticize about this type of initiative. Coexistence in harmony is aimed at, something that is a laudable goal, but this demands from victims of past injustices to move on often without having their disputes settled.

Given the huge inequalities among rich and poor one might wonder if such networks will have sufficient power to rebalance losses suffered with the implementation of the TRIPS agreement. Especially innovations that demand a high level of expertise have still to find sufficient financial backers in the developing world. Except in the BRICS countries⁸³, big science projects will still have to rely on a significant help from developed countries or resort to an alliance of a large group of developing countries. Large differences within the countries make such type of collaborations unlikely in the near future.

E. ACCESS TO KNOWLEDGE (A2K) MOVEMENT

It will not come as a surprise that the central issue around the Access to Knowledge

81. *Ibid.* at 57.

82. *Ibid.* at 60.

83. *Ibid.* Brazil, Russia, India, China and South Africa.

movement is to make knowledge accessible to people. The demand is to make knowledge more accessible for the fostering of scientific and cultural life. Currently, there are no obligations for copyright holders to make a publication available once it becomes out-of-print. The consequence is that the majority of works protected by copyright are insufficiently accessible. Archivists, educational institutions and libraries should have the liberty to make copies available when works are not commercially exploited⁸⁴. The possibility to change protected content in order for it to be accessible for people with certain disabilities is also an issue the movement advocates⁸⁵.

Patent documents may not include all necessary information to reproduce an invention⁸⁶. Commitment to transfer know-how should be a prerequisite for the granting of a patent⁸⁷. A general concern to make tacit knowledge available can also be identified in the draft treaty of the movement.

In the A2K agenda, we can find some elements that have to do less with access to knowledge directly, but more with justice in general. Patents can only be granted if the source or origin of biological material utilized is disclosed⁸⁸. Here we can recognize an attempt to limit biopiracy – a policy in favour of securing indigenous communities' moral and material interests⁸⁹. Similarly measures to make publicly funded research, data and broadcasting accessible are specified. When applying for patents, inventors must disclose if they benefited from governmental funding⁹⁰. Access to governmental information is also justified as an issue of transparency⁹¹.

The movement also recognizes that the public domain is something that is in need of protection⁹². Ever more knowledge qualifies as protectable by exclusive rights and temporary exclusivity also becomes lengthier. Broadening exclusive rights can limit future innovation. Creative authors need materials on which to draw for further innovation. If the so-called “building blocks” of further innovation are privatized, access cannot be guaranteed. Recognizing that inventions do not come out of the void, efforts to actively expand knowledge commons have to be undertaken⁹³.

84. Treaty on Access to Knowledge (draft 9 May 2005) (hereinafter A2K treaty (draft)) available at [www.cptech.org/a2k/a2k_treaty_may9.pdf], art. 3.1 viii and for orphan works generally art. 3.8.

85. A2K treaty (draft), art. 3.3.

86. The TRIPS Agreement art. 29.1 demands that the patent document should contain all information needed for somebody skilled in the art to reproduce the invention. This however is often not done precisely.

87. A2K treaty (draft), art. 4.1 (c) iv.

88. A2K treaty (draft), art. 4.1 (c) ii.

89. For the legal status of traditional knowledge in international law, cf. CARLOS M. CORREA, *Access to Knowledge: The Case of Indigenous and Traditional Knowledge*, in *Access to Knowledge in the Age of Intellectual Property* (GAËLLE KRIKORIAN & AMY KAPCZYNSKI, eds., 2010), and *Protecting traditional knowledge: pathways to the future* (2006).

90. A2K treaty (draft), art. 4.1 (c) iii.

91. A2K treaty (draft), art. 5.5.

92. For a general defence, cf. also JAMES BOYLE, *The public domain. Enclosing the commons of the mind* (Yale University Press, 2008).

93. A2K treaty (draft), art. 5.1. The importance of maintaining a commons from which everybody can draw for further innovation has also been ascertained for plant breeding by supporting easier access to genetic resources, cf. DE SCHUTTER, *The right of everyone to enjoy the benefits from scientific progress and the right to food: From conflict*

Additionally, the A2K movement recognizes that intellectual property rights can be abused and demands clarity about which licensing practices qualify as such⁹⁴. The idea of abuse of rights is also present in the TRIPS agreement⁹⁵.

