

A new opportunity for delivering the commons: exploring the interface between different legal fields”

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INTRODUCTION

This paper explores the contribution which could be made by different legal fields and forms of governance to enhancing the development of the commons, with a focus on the UK and technologies relevant to energy, particularly renewable energy and action against climate change. It does so from the perspective of making available (or returning) the results of innovation and creativity to as many people as possible and on the basis of as little restriction as possible, taking into account the power of private entities and the different forms of governance which confer and restrict that power. Innovation exists within a wide landscape, and this paper serves as the start of a wider project exploring this. The paper introduces the broad range of legal and policy fields - competition, health, environmental and climate change and human rights and their obligations and enforcement procedures (each of which are already the subject of their own rich fields of work) – which could be relevant to a less controlling approach to innovation. The paper also reviews practical initiatives and identifies areas for deeper literature based research and for empirical work, to inform policy change.

METHODS

This paper develops new approaches and arguments from the scholarly legal perspective. This has been developed from a qualitative critical analysis of primary legal sources (legislation, decisions of courts and regulators and policy documents) and consideration of the deep base of secondary legal academic and other work, all of which have been approached in the first instance from the innovation and legal perspective.

RESULTS

IP rights are conferred by states and give significant power to private entities. This power is subject to some limits, but the system remains in conflict with the commons. Valuable attempts have been made to limit the impact of IP through initiatives which proceed in parallel with IP, such as through the Eco-Patent Commons project. There has also been the greater recognition of and reward for smaller scale innovation, particularly in developing areas and through community projects, which have not grown out of a focus in IP. There have been interesting initiatives in the energy sector in the UK, some led by government, notably

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the Saltire Prize for renewable energy in Scotland, and some by industry, for example through the UK Industry Technology Facilitator in respect of oil and gas. Oil and gas regulation is of particular interest given the expansion of established oil and gas operators into the renewable energy sector, for example BP (see BP Alternative Energy webpage); and also because oil and gas is regulated in a manner which is the inverse of IP. Whereas IP confers the right to control the technology which has resulted from the innovation, oil and gas regulation in the UK confers the right to investigate and prospect in an area and to the reward of the profits generated. Can this form of oil and gas regulation provide its own model for innovation, or, which is more likely, can it stimulate a willingness to look more widely for other options?

It is important in this respect that the oil and gas regulatory regimes can require sharing of resources. Also of interest are instances of energy providers returning benefit to the local communities, for example through the Scottish Power Renewable Energy Policy, and Scottish government guidance exists in this respect. More generally, the growth of community governance initiatives in geographical areas the subject of energy (and renewable energy) activity, for example in the Western or Northern Isles of Scotland, are a reminder of alternative workable forms of governance.

Those involved in innovation may choose, however, to seek IP rather than enter a challenge, and to rely on its exclusive rights rather than share them with the local or wider community. Other legal regimes are limited in their ability to restrict the power of IP and to deliver outcomes which are more consistent with the commons. Competition law dislikes the holding of too much power and control and can require the sharing of technology, but only in exceptional cases which involve new developments, and when the technology has become central to an industry. Further, competition law prohibits agreements which have a negative impact on the market and innovation, and regard should be had to this when planning new approaches to sharing if an agreement is involved, bearing in that this is interpreted widely. Other legal fields - human rights, environmental and climate change and health – might seem more closely aligned with the objectives of the commons. Steps have indeed been taken there to encourage new approaches to innovation and the sharing of the results, but this has needed to be a more collaborative basis, given the lack of effective enforcement powers in the relevant international agreements. Further, instruments in these other fields do not engage directly with IP; and when states choose how to proceed they are faced with the more robust enforcement procedures of the international IP agreement. Nonetheless, these instruments and forms of regulation can all combine to encourage states to introduce new approaches, and could encourage innovators, funders of innovation and those developing policy to pursue approaches which do not depend upon and which cannot be blocked by IP; it could also lead to IP owners choosing to share technology in more cases and on more equitable terms. But again, they may choose not to do so.

Looking forward, there is a need firstly for further legal research regarding the wide interfaces identified between legal and regulatory fields (private and public, national, regional and global) which were identified as impacting upon innovation and the commons, and for there to be more engagement between this body of work and that of energy and IP

scholarship, action and policymaking. Secondly, there is a need for empirical research exploring the pressures which lead to different approaches being taken to sharing and funding of innovation and activity in the energy sector, the awareness of key decision makers of laws and forms of regulation other than those relating to IP, and the relevance this has to decision making. Funding is being sought for this to be carried out in a pilot study with a focus on Scotland.

DISCUSSION

Legal obstacles to commons

The power and place of IP, and indeed the limits on it, will be discussed in some depth to contextualise the rest of this paper. IP takes different forms - patents, copyright, design, trade marks. These have different underlying justifications (see MacQueen 2011 and Cornish 2004), but they all confer on the right holder the power to control the use of the underlying technology or subject matter. This right to exclude the activities of others applies irrespective of the benefits which might arise for the mutual growth and sharing of the knowledge and information available to society, or, say, improved mitigation in respect of climate change. Yet, for example, IP is not mentioned in Climate Change (Scotland) Act 2009, which is a key part of Scotland's goal to reduce emissions and obtain all its energy from renewables by 2020 (see also the 2020 Routemap, see webpage). References are made in the legislation to technology regarding the setting of emissions targets (section 2(5) and 4(4)), and regarding energy efficiency (section 60(9)), but not to the role – positive or negative – which IP might play. This is an example of the barriers which exist between different forms of regulation and lack of apparent awareness of them.

