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CHAPTER 11

Research Tools

Patents and the Information Market in the Knowledge Based Economy

Christine GODT

Assistant Professor, University of Bremen

Introduction

Research Tools are an example of a puzzling mismatch between academic discussion and the “real world” discourse in intellectual property. The academic world is convinced that intellectual property functions have profoundly changed in the knowledge-based economy due to a different use of patents and by protecting information *per se*. There is broad consensus that property rights have expanded both in number and scope, giving rise to a new perspective on post-grant instruments such as, *inter alia*, competition law. An understanding has grown that new rules are needed which generate a more civilised and innovation-oriented exploitation of intellectual property, with research tools serving as an example.

In contrast, the “real world” practitioners stick to the old property paradigm of conceiving intellectual property as a privileged competitive position within the full discretion of the owner. Any restriction of the right to exclude is rejected as an intrusion, research tools included. The debate about research tools provides an interesting test case about the mismatch of the academic and a real-world politicised discourse. It is not simply that there is disagreement over whether any danger exists at all to research, to the overall innovation process, and to the public health care system. The dispute on the horizon is about how to contain potential problems.

At the centre rests the question of how we conceptualise the puzzle of proprietary exclusion *and* necessary competition today. In the

19th century, it was a question of all or nothing – a battle which the free traders (who were principally opposed to patents at that time) lost to the lawyers, as Machlup once put it.¹ In the 1970s, free traders gained ground again. In the parallel import cases, the competition argument prevailed in respect to the European common market.² In the 1990s, free traders made further headway. In the factually marginal case of *Magill*, the ECJ limited the extent of intellectual property to the “main” market and cut off leveraging of another market.³ The argument put forward was fostering innovation. Now the question is whether “research tools” are next in the sense that access will be granted for the sake of free competition for information. It is not yet clear whether the issue will pop up in the area of biotechnology (research tools in respect of the Gencode) or in information technology (research tools in respect of “the Code”). However, the keyword seems already to be clear: access. But how will the argument be construed?

I. The Problematique of “Research Tools”

A. What is a “Research Tool”?

There are various ways in which the term “research tool” is used. The ordinary European Patent Attorney uses the term most simply as a “by-chance” patented research instrument. Usually the term is equated with tools used by a research institution.⁴ The rough idea is that this use does not generate profits, thus there is no need for defense and litigation. A slightly more sophisticated conception refers to the so-called research exemption, which is a narrow exception worldwide – in Europe allegedly a little wider⁵ and a little more stringent in the US.⁶ There seems to be general agreement about the list of examples: cell lines,

¹ Machlup, F., “Die wirtschaftlichen Grundlagen des Patentrechts”, *GRUR*, 1961, pp. 373-390, pp. 473-482, pp. 524-537 at p. 379.

² The literature is abundant, still the best account is Ullrich, H., “Kommentarbeitrag: Gewerblicher Rechtsschutz und Urheberrecht, Gemeinsame Forschung und Entwicklung” in U. Immenga & E.-J. Mestmaecker (eds.), *EG-Wettbewerbsrecht*, München, Verlag C.H. Beck, Band 1, 1997, pp. 1101-1467.

³ Cases C-241/91 and 242/91, *RTE and ITP v. Commission*, 1995, ECR I-743.

⁴ Patent Attorney A. Andres in an informal talk at a conference in Berlin, 29 March 2007.

⁵ Holzapfel, H., *Das Versuchsprivileg im Patentrecht und der Schutz biotechnologischer Forschungsinstrumente*, Baden-Baden, Nomos Verl.-Ges., 2003, p. 239.

⁶ *Madey v. Duke – US Supreme Court*, 123 S.Ct. 2639 (2003), commented by Saunders, T., “Renting Space on the Shoulders of Giants: Madey and the Future of the Experimental Use Doctrine”, *Yale Law Journal*, Vol. 113, 2003, pp. 261-268 and Eisenberg, R., “Patent Swords and Shields”, *Science*, Vol. 229, 2003, pp. 1018-1019.

trans-genetic animals, monoclonal antibodies, clones and cloning tools, nucleic acids and proteins, combinatorial chemistry libraries, genomic and proteomic libraries, expression and reporter systems, databases, software, equipment and reagents. However, the central problem with research tools is more disguised than defined by this enumeration. It is placed at the center by Rebecca Eisenberg, who chaired the NIH Working Group on Research Tools in the 1990s. The report frankly defines a research tool as an instrument which is an end-product for some but a mere intermediary tool among many for others.⁷ This definition is opposed by those who explicitly exclude diagnostic or therapeutic products, or commercial-scale production.⁸

Thus, the evaluation of the problem depends on the definition. The term can be narrowly used when defined as “instruments used in research”. However, defined more broadly, the term may be equivalent to biotechnology in general – describing problems of access and exploitation of appropriated tools, and tensions between research goals and market profitability. Thus, research tools are a modern test case for property rights in those technologies which deploy appropriated information at a very early stage in development. They are, therefore, exemplary for the expansion of property rights.

B. The Contested Appraisal of “Research Tools”

The question whether “research tools” pose a risk to economic development and research is highly contested.

Critical positions revolve around anti-commons concerns and potential detrimental effects on public interests such as research, innovation⁹ and public health systems.¹⁰ Debates can be generally distinguished according to their arguments as “*ex ante*” (patentability and patent claims) and “*ex post*” (licensing and restrictions on exclusivity). Both

⁷ Report of the National Institutes of Health (NIH) of 4 June 1998, Working Group on Research Tools, www.nih.gov/news/researchtools/index.htm, p. 3.

⁸ Seide, R.K. & LeCointe, M., “Research Tool Patents: Are there any exceptions to infringement?”, Presentation to the Biotechnology Industry Organisation Conference, June 2004.

⁹ National Institute of Health, *supra* note 7; Henry, M.R., Cho, M.K., Weaver, M.A., Merz, J.F., “DNA Patenting and Licensing”, *Science*, Vol. 297, 2002, p. 1279.; Merz, J.F., Kriss, A.G., Leonard, D.G.B., Cho, M.K., “Diagnostic Testing Fails the Test”, *Nature*, Vol. 415, 2002, pp. 577-579.; Campbell, E.G., Clarridge, B.R., Gokhale, M., Birenbaum, L. *et al.*, “Data Withholding in Academic Genetics”, *Journal of the American Medical Association*, Vol. 287, 2002, pp. 473-480.

¹⁰ Gold, R., Bubela, T., Miller, F.A., Nicol, D. *et al.*, “Gene Patents – mode evidence needed, but policymaker must act”, *Nature Biotechnology*, Vol. 25, 2007, pp. 388-389.

streams of argumentation host two sub-lines, so that we can broadly distinguish four lines of argument. The strongest line concerns non-patentability, concentrating on quantity and quality.¹¹ High-profile cases like the Myriad Patents,¹² Stem Cell Patents¹³ and the Metabolite Case¹⁴ highlight problems with patented research tools in science and public health by challenging their validity.¹⁵ Discussions centre on the requirements of technical teaching (especially in respect to homologies),¹⁶ inventive step/obviousness¹⁷ and utility.¹⁸ A second line of argument

¹¹ Paradise, J., Andrews, L., Holbrook, T., "Patents on Human Genes: An Analysis of Scope and Claims", *Science*, Vol. 307, 2005, pp. 1566-1567; Cukier, K.N., "Navigating the future(s) of biotech intellectual property", *Nature Biotechnology*, Vol. 24, 2006, pp. 249-251; overlapping patents on the medically most valuable gene-segments, Jensen, K., Murray, F., "Intellectual Property Landscape of the Human Genome", *Science*, Vol. 310, 2005, pp. 239-240.

