PATENT ELIGIBLE SUBJECT MATTER RECONFIGURATION AND THE EMERGENCE OF PROPRIETARIAN NORMS—THE PATENT ELIGIBILITY OF BUSINESS METHODS

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I. INTRODUCTION—RESEARCH QUESTION AND THEORETICAL PERSPECTIVES

Technological changes present diverse challenges to the laws of Intellectual Property (IP). At the outset, new technological developments seem to create ever increasing quantities of potential subject matters for IP and expand the boundaries of the IP institution. Commercial values generated by new technological developments similarly test the institutional boundaries of IP. At the same time, as not all commercially valuable technological changes need to be protected as IP, legislators are faced with the complex choice of inclusion or exclusion of a new technological development and knowledge within the IP institution. A decision of exclusion might mean either that a new subject matter cannot be logically regulated with a set of rules of any existing branch of IP or that it is ethically or morally wrong to regulate it with any existing branch of IP. In other words, it might mean that some commercial value does not necessarily have to be internalized with an institutional regulation or that efficiency demands that some commercial value be left unprotected without any proprietary rights. In this context, challenges that new technologies present to IP law lend inquiry as to how the boundary of IP should be drawn, both conceptually and practically. Formulated in this manner, technological challenges present a normative question of identifying new subject matters of any branch of IP law—what should be included as eligible subject matter.

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A. Business Method Controversy

One of the topics that generated attention is the addition of new types of knowledge and technology as patent eligible subject matter. Such subject matter includes methods of doing business, especially in the context of computerized networks or as a method of doing e-Commerce. Since 1998, following a series of United States Court of Appeals for the Federal Circuit (Federal Circuit) decisions on the topic,[1] the United States Patent and Trademark Office (USPTO) has identified four groups of business knowledge[2] and has classified them under the U.S. Patent Classification system.[3] Similar changes are noted in the international patent classification (IPC), and in the patent practices under the Japanese Patent Office (JPO) and the European Patent Office (EPO) as well.[4] The types of knowledge that the USPTO incorporated under the new class include processing knowledge concerning the identification of customers and their preferences (operations research or market analysis data), publicizing data (advertising management,

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1 *See State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1374-77 (Fed. Cir. 1998) (rejecting the Business Method Exception doctrine and reaffirming that subject matter involving algorithms may be patentable where the product is useful, concrete, and tangible); *see also AT&T Corp. v. Excel Commun. Inc.*, 172 F.3d 1352, 1356-57 (Fed. Cir. 1999), *cert. denied*, 120 S. Ct. 368 (1999) (following the *State Street Bank* decision).

2 USPTO, *White Paper: Automated Financial or Management Data Processing Methods (Business Methods)*, http://www.uspto.gov/web/menu/busmethp/index.html (accessed Nov. 1, 2000) [hereinafter USPTO White Paper]; *see also* USPTO, *Class 705: Data Processing: Financial, Business Practice, Management, or Cost/Price Determination*, http://www.uspto.gov/web/offices/ac/ido/oeip/taf/def/ 705.htm (June 30, 2000) (setting forth definition used in USPTO subject matter classification system) [hereinafter *Class 705*].

3 Classification is purely an administrative step in patent prosecution; it precedes the prior art search thus enabling a patent application to be examined. *See generally* USPTO, *Patent Classification Homepage*, http://www.uspto.gov/go/classification/index.htm (updated Feb. 10, 2005).

4 *See* JPO, *Bizinesu kanren hatsumei to tokkyo bunrui [Business Related Invention and Patent Classification]* (2001), http://www.jpo.go.jp/tetuzuki/t_tokkyo/bijinesu/tt1303-090_hatsumei.htm (accessed April 5, 2005). For general patent classification data for Japan, *see* JPO, *Patent Map Guidance*, http://www.ipdl.ncipi.go.jp/homepg_eipdl (*select* Patent Map Guidance) (accessed Nov. 1, 2001); *see also* EPO-JPO-USPTO, *Report On Concurrent Search Program Using PCT Applications for Business Method-Related Inventions Carried Out Under Trilateral Project B3a*, http://www.european-patent-office.org/tws/business/business_start_page.htm (accessed Feb. 10, 2005); EPO-JPO-USPTO, *Report On Comparative Study Carried Out Under Trilateral Project B3b*, http://www.uspto.gov/web/tws/b3b_start_page.htm (accessed Nov. 1, 2001) [hereinafter *Trilateral Study 2000*].

catalogue systems, incentive programs, coupon redemptions), processing knowledge that concerns monetary exchange throughout business transactions (credit and loan processing, point of sale systems, billing, fund transfer, banking, clearing houses, tax processing, investment planning), and data that concerns tracking resources, money and products (human resource management, scheduling, accounting, and inventory monitoring).[5]

Accordingly, patents on methods of doing business have been issued under these and other relevant classes. Consequently, one can now easily find patents on various methods in various disciplines. For example, patents have been granted on methods of computerized tourism,[6] advertising on the Internet,[7] running an automated restaurant business,[8] treating cancer,[9] administering a mortgage,[10] and even on a method of filing a patent application.[11] Together with the debate over more exotic patents such as a patent for a method of swinging a golf club,[12] and with the more familiar debate over patent protection of computer programs, business method patenting has globally generated a large amount of commentary and proposals for patent law reforms.

Some argue that the challenges that result from these technological changes could be transient, which may be adjusted in time.[13] It can be argued that most of the doctrines and principles that were devised to explain mechanical and hardware technology created initial confusion when applied to software or digital computing. Once relevant principles and doctrines are created to guide acceptance of new subject matters, patent law may efficiently regulate problems inherent in patenting new subject matters over time.

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5 *See Class 705*, *supra* n. 2.

6 European Pat. No. 846,301 (issued June 10, 1998).

7 Japan Pat. No. 2,756,483 (issued Mar. 13, 1998).

8 Japan Pat. No. 2,804,933 (issued July 24, 1998).

9 U.S. Pat. No. 5,456,663 (issued Oct. 10, 1995).

10 U.S. Pat. No. 5,876,648 (issued Mar. 2, 1999).

11 U.S. Pat. No. 6,049,811 (issued Apr. 11, 2000).

12 U.S. Pat. No. 5,616,089 (issued Apr. 1, 1997).

13 *Compare e.g.* Robert P. Merges, *Symposium On Law In The Twentieth Century: One Hundred Years of Solicitude: Intellectual Property Law, 1900-2000*, 88 Cal. L. Rev. 2187 (2000) (proposing that the legal system accomodates new technologies through disequilibrium, adaptation and adustment, and legislative consolidation) [hereinafter Merges I] *with e.g.* Robert P. Merges, *Symposium: As Many As Six Possible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 Berkeley Tech. L.J. 577 (1999) (arguing ability to patent business methods has caused an unmanageable increase in patent applications) [hereinafter Merges II].

On the other hand, many have questioned if patentable subject matter should include any processing of any knowledge, including any profitable business concepts, as long as they are in digitized format. These arguments can largely be placed in two groups. The first group argues that a business method is not a proper subject matter of a patent at all, based on policy and legal concerns.[14] Among these, some claim, that this specific subject matter growth signifies a trend of overreaching commodification or propertization, where the boundaries of patent law have been expanded too far.[15] In Europe and Japan the discussion took a generally similar direction, but also discussed whether the patent laws of Europe and Japan should follow U.S. development in terms of international patent harmonization and the protection of the U.S. software industry.[16]

The second group of opposition was concerned more with the question of patent quality, viewing patent offices as unequipped to deal with

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[14] *E.g.* Vincent Chiappetta, *E-Commerce and Equivalence: Defining the Proper Scope of Internet Patents Symposium: Defining the Proper Scope of Internet Patents: If We Don't Know Where We Want to Go, We're Unlikely to Get There*, 7 Mich. Telecommun. & Tech. L. Rev. 289 (2001); Rochelle Cooper Dreyfuss, *Are Business Method Patents Bad for Business?*, 16 Santa Clara Computer & High Tech. L.J. 263 (2000); Aizawa Hidetaka, *Bizinesu Houhou To Tokkyo [Business Method and Patent]*, 1189 Juristo 27-33 (2000) (in author's files); Nakayama Nobuhiro, *Bizunesu Houhou Tokkyo—Jyoron [Business Method Patent—An Introduction]*, 1189 Juristo 24-26 (2000) (in author's files); Leo J. Raskind, *Symposium: The State Street Bank Decision: The Bad Business of Unlimited Patent Protection for Methods of Doing Business*, 10 Fordham Intell. Prop. Media & Ent. L.J. 61 (1996); Richard H. Stern, *Patenting Computerized Methods of Doing Business*, 16 IEEE MICRO 6, 4 (1996) (available at http://csdl.computer.org/comp/mags/mi/1996/06/m6toc.htm (accessed Mar. 31, 2005)).