This issue will be revisited later in this paper. For now, it should be borne in mind that strong arguments do exist that the power of IP is appropriate, or must be tolerated, as IP is an important form of encouraging innovation and investment (see Scherer 2001, Merges 1994, Greenhalgh and Rogers 2010, Torrance 2010, and IPKat blog posts by the Katonomist). Further, the rights conferred by IP are limited by term, say 20 years for patents (section 25 Patents Act 1977 (UK)) and the life of the author plus 70 years, in most cases, for copyright (sections 12-15 Copyright Designs and Patents Act 1988 (UK)). Once the IP expires, the intangible results of the innovation and creativity (which, of particular importance within the commons debate, are not consumed during the period of exclusivity) return to the public domain, and are available for use by all without restriction. The adequacy of this balance is highly controversial (see Hardin 1968, Boyle 1996, Waelde and MacQueen 2007) and the Public Domain Manifesto of COMMUNIA has put forward its contrary view of the proper relationship between private control and the public domain. This argues that the public domain should be central, with copyright merely the exception.

It also should be borne in mind, however, that IP rights are confined by territory (largely by state, say a UK patent cannot control activities in Kenya) and there can be other limits, for example in the UK the IP owner cannot prevent the use of an invention for non commercial purposes (see section 60(5)(a) Patents Act 1977 (UK)). A state may also permit

others, through compulsory licensing (sharing required by the state) to work the invention if market demand is not met a period after grant (section 48A Patents Act 1977 (UK) reflecting article 5A Paris Convention for the Protection of Intellectual Property 1883). The UK can also require that use is permitted for activities of the Crown, such as defence (sections 55-58 Patents Act 1977 (UK)).

Further, however objectionable it might seem to supporters of the commons (and see also for example Williams-Jones and Ozdemir 2007), IP is, for the UK and for most states, an ongoing fact of life. Most states are members of the World Trade Organization, (“WTO”) (see WTO list of members), and the WTO Agreement of 1994 has as one of its Annexes the Trade-Related Agreement on Intellectual Property Rights (“TRIPS”). As a result, states must have IP in a form very similar to that discussed above in the context of the present UK legislation. Significant bodies of work exist regarding the power of developed economies in framing TRIPS, and the obstacles it imposes to the development of others (see Drahos 2002). States can still impose limits on IP, including compulsory licensing similar to that discussed above in respect of the UK (see articles 9, 30, 31 TRIPS). This could be a valuable means of ensuring that as little as possible is removed from the commons in the UK and elsewhere (see Sell 2003). TRIPS also stresses that the protection and enforcement of IP should contribute to promotion of technological innovation, transfer and dissemination of technology, mutual advantage of producers and users, and in a manner conducive to social and economic welfare (article 7); and that states may adopt measures necessary to protect public health and nutrition and promote the public interest in sectors of vital importance to development (although these provisions must be consistent with the rest of TRIPS (article 8)). Yet these provisions do not impose obligations, and there is scope for disagreement as to what is permitted (see Correa 2002 and Beas Rodrigues Jr 2012); and if a state is too adventurous in pursuing opportunities, then another state might complain to the WTO dispute settlement which could lead to trade sanctions (see article 64(1) TRIPS, Dispute Settlement Understanding Annex 2 to WTO Agreement, Pauwelyn 2010).

There has been some clarification regarding what is permitted, for example in respect of compulsory licensing and public health emergencies through the Declaration on the TRIPS Agreement and Public Health made at Doha in 2001. There is also established national legislation requiring the sharing of technologies which might be the subject of IP, for example the Clean Air Act 1963 in the United States. Yet some countries also enter into trade agreements which remove any flexibility, for example requiring that compulsory licensing is not to be permitted in national legislation (see the Agreement between the United States and Jordan, article 4, see discussion in Vivas Eugui and Von Braun 2007 and Drahos 2007). There is also the Anti-Counterfeiting Trade Agreement (“ACTA”), negotiated mainly in secret, which is a global agreement outside the confines of the WTO framework which relates to IP in a sense much wider than addressing counterfeiting (see Final Negotiated Text from May 2011 and Yu 2011). ACTA became very controversial, and at the time of writing in 2012 attempts by activists against it bore fruit, with the rejection of it by the European Parliament, and hence the European Union and its member states (European Parliament News 2012).

Against this backdrop, proposals for a new acquis in respect of international IP have been made in Dinwoodie and Dreyfuss (2012).

Even if this does not come about, and states have an IP system which is highly inconsistent with wider access to technology, innovators are not of course obliged to seek IP. Yet they do, and this has led to scholars exploring IP's tragedy of the anti-commons (see Heller 1998, Heller and Eisenberg 1998 and Leung 2010). An analogy of this within the energy context would arise in the UK if there was a patent for one aspect of a product which harnesses tidal power, a patent for another part of the product which is owned by someone else, a trade mark in respect of the name of the product as a whole which has become well known as the flagship of a government's renewable energy policy, a patent owned by someone else for the key part of system to deliver the energy to the mainland grid, and copyright in respect of the software which can enable the energy to be distributed. If the owners of all this IP cannot agree to work together and grant licences to each other, then none of them can operate at all, and those considering investing in or innovating in the field might look elsewhere (see Sichelman 2011). This situation could also be termed an IP thicket. Thickets also arise in other fields (for example van Overwalle 2010 regarding genetics and which have been the subject of a report by the UK Intellectual Property Office in 2011). Issues such as this are increasingly likely to continue to arise in the energy field.