¹² Relating to a diagnostic test for a genetic breast cancer disposition. One of numerous BRCA-Patents was revoked (EP 699,754), two others reduced in scope by the European Patent Office in 2004 and 2005.

¹³ For the US, the US PTO in a preliminary decision revoked three embryonic stem cell patents of WARF (so called Thompson patents) in April 2007 on request of re-examination by two public interest organisation ("Key stem cell patents revoked", *New Scientist*, 3 April 2007); for Germany, the Bundespatentgericht narrowed down an embryonic stem cell patent (so called Brüstle Patent) on 5 December 2005 (No. 3 Ni 42/04); for the EPC, the re-examination of an embryonic stem cell patent is pending before the enlarged body of appeal; discussed by Schatz, U., "Öffentliche Ordnung und gute Sitten im europäischen Patentrecht", *GRUR Int.*, 2006, pp. 879-888.

¹⁴ Relating to a blood test for vitamin deficiency. Various *amicus curia* briefs from numerous Medical Associations urging the Court to rule against patent eligibility provided the case with publicity, Eisenberg, R., "Biotech Patents: looking backwards while moving forward", *Nature Biotechnology*, Vol. 24, 2006, pp. 317-319. However, the Supreme Court dismissed the writ of certiorari on 22 June 2006.

¹⁵ For their exemplary and discursive function see Godt, C., *Eigentum an Information: Patentschutz und allgemeine Eigentumstheorie am Beispiel genetischer Information*, Tübingen, Mohr Siebeck, 2007, p. 196.

¹⁶ In the affirmative decided by the European Patent Agency, Decision of 7 August 2006, T 898/05, *Homopoetic Receptor/ZYMOGENETICS*, printed *GRUR Int.*, Vol. 152, 2007, commented by Jaenichen, H.-R., "Alle Erfindungen sind gleichberechtigt", *GRUR Int.*, 2007, pp. 104-112.

¹⁷ Straus, J., "Produktpatente auf DNA-Sequenzen – Eine aktuelle Herausforderung des Patentrechts", *GRUR*, 2001, pp. 1016-1021.

¹⁸ A requirement that for a long time was in the center of interest in restricting the scope of gene patents, for the US see PTO Utility Guidelines, Fed. Reg. Vol. 66, No. 4, 2001, pp. 1092-1099, commented by Worrall, T., "The 2001 PTO Utility Examination Guidelines and DNA Patents", *Berkeley Technology Law Journal*, Vol. 16, 2001, pp. 123-143; for Europe see Art. 5 sec. 3 EC Directive 98/44/EC, commented by Godt, C., "Streit um den Biopatentschutz: Stoffschutz, Patente auf Leben und Ordre Public – nationaler Gestaltungsspielraum bei der Umsetzung der Europäischen Biopatentrichtlinie", ZERP-Diskussionspapier 1/2003, Bremen, ZERP, however transposed in Germany not as "utility requirement" (*gewerbliche Anwend-*

refers to the professional concern over the scope of claims, known as "reach-through claims"¹⁹ (denied, both in Europe and the US).²⁰ A third discussion is about restrictive license policies²¹ and contract clauses ("reach-through clauses")²² which became possible since licensing superseded the sale of research tools. Yet a fourth debate concerns *ex post* instruments, an issue which has been lingering for years: already in 1989, Rebecca Eisenberg had proposed to replace the property rule with a liability rule for patented tools used in research institutions, thus substituting compensation for injunction.²³ However, successive proposals to restrict the claim of injunction have only been considered by the judiciary in the field of information technology.²⁴ A collective compensation scheme was proposed by the Australian Law Reform

barkeit), but as claim specification (§ 1a sec. 4 German Patent Law) – consequently only applicable to patents filed with the German Patent Office, and not applicable to EPC-Patents.

¹⁹ Lim, A.S.Y., Christie, A.F., "Reach-through Patent Claims in Biotechnology: An Analysis of the Examination Practices of the United States, European and Japanese Patent Office", Intellectual Property Research Institute of Australia – Working Paper No. 03/05, 2005, www.ipria.org.

²⁰ Trilateral Project (EPA, PTO, JPO), Comparative Study on "Reach-Through-Claims", 2001, http://www.trilateral.net/projects/biotechnology/reach_through_claims/B3b_reachthrough_text.pdf.

²¹ E.g. WARF was criticised for having granted only 8 licenses to research centers, Editor in Chief, "Burning Bridges", *Nature Biotechnology*, Vol. 25, 2007, p. 2; Other articles complain about encrusted negotiations about royalties, Silverman, E., "The Trouble with Tech Transfer", 2006, <http://www.scientist.com/article/home/39379> (last visit April 2007). A governmental reaction to those problems are the US NIH-Licensing Guidelines of 11 April 2005 (Fed. Reg. Vol. 70, No. 68) which discourage exclusive licensing.

²² Prominent case: *Bayer AG v. Housey Pharmaceuticals*, *US Delaware District Court*, 169 F. Supp. 2d 328 (2001), commented by Biven, M.M. & Cohen, M.R., "Reach-Through Royalties in Research Tool Licenses: Bayer AG v. Housey Pharmaceuticals", *Biotech IP Update*, Winter 2002, pp. 1-2 and Seide, R.K., "Curtailed of 'Reach-Through' Infringement Claims: Bayer AG v. Housey Pharmaceuticals, Inc. Case Study", *Journal of BioLaw and Business*, 2004; a sub-problem of this discussion is the staking of royalties in the course of development, for a thorough analysis of this issue see Godt, C., "The Role of Patents in Scientific Competition" in Albert, M., Schmidtchen, D., Voigt, S. (eds.), *Scientific Competition*, Tübingen, Mohr Siebeck, 2008, pp. 151-171, for a more general account Godt, C., "Patentschutz für Forschungsergebnisse – eine Herausforderung für die Wissenschaft", *Wissenschaftsrecht*, Vol. 36, 2003, pp. 25-51.

²³ Eisenberg, R., "Patents and the Progress of Science: Exclusive Rights and Experimental Use", *University of Chicago Law Review*, Vol. 56, 1989, pp. 1017-1086.

²⁴ Affirmative the US Supreme Court in *EBay et al. v. Mercexchange*, Decision of 15 May 2006; considered, but denied by the German Bundesgerichtshof in *Paperboy*, *GRUR*, 2003, p. 958) and the Oberlandesgericht Hamburg in *Cybersky*, *GRUR-RR*, 2006, p. 148.

Commission.²⁵ More recent proposals concentrate on patent pools and clearinghouse mechanisms.²⁶

On the other hand, studies using a more narrow definition of research tools submit evidence that, in biotechnology, patents do not amount to a problem in research.²⁷ They contend that quality control will contain potential problems. Examiners should strictly apply the patentability requirements of a proper description of the technical teaching, novelty,²⁸ inventive step/obviousness²⁹ and utility. Courts should safeguard the standards – as for example, the way the CAFC did in *University of Rochester v. Searle, Monsanto, Pharmacia and Pfizer* 2002.³⁰ Ultimately, the research exemption would provide a safe enough haven for scientists.

However, even these studies account of problems with diagnostics, the transfer of material,³¹ restrictive licensing³² and staking royalties.³³

²⁵ Australian Law Reform Commission (ALRC), “Gene Patenting and Human Health”, Sydney, Australian Government, ALRC 68, 2004, p. 741.