[15] *E.g.* Mark A. Lemley, *Book Review: Romantic Authorship and the Rhetoric of Property*, 75 Tex. L. Rev. 873 (1997); Lawrence Lessig, *Patent Problems*, The Standard (Jan. 21, 2000), www.lessig.org/content/standard/0,1902,8999,00.html (accessed Feb. 12, 2005); John R. Thomas, *The Patenting of the Liberal Professions*, 40 B.C. L. Rev. 1139 (1999) [hereinafter Thomas I]; John R. Thomas, *Symposium: The Post-Industrial Patent*, 10 Fordham Intell. Prop. Media & Ent. L.J. 3 (1999) [hereinafter Thomas II].

[16] *See e.g.* C.D. Freedman, *Software and Computer Related Business Method Inventions—Must Europe Adopt American Patent Culture?*, 8 Intl. J. L. & Info. Tech. 3, 285-309 (2000); Ari Laakkonen & Robin Whaite, *The EPO Leads the Way, but Where To?*, 23 E.I.P.R. 5, 244-49 (May 2001); Michal Likhovski, *Fighting the Patent Wars*, 23 E.I.P.R. 6, 267-74 (June 2001); Hirashima Ryuuta, *Tokkyoniokeru Hogotaishoutoshiteno bizinesuhouhou [Business Method as Patent Eligible Subject Matter]* in *Beikokuniokeru bizinesuhouhoutokkyono kenkyuu [Research on the Business Method Patenting in the U.S.]* 1-94 (Chitekizaisankenkyuushou ed., Tokyo: Yuushoudou 2001); Hienuki Toshifumi, *Chitekizaisankento Kyousouseisaku—Bizinesu Moderu Tokkyo to Idenshikanrentokkyoo Sozainishite [Intellectual Property Right and Competition Policy on Business Model Patent and DNA Related Patent]*, 606 Kousei Torihiki 2, 2-3 (2001) (in author's files).

prior-art of certain new subject matter to issue valid patents. The known technical applications that implement the methods, and the familiarity of the design, have also been the source of questioning the quality and validity of issued business method patents and the competency of patent examiners.[17] While this second approach treats the problem as transient in nature, the first approach critically questions if the problem of business method patenting could be more fundamental. On the other hand, more practically-oriented commentators simply observed that allowing business method patents would induce e-business firms, as well as financial industries, to file for patents strategically; either to avoid troublesome infringement litigation for the methods that they have used in secret, or to have a global first-mover advantage.[18] Statistics do show that applications for a patent in these new classes have increased in all three regions during the last years.[19]

There are plenty of technologies and innovations that were not imaginable when the IP institution was initially devised. Among these, why has business method patenting been singled out as an indicator of crisis in the patent institution by many scholars? One explanation could be the essential differences between the traditionally accepted subject matters and a business method. It is often stated that a patent protects ideas and copyright protects expressions. However, a closer look suggests that what patent law protects may not simply be general "ideas," but a specific implementation of those ideas—an instantiation of the idea. What patent law gives is property-like protection on the instantiation of ideas. In this sense, "invention,"[20]

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17 *See* Jared Earl Grusd, *Internet Business Methods: What Role Does and Should Patent Law Play?*, 4 Va. J.L. & Tech. 9, ¶ 68 (1999) (arguing that what the *State St. Bank* decision did in the U.S. was to move the focus of the inquiry away from subject matter to the other conditions based on the individual quality of each claim); *see e.g.* John Kasdan, *Obviousness and New Technologies*, 10 Fordham Intell. Prop. Media & Ent. L.J. 159, 177-83 (1999) (explaining why the USPTO may face difficulties in the examination of obviousness of business method patent claims); Merges II, *supra* n. 13.

18 Michal Likhovski, Michael Spence, & Michael Molineaux, *The First Mover Monopoly,* OIPRC Elec. J. of Intell. Prop. Rights, http://www.oiprc.ox.ac.uk/EJWPO500.html (last updated Jan. 30, 2005); Jacob Razem, *Business Methods Patent Protection for New Ways to do Business and the Effect on Financial Institutions*, 4 N.C. Banking Inst. 521, 537-43 (2000).

19 In the U.S., *see* USPTO White Paper, *supra* n. 2, at 7. In Europe, *see* OJ EPO 7/2000 at 310, http://www.european-patent-office.org/epo/pubs/oj000/7_00/7_3070.pdf (accessed April 5, 2005). In Japan, *see* Japanese Patent Administration Report 2003, Statistics at 67 (in Japanese), http://www.jpo.go.jp/shiryou/toushin/nenji/nenpou2003_pdf/honbun/3-2-3-c.pdf (accessed April 5, 2005).

20 Japan Patent Law, No. 121 (Apr. 13, 1959) (as amended by Law No. 220 ch. 1 § 2(1) (Dec. 22, 1999) [hereinafter JPL].

"invention of technology,"[21] or the "useful arts"[22] are legal expressions that embody the principle that embody the subject matter of patents. An idea should be embodied and manifested in some concrete form, often to the degree of physical means. On the other hand, a business method is commonly understood as a processing of "business" knowledge or abstract data into valuable business information and activities. In essence, this process could be viewed as an inherently human process such as thinking and deciding on an action. In this sense, a business method seemingly lacks physical finality in its implementation[23] when compared to the mechanical inventions or even chemical processes that eventually produce a finite, tangible product. The tangible and concrete result of a business method might simply be a commercially-valuable number.[24]

The scepticism of scholars and the general public thus stems from the intuitive belief that an innovative business method or concept may be inherently different from the invention of technology that patent law aims to protect with patent property rules. However, one may find a more serious underlying concern from this observation—that protecting this inherently different subject matter with a patent could ultimately create a different social meaning of patentable subject matter, and that this addition of patentable subject matter could signify a more fundamental change in patent law.

If patent law is there simply to protect any kind of commercial value-creating action, and if the subject matter of patent law should be any intangible idea or human activity that creates commercial value and is repeatable by another person, then a business method patent may not be much of a problem.[25] As long as the claimed "idea" or action can be repeated and the claimed commercial values can be achieved through practice of the

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21 Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, § 5, art. 27(1) (1994) [hereinafter TRIPs Agreement].

22 U.S. Const. art. I, § 8, cl. 8; 35 U.S.C. § 101 (2000).

23 *See* Chiappetta, *supra* n. 14, at 296-99 (arguing that business method patents may include claims to non-computing but competitive activities, beyond the finite computer implementations and to cover any underlying activities); Richard S. Gruner, *Intangible Inventions: Patentable Subject Matter for an Information Age*, 35 Loy. L.A. L. Rev. 355, 358 (2002) (arguing that there is a growing body of principle recognizing the utilities in intangible discoveries without physical contexts in U.S. law).

24 U.S. Pat. No. 5,193,056 (issued Mar. 9, 1993) of the Signature Financial group, debated in *State Street Bank*, 149 F.3d at 1375, was an invention of this kind producing a useful number.

25 WIPO Document SCP/7/3, *Draft Substantive Patent Law Treaty*, art. 12(1) (Mar. 6, 2002) [hereinafter *SPLT Draft 2002*]; WIPO Document SCP/6/2, *Draft Substantive Patent Law Treaty*, art. 12(1) (Sept. 24, 2001) [hereinafter *SPLT Draft 2001*].

patent, it should worthy of patent protection. On the other hand, if patent law has some other social meaning and its subject matter is an implementation of such social meaning, one may argue that the protection of business methods with patents could be difficult to justify. In this sense, one may question if patent protection, which is based on a property rule requiring injunctive relief, is the most suitable and socially desirable instrument for the protection of commercially valuable innovation. In this regard, the patenting of a business method becomes the question of normative choice of a society.

B. Research Question and Scope

This article questions whether this addition to patentable subject matter could signify a more fundamental change in patent law and its normative meaning. This article is an attempt to answer the question of where is the socially desirable boundary of patent law by comparatively studying patent laws and practices. By studying the phenomenon of business method patenting as an example, this article examines how a new societal and technological change is accommodated and regulated by the patent institution. To avoid generality, the scope of this article is limited to the substantive patent law provisions and case laws in Japan, the U.S., and in the European Patent Convention (EPC).[26] It also studies a draft of a European Community (EC) directive proposal on patentability of computer-implemented inventions,[27] and some of the relevant provisions in the multilateral trade agreement of TRIPs,[28] and proposed rules of the World Intellectual Property Organisation's Substantive Patent Law Treaty (SPLT) as of March 2002.[29] In addition, examination guidelines of the JPO, USPTO,

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[26] 35 U.S.C. § 101; *Tokkyohounadono Ichibuwokaiseisuru Houritsu [Law Revising Parts of the Patent Law and Others]*, Japanese Law No. 24 (Apr. 17, 2002) [hereinafter JP Law No. 24 (2002)]; *see also Act Revising the Convention on the Grant of European Patents* (Munich: Nov. 29, 2000) (not yet in force) (available at http://www.european-patent-office.org/epo/dipl_conf/pdf/em00003a.pdf (accessed Mar. 31, 2005)); *see* JPL, *supra* n. 20; European Patent Convention, *Convention on the Grant of European Patents (1973)* (entered into force on Oct. 7, 1977) [hereinafter EPC].