As resources decline, energy cannot merely be extracted from the ground; technology will be at the heart of new ways of harnessing old forms of energy, such as extracting oil from the sea bed (see Gallagher et al 2006, Ewan 2011) and also of generating new energy sources. This has been recognised by the attention paid to IP and technology transfer at the United Nations Framework Convention on Climate Change ("UNFCCC") 1992 of which the UK is a member (see website and also Barton 2007, Abbott 2009, Maskus 2009, Gerstetter 2010, Derclaye 2010, Rimmer 2011, Blakeney 2012), and by the encouraging institutional interaction through a tripartite project between the United Nations Environmental Programme, the European Patent Office and International Commission on Trade and Sustainable Development in 2010. Further, at its Cancun meeting in 2010, the UNFCCC established the Technology Mechanism (see Technology Mechanism webpage and discussion in contributions by Navraj Singh Ghaleigh and by Elisa Morgera and Kati Kulovesi in a forthcoming collection edited by the author *Environmental Technologies, Intellectual Property and Climate Change: Accessing, Obtaining and Protecting* (Edward Elgar 2012) ("Environmental Technologies Collection"). At the meeting of the Technology Executive Committee in Bangkok in September 2012, a decision was made to investigate IP (IISD Reporting Services 11 September 2012). It will be interesting to note what this generates for IP and climate change more generally, for thickets and for the commons.

Re-birth of commons

There have also been projects focussed on bringing about a different, and more open, approach to encouraging and sharing innovation which take a different approach to IP than the more negative one discussed so far (Wiener 2006, Troxler 2010, Maggiolino and Montagnani 2011). Of most interest here is the ongoing work in the energy sector. Through

the Eco-Patent Commons, established by the World Business Council for Sustainable Development in 2008 (see website), many leading companies have chosen to pledge part of their patent portfolio to the group – a new central commons. Members and non members of this group can then obtain free access to these patents. This project is stated to have both philanthropic and business objectives and has been the subject of much positive comment. Questions have been raised however, regarding why leading companies choose to become involved in it, and the quality and value of the patents which they choose to contribute to the group, in contrast with those they choose to control in the more traditional way (see Van Hoorebeck and Onizu 2010, Hall and Helmers 2011, Boynton 2011).

Innovation regulation

Prizes involve specific technical challenges being set and then solved. Within oil and gas, there have been industry attempts to encourage collaborative innovation through the challenges issued by the UK Industry Technology Facilitator. This is an industry group which issues challenges based on issues the industry has encountered (see webpage). For 2012, these are focussed on oil and gas, however the group clearly recognises the importance for all energy providers to work together, so it will be interesting to note the direction of future challenges and their role in renewables (see Industry Technology Facilitator Knowledge Transfer Network webpage). Prizes and challenges have been used in more developing areas, such as the Innovation Prize offered by the Rockefeller Foundation and the African Carbon Trust in 2009 (see Scholtz 2009) and this is considered in more detail by Anna Davies in her contribution to the Environmental Technologies Collection.

There have also been state challenges, for example in Scotland the Saltire Prize of 2010 pursuant to which “£10 million will be awarded to the team that can demonstrate in Scottish waters, a commercially viable wave or tidal stream energy technology” (see Scottish Government Saltire Prize webpage) It should be borne in mind, however, that hidden in the contractual details is a provision that the IP owner will retain the IP (clause 10.6, see Scottish Government Saltire Prize Competition Guidelines webpage). So while the prize is an incentive to innovation, it is not a means of enhancing the commons. This embedded attachment to the place of IP in innovation suggests a need to review other forms of regulating, conferring exclusivity and encouraging risk taking.

Other forms of control and sharing

Unlike the possible proceeds of innovation and creativity, in the UK Continental Shelf oil and gas while in the ground belongs to the state and are not part of the commons. Accordingly, to explore for oil and gas either on land or offshore an operator must apply for and be granted by the state a production licence for a particular period and in respect of blocks, an area for work (section 3 Petroleum Act 1998 and see also Department of Energy and Climate Change Petroleum Licensing Guidelines and Types of Licence webpages). Model licences have been developed and the key issue in respect of grant are the work programmes submitted by the operator. Licences are issued in a series of rounds (see eg Department of Energy and Climate Change 27th Seaward Licensing Round webpage).

Interestingly, there are now requirements that one half of the block will be returned (“recycled”) to the state at the end of the first period covered by the licence, as part of the state’s plan to encourage maximum activity within the licensed area (see discussion in Gordon 2011 and Department of Energy and Climate Change Types of Licence webpage).