²⁶ Verbeure, B., van Zimmeren, E., Mattijs, G., van Overwalle, G., “Patent Pools and diagnostic testing”, *TRENDS in Biotechnology*, Vol. 24, 2006, www.sciencedirect.com, pp. 115-120; van Overwalle, G., van Zimmeren, E., Verbeure, B., Matthijs, G., “Models for Facilitating Access to Patents on Genetic Inventions”, *Nature Reviews Genetics*, Vol. 7, 2006, www.nature.com, pp. 143-147 and van Overwalle, G., “Dealing with Patent Fragmentation: Patent Pools and Clearing Houses”, Oral Presentation to the US National Academies, January 2007 – concrete proposal for diagnostic testing for Hereditary Non-Poliposis Colon Cancer (HNPCC); Bergman, K., Graff, G.D., “The Global Stem Cell Patent Landscape: implications for efficient technology transfer and commercial development”, *Nature Biotechnology*, Vol. 25, 2007, pp. 419-424 – proposing a clearinghouse for stem cell patents.

²⁷ OECD (2002), “Genetic Inventions, Intellectual Property Rights and Licensing – Evidence and Policies”, www.oecd.org/dataoecd/42/21/2491084.pdf (7/04), Paris.

²⁸ The novelty standard has become problematic after public policies have fostered collaborations, the problem has been explicitly remedied for collaborative research by amendment of 35 USC. § 103 (c) through the CREATE Act of 2004, effective 15 September 2005. The US-PTO is currently experimenting with an open public review process for a limited number of IT-related patents, see Ledford, H., “Patent Examiners call the Jury”, *Nature*, Vol. 448, 2007, p. 239.

²⁹ However, the evaluation of what strict standards mean, depends on the question raised: See on the one hand Petherbridge, L., Wagner, P., “The Federal Court and Patentability: An Empirical Assessment of the Law of Obviousness”, University of Penn Law School, Paper 103, *Texas Law Review*, Vol. 85, 2007, who argue that the measure has not changed. On the other hand, statistics show a decline of patents issued purportedly responding to pressure for stricter examination (2004: 382,139 applications, 181,302 issued; 2005: 417,508 applications, 157,717 issued), http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm (visited 13 March 2007).

³⁰ 358 F.3d 916.

³¹ Walsh, J.P., Cho, C., Cohen, W.M., “Patents, Material Transfers and Access to Research Inputs in Biomedical Research”, Final Report to the National Academy of Sciences’ Committee Intellectual Property Rights in Genomic and Protein-Related

Remarkably, any linkage to the patent system is either denied or downplayed. As solutions, classical instruments such as a patent pool³⁴ or compulsory licenses³⁵ are proposed – though more as an afterthought.

C. A Fresh Look at the “Research Tools” Debate

These debates are startling in themselves. Reading the technicalities of the cases, one cannot but conclude that the contested “research tools” are what most biotechnology is all about. Thus, the contained debate about “research tools” is in essence a debate about principles governing the development of the biotechnology market. The debate is contested because of the diversity of the various interests and high stakes involved. Some small and innovative firms secure their access to the market via patent protection. In contrast, other small firms fear being squeezed out by reach through claims when licensing tools on which they depend. Multinational corporations in general have no difficulty because they deal with the problem via market power, yet they fear “patent trolls” blocking their way and raising costs. Beyond these private concerns, various public interests are at stake. How does the institutional frame, which brings about the most efficient innovation rate, look like? How to safeguard an open research environment? Endangered are the freedom to operate, the public interest in competition and available market opportunities. Affected are public health policies.³⁶

Inventions, 2005, <http://tigger.uic.edu/~jwalsh/WalshChoCohenFinal050922.pdf>. Caulfield, T., Cook-Deegan, R.M., Kieff, S.F., Walsh, J.P., “Evidence and anecdotes: an analysis of human gene patenting controversies”, *Nature Biotechnology*, Vol. 24, 2006, pp. 1091-1094.

³² Editor in Chief, *supra* note 21.

³³ Hopkins, M.M., Mahdi, S., Patel, P., Thomas, S.M., “DNA patenting: the end of an era?”, *Nature Biotechnology*, Vol. 25, 2007, <http://www.nature.com/nbt/journal/v25/n2/abs/nbt0207-185.html>, pp. 185-187; full report: Hopkins, M.M. et al., “The Patenting of Human DNA: Global Trends in Public and Private Sector Activity – A report for the European Commission”, compiled by SPRU, Brighton, UK, November 2006, http://www.sussex.ac.uk/spru/documents/patgen_finalreport.pdf; Straus, J., “Genetic Inventions and Patents – A German Empirical Survey, Beitrag zur Konferenz: “Genetic Inventions, Intellectual Property Rights and Licensing Practises””, BMBF/OECD, Berlin, 2002, <http://oecd.org/EN/home..EN-home-0-directorate-no-no-no-0,FF.html>.

³⁴ Caulfield, T., Einsiedel, E., Merz, J.F., Nicol, D., “Trust, Patents and Public Perception: the governance of controversial biotechnology research”, *Nature Biotechnology*, Vol. 24, 2006, pp. 1352-1354.

³⁵ Hopkins, Mahdi, Patel, Thomas, *supra* note 33, p. 187.

³⁶ Gold, Bubela; Miller, Nicol, *supra* note 10, rightfully point out that the immediate public health concern is closely related to the other public interests like research, competition and innovation (referring to the high profile debate around Myriad’s breast cancer diagnostic related to BRCA1/BRCA2 mutations).

It is academia's task to conceive ways of accommodating all interests and developing rules on when injunction is legitimate and when it is not. Thus, research tools offer a challenge for the reconsideration of the patent system and its recent changes.

II. The Background: The Changing Patent System

At the end of the 1990s, some scholars alleged that the expansion of property rights in number and in scope is due to a natural adaptation to the thriving development of new technologies.³⁷ Today, this expansion has become understood as a fundamental change to the patent system itself.³⁸ Two different drivers are identified.

The first driving force is a different use of the patent system for managerial, economic and technological reasons. Instead of just securing the competitive position of one product, management philosophies have turned to strategic patenting.³⁹ Smaller high-tech firms file patents as benchmarks of ingenuity; not for market exclusivity as such but the patent provides them with a competitive advantage and with access to financial markets. Inversely, for the financial sector patents function as indicators of technological potential and an additional lucrative, however speculative, instrument to secure a credit. Multinationals pursue strategic patenting for different reasons. They protect their core technologies by cushioning central patents through peripheral protective patents, secure future technological developments and ensuring future bargaining chips.⁴⁰ In respect of business development, the patenting of

research tools is considered to be crucial.⁴¹ In addition, patents are exploited not only by exclusive production but also by the sale and licensing of patents. These secure the transfer of information between independent, internationally-decentralised entities, between firms in collaborative research, and technology transfer from science to industry. This managerial shift accounts for a proactive filing behaviour, thus quantitatively more rights.⁴²

The second driving force is the extension of intellectual property to information as such. It has not only given rise to the invention of new legal rights,⁴³ but enlarged the scope of intellectual property and altered its function. Information is different to classical technical teachings or works.⁴⁴ Three characteristics stand out: (1) specific information is not substitutable;⁴⁵ (2) information is not a qualitative term; (3) it is easily reproducible.

The first feature ("not substitutable") is largely identical to characteristics for which the term "discovery" once was supposed to exclude certain kinds of ingenious ideas from the intellectual property system. It renders "inventing around" impossible – thus undermining the very idea of the intellectual property system that only imitations are to be excluded yet substitutions encouraged. The second feature ("not a qualitative term") gives rise to the well-known threshold problems. For patent examiners, it has become difficult to determine what an inventive step truly is. Therefore, the scope of a patent has increasingly expanded. The third feature ("easy to reproduce") not only re-enforced the quantitative growth of claimed property rights; but more importantly, information property has predominantly become exploited by licenses.⁴⁶ Licenses have replaced sale contracts, thus circumventing the classical boundary

³⁷ See only Straus, J., "Abhängigkeit bei Patenten auf genetische Information – ein Sonderfall?", *GRUR*, 1998, pp. 314-320.