[27] *Proposal for a Directive of the European Parliament and of the Council on the Patentability of Computer Implemented Inventions*, COM (2002) 92 final [hereinafter *EC Computer Patent Directive Proposal 2002*].

[28] TRIPs Agreement, *supra* n. 21.

[29] WIPO Document SCP/7/5, *Notes* (March 18, 2002); WIPO Document SCP/7/4, *Draft Regulations and Draft Practice Guidelines Under the Draft SPLT* (March 6, 2002); *SPLT Draft 2002*, *supra* n. 25; *see also* WIPO Document SCP/6/3, *Draft Regulations and Practice Guidelines Under the Substantive Patent Law Treaty* (Sep. 24, 2001); *SPLT Draft 2001*, *supra* n. 25.

and EPO are studied, as they are practical authorities that determine the patentability of claims directed toward business methods.

To understand the normative nature of business method patenting, it is important to place the phenomenon of business method patenting in the broader context of expanding the boundaries of IP institutions, an interesting approach suggested by a few authors. While generally describing the business method patenting in the U.S. and in Japan, some authors observed that the subject matter of patents seem to become more "intangible" or purely "informational."[30] Expressed in these terms, there is an intuitive understanding that patenting business methods could signify a broader change than a mere addition of a new subject matter, in effect resulting in a reconfiguration of patentable subject matter. At the same time, Drahos, in 1996, while discussing a general trend in the IP institution, argued that proprietarianism would suggest removal of the distinction between discovery and invention based on internal belief, but not based on traditional policy concerns of the instrumentalist vision of intellectual property.[31] Thus, it is possible to connect these ideas, and construct two questions concerning the normative meaning of business method patents: (1) whether patenting business methods means a reconfiguration of patentable subject matter; and (2) if such reconfiguration of patentable subject matter can be justified by utilitarian instrumentalism as the normative foundation of the patent institution. In these two aspects, this article examines the normative meaning of the accommodation of business methods as patentable subject matter.

II. PATENT SUBJECT MATTER EXPANSION AND RECONFIGURATION—SOME DISTINCTIONS

In the patent statutes, patentable subject matter is one of the more generally worded parts. The generality of the definition of "subject matter" is the starting point of the discussion on the subject matter reconfiguration, whether it is due to the semiotic nature in the language of law, or whether it is due to the indeterminacy of the normative belief of patent law. The changes in the societal perception of patentable subject matter are understood as a fact. The legal and legislative question and disagreement is on how to give legal meanings to such changes. Thus, a factual change in the perception of patentable subject matter could affect its legal perception, or cause an equivalent change in law as well. Similarly, even when the text of

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30 Alan L. Durham, "*Useful Arts" in the Information Age*, 1999 B.Y.U. L. Rev. 1419, 1440 (1999); Gruner, *supra* n. 23, at 360-61.

31 *See* Peter Drahos, *A Philosophy of Intellectual Property* 200-02, 208-09 (Dartmouth Publishing Group 1996).

the law stays the same, the changes in the interpretation of laws by relevant authorities affect the societal perception of patentable subject matter, as it could give rise to a social meaning beyond the parties involved.

Patentable subject matter reconfiguration should be understood in the following context. Subject matter can be expanded conceptually and legally, because new innovations are expected and associated value is added to these new innovations. The institution of patent law expects that its existence will promote greater knowledge, i.e., creation of additional technological arts, inventions, or useful arts. To some degree it is equipped to deal with an increase in patentable subject matter. The generality in the expression of patentable subject matter is logical—an innovation is difficult to anticipate. Thus, provisions on subject matter need to be general enough to allow for regulation of new subject matters, but also specific enough to function as a filtering category that allow only a certain type of knowledge to be patentable.[32]

Prof. Cornish has explained the expansion with the concept of accretion and emulation.[33] Accretion involves re-definition of existing rights so as to encompass the novel material, and emulation is the creation of a new and distinct right by analogy drawn from the types of IP that are already known. In the sense that emulation of a new rights regime is a creation of new subject matter with new definition, it is an expansion of the subject matter of IP. However, because it creates a new system of rights, this differs significantly from subject matter expansion under an existing branch of IP that is within the meaning of subject matter expansion used in this article.

Accordingly, it is possible to view patent subject matter expansion as a process by which an IP institution accommodates new forms of knowledge, as a quantitative accretion, of which the phenomenon of business method patenting is just one example. This growth has been a continual part of national and international patent law making. Once limited to mechanical and chemical technologies, today patentable subject matters include

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[32] *See* TRIPs Agreement, *supra* n. 21, at art. 27(1); JPL, *supra* n. 20, at art. 2(1); Donald Chisum, 1 *Chisum on Patents* § 1 (Matthew Bender & Co. 2000); W.R. Cornish, *Intellectual Property, Patents, Copyright, Trade Marks and Allied Rights* 177 (3d ed., Sweet & Maxwell 1996); Josef Kohler, *Lehrbuch des Patentrecht [Textbook of Patent Law]* 13-15 (J. Bensheimer: Mannheim, Berlin Leipzig 1908); Nakayama Nobuhiro, *Chuukai Tokkyo Hou I [Patent Law Annotated]* vol. I, 26-33 (3d ed., Tokyo: Aoki Shoin 2000); *see also* Gert Kolle, *The Patentable Invention in the European Patent Convention* 5, 02/1974 IIC 140-56 (1974); William C. Robinson, *The Law of Patents for Useful Inventions* vol. 1, 101-13, 132-78, 190-228 (Little Brown & Co. 1890).

[33] W.R. Cornish, *The International Relations of Intellectual Property*, 52 Cambridge L.J. 1, 46, 54-55 (1993).

agriculture,[34] chemical substances, medical procedures,[35] computer software,[36] and arguably, business methods.[37] It is a global and ongoing process. The first multilateral agreement with substantive provisions on patents, the TRIPs Agreement, reflects this trend by obliging its members to provide no

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[34] In the U.S., *see Ex parte Hibberd,* 227 U.S.P.Q. (BNA) 443 (B.P.A.I. 1985) (considering patent protection of a plant variety). In Japan, *compare* 1956 Patent Act art. 32 *with* 1976 Patent Act art. 32 (where food stuff, chemical substance and medical procedure exception was removed). In Europe, *see* EPO, European Patent Convention art. 53(b) *Exceptions to Patenability* (available at http://www.european-patent-office.org/legal/epc/e/ar53.html (accessed Feb. 10, 2005)) ("European patents shall not be granted in respect of . . . plant or animal varieties or essentially biological processes for the production of plants or animals . . ."). In TRIPs, *see* TRIPs Agreement, *supra* n. 21, at art. 27.3(b) (requiring plant protection).

[35] *See Allergan Sales, Inc. v. Pharmacia & Upjohn, Inc*., 41 U.S.P.Q.2d (BNA) 1283 (S.D. Cal. 1997); *see also* 35 U.S.C. § 287(c); EPO Enlarged Board of Appeal Decision, Case No. G 0005/83-EBA (Dec. 5, 1984) (available at http://legal.european-patent-office.org/dg3/biblio/g830005ep1.htm (accessed Feb. 19, 2005)) (allowing European patent on the second medical indication).

[36] *See AT&T Corp,* 172 F.3d at 26 ("it is now clear that computer-based programming constitutes patentable subject matter . . ."); *In re Alappat*, 33 F.3d 1526, 1536 (Fed. Cir. 1994) (concluding that a programmed computer could be entitled to patent protection); EPO TBA Decision T 0935/97, *IBM Corp*. (1999) (unreported to OJ) (available at http://legal.european-patent-office.org/dg3/biblio/t970935eu1.htm (accessed Feb. 10, 2005)) and EPO TBA Decision T 1173/97, *IBM Corp.* EPO OJ 1999:589 (1998) (available at http://legal.european-patent-office.org/dg3/biblio/t971173ex1.htm (accessed Feb. 10, 2005)) (both IBM decisions discussing positively the patentability of computer program products, despite the explicit wording of the European Patent Convention); *see also* EPO, *Guidelines For Examination in the EPO* part C, ch. IV, § 2 (available at http://compendium.european-patent-office.org/cbc/Comp_LEGAL/gui_lines/e/c_iv_2.htm (accessed Feb. 10, 2005)) [hereinafter *EPO Guideline 2001*]; JPO, *Examination Guideline* (available at http://www.jpo.go.jp/infoe/1312-002_e.htm (accessed Jan. 11 2002)) (publicly notified in Dec. 2000) [hereinafter *JPO Guideline 2000*].

[37] *State St. Bank*, 149 F.3d at 1374-77; EPO TBA Decision T 1173/97 (1998), *supra* n. 36; EPO TBA Decision T 0935/97 (1999), *supra* n 36. *See also* EPO TBA Decision T 0258/03, Auction Method/Hitachi (2004) (available at http://legal.european-patent-office.org/dg3/biblio/t030258ep1.htm (accessed April 5, 2005)) (where the Board noted that "its comparatively broad interpretation of the term "invention" in Article 52(1) EPC will include activities which are so familiar that their technical character tends to be overlooked, such as the act of writing using pen and paper. Needless to say, however, this does not imply that all methods involving the use of technical means are patentable. They still have to be new, represent a non-obvious technical solution to a technical problem, and be susceptible of industrial application."); JPO, Policies Concerning Business Method Patents (2000) (available at http://www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/tt1211-055.htm (accessed April 5, 2005)) (generally outlining JPO's policy to examine business method claims).

categorical exemption as to the field of technology for patentable subject matter,[38] in principle, unless there are some special public policy reasons.