The licence holder will control and profit from the oil and gas which might be found in the block; if oil and gas are not extracted, they will lose. This is quite a different approach to encouraging investment and risk taking than that discussed in respect of IP, yet like IP the oil and gas licensing model is based on control. There are other similarities. Just as the tangible limits of the block confine the oil and gas exploration, IP rights of others can impose limits on the approaches which innovators may take to developing a new technology. Further, like IP’s compulsory licensing, oil and gas legislation has arrangements for requiring wider use and new activity, firstly through the recycling provisions discussed above, and also the Fallow Field and Stewardship Initiatives, which were developed through close industry and government collaboration through PILOT (see Department of Energy and Climate Change PILOT webpage). Fallow Field and Stewardship licensing conditions enable the state to intervene and enable others to act if the license holder(s) does not work all of the block as effectively as possible (see also Gordon and Paterson 2011, 5.7-5.49). Finally, legislation also provides means of providing access to one set of infrastructure (say a pipeline) to others, depending on need, capacity, security and the payment of a fair, reasonable and non-discriminatory fee if agreement cannot be reached; and since 2011, the state has to power to intervene in a situation even before negotiations may have completed (Energy Act 2011 sections 82 and 83).

These intersections between IP and oil and gas are of particular interest here given that, as noted above and given the maturity of the UK fields, innovation will be an important part of extracting oil and gas from the ground; accordingly, those very people involved in decision making regarding the taking of a production licence may also be involved in decisions regarding the funding of innovation (see also for example the GE Oil and Gas webpage and Ewan 2011). Would this lead to an openness to approaches to innovation which proceed in a manner unlike that of IP? It is of further interest to note that analogies can be identified in turn between the commons and other forms of regulation of oil and gas.

There is a high level of voluntary industry regulation in the UK, with the business community, rather than the state, setting the rules by which they wish to operate. There is the Commercial Code of Practice, the Infrastructure Code of Practice and a Code of Practice on Access to Upstream oil and gas infrastructure, all of which have at their heart principles of industry fairness and transparency (see also Vass 2011). Further, places affected by oil and gas and renewable energy development, such as the Western and Northern Isles of Scotland, have seen a growth of much more traditional commons and community governance activities (cf Ostrum 1990, Armitage 2008). The Land Reform (Scotland) Act 2003 enabled new approaches to land ownership, for example the purchase of the Islands of Eigg and Gigha by their communities, with the communities then each establishing their own rules for how they wish to operate (see Eigg Heritage website and Scottish Government Community Buy-Out Gigha webpage, also Mackenzie 2010). It is noteworthy here that Eigg and Gigha then chose

to engage in community based renewable energy projects and to act in new ways to combat climate change (see Wind and Sun Isle of Eigg web page, Islands Going Green Eigg Electric Webpage, Carrel 2010, Isle of Gigha Frequently asked questions about the Gigha windmills webpage). It is of final interest to note that the Scottish Government has provided guidance to assist in such initiatives, (see Scottish Government Community Energy Renewable Energy Toolkit (see webpage and section 6).

This embracing of different forms of governing assets, land and responsibilities in respect of them, by governments, companies and communities, may provide helpful models for further work regarding innovation and the commons (see also Brooks 2002, 365-392). Arguments have indeed been made that the growth of a more community based approach to property could be a model for a more community based approach to copyright ((Howe 2011). For now, however, none of these arguments provide immediate solutions to the power of IP and the restriction of the commons. Accordingly, it is helpful to pursue the limits which can be imposed now, by other legal fields, on the power of the IP owner. Can they deliver wider access to technology to contribute to the growth and support of the commons?

Legal contributions and lessons

The most established legal counter to IP is competition. Competition law will be the subject of quite detailed discussion, given that it provides practical means of sharing (or preventing sharing), in some cases. Competition, like IP, is a top down form of control which sets out ways of bringing about its key objective of enabling the market to proceed without restriction, irrespective of the industry in which it operates. Similarities can once again also be identified between fields, with IP and competition both aiming to encourage innovation (see for example Geroski 2005, Regibeau and Rockett 2007). There is also a deep relationship between energy and competition, including regarding the sharing of infrastructure, although this had not focussed on innovation (Vedder 2008, Vedder 2011, Hariharan and Ghaya 2011 and Talus 2011). Of present interest, competition law can be concerned at licensing of IP, as this involves an agreement which will have an impact on the market; and depending on how a commons is structured, competition law might be interested in it. Competition is also concerned at the holding of too much power, it may be interested in a refusal to license IP.

The European Union treaty provisions address competition law, and are therefore the most important for this paper's discussion. What is now article 101 Treaty on the Functioning of the European Union (formerly known as article 81) can render void agreements which can impact upon development and innovation, which clearly could cover IP licensing. Since the 1990s, however, the European Union has seen a recognition of the more positive impact which the licensing of IP can have on innovation, and this has led to the block exemptions which can enable agreements to continue. Regulation (EC) on the application of article 81(3) of the Treaty at categories of technology transfer agreements, applies to agreements between two parties (recital 1, article 2). Also important, particularly regarding the extent to which a group of IP owners can agree to share their technologies, through say a patent pool which would enable thickets such as those discussed above to be avoided, are the Commission

Notice Guidelines on the application of article 81 of the EC Treaty to technology transfer agreements (see articles 152, 167, 224, 225, 227, 231–232) and also from 2011 the Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements (see in particular articles 146, 147). Broadly, if an agreement aims to encourage innovation, dissemination and does not restrict price and activity beyond the IP, agreements involving IP are likely to be permitted (see also Ghidini 2010, 215–6).