³⁸ Cornish, W.R., "The Expansion of Intellectual Property Rights" in G. Schriker, T. Dreier, A. Kur (eds.), *Geistiges Eigentum im Dienst der Innovation*, Baden-Baden, Nomos Verl.-Ges., 2001, pp. 9-22.

³⁹ Economist Intelligence Unit (2007), "The Value of Knowledge – European Firms and the Intellectual Property Challenge", http://graphics.eiu.com/files/ad_pdfs/eiu_EuropeIPR_wp.pdf (last visit August 2007); Wurzer, A.J., Kaiser, L., "Patente, Produkte und Profite", *Harvard Business Manager*, 2006, pp. 23-35.

⁴⁰ One reason is technological change characterised as sequential innovation which gives rise to a "thick tail" of patents, Bessen, J., Maskin, E., "Sequential Innovation, Patents, and Imitation", 1999, rev. 2006, http://www.immagic.com/eLibrary/ARCHIVES/GENERAL/BOS_U_US/B060300B.pdf, Scotchmer, S., "Standing on the Shoulders of Giants: Protecting Cumulative Research" in S. Scotchmer (ed.), *Innovation and Incentives*, Cambridge, Mass., MIT Press, 2006; another reason is overlap of patents ("patent thicket") which is observed both in biotechnology (Jensen & Murray, *supra* note 11) and in IT (Shapiro, C., "Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting", 2001, <http://faculty.haas.berkeley.edu/shapiro/thicket.pdf>). Reasons of strategic ma-

neuvering in competition are explored by S. Anderman (*supra* in this volume, chapter 7).

⁴¹ Hopkins, Mahdi, Patel, Thomas, *supra* note 33, p. 186.

⁴² Harhoff, D., "Intellectual Property Rights in Europe – where do we stand and where should we go?", Contribution to the project "Globalisation Challenges for Europe and Finland", organised by the Secretariat of the Council of Europe, 2006, http://www.vnk.fi/hankkeet/talouseneuvosto/tvo-kokoukset/globalisaatioselvitys-9-2006/artikkelit/Harhoff_06-09-20.pdf.

⁴³ Vivant, M., "La Privatisation de l'information par la propriété intellectuelle", *Revue Internationale de Droit Economique*, 2006, pp. 361-388 coining the term "hyperpropriété".

⁴⁴ Already Ullrich, *supra* note 2, Part B, No. 7, 22; Drahos, P., Braithwaite, J., *Information Feudalism: Who owns the Knowledge Economy?*, London, Earthscan, 2002; Hilty, R.M., "La Privatisation de l'Information par la Propriété intellectuelle: Problème et Perspective", *Revue internationale de droit économique*, 2006, pp. 353-359.

⁴⁵ Rightfully highlighted by Hilty, *supra* note 44.

⁴⁶ For the various reasons see Godt, *supra* note 15, p. 287.

of exhaustion. These are the legal basis for restrictive covenants “reaching through” the patent and encroaching on the economic freedom of others, thus broadly expanding the reach of the property owner. Consequently, the expansion of intellectual property to information *per se* has eroded any concepts of boundaries to intellectual property. Thus, its scope has become larger and the power provided to the intellectual property owner has grown.

This double-strand change (*i.e.* the shift in use and information coverage) has fundamentally transformed the function of the patent system, which I described earlier as a shift from a monolithic core of the right to exclude to a “dual colons” concept of investment protection (congruent with the right to exclude) and of knowledge transfer.⁴⁷ It is a similar transformation to the one which the property system underwent in the industrial era in respect of immovables. It was characterised by a shift from the “right to exclude”, as an integral part of someone’s personal freedom, to an asset providing economic freedom. Comparably, research tools form part of the modern changes in the intellectual property system. Modern economy included them in the proprietary system for various reasons, yet broad access is needed.

The legal system, however, has only reacted in traditional ways. “Access” to a technology in patent law has continued to be conceived of as either not being granting a right to intellectual property (thus putting the technology into the public domain) or via publication. Problems of access were thus primarily thought of in binary terms of the granting/non-granting patents – in contrast to copyright law. Compulsory licenses were discredited as expropriation. Therefore, in respect of current and potential problems with research tools, the patent system primarily reacted by reforming the granting process of patents, while the scientific community reacted defensively with publication. The patent agencies made an effort to administer the applications more effectively, quantitatively and qualitatively.⁴⁸ They tightened the standards in the administrative process through legal and judicial intervention – resulting again in greater awareness and perhaps stricter examination.⁴⁹

These policies have been supported by the belief that patents are only regulated in the process of being granted. The right to exclude has

⁴⁷ Godt, *supra* note 15, p. 563.

⁴⁸ See Schneider, I., “Governance of the European Patent System – Between Self-Regulation and Legislative Governance: The Case of the EU Biopatent Directive”, Paper submitted on the Conference “Frontiers of Regulation” (Panel: “The Regulation of Intellectual Property”, Bath (UK), 5 September 2006.

⁴⁹ Hopkins, Mahdi, Patel, Thomas, *supra* note 33; Gold, Bubela, Miller, Nicol, *supra* note 10.

remained untouched – or left to instruments perceived to be outside the patent system such as public health or competition law. However, when we acknowledge that the threshold of patentability has eroded due to the patenting of information, and if we also acknowledge the functional change of the system into an institution of the information society, then the need to re-consider the fine-tuning of property rights *ex post* becomes evident.⁵⁰ This re-consideration is all the more indispensable, if we want to safeguard the functionality of the patent system in information goods. The effectiveness of the system rests on the balance of interests, which has shifted towards the interests of patentees. The partial loss of the balance needs to be re-captured by an *ex post* fine-tuning, providing protection against unfettered infringement claims and securing access. This contribution aims at filling this gap.

III. Constructing Options: “Competition for” and “Access to” Information

A. *The Paradox of Exclusion for Access*

The discussion on research tools follows the line of the old debate about the relationship between exclusionary property and competition for the innovation process. Enshrined therein is the paradox that the exclusionary right is granted for the sake of access which brings about the prize mechanism.⁵¹ Already Schumpeter pointed out that the relationship is delicate and cannot be simplified to an “either-or” answer.⁵² Today, modern economics assumes an “inverted U-shape curved relationship” between proprietary innovation incentives and competition.⁵³ The discussion has translated into a legal debate over whether an intellectual property right is a precondition for a competitive market or

⁵⁰ Godt, C., “Innovationsfreiheit und – verantwortung: Geistiges Eigentum und öffentliche Ziele post grant” in W. Hoffmann-Riem, M. Eifert (eds.), *Geistiges Eigentum und Innovation*, Baden-Baden, Nomos Verl.-Ges., forthcoming.

⁵¹ Arrow, K., “Economic Welfare and the Allocation of Resources for Invention” in National Bureau of Economic Research (ed.), *The Rate and Direction of Inventive Activity*, Princeton N.J., Princeton University Press, 1962, p. 615 coined it the “paradox of information”.

⁵² Schumpeter, J., *Capitalism, Socialism, and Democracy*, New York, Harper and Brothers, 1942.

⁵³ Seminal paper of F. Scherer (“Research and Development Research Allocation Under Rivalry”, *Quarterly Journal of Economics*, Vol. 81, 1967, pp. 359-394) confirmed in principle by Ph. Aghion, B. Bloom, R. Blundell, R. Griffith, P. Howitt (“Competition and Innovation: An Inverted-U Relationship”, *Quarterly Journal of Economics*, Vol. 120, 2005, pp. 701-728.

whether competition is a precondition for market exclusivity.⁵⁴ Differentiations which sought to catch “the right balance” mostly resorted to the accommodation of patentability requirements, not to a refinement of remedies – thus leaving “access” to be a matter of the public domain.