The problem with patentable subject matter expansion is how to distinguish the point where its growth becomes a qualitative reconfiguration. When do we know where minor redefinition or clarification stops being confined to a quantitative change and starts to become a qualitative reformulation? On what grounds can we argue that subject matter expansion is accretion that is necessary to keep patent law updated, and when does it become a reconfiguration that is better regulated with other institutional means or emulation of a new system of rights?

One way of answering these questions would be finding why we have patentable subject matter in the first place, i.e., by asking what is its function and meaning in patent law. One could examine it both in terms of its function, and in terms of its substance. If the essential function of patentable subject matter changes as the result of subject matter accretion, one may argue that its growth is actually a reconfiguration. Furthermore, if the accretion of new subject matter changes the substantive principle of patentable subject matter without an explicit change in the textual expression, there may be a subject matter reconfiguration. Two conceptual tools for this purpose include: (1) the normative function of patentable subject matter; and (2) the concept of instantiation as the underlying principle for defining substantive patent law subject matter. First, the function of patentable subject matter is discussed and the second question is discussed later, together with a comprehensive comparative study on the substantive rules of patentable subject matter.

Patent laws generally grant patents based on several qualifications, which can be grouped into two general substantive tests. One is the categorical test on patentable subject matter,[39] and the other is a series of tests to ensure the validity of a specific patent including: novelty, inventiveness/non-obviousness, and utility/industrial applicability.[40] Patents are issued only to those which pass substantive examinations based on these qualifications. Thus, not all knowledge is patentable, and not all patentable subject matters are patented inventions. Even if one new innovation is categorically patentable, it still needs to satisfy the conditions of validity to be granted patent protection. These two qualifications ensure that patentability examination remains substantive in terms of what types of

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[38] *See* TRIPs Agreement, *supra* n. 21, at art. 27(1).

[39] *See* 35 U.S.C. § 101; JPL, *supra* n. 20, at § 2(1); TRIPs Agreement, *supra* n. 21, at art. 27; EPC, *supra* n. 26, at art. 52(1).

[40] *See* 35 U.S.C. §§ 101-03; JPL, *supra* n. 20, at § 29(1)-(2); TRIPs Agreement, *supra* n. 21, at art. 27; EPC, *supra* n. 26, at art. 52(1).

knowledge can be identified as patentable knowledge and what types are not.[41] If the existence of patent institutions is to promote intellectual creations or efficient use of resources by connecting intellectual creations to the market, why not allow all types of intellectual creations to benefit from patents? What motivates the need to identify the types of knowledge?

If only benefits flowed from the protection of patents, there is no reason not to allow all types of intellectual creations to be the subject matter of a patent. If the existence of the patent institution only promotes intellectual creations or efficient uses of resources, the reconfiguration of the subject matter simply would allow different knowledge to be covered by the protection of patents. There is no reason why reconfigured subject matter should not be beneficial. However, if one can find meaningful reasons why the categorical limitation of patentable subject matter needs to exist, one may argue against its reconfiguration and against eliminating this categorical limitation. When patent protection has a cost, substantive law should limit its application where the cost outweighs the benefit. This is one of the main functions of patentable subject matter. In this sense, patentable subject matter functions as a limitation to patentable knowledge via substantive examination.

However, the existence of two types of limitations, one being categorical identification of patentable subject matter (those that are patentable and those that are not), and the other being substantive conditions of validity, confuses this assertion. If the subject matter limitation is needed, what determines the form and contents of such a limitation? For example, what instructs that there is a need to have a general subject matter limitation as well as individual validity limitations? If having an instrumentalist limitation ensures the knowledge to be validly invoking protection, the necessity of defining patentable subject matter as a rule that formally divides patentable knowledge from the other types of knowledge may not necessarily have to be the means of implementing this limitation.

Generally, there exists largely five groups of explanations for the existence of patentable subject matter involving different perspectives of patent law and its role in society: 1) a positivistic identification of intangible or abstract objects of property relations, i.e. the *res*;[42] 2) a technical necessity

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[41] One could add a third group of tests on the disclosure requirement such as enabling disclosure, which is as important as the other two groups. As the discussion is somewhat more formal, and highly specific, it is omitted here, as the focus of the thesis is on the general and categorical substantive distinctions of the subject matter test.

[42] For a variation of this argument, *see e.g.* Brad Sherman and Lionel Bently, *The Making of Modern Intellectual Property Law* 43-59 (Cambridge 1999); *see generally* Carol M. Rose, *Romans, Roads, and Romantic Creators: Traditions of Public Property in the Information Age*, 66 L. & Contemp. Probs. 89, 108 (Winter/Spring 2003) (generally

for the preservation of integrity of law;[43] 3) a limitation on the private and public domain—a libertarian approach;[44] 4) identification of industry that needs patent incentives and functional division of institutional competence;[45] and 5) a market oriented explanation which is a variation on patent-induced invention theory[46] and a commodification explanation.[47]

All of these explanations commonly point out one important function of patentable subject matter—its function as a limitation embodying a normative belief. Understood as such, the existence of patentable subject matter indicates a social choice that is based on these normative considerations of the patent institution. This social policy consideration is what makes a patent institution an instrumentalist institution that provides a limited property protection for selective subject matter for a specified social goal. Thus, based on the above understanding, a more general but significant explanation could be drawn—that the existence of subject matter limitations could be understood as a means of implementing utilitarian instrumentalism as a normative foundation of patent law by its function as a categorical limitation. If changes by the addition of a subject matter, such as business method, effectively remove this function as a categorical limitation, it is possible to argue that business method patenting signifies a subject matter reconfiguration.

Patent institutions are based on the balancing of two conflicting normative influences, exclusion and diffusion.[48] These two different norms and their respective systems of belief, proprietarianism and instrumentalism, advise differently on the choice of the direction of changes in the patent laws in terms of justification of the institution itself, justification of individual

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advancing the idea that intellectual matters become appropriable objects of property (*res*) via intellectual property law).

43 *See* Rebecca S. Eisenberg, *Analyze This: A Law and Economics Agenda for the Patent System*, 53 Vand. L. Rev. 2081, 2084-85 (2000).

44 *See* Robert Nozick, *Anarchy, State, and Utopia* 175-82 (Basic Books 1974); *see also* John Perry Barlow, *The Economy of Ideas*, WIRED, http://www.wired.com/wired/archive/2.03/economy.ideas.html (accessed Feb. 10, 2005).

45 For one variation on this line of argument, *see* Tamura Yoshiyuki, *Tokkyo Hatsumeino Teigi [The Definition of Patentable Invention]*, Hougakukyoshitsu, No. 252, 14-16 (Sept. 2001) (in author's files).

46 *See* Ann Bartow, *Separating Marketing Innovation from Actual Invention: A Proposal for a New, Improved, Lighter, and Better-Tasting Form of Patent Protection*, 4 J. Small & Emerging Bus. L. 1 (2000); *see also* Yoshiyuki, *supra* n. 45, at 14 (in author's files).

47 *See generally* Margaret Jane Radin, *Contested Commodities* (Harvard 1996).

48 *See generally* Janus A. Ordover, *A Patent System for Both Diffusion and Exclusion*, 5 J. Econ. Pers. 43, 60 (1991).

entitlement, and the definition of community that it envisions.[49] As patentable subject matter embodies the normative foundation of a patent institution, patentable subject matter reconfiguration may indicate shifting dynamics in these normative influences.

III. DEFINING BUSINESS METHOD AS A SUBJECT MATTER OF A PATENT

Does business method patenting remove this normative function of patentable subject matter as a categorical limitation? This article argues that it does, based on changed substantive rules. One conceptual tool that usefully distinguishes reconfiguration from quantitative accretion is the instantiation of the abstract, which is implicitly embodied in the text of patent laws as a requirement of the subject matter of patents to be physically meaningful arts.[50] That an invention has to represent the idea by concrete instance is often understood as the inherent principle that is underlying in the statutory expression of patentable subject matter. Whether it is called technology, invention, or the useful arts, invariably patent laws inherently require only the instantiation of the idea be patentable, but not the underlying idea as such.[51] The dichotomy of the instantiation and the abstract is believed to be the manifestation of the normative belief that a patent is granted as a tool for a specific purpose, i.e., for the enrichment of the intellectual commons, industrial growth, or technological progress, not an end in and of itself. This is manifested in the objective clauses of the patent laws of Japan,[52] of TRIPs,[53] and found in the U.S. Constitution.[54]

Does a business method inherently have a different level of instantiation from that of other patentable methods? This requires a definitional exercise, which is beyond a simple academic exercise, because any attempt to suggest regulation of business methods as a new subject matter, or with a newly emulated system of rights, should contain a definition that distinguishes a business method from other methods. Even if one opts for proposing no I.P. protection of business methods, one should know the boundaries of what is not patentable.