The horizontal cooperation agreement guidelines also apply to standards (see section 7 and see Sattler 2011). Standards arise when all those who work in an industry use a particular technology for a function or apply agreed forms of measurement and assessment. A closed standard will arise if members of an organisation, say those involved in software relevant to delivering renewable energy to the grid, agree that a particular set of technology is to be used by all to achieve a particular goal. The International Electrochemical Commission sets standards in the energy field and the World Council on International Telecommunications will meet in Dubai in December 2012, where the International Telecommunications Union will discuss climate change and energy efficiency standards. From the commons perspective, it is preferable for a standard to focus on the functionality of a technology, rather than refer to a particular product, or a technology which is the subject of IP. This more likely to be so if a standard is “open”, such as World Wide Web Consortium (see website) with details of it available to all, rather than just a specific membership (see discussion of open standards in Fitzgerald and Pappalardo 2009, Glader 2010).

If one cannot meet the standard without using such a technology or product, and there is IP in respect of it, the IP owner holds a large amount of power (see Lemley 2002, European Commission Fraunhofer Fokus and Dialogic 2011). IP policies of standards bodies are more likely to be acceptable from the competition perspective if they state that if a member owns IP which is within the standard, this must be disclosed when the standard is set; and that if it is essential for that IP to be used to meet the standard then the IP should be licensed to all members on a fair reasonable and non-discriminatory basis (see horizontal cooperation agreement guidelines para 285 in particular, and for long running debate see Treacy and Lawrance 2008, Gilbert 2010, and discussion of the impact of this in Contreras 2011). The meaning of “essential” and “fair reasonable and non-discriminatory” remain unclear (see Treacy and Lawrance 2008 and from the United States perspective, Epstein et al 2012). Some guidance is provided in the horizontal cooperation agreement guidelines as to process (paras 287-291) and as seen above the term is found in energy legislation, as discussed above; so it will be interesting to review further interfaces in this respect.

There is a growing body of work regarding the relationship between competition law and the environment (Kingston 2011). There have been no cases, however, regarding the relationship between agreements, innovation and energy, energy standards, or indeed regarding pledging to a commons group. There have also not been any cases considering competition law as it applies more generally to commons licensing agreements and commitment to an open standard. The permissive attitudes to licensing, the present form of the block exemption and guidelines discussions above and the openness of the licensing

which would be involved in open standards, and commons licensing suggests that a successful challenge is unlikely; but it should be borne in mind that this cannot always be assumed, given the focus of competition on the market and encouraging innovation, rather than delivering a commons.

Competition can also require more sharing than might arise though IP and oil and gas legislation, say in respect of the control of a new pipeline (see also Aldersley-Williams 2011) or IP relating to a new software which aims to prevent sites being hacked, which could be a landmark in energy security (see Alec 2012, Usenmez 2011, Department of Energy and Climate Change Energy Security webpage). This can be particularly important if a technology becomes a de facto standard through its commercial success, with it used by so many in an industry to the extent that technologies which do not work with it are highly unlikely to be accepted. This could provide a second basis for standards placing an IP owner in a position of significant power. If an IP owner refuses to license its technology in such cases, competition law may be interested, on the basis of the prohibition on the abuse of a dominant position now found in article 102 Treaty on the Functioning of the European Union (previously article 82). This provision has also been used to investigate Samsung in the light of concerns that it has not met the IP licensing policies in the standards policy of which it is a member (European Commission Press Release Antitrust 2012). Likewise, it can be an abuse of a dominant position to refuse to license IP.

The few cases which have been considered the issue have focussed on communications and pharmaceutical technologies - the one case which has involved the environment (*Der Grune Punkt* regarding labelling), did not involve a refusal to share. It is interesting to note in the context of this paper, however, that this body of law is argued by scholars (although not by courts) to be strongly rooted in the essential facilities doctrine, which arose from the need to provide access to physical infrastructure such as docks (*B& I Line/Sealink, Oscar Bronner Muller and Rodenhausen* 2008) and which is reflected in the Energy Act 2011 discussion above. Yet for the question of abuse to be relevant at all, there must be a dominant position in a market.

Definition of the market is a complex exercise, and involves regard to substitutability, geography, barriers to entry and the level of innovation in the field (see Commission Notice on the definition of the relevant market). Once the market is defined (say, is it delivering tidal power from Orkney to Grangemouth, or is it the delivery of all renewable energy to the grid in the UK), then is the provider dominant in the market? Could the IP owner operate to an appreciable extent independently of others in its approach to licensing its technology (see *United Brands*)? This will depend on the size of market share, the number of competitors in the market, and once again barriers to entry and the level of innovation in the field – how readily could technology used to deliver natural gas, say, work with power generated by waves? If there is dominance, then case law requires there to be exceptional circumstances for the refusal to license to be an abuse; it also suggests that this would not be met by, say, arguments that all energy companies should be protected against cyberattack and so all should be able to use particular software, irrespective of the stance taken by the copyright owner. Rather, (see *Radio Telefis, IMS Health, Microsoft 2007*, the last two of which involve

standards) there must be no actual or potential substitute for the technology the subject of IP (which requirement would be met in some cases, but not all, and certainly is inconsistent with the concept of returning technologies to the commons); the technology would be used to develop a new product or technical development for which there is unmet consumer demand (and continuing its existing technical purpose but offering it to more, consistent with the commons, would not meet this); the refusal to license excludes viable competition in a (possible hypothetical) secondary market (again, this would exclude wider participation in ongoing activities); and there is no objective justification for the refusal (the meaning of this is unclear, although reward of innovation per se will not suffice).