In relation to the above-discussed threatened human rights, the Access to Knowledge movement seeks to address all four rights. The benefits of science should be accessible to all and people are to be equipped with the tools to participate in the advancement of science. It tackles the issue of self-determination by seeking more transparency and empowering more people with a right to access to information. Some constraints are however set on how far people may exploit their creative work. A stricter balance between society's interests and the interests of innovators is sought. Additionally, it plans measures to avoid illicit exploitation of other peoples' inventions, especially by addressing the issue of biopiracy.

Criticism. The A2K movement is a very ambitious movement, often underestimating current political realities. The urgency to include more people in scientific enterprises is something difficult to sympathize with before subsistence needs are widely secured. Addressing the current level of deprivation half of the world population lives in is something most people would prioritize. Others may also question the need of engaging in more science and technology development before the benefits of existing inventions are widely shared.

F. COMPULSORY LICENSES

To label the wide use of compulsory licenses as a separate movement or proposal will most likely provoke objection. There are however good reasons to treat them here as one of the many proposals being discussed. Compulsory licenses recognize that intellectual property rights can be abused and that the way innovators may use these rights may run counter to public interests. The legal tool of a compulsory license entitles a government to override exclusive rights granted by a patent. States using compulsory licenses still agree that the patent holder is entitled to remuneration, but they reserve the right to establish what an adequate remuneration consists of.

Having predecessors in national jurisdictions, this tool was also established in the TRIPS agreement, and has been reaffirmed in the Doha Declaration on the TRIPS Agreement and Public Health, November 2001^[96].

Using compulsory licenses can be decided democratically, but governments often have to fear retaliation measures by the patent holder's country of origin. The decision can be affirmed or rejected by international arbitration.

Criticism: Compulsory licenses have some short-term benefits, however when widely used or the threat of their use exists it discourages innovation in the affected

to complementarity, 325-327.

94. A2K treaty (draft), art. 7.1.

95. TRIPS, art. 40.2.

96. See TRIPS agreement, article 31.

field. The easiest escape from losing on research and development investment is to do research in areas where recouping one's capital is safe. Companies can simply avoid doing research in areas that will provide solutions specially targeted for the needy⁹⁷. Thus, in the long run compulsory licenses do not solve the problem of access to the benefits of science and may even have a negative effect in aligning scientific agendas with the problems of the poor.

Enhancing participation possibilities is generally not addressed, at least for the very poor. An exception occurs when exclusive rights on broad patents are revoked, thus enabling again follow-on innovation by other companies as well.

Little is gained for the right to self-determination. Compulsory licenses allow only choosing from what is already invented.

VI. A BRIEF OVERALL ASSESSMENT OF THE ALTERNATIVES

After examining the different proposals, the question is raised: which one of them should be favoured? This demands a clear assessment of the benefits and shortcomings of each one of them. Before this can be done, we have to recall that some of the disadvantages apparent in the proposals are actually deliberate concessions made toward political feasibility. The meaning of what concessions amount to is however also subject to a variety of interpretations. An example is VAN PARIJS' understanding of the term: "a concession does not consist of agreeing to receive less than one has an interest in obtaining, but rather in agreeing that one will receive less than what one regards as one's entitlement"⁹⁸. A proper use of the term would require from us to have a clear notion in regard to what we are entitled to. Unfortunately, there is a wide dispute on what our entitlements amount to (or to what we are obliged to provide others with), therefore making it inevitable that our understandings of what concessions are differ. Thus, three doctrines aiming at securing different sets of entitlements will be briefly discussed. Those are the basic rights idea, entitlements secured by the International Bill of Rights and notions defending rights of future generations.