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49 *See* Drahos, *supra* n. 31, at 199-203, 210-19.

50 Expressions such as "useful Arts" in U.S. Const. art. I, § 8, cl. 8, "invention of technology" in EPC, *supra* n. 26, at art. 52(1), and JPL, *supra* n. 20, at § 2(1) reflect this.

51 *See* 35 U.S.C. § 101; JPL, *supra* n. 20, at § 2(1); TRIPs Agreement, *supra* n. 21, at art. 27; EPC, *supra* n. 26, at art. 52(1).

52 JPL, *supra* n. 20, at § 1.

53 TRIPs Agreement, *supra* n. 21, at art. 7.

54 U.S. Const. art. I, § 8, cl. 8.

Most commentators and authorities simply use the term "business method patent" as a generic term to describe the group of e-Commerce related patents or other patents based on business activities or concepts. Some attempted to use the term "Internet patent" to specify its essence of being business on the Internet.[55] Some use "business model patent" to specify that its scope goes beyond the Internet application of business method, but applies to the whole concept of a business model that can be repeatable and that generates values.[56] For the sake of consistency, the term business method or method of doing business is used to broadly cover these various terms.

If a statute is to be drafted addressing business methods either to prevent their patent protection or to explicitly define them as eligible subject matter, a clear definition would be necessary. At the same time, to be effective in the future, the definition cannot be exhaustive. As a method of a business necessarily involves mental processes, a creative human mind can devise any new method or combinations of methods or processes. Therefore, a statutory definition whose amendment or revision would be difficult in light of case law, administrative guidelines, and/or classification, may not be pragmatic. Furthermore, statutorily defining a business method in patent law necessarily needs to follow a decision on its patent eligibility. This is because in the absence of a provision to the contrary, even if the statutory definition is included to restrict the scope of business method patents, a statute that provides it as patentable creates a meaning that it is inherently a technology as contemplated in the patent law. At the same time, leaving it undefined by case law, but practically defined by the administrative classification and practices of the patent office, create uncertainty.

No patent statute or case law explicitly defines a "business method" either as business method patent subject matter, or as non-statutory subject matter, in all three geographic regions under the study of this article.[57] One

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[55] Chiappetta uses the phrase "Internet patents" to "include patents protecting methods of doing business on the Internet, standing alone or as computing implementations" and to exclude patents "covering the basic equipment and telecommunications routing, switching and other related technologies vital to the operation of the Internet's infrastructure." Chiappetta, *supra* n. 14, at 361 n. 1.

[56] The term "business model patents" has been used often in Japanese literature. *See e.g.* Henry Koda, *Bijinesu Moderu Tokkyo [Business Model Patent]* (Nikkon Kougyou Shinbunsha 2000); *see also* Takashi Nakajima, *Shougeki No Bijinesu Moderu Tokkyo [An Impact: Business Model Patent]* (Nihon Horei 2000); *Nichibei Bijinesu Moderu Tokkyo [Japan and American Business Model Patent]* 272 (Sofutowea Jyohou Senta [Software Information Center] ed., Nikkon Kougyou Shinbunsha 2000).

[57] *But see* H.R. 1332, 107th Cong. § 2(f) (2001) (termed the Business Method Patent Improvement Act of 2001); H.R. 5364, 106th Cong. § 2(f) (2000) (termed the Business Method Patent Improvement Act of 2000).

circular definition is found under U.S. patent law, Section 273(a)(3), in the "method" claims that are to be the basis for prior user defence as "the term '*method' means a method of doing or conducting business*" (emphasis added).[58] Some form of the definition may be found in the administrative classification, such as modern data processing,[59] which does not have any binding legal significance. The confusion might exist because the concept itself is not clear, as pointed out by prominent American Judge Newman that the concept is too "fuzzy" to be a part of law, and suggested "that it be discarded as error-prone, redundant, and obsolete."[60] However, the fuzziness might stem from the fact that there are several complexities in the concept of patenting a business method. This includes the complexities in the definition of a method, in the scope of a business, and in the technological means of its implementation where it is becoming increasingly difficult to distinguish between what is the means and what is the essence.[61]

Commonly understood, a business method connotes that business methods or models are the ways in which firms conduct and act related to their business. Two relevant parts of the phrase stand out. It necessarily concerns business, i.e., is commerce-related,[62] and it is a method, i.e., a process (or an activity) rather than an apparatus or an artefact. Using similar concepts, Merges uses the term "business concept patent" that is characterized by two attributes: "(1) it describes an essentially commercial (as opposed to technological) activity, typically some way to make or save money; and (2) the hardware and software elements are described and claimed at such a high level of generality that they are for all practical purposes nominal."[63]

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58 35 U.S.C. § 273(a)(3).

59 *Class 705*, *supra* n. 2.

60 *In re Schrader*, 22 F.3d 290, 298 (Fed. Cir. 1994) (Newman, J., dissenting).

61 *See generally* Lawrence Lessig, *Code and Other Laws of Cyberspace* (Basic Books 1999) (applying this to the law of the Internet); Marshall McLuhan, *Understanding Media: The Extensions of Man* (McGraw-Hill 1964) (arguing that the medium is the message).

62 Cambridge Dictionary of English defines "business" as "the activity of buying and selling goods and services, or a particular company that does this, or work in general rather than pleasure." Cambridge Dictionary, http://dictionary.cambridge.org/define.asp?key=business*1+0&dict=A (accessed Jan. 28, 2005). Merriam Webster's Dictionary defines it as "a usually commercial or mercantile activity engaged in as a means of livelihood." http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=business (accessed Feb. 20, 2005). One archaic expression that is noted in Merriam Webster's definition is a "purposeful activity." http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=business (accessed Feb. 20, 2005).

63 Merges II, *supra* n. 13, at 579.

The first attribute introduces two distinctions concerning what a business method is, while the second attribute establishes the distinction based on how it is implemented. At a glance, the first attribute seems to be something that is akin to the concept of a profitable scheme, which is found in Japanese literature.[64] However, it introduces two important concepts of distinction—the essence of an invention and the nature of the subject matter as an "activity." This indicates that the essence of the business method lies with its valuable or profitable business-related activity and that it concerns an activity (i.e. process), rather than a thing (i.e. apparatus). However, the problem is that finding the "essence" of an invention has proven to be difficult, as it introduces a certain level of subjectivity into the definition, especially in the peripheral claiming system.[65] On the other hand, under the central claiming system, i.e. the problem and solution approach, of Europe and Japan, it might be easier to identify the problem as the essence of the invention, what the claim drafter intended as the essence of the invention based on the text of the claims. Furthermore, a definition focusing on this aspect would exclude any apparatus or product claim from the scope of a business method, and a skilful claim drafter can always draft a process as a product or apparatus claim, if the law so requires.[66] While this alone may not be sufficient distinction to define the business method as a subject matter, it is useful in distinguishing it from the other methods.

The second attribute relates to how a method is implemented. This requires a determination of what is a nominal level or general technological means and thus introduces, albeit generally, the concept of novelty and obviousness in the definition of a subject matter. Thus, if one introduces this in the definition, one may argue that a business method that has a new, non-obvious (inventive) and useful, industrially applicable means of implementation it is patentable subject matter, while other methods of doing business are not. This conflates the validity determination with the subject matter determination at the definition stage. How the method is implemented forms a fundamental part of the definition of a business method as patentable subject matter. Thus, defining it as patentable necessarily

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64 The concept of "Moukeru Shikumi" [method to earn profit] is sometimes found in Japanese literature as a misleading description of business method patents. *See e.g.* Aizawa Hidetaka, Ishii Tadashi, Nakayama Nobuhiro & Naruto Michio, *Bizinesu houhou Tokkyo No Genjyouto Shourai [The Current Status and Future of Business Method Patent]*, 1189 Juristo 2, 2-3 (2000) (in author's files).

65 *See* Nari Lee*, Technological Change and Regulatory Heterogeneity. A Comparative Study on Patent Infringement Analysis in the US, Japan and Korea*, U. Vaasa Research Paper Series, 70-73, 98 (June 2000).

66 John R. Thomas, *Of Text, Technique, and the Tangible: Drafting Patent Claims Around Patent Rules*, 17 John Marshall J. Computer & Info. L. 219, 246 (1998).

conflates the categorical subject matter rule with other validity requirements. Thus, the risk is that a categorical identification intended by the subject matter test becomes subsumed by the validity requirement, which may remove its function as a limitation. If comparative law exercises show that this attribute is somehow incorporated into the patent law practices in the U.S., Japan, and under the EPC, it would help us view the change as subject matter rule reconfiguration.