There is a wider, though weaker, view that one should look more widely to all exceptional circumstances (*Volvo, Commission Decision in Microsoft 2004*) and there are also signs that the regulator, the European Commission, is prepared to look more broadly in establishing what might be abuse (see Communication from the Commission, *AstraZeneca*, and discussion in Rouseva 2010). Yet in any event, the abuse case law will assist in a much narrower set of categories than would a requirement for fair, reasonable and non-discriminatory licensing under a standards agreement. And even the widest view of abuse would still exclude technologies which do not involve the IP owner being in a dominant position. Accordingly, competition law can rarely require that technologies are returned to the commons or at least made available more widely if the IP owner does not wish to do so. Other forms of regulation might appear more aligned to the communal and collaborative themes of the commons. Health, environmental and human rights law, all of which have strong links with each other and with innovation and possible action against climate change, will be considered, from the perspective of their international agreements.

Health was discussed above in the context of TRIPS (which is also considered Hestermeyer 2007 and Sterckx 2007) and there is a strong link between health and the consequences of climate change, for example the destruction of crops leading to starvation or the development of new diseases which are immune to existing vaccination (see consideration of this by Baskut Tuncak in his contribution to the Environmental Technologies Collection). There is international regulation of health through the World Health Organization (“WHO”), and the WHO has become active in the innovation and IP debate. In 2003 the WHO established a “Commission on Intellectual Property Rights, Innovation and Public Health” (see website) and its recommendations (4.13–4.27) led to World Health Assembly resolutions in 2006 regarding the appropriate stance to be taken to IP, and other approaches to rewarding innovation and steering investment and research, for example through prizes (WHA59.24). WHO action continued, with new resolutions in 2008 (WHA 61.21) establishing the WHO Global Strategy and Plan of Action on Public Health, Innovation and Intellectual Property. The WHO also established a working relationship with WIPO and the WTO (see Trilateral cooperation webpage).

This practical approach of the WHO takes an approach to innovation which is based on outcomes, and will not be distracted by questions of IP and power. Yet the discussion of the power of IP above means that there must be significant engagement with IP; and the WHO outputs, despite being lauded in the health field (New 2008) do not move beyond

those of the WTO from the declaration made at Doha in 2001. If a state chooses not to require an IP owner, or an innovator and investor seeking to enter the health field chooses to take a more controlling approach and refuse to license its IP, then even if it is of importance to new diseases arising from climate change, the WHO cannot force it to do so. More proactive steps were taken by the WHO in 2005 with its international health regulations regarding reporting and management of disease emergencies; yet these too have limited enforcement and mandating powers (see WHO international health regulations webpage), particularly when compared to competition law and oil and gas which were discussed above. Important health technologies can remain, therefore, outside the commons and for the present focus of this paper, health offers little.

Environmental and climate change law can seem more encouraging from this perspective. The Kyoto Protocol (1997) of the UNFCCC which was discussed above sets out goals and targets for states regarding the reduction of greenhouse gas emissions, but does not address IP. The creation and transfer of technology can be important to assisting countries, in their differing cases of need, in mitigating the impact of, adapting to and obtaining information regarding climate change. Technology has been an important part of the UNFCCC's work since the establishment of the Expert Group on Technology Transfer in 2001 (see Expert Group on Technology Transfer webpage). This has increased since the Copenhagen Accord of 2009 (see Copenhagen Accord webpage) and Cancun Agreement of 2010 (see Cancun Agreement webpage), which, as discussed above, led to the Technology Mechanism. These instruments do not have enforcement systems in the manner of TRIPS (see article 14 UNFCCC regarding settlement of disputes), but the Kyoto Protocol does have an innovative compliance system (see article 18 and discussion of its development in Oberthür and Lefeber 2010, Brunnée 2011 and Cardesa-Salzmann 2012). This system could serve to encourage states to encourage innovation and technology in new ways. This could lead, say, to software regarding the delivery of energy, technology relating to different forms of renewable energy, and also medicines, vaccinations and drought resistant crops, being more widely available. But if approaches are considered by states which involve IP and could clash with TRIPS, the sanctions of TRIPS are likely to be borne in mind by states, even if they would be acting to meet their Kyoto Protocol obligations. So a more radical approach to innovation, which is not dependent on IP, is preferable.

Of interest here is the Convention on Biological Diversity 1992 (see website) and its Nagoya Protocol on Access and Benefit Sharing 2010 (see webpage). The Convention state parties must seek to bring about the protection and development of biodiversity and ecosystems, and the Convention refers to technology transfer and protecting IP (article 16 and see also Brooks et al 2002). Similar provisions are in the Nagoya Protocol (article 5(4)), which addresses access and sharing of reward of those involved in working with the biospace, by encouraging local initiatives and systems which require prior informed consent and mutually agreed terms on the part of those involved in projects (see discussion by Morgera and Tsioumani 2010). IP is acknowledged as a possible source of benefit but importantly the Annex to the Protocol does include a list of other options.