Having basic rights secured is a widely shared goal, a common consensus one could say. However, here some differences in opinion arise at an early stage. HENRY SHUE defines the right to subsistence as one of the basic rights. He means by this that without the minimum securities to ensure subsistence, other rights cannot be enjoyed⁹⁹. The rights that are usually considered as basic are some of those we can find in the ICESCR Articles 11.1 and 12 – the right to health, shelter and food. In how far science and technology play an indispensable role in securing those rights

97. HOLLIS & POGGE, *The Health Impact Fund: Making New Medicines Accessible for All* 99 f.

98. PHILIPPE VAN PARIJS, *What makes a good compromise?*, 47 *Government and Opposition* 466 (2012).

99. HENRY SHUE, *Basic rights: Subsistence, affluence, and U.S. foreign policy* (Princeton University Press, 2nd ed., 1996).

is far from self-evident.

In relation to health, the link between taking a medicine and a certain health outcome is often undeniable. While food is often seen as an even more urgent necessity than medicines, the causal relationship between a specific agricultural innovation and food security is more difficult to establish. The target of food security can be achieved by other means than relying on the particular innovation in question. Additionally we have special local circumstances that alter the hierarchy of the needs that are considered more urgent for human survival than others. People living around the polar circles would argue that one cannot be deprived of proper clothing and shelter for even less time than of food and medicines. It is commonly acknowledged that innovation can play a role to make clothing and shelter better suitable for harsh environments, but the securement of those needs is even less dependent on a particular technological innovation.

Thus, in how far a person tends to categorize an object as necessary for securing basic rights depends often on perceived vulnerabilities, and those vary according to multiple social and geographic factors¹⁰⁰. Using the basic goods category to identify the objects of innovation that can be exploited without moral scruple would only make sense on a global scale if the objects falling within this category can be broadly bundled. The diversity of vulnerabilities obliges to offer correlative remedies and a prophylactics package. A strict hierarchy of which needs are more vital than others is impossible to defend on a global scale.

A number of technologies fall clearly out of the scope of what is protected by the basic rights doctrine, but can nevertheless significantly help to achieve certain rights protected by the International Bill of Rights. The importance of many of the less urgent human rights cannot be completely ignored by basic rights advocates. Since we do not have institutions that redistribute resources in order to guarantee that basic subsistence rights are more widely secured, people are compelled to do everything in their power to overcome local threats to health, food security and generally hazards coming from an exposure to a harsh environment. Having access to research networks and a basic infrastructure to undertake experiments enables people to seek for solutions on their own. Failing to continuously assist people as they fall into distress makes it mandatory to enable them to be able to provide for themselves. Securing possibilities to partake in science and technology development releases people from a relationship of dependency, a goal that is laudable in its own right¹⁰¹.

Copyright limits access to the most recent scholarship and research in the social and natural sciences, having the effect that many people are not informed about the newest development in fields that concern their daily lives. Being misinformed or

100. For perceived vulnerabilities, in terms of identifying oneself in a position of disadvantage, cf. JONATHAN WOLFF & AVNER DE-SHALIT, *Disadvantage* (Oxford University Press, 2007).

101. Cf. TIMMERMANN, *Sharing*.

having scarce access to information makes citizens vulnerable. Democratic citizenship demands access to information and the tools that make knowledge more widely accessible and permit a more open dialogue. This is vital for self-determination.

Lastly, technologies shape not only our current society but also the way future people will live their lives. Most likely the next generations will build up on technologies we have developed, as we have continued to develop technologies our ancestors made available. Science technologies are not neutral in the ethical assessment and we are accountable for the direction research agendas have taken. Failing to develop an innovation incentive system that allows us to democratically steer research agendas is a major omission, which makes the current generation responsible for the direction it allowed science to lead.

The situation of extreme scarcity in which half of the world population lives, makes it difficult to abandon a prioritarian position. The suffering caused by malnutrition and disease is so devastating, that access to medicines and work toward food security simply have to be prioritized. It makes therefore sense to follow the drafters of the Health Impact Fund and offer an incentive system that addresses at least one of those major problems. However sticking to addressing subsistence needs only will never erase the stigma of strict dependency from the global poor. Stimulating South-South collaborations is a great path to a world where people assists each other mutually through innovation.

As a final remark, emphasising the role technology could play should not make us neglect wider social problems. While knowledge and the accessibility of new innovation may help us achieve a variety of social goals, extreme inequality undermines much of the potential benefits we can harvest from innovation. As a world of extreme equalities undermines incentives to excel, a world of extreme inequalities undermines the achievements of those who have excelled.

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