IV. SUBJECT MATTER OF PATENT AND BUSINESS METHOD—A COMPARATIVE LAW EXERCISE

Thus far, this article argues that the reconfiguration of subject matter occurs when the categorical limitation embodied in patentable subject matter becomes subsumed by validity as it would effectively remove the function and substantive meaning of the former test as a limitation. To reflect this challenge in the definition of a business method in terms of what it is and how it is implemented, comparative exercises are organized in two parts. The first examines the general rules of patent eligibility to establish a common rule of subject matter, and the patent eligibility of computer programs to see how this common rule has changed. The second exercise discusses in detail the ways in which a business method has become the subject matter of patents, relying on the acceptance of computer program as a proper patent subject matter.

A. Patent Eligibility of a Computer Program

The patent institution was created for instrumentalist reasons and this is embodied as a function of subject matter. While there are various theories as to what exactly justifies selecting one type of knowledge over the other, patent laws commonly have selected only certain technological "discoveries" or "creations" to be a subject matter of proprietary protection, but not all aspects of knowledge. Therefore, a selection has always been made to distinguish protectable ideas from non-protectable ideas. This distinction is still present in the language of patent laws of the U.S., Japan, and Europe where there exist stipulated categories of knowledge that are prohibited from patent eligibility. The justification for prohibiting eligibility to certain categories of subject matter has been largely normative, namely that the patent institution "should" protect some subject matters because that would best achieve the stipulated objective of patent law. Although the objective clauses of Japanese Patent Law, the U.S. Constitution, and TRIPs fail to specify specific legislative means of achieving this goal, commonly they indicate normative foundations of the patent institution as an instrumentalist

institution. Understood as such, the patentable subject matter rule in the patent laws of the U.S., Japan, and Europe embodies this principle to a certain degree.

The U.S., Europe, and Japan have three different ways to define and limit patentable subject matter. First, the U.S. has a general categorical limitation but with individual limitations of validity. Second, Japan has an essentialist definition of the term "invention." Third, the EPC has categorical exclusions to subject matter.[67] However, in all three regions, depending on the interpretation of the statutory expression, various contestable subject matters have become included as patentable. The legal community may notice that there is a general encroachment of the category of "discovery" or "abstraction," which is to be held in common for future knowledge creation.

While there is the need to maintain a distinction between instantiation and abstractions, both are found in the text of law; in some interpretations of the laws of all three regions, the degree of instantiation required to qualify a patent for protection is moving away from the traditional physical embodiment rule. As a result, confusion persists with attempts to provide an essentialist definition of what "technology" is. At the same time, finding a meaningful limitation in the law is becoming increasingly difficult. For example, Stern argued that some of the recent interpretations of the definition of patentable subject matter in the U.S. indicate that the concept of technological arts has become "so inclusive that it amounts to a universal class which makes it useless as a tool of legal analysis."[68] Any attempts to find defining features of technology, once patentable subject matter moved away from the physical embodiment rule, became highly abstract and conceptual. As such, a definition of technology in patent law that includes conceptual instantiation could lead to an equation of any human activity in addition to a technological art. The acceptance of computer programs as a patentable subject matter is a step in this continuum.

Computer programs have been thought to consist of numbers and logical constructs that are mental steps, and thus had long been thought to be out of the scope of patentable subject matter. Rationales for expanding eligibility to computer programs varies, but mainly are expressed as created for economic concern, such as a guarantee for investment and the need to protect new types of functional products that copyright protection fails to provide. The EPO simply points to the treaty obligation under TRIPs, despite the fact that it is not directly binding, and despite the fact that

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[67] 35 U.S.C. § 101; JPL, *supra* n. 20, at § 2(1); EPC, *supra* n. 26, at art. 52(1); TRIPs Agreement, *supra* n. 21, at art. 27.

[68] Richard H. Stern, *Scope-of-Protection Problems With Patents and Copyrights on Methods of Doing Business*, 10 Fordham Intell. Prop. Media & Ent. L.J. 105, 129 (1999).

whether Article 27(1) envisioned computer programs as patentable subject matter is still questionable and open for interpretation.[69] Others pointed to an interpretation of higher authority of law, such as the U.S. Constitution.[70] The JPO pointed to the general legislative purpose of statutes for the basis of redefinition before its April 2002 patent law revisions that effectively stipulated to the patent eligibility of computer programs.[71]

While the substantive "rule" of patent subject matter that is in common in all three regions seems to be the rule of "instantiation of abstract ideas" either by a subject matter definition of useful arts, invention, or non-technology, the discussion on computer programs shows a fundamental change in this rule. It shows how an accretion of a subject matter (computer program) has moved the threshold of "instantiation" away from physical manifestation. This is because the degree of instantiation that is required of a computer program to be patentable is less physical-resource oriented and one step away from the finality of the instantiation.

One may argue that a programmable machine "is novel" as it becomes a new tool for performing different functions depending on the software loaded onto it.[72] On the other hand, a new computer program whether claimed as a process or a product may not cause a physical transformation beyond the normal interaction between hardware and software—a flow of electric current.[73] Modern data processing blurs the distinction between tangible means of carrying out a process to the degree that the means of carrying out processes can be highly intangible as well. Pure energy or a frequency, which is not fixated on a physical medium, could be a medium for embodying a computer program. If an embodiment of a data signal in this medium is the touchstone of finding instantiation of the abstract, the embodiment of intangible energy confuses the neat distinction between abstraction and instantiation.[74] As data processing is defined in terms of patentable methods, tangible means or transformation in tangible resources may no longer be meaningful.

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69 *See* EPO TBA Decision T 1173/97, *supra* n. 36; EPO TBA Decision T 0935/97, *supra* n. 36; *see also* EPO TBA Decision T0258/03, *supra* n. 37.

70 *Diamond v. Chakrabarty*, 447 U.S. 303, 307 (1980); *see also State St. Bank*, 149 F.3d at 1373 (citing *Chakrabarty*).

71 JP Law No. 24 (2002), *supra* n. 26, at § 1.

72 *In re Alappat*, 33 F.3d at 1545.

73 *See* EPO TBA Decision T 1173/97, *supra* n. 36, at ¶¶ 6.2-6.3; EPO TBA Decision T 0208/84, *VICOM*, EPO OJ 1987, 14 (1986) (available at http://legal.european-patent-office.org/dg3/biblio/t840208ep1.htm#txt (accessed Feb. 13, 2005)).

74 Gregory A. Stobbs, *Patenting Propagated Data Signals: What Hath God Wrought?*, IEEE Commun. Mag. 98, 100 (July 2000) (noting that the USPTO is willing to accept software inventions embodied in propagating energy).

When the Federal Circuit ruled that the transformation of data is a sufficient level of instantiation as long as the abstract data is transformed into concrete information, it partially accepted a conceptual transformation of sufficient instantiation to be considered a patentable process.[75] In the case that followed, Judge Plager asserted that physical transformation was not an absolute requisite for patentability and that "a number which had a specific meaning" produced by the process was patentable "if the end result . . . was useful, concrete, and tangible."[76] Similarly, in Japan, the requirement of subject matter in the current examination guideline is that "information processing is concretely realised by utilisation of hardware resources."[77] This is far less stringent a requirement than requiring hardware resources to be controlled, or a physical property of an apparatus to be present in the claim.[78] Furthermore, article 1 of Law No. 24 of 2002 revises article 2(3) of the present Japanese patent law to redefine the meaning of *mono* [product] to include "the program."[79] A "program" is further defined as "the instructions on the electronic calculator, which are arranged to achieve a certain result," and "the like" as "other equivalent information for the processing by electrical calculator," thereby allowing not only a process claim or an apparatus claim, but also an independent product claim to a computer program.[80]

This partial acceptance of conceptual rather than physical transformation prepares the accommodation of less physically-instantiated processing of useful information, which characterises business methods. At the same time it shows how a technological advance in the form of digital computing and computerisation of information has enabled an external implementation of what was once thought to be an essentially internal and human process. Once the computer program is accepted as patentable subject matter, it is logically improbable not to expand the scope of patent subject matter to a method of doing business. This is because computer programs as patentable subject matter forces acceptance of a certain degree of conceptual instantiation. As a result, patent eligibility of computer

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75 *See State St. Bank*, 149 F.3d at 1373.

76 *See AT&T Corp.*, 172 F.3d at 1358-60.

77 JPO, *Examination Guidelines for Patent and Utility Model in Japan*, part VII, ch. 1, § 2(2)(1), 11, http://www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/Guidelines/PartVII-1.pdf (accessed Feb. 13, 2005).

78 JPO, *Implementing Guidelines for Inventions in Specific Fields*, ch. 1, § 2(2)(1), http://www.jpo.go.jp/ tetuzuki_e/t_tokkyo_e/txt/soft-e.txt (accessed Feb. 13, 2005).

79 *See* JP Law No. 24 (2002), *supra* n. 26, at § 1.