Ex post instruments of access to proprietary information have always been contested issues. Three tools are traditionally discussed: compulsory licenses granted by patent courts in the public interest, voluntary patent pools; and “compulsory licenses” based on competition law.⁵⁵ Alternative regulatory schemes of access rights, either an individual right (free or in exchange for compensation),⁵⁶ or a collective levy scheme⁵⁷ exist only in copyright law. In respect of patents, the three classical instruments only provide a narrow opening, and one ridden with prerequisites. As a matter of principle, compulsory licenses are in practise not issued by Western industrialised countries’ patent authorities. The broadly-discussed possibility of granting access via competition law⁵⁸ has as yet been limited to copyright and to an extremely limited number of cases qualified by “special circumstances”.⁵⁹ Patent Pools have not been established in the field of biotechnology⁶⁰ – notwithstanding some initiatives involving open-source models.⁶¹

⁵⁴ Ullrich, *supra* note 2, Part B, No. 43.

⁵⁵ A forth instrument, “crown use”, is essentially a dead institution. It is the authoritative and abstract decision which entitled everybody to use a patent. The equivalent in a civil law jurisdiction is § 13 German Patent Code.

⁵⁶ Like the before mentioned press clippings, § 49 German Copyright Law.

⁵⁷ Via Collection Societies, which – due to Digital Rights Management – are actually put into question, and undergo a fundamental reform process.

⁵⁸ Often falsely labeled as “compulsory license”. Technically, it is only denied injunction: Under the circumstances identified, the owner had reached beyond the protected area. Therefore, the owner is not entitled to the monopoly rent provided by the exclusionary right (if at all only to “proper compensation”, this is the widely rendered interpretation of the Commission in *Frankfurt Airport*, Decision of 14 January 1998, O.J. L 72/30, see e.g. Tirole, J., “Economics of Compulsory Licensing, Presentation to the Brookings Conference on ‘Is Sharing A Virtue? Compulsory Licensing and Essential Facilities After Trinko’”, Event Proceeding 04-08 April 2004, p. 13, download: <http://www.aci-brookings.org/admin/authorpdfs/page.php?id=938> (last visit August 2007)). In contrast, the state acknowledges that a compulsory license intrudes into the property.

⁵⁹ See Korah, V., “The Interface between Intellectual Property Rights and Competition in Developed Countries”, 2 SCRIPT-ed (4) December, 2005, p. 441, download: <http://www.law.ed.ac.uk/ahrc/script-ed/vol2-4/korah.asp> (last visit August 2007).

⁶⁰ For reasons spelled out in OECD, *supra* note 27.

⁶¹ SNP-Consortium as a limited form; Human Genome Database as a pure public domain approach based on the renouncement of patents; other examples are BIOS and CAMBIA.

Transposing the paradox to research tools, the question reads: is commodification (and thus exclusivity) of a research tool a precondition for competitive access or, in contrast, is competitive access a precondition for the proprietary exploitation of a research tool? In other words, how much and what kind of access is needed?

Considering the dynamic economic model, the proposition advanced by industry that no action is needed is not convincing. Regarding the described shift towards commodification, it cannot be assumed that the patentability requirements secure the right balance. The available *ex post* instruments are too narrow for the following reasons: the patent pool as an internal instrument of coordination within industry is only available to competitors with similar market power.⁶² Neither the pool nor the compulsory license is an option for “users” like medical doctors and researchers. Therefore, the focus shifts to general private-law remedies. What are the reasons which could justify a curb on the right to exclude? Can we develop a toolbox which correlates the relationship of exclusion and access to the dynamic economic reasoning about innovation and competition? Can any typology or test be devised?

B. Learning from Competition Law

We take the leading case *Magill*⁶³ as a point of departure in which the European Court of Justice granted access to intellectual property. The policy reason limiting the right to exclude is competition policy. However, as Hanns Ullrich rightfully pointed out, the case is not simply about access to an essential facility.⁶⁴ The case sheds more light on the idea of patent property than on competition. It reveals the very content of the patent property – which is the right to exclude imitative competition, not competition by substitutes. The fostering of developing substitutes (“inventing around”) is the very essence of the patent system. The demarcation line between “the patent-owner’s property” and a substitute is defined in patent law by the doctrine of equivalents. This is the very essence of Hanns Ullrich’s distinction between “patent exclusivity” and “market exclusivity”.⁶⁵ He stresses that “patent exclusivity” is not equivalent to “market exclusivity”. Patent exclusivity is to be conceived of as a consequence, not the source of market dominance. This is the

⁶² Unless extended to a clearinghouse model as proposed by van Overwalle, *supra* note 26.

⁶³ *Supra* note 3.

⁶⁴ Ullrich, *supra* note 2, Part B, No. 43.

⁶⁵ Ullrich, *supra* note 2, Part B, Rn. 39.

rationale for *Magill* incorporating modern competition theory,⁶⁶ and it became re-enforced by the ECJ in *IMS-Health*⁶⁷ and by the German High Court in its *Spundfass* decision⁶⁸ for situations of a *de facto* and a formal technical standard. The goal of competition law is innovation, typically achieved incrementally via competition in substitutes. Therefore, whenever a patent owner suppresses the development of substitutes via patent rights, he misuses his power. In other words, the patent cushions the patentee's risk to innovate, but not his/her interest in market protection. And the patent neither provide the power to suppress the performance of others nor encroaches on it. In competition law, this rationale is put in place via the delineation of markets. In essence, it is not much more than, and pursues the very same goal as the doctrine of equivalence; it defines the content of the patent property.

These categories have been more refined in cases where access to information technology was sought. This is partly due to the more nuanced boundary concept of copyright.⁶⁹ In addition, the tension between the demand of access on the one hand and market power on the other is most pressing in this area, as highlighted by the debate around Microsoft.⁷⁰ However, from a legal standpoint, three other more recent cases are more telling. In 2006, the US-Supreme Court held in *EBay* that injunction against patent infringement is not automatic, arguing that

injunctive relief in common law is only a remedy in equity.⁷¹ In Germany, two other decisions drew attention while considered (but eventually denied) restricting the granting of injunction the decision of the *Bundesgerichtshof* in *Paperboy*,⁷² and the decision of the *Oberlandesgericht* Hamburg in *Cybersky*.⁷³ In *Paperboy*, the German High Court had to evaluate an internet news service with links to newspaper articles. In *Cybersky*, the Hamburg Regional Appeal Court thoroughly evaluated the supply of films in a P2P-files sharing system. In each case an injunction was eventually granted. However, in both cases the courts fine-tuned the injunctive relief by mutual duties. The dogmatic base for this rationale is that the infringement was only indirectly committed,⁷⁴ namely committed by a third party. Since 1928, civil courts have applied a duties concept to these constellations⁷⁵ and combined it with a proportionality test asking for less intrusive means which would be sufficiently effective for the property owner and deterrent enough for the (indirect) infringer.⁷⁶

It is this flexibility in civil jurisdiction which triggered the collective levy system on recorders in the 1960s.⁷⁷ It was neither the legislature nor industry which closed the gap between the right to exclude and the right to free access by conceiving of the idea of compensated access. In respect of research tools, this precedent tells us that it does not necessarily need the good will of industry to set up a well-configured patent pool or clearinghouse.⁷⁸ Such a process can also be instigated by a civil court

⁶⁶ Ullrich, H., "Expansionist Intellectual Property Protection and Reductionist Competition Rules: A TRIPS Perspective", *Journal of International Economic Law*, Vol. 7, 2004, pp. 401-430.

⁶⁷ Case C-418/01, *IMS-Health*, 2004, ECR I-5039, Heinemann, A., "Interne und externe Begrenzungen des Immaterialgüterschutzes am Beispiel des IMS Health-Falls" in R.M. Hilti & A. Peukert (eds.), *Interessenausgleich im Urheberrecht*, Baden-Baden, Nomos Verl.-Ges., 2004, pp. 207-219.