A wide range of countries are parties to the Convention, including the UK, yet commentary on it from the innovation perspective has focussed on the opportunities which might arise for developing areas (see Swiderska March and July 2012 and the activities of Natural Justice, see webpage). Discussion in the UK has focussed on the impact of the Convention on nature conservation (see Reid 2011). Yet as another example of an interrelationship between energy and innovation, examples of community benefit funding and support can be found in developed areas in the energy sector. Consider the Shetland Charitable Trust (see website) which uses funds gained from oil and gas to fund community owned social projects. This also owns 90% of Viking Energy Ltd (see website) which has been involved, for example, in 2012 in a new wind farm project, which will serve not only the islands but will also export to the Scottish mainland. Likewise the Crown Estate, which owns much land and sea on which renewable energy and oil and gas exploration and development is carried out (see Crown Estate Energy webpage) has a Crown Estate Marine Stewardship Fund to support community projects which look after the marine estate (see webpage) and a Crown Estate Coastal Communities Fund to support local projects (see webpage). Scottish Power's Community Benefit Policy has also funded community initiatives (for example the Glendaruel playpark in Colintraive (see webpage).

These lessons from the perspective of the Convention on Biodiversity might serve to provide example of new approaches to reward and benefit could be used in the innovation field, by states taking an entirely new approach without needing to approach IP in a manner which could lead to states potentially breaching obligations under TRIPS. Yet identifying examples of approaches taken to reward within the energy, environmental, biocultural and climate change space on the part of states, businesses and communities is not the same as requiring states innovators and investors to behave in a particular way - particularly when the place of IP in innovation is so established. There is very limited engagement in the Convention and the Nagoya Protocol with the different approaches which might be suggested to states given the obligations in TRIPS. Article 22 of the Convention provides that the Convention shall not affect other obligations of states unless they create a serious damage or threat to biodiversity and similar provisions are in the Nagoya Protocol (articles 1 and 23). It is also unlikely that clear guidance might be developed in the future through dispute resolution as to how the Convention and Protocol relate to TRIPS. The Convention refers to conciliation and mediation (article 27) and the Nagoya Protocol sets up arrangements for monitoring (article 29) and asks that the parties discuss compliance procedures (article 30). Might the final legal field considered here, human rights, assist states more by requiring different approaches?

Human rights might indeed seem the most appropriate means of creating and delivering greater access to the commons, given the apparent themes both in the commons and human rights of fairness, appropriate reward, sharing and community. Work in this respect could indeed build on steps which have been taken on the biodiversity field (see Morgera 2012). Yet the human rights legal framework, particularly at international level which will be the focus here, is fragmented. There are clear statements of international rights in the International Covenant on Civil and Political Rights and the International Covenant on

Economic Social and Cultural Rights, both of 1966. These include rights which may seem relevant to the commons, particularly in the health, communications and energy sectors: to life (article 6 ICCPR, also discussed in Hestermeyer 2007), health (article 12 ICESCR, see also Smith 2007), food (article 11(1) and (2) ICESCR, see Haugen 2007), and also in respect of the reward of the innovator and access to the benefits of scientific progress (article 15(1) (b) and (c) ICESCR (see Shaver 2010 and Human Rights Council consultation 2011, Chapman 2001, Helfer 2003 and General Comment 2005). There is also growing discussion regarding human rights and the environment, for example the Resolution of the Human Rights Council of the Office of the High Commissioner for Human Rights 25 March 2009 (recital 7).

These rights impose obligations on states to confer these rights on their citizens; it does not address IP owners. Further, once again, international human rights regulation offers limited enforcement mechanisms if the approaches of states to IP are considered inconsistent with the wide range of obligations imposed by the treaties. This is important as the United Nations High Commissioner for Human Rights' Sub-Commission for the Promotion and Protection of Human Rights has expressed concern, in resolutions of 2000 and 2001, at the manner in which states have chosen to comply with their obligations under TRIPS, and considers that this has been inconsistent with state obligations in respect of human rights. This did stimulate increased collaboration between the UN human rights bodies and other international institutions in respect of innovation, with the Office of the UN High Commissioner for Human Rights making a submission to the WTO discussions in 2003. If disputes do still arise involving the relationship between TRIPS and human rights treaties, individuals in some cases, and states, can make complaints to monitoring bodies. This would be investigated and regular reports are made as to the extent to which the activity of a state meets its obligations under the treaties (regarding ICCPR see Human Rights Committee website and regarding ICESCR see Committee on Economic Social and Cultural Rights website, and also Bowman 2007).

This is not a comparable sanction to that offered by the WTO and it cannot require an IP right to be shared in a particular situation. Human rights also, therefore, cannot provide a clear solution to enhance the commons in the innovation space. Perhaps surprisingly given the arguments which have been made about the WTO as the home of IP protection and of significant sanctions, there is an opportunity for the fields to combine under the WTO umbrella. There are debates among scholars and in case law regarding the proper place of other legal fields in WTO dispute settlement, notably human rights and the environment (see *EC – Measures Affecting the Approval and Marketing of Biotech Products, United States – Import Prohibition of Certain Shrimp, United States – Measures Affecting the Cross-Border Supply of Gambling, China – Measures Affecting Trading Rights and Distribution Services for Certain Publications* and discussion in Frankel 2005-6, Harrison 2007, Howse and Horn 2009 Van Damme 2010, Pavoni 2010, Concini and Pauwelyn 2010, Kulovesi 2011). If a complaint is made against a state because of an approach it takes to sharing IP, arguments could be made that regard should be had to human rights and Kyoto Protocol and Convention obligations. These arguments would, however, be ambitious; and further, they could be

explored only in the context of interpreting the proper scope of states obligations under TRIPS and the flexibility it confers. Obligations under the other international instruments could only be enforced with their own systems – with the limits which have been discussed.