80 Translation is the author's. *See* the original expression of the JP Law No.24 (2002), *supra* n. 26, at § 1.

programs has prepared the way for patent eligibility of all human activity, as long as it is instantiated—the invention has a concrete utility, as in the case of products or processes of useful information, which ultimately include methods of doing business. The proposed substantive patent law harmonization treaty proposed a similar rule. In the Draft Treaty as of March, 2002,[81] Article 12(1)(a) states that "subject matter eligible for protection shall include products and processes [in all fields of technology] which can be made and used in any field of activity." Although Article 12(1)(b) excepts from patent eligibility abstract ideas, theories, and aesthetic creations, by defining patentable subject matter as that which "can be made and used in any field of activity," it removes physical manifestation as the test of eligibility. If this provision is accepted as such, as long as it involves some form of activity, any knowledge with some commercial value will not be presumptively barred from patent eligibility.

B. Patent Eligibility of a Business Method

Despite the common existence of business method patents in the U.S., Japan, and in Europe, the texts of laws on the patent eligibility of a business method seem to be divergent. In the U.S., a series of recent Federal Circuit decisions has actively removed the exception to patenting business methods where methods result in practical utility.[82] In addition, the reference to business methods in the prior user defence for a first inventor, provided by the American Inventors Protection Act of 1999 has indirectly codified this change.[83] On the other hand, in Japan, there still exists the statutory definition of inventions, under Article 2(1) of the Patent Act that requires the patentable invention to be an industrially applicable "invention" that is "a highly advanced creation of technical ideas, by which a law of nature is utilized."[84] This, in theory, could restrict patenting of a pure business method. However, reflecting the pro-patent policy of the current government, patent law revisions of 2002 have eased this restriction by explicitly allowing product claims to a computer program.[85] The JPO accepts business method patent claims relying on the significance of a computer program as a means of implementing this type of information processing and rejects only that

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81 *SPLT Draft 2002*, *supra* n. 25, at art. 12, § (1)(a).

82 *See AT&T Corp.*, 172 F.3d 1352; *State St. Bank*, 149 F.3d 1368.

83 Pub. L. No. 106-113, § 4302, 113 Stat. 1501, 1501 (1999) (revising 35 U.S.C. § 273 (a)(3)).

84 JPL, *supra* n. 20, at ch. 1, § 2(1).

85 JP Law No. 24 (2002), *supra* n. 26, at § 1.

which most clearly falls into the category of a pure business method.[86] While the EPC[87] still explicitly excludes patenting of a business method, it is only to the degree of the subject matter "as such,"[88] thereby opening a possibility by interpretation.[89] In sum, although the text of law seems to be divergent, the practices based on expansive and flexible interpretations of the law suggest that the divergence may exist only superficially.

Patentable subject matter defines the degree of instantiation that the patent institution requires of a patent. It is possible to view business method patenting as part of a continuation of changes in the less stringent requirement of physical instantiation. This change is possible because the limitation of patentable subject matter is not specific enough to exclude a subject matter that could be viewed as a non-technical method, a business method implemented by arguably technical means—computer programs. Even if a more or less specific definition of patent eligibility is given in the law to exclude a subject matter, a creative interpretation of patent office policies and the artful claiming of a self-interested applicant, may enable patenting of such subject matter. For now, the Federal Circuit decisions[90] and implicit reference in the statute[91] indicate that a business method is patentable subject matter in the U.S. Although the definition of the invention in Japan[92] could be read restrictively, the claims to business methods are accepted as long as the claims are written in a manner that sufficiently utilizes hardware resources of a computer.[93] Despite the explicit statutory provision to the contrary under EPC 52(2), claims to business methods are accepted by EPO if some form of "technical character" is found.

Although without the whole-hearted enthusiasm seen in the removal of the business method exception in U.S. case law, the practice of the EPO

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86 *See* JPO, *Examples of Non-Patentable Business Methods* (2001), http://www.jpo.go.jp/techno/tt1303-090-jirei.htm (accessed Feb. 1, 2002).

87 EPC, *supra* n. 26, at art. 52(2)(c).

88 *Id.* at art. 52(3).

89 *See* EPO TBA Decision T 0931/95, *Pension Benefit System Partnership*, EPO OJ 10/2001, 441 (2000) (accepting apparatus claim, but not the method claim to a business method); EPO TBA Decision T 0769/92, *Sohei*, EPO OJ 1995, 525 (1994); *see also Trilateral Study 2000*, *supra* n. 4, at app. 6, 3.

90 *AT&T Corp.*, 172 F.3d 1352; *State St. Bank*, 149 F.3d 1368.

91 35 U.S.C. §§ 273(a), (c).

92 JPL, *supra* n. 20, at § 2(1); *see* Tokyo High Court Judgement, Case. No. Hei 9 (Gyo Ke) 206 (May 26, 1999), http://courtdomino2.courts.go.jp/chizai.nsf/Listview01/F20B3607950AB78949256A7700082C7D/?OpenDocument (accessed Dec. 1, 2000).

93 *Examination Guidelines for Patent and Utility Model in Japan, supra* n. 77.

and JPO emphasizes the claiming. According to the EPO, there are three main groups of claims in relation to business methods:

> (1) claims for a method of doing business in abstract, i.e. not specifying any apparatus used in carrying out the method; (2) claims which specify computers, computer networks or other conventional programmable digital apparatus for carrying out at least some of the steps of the business method ('computer-implemented business methods'); (3) claims which specify other apparatus (perhaps in addition to computers) e.g. mobile telephones.[94]

The first kind is the so-called "pure" business method claims. However, in the words of the EPO, "while initial claims may sometimes fall in the first category, the applicant nearly always has the possibility to amend them to specify computer means for carrying out at least part of the method."[95] Thus, it is possible to reformulate the abstract claims for a business method so that it is no longer purely directed to the abstract method of doing business. Thus, the claims of the group (1) could be converted to the claims of the group (2) or (3).

Similarly, the JPO rejects applications where (1) claims are directed to a business method *per se*; (2) claims are directed to a business method where the computer is utilized as a mere tool; and (3) where information processing by software is not concretely realized by using hardware resources.[96] Claims written as (1), however, can easily be converted to claims of (2) or (3). Thus, (2) and (3) are difficult to distinguish from the type of business methods where the information processing is concretely realized by hardware resources, which is accepted by the JPO as a claim directed to statutory subject matter. Using a technological means as a mere "tool" or as an essential part of the invention is difficult to distinguish. This is because claims often recite how the invention is realized by relying on the means of implementing the invention. As the concrete realization of processing by hardware and the use of it as a mere tool are both a consideration of degree, this practice stresses the manner in which the claims are expressed.

However, whether a business method is implemented as an apparatus or method can be claimed either as a process or product, and the forms of claims do not necessarily define the substance or essence of the invention as such. As the JPO and the EPC both show reluctance in accepting a method claim over an apparatus claim, the applicant would likely be advised to direct the claims to an apparatus, such as a programmed computer, or as a computer program product. For example, claim 1 of a revoked patent for a wedding

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94 *Trilateral Study 2000*, *supra* n. 4, at app. 6, 3.

95 *Id.*

96 *See Examples of Non-Patentable Business Methods*, *supra* n. 86.

gift presentation method was directed to a method.[97] Similarly, one of the claims that was not accepted by the EPO, evident in the case of Pension benefit system,[98] was directed to a method.

The case studies in the U.S., and the practices of the JPO and EPO show that acceptance of patent eligibility of computer programs makes it difficult to deny patent eligibility to business methods. This is despite the fact that unlike other inventions, business methods are fundamentally concerned with how to use data in doing business. Its instantiation is instantiation of abstract data from an application to a concept, so that it can be applied to an action. Its instantiation is the transformation of business data to a business decision and nothing further. No part of its instantiation may involve physical implementation. In this sense, patent subject matter gets reconfigured and becomes a conceptually instantiated structure to produce useful information.

Table 1 exemplifies the varying degrees of instantiation as the basis for patent eligible subject matter. If we accept invention 3 of Table 1, it becomes hard not to accept the eligibility of invention 4, as it could be one manifestation of invention 3. Invention 3 could be relied on as a means of instantiation, which results in invention 4. Invention 4 is fundamentally how to use the invention 3. However, eligibility of invention 5 would cause reconfiguration of patent subject matter, as there would have to be another series of instantiations to arrive at its physical instantiation, if at all.

The added complexity of business methods are where the claims are so-called "mixed" ones—when the claims are for both artefact and technique. When claims cite both mixed elements of pure business methods and technically applied business methods, it becomes difficult to judge the patent eligibility of subject matter based on some part of the claim. Which part should pass the test of patent eligible subject matter, the entirety or only part of the claim? Idealistically, both should be given equal consideration, and a determination should be made as to whether the essence of an invention resides in the patentable part or not. However, in the case of any claims for an invention, it is very difficult to determine such an essence of the invention. In cases of business methods that employ certain means, it is very hard to determine whether the means are the main invention, or the problems or ideas they incorporate. The separation of the means from the essence could be very difficult or impossible. In this sense, distinguishing those business method claims that are abstract in nature but simply employ "the technical means" to overcome legal restrictions, from those business method claims that are genuinely technical, could be very difficult.

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97 Japan Patent No. 302,368 (Application No. 08-217867, revoked on July 11, 2001).