⁶⁸ Bundesgerichtshof (High Court), Decision of 13 July 2004, *Bundesgerichtshofes in Zivilsachen*, 160, 67 – *Standard-Spundfass*. The rationale is as follows. If a patent protected technology becomes an industry standard via a governance process including standard organisations, the state and industry, the market potential does not only rest on the genius technical achievement, but also on the collective process of standard setting. In this situation, the market potential of the patent is not equivalent to the patentees achievement. Therefore, the patentee cannot be granted injunction. See also Heinemann, A., "Gefährdung von Rechten des geistigen Eigentums durch Kartellrecht? Der Fall Microsoft und die Rechtsprechung des EuGH", *GRUR*, 2006, pp. 705-713.

⁶⁹ E.g. Bundesgerichtshof (High Court), Decision of 11 July 2002, *Bundesgerichtshofes in Zivilsachen*, 151, 300 – *Elektronischer Pressespiegel* (electronic press clippings) – extending the exemption of § 49 German Copyright Law to electronic press clippings.

⁷⁰ Distinguish the US-dispute about the browser and the EC disputes about group software and the Media-Musik Player, see Heinemann, *supra* note 68.

⁷¹ *EBay Inc. v. Mercexchange*, *supra* note 24.

⁷² *Paperboy*, *supra* note 24.

⁷³ *Cybersky*, *supra* note 24.

⁷⁴ A good introduction to concept and historic development provides Leistner, M., "Von 'Grundig-Reporter(n) zu Paperboy(s)'" *GRUR*, 2006, pp. 801-814.

⁷⁵ *Reichsgericht* (High Court), Decision of 25 January 1928, MuW 1927/28, S. 272.

⁷⁶ First explicitly in *Reichsgericht* (High Court), Decision of 31 January 1927 – *Saugtrommeln* (also known as *Zentrifugaldrehzahlregler*) considering alternatively the duty to include a contractual penalty clause or a duty to warn.

⁷⁷ *Bundesgerichtshof* (BGH: High Court), Decision of 18 May 1955, *Bundesgerichtshofes in Zivilsachen*, 17, 266 – *Grundig-Reporter* (in which the BGH imposed only a duty to inform the buyer of the recorder about the potential to infringe); finally: in BGH, Decision of 29 May 1964, BGHZ 42, 118 – *Personalungsweise* the Court held that "it were not longer acceptable to leave the use of the technology by consumers to the discretion of the property owner" (translation Ch. Godt), p. 108.

⁷⁸ For the concept (and boundaries) of judicial activism, Brüggemeier, G., "Judizielle Schutzpolitik de lege lata", *Juristenzeitung*, 1986, pp. 969-979, for a more recent account on the function of duties, Brüggemeier, G., *Common principles of tort law: a Pre-statement of Law*, London, British Institute of International and Comparative Law, 2004.

judge.⁷⁹ In addition, this flexibility does not necessarily generate a collective, generalised scheme. It can also trigger a situation-based approach as civil court often did in respect of restrictions on the freedom of contract.⁸⁰

C. Frictions and Contours of the Interface of Property and Competition

It is understood that this broad approach is in need of systematic refinements. Three problems stand out: (a) dependency in patent law; (b) the case of non-existence of a market of substitutes; and (c) strategic patenting.

1. Dependency and Substitutes

Dependency is a mechanism central to the functioning of the patent system. It secures that the prior inventor can participate in profitable improvements which crowd his initial innovative product out of the market. Dependency upholds the incentive to innovate during the process of constant innovation.⁸¹ Thus, an injunction cannot simply be denied by arguing that the new product “substitutes” the prior one, and that the substitutive competition – in contrast to imitative competition – was not covered by intellectual property. A new balance needs to be struck between appropriate protection and competition. One way is to “fan out” injunctive relief. Substitutes which clearly rest on the prior invention are unconditionally covered by the right to exclude. In contrast, substitutes which are radically improving the prior product are beyond the reach of the property claim. This legal concept was already conceived by Robert Merges in 1991 and coined “reverse equivalence”.⁸² This idea gives full credit to the rationale that patents should primarily be geared towards reducing imitative competition, and shall neither suppress nor encroach on the performance of others.

2. The Non-Existence of a Market of Substitutes

Another challenge to the juxtaposition of imitative and substitutive competition is the situation where substitution is not possible. In these

⁷⁹ Just as courageous as the US-District Court Judges Thomas Penfield Jackson and his successor Judge Colleen Kollar-Kotelly in the Microsoft procedure in 2001.

⁸⁰ Out of the vast literature see only Trebilcock, M.J., *The Limits of Freedom of Contract*, Cambridge, Mass., Harvard University Press, 1993 and Busche, J., *Privatautonomie und Kontrahierungszwang*, Tübingen, Mohr-Siebeck, 1999.

⁸¹ For a thorough analysis of this argument see Godt, *supra* note 15, p. 559 *et seq.*

⁸² Merges, R.P., “A Brief Note on Blocking Patents and Reverse Equivalents: Biotechnology as an Example”, *Journal of the Patent and Trademark Office Society*, 1991, pp. 878-888.

technical areas, competitors are always in need of the patentee’s technical teaching. This is the standard situation in both information technologies, biotechnology and IT. Therefore, the bifurcated differentiation of imitation/substitution is not working. A more differentiated approach is needed which creates a third category between exclusion and freedom. Such a third category is usually described as a liability rule, which cuts the remedy of injunction back to a claim for “just compensation”. This instrument is common in copyright for situations where broad access is valued as socially and economically beneficial. This category is missing in the toolbox of patent law.⁸³

3. Strategic Patenting

A third problem rests with the idea that patents only cover the innovation risk, but not the interest to secure a market.⁸⁴ The protection of future avenues of development and securing the market position is at the heart of the shift towards strategic patenting (*supra* II). Research tools play a central role in this game. How can we accommodate the “new use” and the need for access? The answer is provided by a more nuanced approach to injunction following well-explored methods of differentiation pertaining to injunction in classical civil law.

D. Getting the “Prize Right” for Access

The main problem with mandatory access is the determination of the access prize. This problem was broadly discussed in 1994 when a mandatory licensing scheme was advocated for computer programmes.⁸⁵ Robert Merges criticised the proposal on the grounds of the Coase Theorem, in that it would disrupt the prize-building mechanism for which the patent property is granted in the first place.⁸⁶ It is the patent’s purpose to encourage private investment. The very idea is to give the investor the prospect of profits by granting him a property right. This very point has been taken up in the current debate about intellectual property and competition in the wake of the ECJ’s rulings in *Magill* and *IMS* in cases of “refusal to license”. Valentine Korah (2005)⁸⁷ and Jean

⁸³ For the conceptual problem of when competition in substitutes is impossible, Ullrich, *supra* note 2, Part B, No. 38, 39.

⁸⁴ Ullrich, *supra* note 2, Part B, No. 43.

⁸⁵ See the so called “Manifesto” by Samuelson, P., Davis, R., Kapor, M.D., Reichman, J.H., “A Manifesto Concerning the Legal Protection of Computer Programs”, *Columbia Law Review*, Vol. 94, 1994, pp. 2308-2390.

⁸⁶ Merges, R.P., “Of Property Rules, Coase, and Intellectual Property”, *Columbia Law Review*, Vol. 94, 1994, pp. 2655-2673 at p. 2664.