New approaches

The wide range of existing legal frameworks cannot require those involved in innovation to share technology and license IP if they do not wish to do so. If a state encourages innovation and reward through a different route, while also having an IP system, TRIPS will not be relevant; yet the obligations and enforcement procedures in the other more relevant instruments discussed have been seen to not provide external encouragement or requirement for states to take this path. Further, even if there is an alternative, innovators and states may choose to pursue the more established IP route. In other work, I have argued for IP, competition and human rights to be combined by decision makers in disputes at national, regional and international level, to lead to greater access being provided to essential technologies (see forthcoming monograph *Intellectual Property, Human Rights and Competition: Access to Essential Innovation and Technology* to be published by Edward Elgar in 2012). A strong focus is placed there on the role of human rights in private IP disputes in the UK and the EU, competition defences based on EU law, and delivering arguments based on existing legal obligations to require a decision maker to permit that conduct can continue without payment. Yet these arguments are complex, limited to essential technologies and can only be used once a dispute is before a court, or note paid to the issue by policymakers.

The focus throughout this paper has been to bring about means of ensuring wider access to all technologies and to enhance the commons. To do this, the opportunities for further interconnection between laws and regulations regarding IP, innovation, competition, health, environment, human rights, energy and land regulation and community governance must be further explored, at national, international, and in particular European Union level. This work should build on the literature discussed in this paper, the connections and parallels identified, and also the growing base on work exploring the links between fields (Brown et al 2010, International Council on Human Rights Policy 2011, Young 2012). What further lessons can be learnt from this regarding possible new forms of requiring wide access to technology, and incentives to encourage an approach to innovation more consistent with the commons?

Is there an analogy from the oil and gas licensing model, say in relation to thickets and state prizes? How could this be combined with the fundamentally intangible nature of working with technology and ideas, rather than blocks of the North Sea? An interesting lesson might also be learned from arrangements which have developed in the UK to address, through unitisation agreements, entitlement to oil if a reservoir covers more than one block, and as such could be drilled and extracted by more than license holder (see Macleod 2011). Or is the key point that the willingness of energy companies and governments to accept the oil and gas licensing approach, and to be involved in and encourage community energy projects, means that they may be receptive to other other new forms of encouragement? The

Scottish Government as part of its Routemap might then be willing to require that all businesses located in communities within 100 miles of a wind turbine, which would like to use technology in the turbine as part of their own projects to develop compatible technologies, should have a free licence, if they in turn donate a percentage of their profits to a community group? Or should the Scottish Government set up another prize (of much higher value than the Saltire Prize) and require this time that IP is not sought, thus avoiding issues with TRIPS, and require that it should be available to all for no fee?

Work on development of these ideas must continue. And to inform this, and also to establish the possible reaction to the ultimate proposals, interviews will be carried out with lawyers, funders, business advisers, innovators, and policymakers. These interviews will explore whether or not those involved in the innovation space are aware only of the need to enforce the exclusive rights conferred by IP, and to obtain more and wider rights? Is there an awareness of competition law, human rights, environmental and health instruments? Is there an awareness of community governance projects and their success in owning land and generating power, or does this not seem directly relevant to their business and professional world? Have they considered pursuing more work under the umbrella of prizes or Commons based licensing as a different means of rewarding innovation and delivering ongoing financial gain? Would prizes or Commons based licensing be considered to be inadequate reward (see consideration of this by Pugatch 2011 in respect of diseases)? Is there an awareness that one part of a business might be comfortable with oil and gas licensing and one with IP and one with community ventures? Has there been strategic analysis of the outcomes of this, and how this might impact on the business as a whole?

Further, are those involved in funding or advising innovators (such as venture capitalists or bodies such as Scottish Enterprise (see website) aware of human rights and environmental instruments and also the growing focus on energy security? Do they see these as remote from their companies and targets (which given the growth of initiatives such as the Eco-Patent Commons seems unlikely)? Are advisers, investors and policymakers comfortable with one approach to use of investment and risk taking in oil and gas exploration but a different one regarding innovation? Do they see other areas of law are relevant only to another legal or government department? Would investors and advisers continue to be involved if innovation was regulated in a different way?

These interviews should influence policy development in the UK building on the Hargreaves Report (see website) such as the Intellectual Property Office's consideration of its role (see July 2012 report) and in the European Union, through the European Commission's work on "A Single Market for Intellectual Property Rights" (see webpage). They would assist the preparation of consultations and proposals in respect of innovation and energy which are embedded in a wide, not narrow, regulatory and evidential base. Funding is presently being sought to conduct these interviews with experts from throughout Scotland and from large and small providers, with a focus on energy.

CONCLUSION

Change is required, by states and by innovators, to bring about wider access to the commons. The review of a wide range of legal regimes from the perspective of their interaction and enforcement opportunities has identified opportunities for this to be encouraged, but it cannot be required. Examples do suggest that it can be consistent with innovation and corporate benefit to pursue an open approach (for example community involvement in energy projects and commons licensing in the renewable energy field) but would more providers do so, and would the state require them to do so, as a means of respecting its full range of international obligations? The two proposed strands of future work, literature and empirical, should deliver proposals for a more balanced and open legal and regulatory landscape within which the benefits of the commons or at least wider access will have a much greater role. They will also provide guidance as how, and in what circumstances, it would be likely to be accepted. The empirical aspect of the project may suggest that it would not be accepted; if so, this must be addressed, and deeper and new foundations for innovation and sharing must be cast, and include all relevant elements and perspectives.

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