⁸⁷ Korah, *supra* note 59, p. 442: “The law of property grants an exclusive right in the hope that this will induce people to make investments in things that people want to

Tirole (2004) re-iterate this reasoning.⁸⁸ However, both acknowledge that intellectual property is “different” and that intervention might be necessary for reasons which have to do with restoring a balance with other policy goals.⁸⁹ Both advocate a cautious case-by-case approach: Tirole emphasises that a difference needs to be made between an essential facility and an obligation to share,⁹⁰ Korah suggests a careful analysis of a “very strong” dominant position.⁹¹

As academics specializing in competition theory, both authors have competition law procedures in mind. However, there is agreement that competition law instruments usually apply “too late” and can only be deployed in singular cases.⁹² Yet, the civil law concept proposed here could supplement both patent law and competition law procedures. It adds to them a remedy for “users” (not only competitors). It is different because it is apt to reflect on the particularities of the case constellation. It applies at an earlier point in time than competition law as it does not presuppose the distortion of markets through a dominant market position.

E. A Differentiated Approach to Remedies for the Information Market

These considerations may be assessed by means of a test applicable by judges. The following proposal borrows extensively from the modern structure of duties. The “duties concept” has not only been deployed for the containment of injunctive relief (especially in indirect infringement

cases),⁹³ but primarily for the finetuning of liability – serving both containing and enlarging liability (duty of verification in recent internet trademark infringement and unfair competition cases,⁹⁴ organisation duties in medical and product liability).⁹⁵ In the given context, the duties concept is used to re-fine the scope of property and to adapt it to the needs of the information society. Historical precedents are, for example, the statutory rule of § 906 BGB which restricts property rights in respect of industrial plants in the neighbourhood,⁹⁶ and the famous Grindel-hochhaus-Decision of the German High Court⁹⁷ from 1964 in which the Court limited the claim for injunction by a claim for compensation, thus transforming the claim for proprietary injunctive relief into a financial asset.

In essence, injunctive relief is granted when a two-step test is met. First, a causal violation of the right has to be determined (infringement of the right). Secondly, the violation has to be qualified as unlawful. It is particularly at the second level where the duties’ concept is applied,⁹⁸ and where duties are weighed according to the principle of proportionality.⁹⁹ Applied to intellectual property in conjunction with the interface to competition law, we can identify the following rationales.

(1) On the first level, the violation of the right is to be determined. Here, we can sort out those uses of the invention which can be qualified as radical improvements (*supra*). Those activities, in contrast to imitations and also substitutions, can be qualified as beyond the scope of the patentee’s property right, thus non-infringing. We might also consider

use. The investor will be able to use the fruits of the investment itself, rent out or sell it to others. This should lead to the optimal amount of investment being made. This is not the same as a fair return, but enables the market to decide the compensation due to the investor”.

⁸⁸ Less explicit also Ullrich, H., “Intellectual Property, Access to Information, and Antitrust: Harmony, Disharmony, and International Harmonization” in R. Dreyfuss, D.L. Zimmerman, H. First (Hrsg.), *Expanding the Boundaries of Intellectual Property*, New York, Oxford University Press, pp. 365-402, esp. pp. 393 *et seq.*

⁸⁹ For the same reasons it is clear to both, that it is not the exclusionary right which secures a potential high prize, but demand. In a refreshing way, both are not caught by common wisdoms and remain critical towards the institutions they explore. Korah (*supra* note 59, p. 443) points to the problem that IP does not necessarily secure that investments are made where they should have been made: “The law favours successful inventors who have obtained important rights with little effort”. Tirole (*supra* note 58, p. 12) acknowledges what he calls a paradox that the duty to share is higher the more unique the innovation is.

⁹⁰ Tirole, *supra* note 58, p. 10; earlier already Ullrich, *supra* note 88, p. 395.

⁹¹ Korah, *supra* note 59, p. 443 (= Korah, V., *Intellectual Property Rights and the EC Competition Rules*, Oxford, Hart publishing, 2006, p. 176).

⁹² Ullrich, *supra* note 88, p. 401.

⁹³ For an analysis of copyright cases see Leistner, *supra* note 74; recent German cases in respect of trademarks are *Bundesgerichtshof*, Decision of 11 March 2004, *Bundesgerichtshofes in Zivilsachen*, 158, 238 – Internet Auction I, and *Bundesgerichtshof*, Decision of 19 April 2007, *GRUR* 2007, 708 – Internet Auction II (for a concise comment of the dogmatic construction of these cases, see Ahrens, H.J., “21 Thesen zur Störerhaftung im UWG und im Recht des Geistigen Eigentums”, *Wettbewerb in Recht und Praxis*, 2007, pp. 1281-1290, at p. 1286); for a comment on similar developments in recent unfair competition law (*Bundesgerichtshof*, Decision of 12 July 2007 – EBay, Inappropriate Content for Minors), see Koehler, H., “‘Täter’ und ‘Störer’ im Wettbewerbs- und Markenrecht – Zur Entscheidung ‘Jugendgefährdende Medien bei EBay’”, *GRUR*, 2008, pp. 1-7.

⁹⁴ Ahrens, *supra* note 93, at p. 1290.

⁹⁵ Brüggemeier, *supra* note 78, p. 124-129.

⁹⁶ For the parallel legal evolution in the context of nuisance, see Clarke, A., Kohler, P., *Property Law*, Cambridge, Cambridge University Press, 2005, p. 217 *et seq.*

⁹⁷ *Bundesgerichtshof* (High Court), Decision of 26 February 1964 – *Bundesgerichtshofes in Zivilsachen*, 41, 157.

⁹⁸ There is broad disagreement about the proper dogmatic position of the duties, as Leistner (*supra* note 74, p. 807) rightfully points out.

⁹⁹ Masterly exercised by the OLG Hamburg in *Cybersky*, *supra* note 24.

some activities as non-infringing which have nothing to do with the competitive position, but can be qualified as mere “use” in the public interest and as “public domain property use”.¹⁰⁰ These activities would be non-commercial and would amount to something like a patent law’s equivalent to copyright laws “private copy”. In contrast, indispensability as such does not give rise to the qualification as non-infringing on this level.

(2) On the second level, unlawfulness is to be determined by a comprehensive analysis of the position of both the right owner’s and the infringer’s position and abilities. Three sequential steps are to be taken. First, the position of each party is to be described precisely (a). Secondly, the duties which accrue from their positions are to be identified (b). Third, the question of proportionality is to be raised (c).

a) In respect to the right owner’s position, the following questions are to be investigated. What is his/her market position? Is it the only marketed product of the firm, which is often the case with “high tech newcomers”? Then the scale is prone to tilt towards injunctive relief for the purpose of fostering innovation. What is his/her position *vis-à-vis* the alleged infringer? Is it a competitor’s or a client’s relationship? In the first case, injunction is the default rule, in the second, this is not necessarily so. Which function does the claimed property right fulfil in the owner’s business model? Is the patent exploited in-house or does it serve a strategic function? Whereas strategic patents are to be acknowledged due to the analysed shift in the patent system, they are to be analysed in the frame of its double function of investment protection *and* technology transfer. This corresponds to the reasons why they were filed, namely in view of serving as proprietarily-secured transfer and bargaining chips. The function of commodification is upheld, if compensated access only is granted. A different rationale applies to strategic patents whose function is but market protection. Supposing that we can distinguish commodification from market protection, the scale can even tilt towards uncompensated access.

In respect of the infringer’s position, the following questions will be raised. Did he/she have the ability to “invent around”? If yes, the scale tilts to injunction. If “no”, differentiation is needed. Injunctive relief can be indispensable when the patent is used by a commercially-exploited improvement (substitutive competition). This is the typical dependency situation (*supra*); negotiations are in the interest of both parties. However, in biotechnology and in information technology, the “typical commercial improvement” situation can differ from the historical

¹⁰⁰ For an evolving typology of the term “public domain”, Samuelson, P., “Enriching Discourse on the Public Domain”, *Duke Law Journal*, Vol. 55, 2006, pp. 783-834.

prototype. For example, in IT, the defendant could be a member of the open-source community who works under a cooperative guild-ethos (proprietary self restriction of the group), which has been found to be macro-economically highly efficient,¹⁰¹ and which is formally acknowledged in some jurisdictions.¹⁰² In such a constellation, a judicial injunction against an “open source” developer could amount to contradictory state behaviour.

b) The second step will identify the duties of the parties according to their position. Did the property owner sufficiently account for a differentiation between the various licensees?

Two important considerations will influence both the result and the question of commercial use. In case it is a scientific institution not (yet) ready to commercialise the improvement, then, only *when* the improvement is ready to be marketed an injunction will be justified, and then primarily against the commercialising developer. When the institution is commercialising altered or improved tests (e.g. hospitals), it is sensible to deny injunction but to require equitable compensation.

c) The third step allows for a comprehensive proportionability test. The following criteria have to be carefully weighted: Are means available which are as effective for the owners as an injunction but less intrusive for the infringer? This is a question which needs to be raised especially when public interests are at stake, such as public health and research.¹⁰³ Is the infringing activity geared towards production or simply towards use? Is the use commercial or non-commercial?

IV. Applying the Test to “Research Tools”

The test is novel in that it ultimately derives at three remedies: injunction, compensated access, and free competition (“free access”) – following a structured and nuanced differentiation. The following exercise of applying the proposed test to “research tools” is necessarily limited to examples. The variability of the “real world” cannot be captured. For reasons of clarity and discourse it borrows from the

¹⁰¹ UNU-MERIT (2006), Economic Impact of the Open Source Software on Innovation and the Competitiveness of the Information and Communication Technologies (ITC) sector in the EU, <http://ec.europa.eu/enterprise/ict/policy/doc/2006-11-20-flossimpact.pdf>.

¹⁰² In Germany: § 32 sec. 3 sentence 3 UrhG (so called Linux-exemption).

¹⁰³ A test case could be (again) short sequences of (now) synthetic DNA (called “DNA-parts”), see N.N., “Patenting the Parts”, *Nature Biotechnology*, Vol. 25, No.8, August 2007, p. 822 – an editorial which (again) appeals to public research consortia to publish and to share the material (path dependant approach to the EST and Genome Debate of the 1990s, Godt, *supra* note 15, p. 178).

famous, publicly debated cases. The exercise refers to injunctive relief. But *mutatis mutandis* the rationale of restricting the property claim is applicable to contract clauses in the same way, thus reducing the validity of reach through contract claims, and to the duty to provide material.

A. First Step: Infringement of a Right

Beyond the cases of radical improvement, but in line with their rationale, those uses of “research tools” can be sorted out as non-infringing which decipher a patented sequence anew. Again, differentiation is needed. When an identical diagnostic test is discovered to be good also for a different disease, then the test marketed for this second disease will be dependent on the prior patent (thus infringing). In contrast, when a patented genetic sequence (which is technically dependent despite of recital 25 of the European Biotech Directive) is identified for the synthesis of a protein causing a different disease, then, this (novel) technical teaching is, in respect to its scope, to be qualified as outside the prior patent’s reach because it is “radically different”, thus non-infringing.¹⁰⁴

B. Second Step: The Unlawfulness-Test

Determining the position of the parties is a prerequisite to identifying their duties. Mere profit-oriented undertakings are to be distinguished from entities in the research community and in the public health system. Start-ups marketing their one-and-only patented product to the research community can be dealt with differently from multinationals. Members of the open source community can be differentiated from firms not committed to the ethos of sharing. Having taken account of the different position, parties can be under the duty to elaborate a differentiated patent policy, which is appropriate to both their own mission (for example, an academic institution) and market position, as well as the market position and mission of their various clients.

Thus, for example, it can be stated that publically-funded research organisations are under a duty to pursue a differentiated patent policy (e.g. an institution like the Winconsin Alumni Research Foundation,

¹⁰⁴ The European Biotech Directive only unclearly deals with this problem in Art. 5 sec. 3 Dir 98/44/EC, see Godt, *supra* note 18, p. 15 and 17. At the time, the debate was preoccupied with the functional restriction of the patent, see Godt, *ibid.*, p. 12; agreeing with this analysis, Ensthaler, J., Zech, H., “Stoffschutz bei gentechnischen Patenten”, *GRUR*, 2006, pp. 529-536 at p. 533 *et seq.* The German Legislator transposed the respective rules as a question of claim formulation (Art. 1a sec. 4 German Patent Law). Consequentially, the question of a functional restriction of the patent scope is unresolved.

WARF).¹⁰⁵ Not only should two different forms of contract be available (commercial, non-commercial), but again, patents are to be evaluated in the frame of protection and transfer. The patent policy has to deal with the problem of indispensability credibly resulting from “close to discovery”-inventions. It does not seem acceptable that research institutions follow a stringent patent policy towards “small innovative high tech firms”. Nor is it acceptable that they pursue a stringent policy towards other public research institutions. In those cases, I argue for a judicial restriction of remedies to compensated access. The duties between “small” and “big” commercial players vary in respect to their position and the function of the patent in their business strategy. Patents for “small” players need to be kept functional as options for market entry. If this aspect prevails, injunction is justified. However, injunction should be denied to “patent trolls” who transform patents into mere stumbling blocks – as the US-Supreme Court did in *Ebay (supra)*.

C. Third Step: Proportionality

The principle of proportionality is to be applied in cases where the infringer is a commercial institution or an institution of the public health system (e.g. Myriad). If the patented information is indispensable, the public interest is better served when more than one institution worldwide can perform the diagnostic test. With the decision for the availability of patent protection for gene sequences – under the condition that all other requirements are met (inventive step, utility) – these conflict situations are an unavoidable consequence. It is predictable that discretionary power can be executed to the detriment of public interest. Yet, patent property is not granted for reasons of general freedom of the individual (as property was once thought of by Kant). Patent protection is granted for reasons related to economic and social development. This balance need to be upheld also in *ex post* infringement procedures. Thus, when public health or research interests are curtailed by proprietary access in a disproportionate way, the remedy for infringement may be reduced to compensated access.

¹⁰⁵ Editor in Chief, *supra* note 21, complaining about the restrictive policy; I. Schneider (“Beschleunigung – Merkantilisierung – Entdemokratisierung? Zur Rolle von Patenten in der embryonalen Stammzellenforschung” in F.S. Oduncu, U. Schroth, W. Vossenkuhl (eds.), *Stammzellenforschung und therapeutisches Klonen*, Göttingen, Vandenhoeck und Ruprecht, 2002, pp. 211-245) contends that WARF hides behind ethical considerations.

Conclusion

The analysis of “research tools” produced three results.

First, the “research tools” debate appears to be a limited-one only when looked at superficially. In essence, it is a debate about governing principles of patenting in the realm of research-based technologies. With a commercialised research environment in place, the *problématique* cannot be reduced to a question of “research exemption”. To the contrary, it is a question about the interface of intellectual property and free competition in the information society.

Secondly, the patent system has been transformed under the pressures of the globalised information economy. The quantity and the quality of rights have expanded. This calls for a response by the judiciary (not only by competition authorities) to secure a civilised use of property and to secure a proper balance of interests in the patent system. Property rights have to be fine-tuned as institutions in a market of commodified information. It is the task of the judiciary to secure both “sides of the coins” protection and competition.

Third, the instrument to achieve this goal is a fine-tuning of remedies, namely a differentiated concept of injunctive relief. It is a concept which will give guidance to the emerging body of case law which *vice versa* will inform anew the academic debate about values and public interests on the one hand, and the construction of balance on the other.