98 EPO TBA Decision T 0931/95, *supra* n. 89.

This complexity has been reflected in conflated patentability standards concerning business methods. An example is the adoption of "*prima facie* novelty" in the definition of a computer implemented invention in the first draft of the EC Directive Proposal of 2002. Article 2(a) defined the subject matter of the convention, which in turn was declared as a field of "technology" in Article 3 of the same proposal. The effect when those two articles are read together was such that a *prima facie* novelty of subject matter determines whether a computer implemented business method could be patent eligible or not, even prior to the substantive examination of the patent claims.[99] If it is *prima facie* novel, then it is a patentable computer-implemented invention under the EC Directive. On the other hand, if it lacks such novelty, it cannot be patentable, as they would not belong to a field of technology. This confusion has led to the deletion of the expression "*prima facie*" from Article 2(a) and the entire Article 3.

Similarly, the *State St. Bank* standard of finding useful, concrete, and tangible results of mathematical algorithms that implement a business method can be viewed from the same angle.[100] This expansion indicates patentable subject matter in the U.S. now includes liberal arts[101] and as a result, redefined the term "technology" to "connot[e] any form of rational human action."[102] That an invention should bring about a useful, concrete, and tangible result conflates the utility standard with the subject matter standard.[103] As a result of subject matter being a useless limitation, limitations have to be found elsewhere. One example is that of non-obviousness, which by itself cannot identify a field of knowledge that requires patent incentive, as it is an individual test.[104] The JPO's guideline likewise adopts an emphasis on the means of implementation.[105] In all three cases, it is the analysis of the implementation of the method, not of the method itself, which determines it to be patentable subject matter.

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99 *See EC Computer Patent Directive Proposal 2002*, *supra* n. 27, at art. 2; *see also* the EU Council's common position paper and adopted amendments, CSL 11979/1/2004 (Mar. 7, 2005) (available at http://register.consilium.eu.int/pdf/en/04/st11/st11979.en04.pdf (last accessed April 5, 2005)) (text unreported to official journal).

100 *See AT&T Corp.*, 172 F.3d at 1352; *State St. Bank*, 149 F.3d at 1374-77.

101 Thomas II, *supra* n. 15.

102 *Id.* at 40.

103 *Id.* at 23-27.

104 *See* Grusd, *supra* n. 17 (arguing that the *State Street Bank* decision shifts the burden from the subject matter test to the non-obviousness test).

105 *See Examples of Non-Patentable Business Methods*, *supra* n. 86.

	1	2	3	4	5
Type	Machine/ Device	Manufacturing Process	Technology Process	Computerized Business Method	Business Method
Example	A computer machine	Process of manufacturing a computer machine	Computer program	Internet Retailing	Retailing
Idea	Law of nature (electronic currents, circuit)	Law of nature (electronic currents, circuits)	Abstract Numbers (Law of Nature – current, circuits)	(Law of Nature) Empirical Rules of Retailing	Empirical Rules of Retailing
Instantiation 1		Use of Process	Use of numbers in calculation	Apply data to Business (Information)	Apply Data to Business (Information)
Instantiation 2			Use of Hardware resources (signal generating)	Apply business data to Computer Program	Process business data using Retail rules
Instantiation 3				Use of Hardware Resources	Business Decision
Instantiation – Result	Machine	Machine	Changed Signal Different Machine? Carrier Wave?	Retailing using Computer	Retail Sale
Invention	How to make a device	How to use other devices/physical resources to make a device	How to use a device to change the device (how to change a physical resources of a device)	How to use a device in business	How to apply data in business
Eligibility	O	O	O/X	O/X	?

[Table 1. Degree of Instantiation]

As demonstrated, one common complexity lies with the difficulty of separating the means of implementation (how) from the idea implemented (what). Reflecting this complexity is the conflation of patent eligibility and the test of validity. This conflation of patent eligibility and validity highlights the problem that a method of doing business may not exist

independently of those who process the information (which would make it fundamentally a personal skill) or without the help of further technical means.[106] As a subject matter of a patent, technological means should form the essence of the externalized, repeatable process of a business method. This is because it is only by relying on the externalized, repeatable process that a method may have independent and objective value, separate from the personal value, generated once by the application of the method.[107] A business method without the external and objective means to define it is simply a subjective instruction to an action—information which may not have any objectively verifiable value.[108] Only when the method objectively reproduces information does there arise any reason to protect it, either through the rule of law or with self-help.

Understood as such, subjecting a business method to patent protection would require an assessment of the means of implementation—how it came to have a physical meaning. To do so, it conflates the standards of *what an invention is* with *how it is done* whereby the first is subsumed by the second. Therefore, accepting a business method as patent-eligible cannot avoid reconfiguring patent eligibility rules, delineating between what an invention of technology is and how it is accomplished. In this sense, when business methods were made patent-eligible, patentability moved from the medium of information generation to patenting the information itself.

V. NORMATIVE SIGNIFICANCE OF THE SUBJECT MATTER RECONFIGURATION

With the advance of modern data processing techniques, a business method can exist in a boundary where the instantiation of the abstract idea is not clearly recognizable.[109] Facing this complexity, patent laws have redefined "invention" and "technology" as the subject matter of the patent right to provide protection for these new forms of knowledge and their implementation in spite of the observation that this has, in effect, reconfigured the rules governing patentable subject matter. Why does such reconfiguration happen and what justifies this change?

A most obvious place to look would be the objective clauses of the patent laws and to ask if the normative foundation enshrined in them justifies this change. However, the objective clauses of the statutes and constitutions

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106 Thomas II, *supra* n. 15, at 53-55 (using the concept of industrial arts as the subject matter of patent to compare a business method to personal skill).

107 *Id. See also* Chiappetta, *supra* n. 14, at 299-300.

108 Chiappetta, *supra* n. 14, at 315-19; Thomas II, *supra* n. 15, at 54.

109 Dreyfuss, *supra* n. 14, at 278-79.

in these countries are not clear enough to provide justification for including a specific new subject matter. It does not instruct us specifically why a certain field of knowledge may remain in the public domain whilst others are to be privatised, albeit for a limited amount of time. One can attempt to find the legislative intent of the patent institution as whole. However, the identification of the objectives of an institution is nearly impossible. Even if it is possible, the identified objectives are too general to provide any specific instruction. It is also quite difficult to read into these objective clauses that a subject matter test has been contemplated to limit patent eligibility. However, one indication of the existence of such an objective clause is that a patent right is created as an instrument for a social goal—such as progress of science and the useful arts, industry or even economic development. Even if they are now too generally worded to have any meaning, its implementation as specific provisions of patent law might provide us with the applicable meaning of these objective clauses.

Patentable subject matter rules then can be seen as an implementation of the objective clauses.[110] The physical manifestation as a basis for patent eligibility then can be explained from this vein. One may deduce from the fact that patentable subject matter is instituted as a part of the system of the rules, aiming at providing an instrumentalist right, that similar normative meaning may be found in patentable subject matter. As discussed, there are several distinctive functions of patentable subject matter.[111] One conclusion one may draw from the functions, is that the standard of patent eligibility is a normative limitation on patent subject matter, based on utilitarian instrumentalism. It functions as a qualitative basis for substantive examination of the utility of an invention. As it is a categorical identification of fields that require patent incentives, *ex ante*, it also reflects the instrumentalist nature of a patent right. Here, a physical transformation requirement is not merely to trace liability for infringement, but a matter of social agreement.[112] Thus, the degree of instantiation required

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[110] *See supra* nn. 50-54 and accompanying text.

[111] *Id.*

[112] Gruner argues that the level of instantiation that grounds the rule for patentable subject matter is simply there is a "means for physical coping." In this context, the physical manifestation of the abstract ideas that define the subject matter principle of patent law is simply a device for tracing liability for infringement. Therefore, no further meaning can be given to this physical manifestation rule. As long as it is possible to trace the liability for the infringement of the "intangibles," the rule can be redefined and reconfigured. Thus, it is not logically problematic to accept conceptually instantiated abstract concepts or ideas, as long as there can be other means of tracing liabilities. Thus, one can argue the level of instantiation can either be conceptual instantiation or physical manifestation. Gruner, *supra* n. 23, at 378-80.

for patentable subject matter reflects a normative choice, based on which the line is drawn between the abstract object of property relations as art (either useful, industrial or technological) and "nature" or pure idea.[113] In other words, patentable subject matter reflects the social choice of what should be the degree of instantiation—from which point nature stops and the arts begins. Thus, reconfiguration of the rule of patentable subject matter has normative implications.

Utilitarian instrumentalism, enshrined in the objective clauses of patent laws, is premised on the belief that the benefit to society should outweigh the cost of granting a patent to inventors.[114] Thus, it would appear that creation of a property right by expansion of patentable subject matter should be accompanied by conditions that ensure the rights are granted for the inventions with good motivations, and as the rights are not absolute, subjecting them to policy-motivated restrictions may be allowed. In this context, the patent institution purposefully creates rights to change incentive structures so that a net benefit can be achieved. If creation of incentive is a policy goal, changing of incentive structures requires the recognition of different incentives of different industries, as the incentive to disclose an invention created by the patent right may not necessarily provide the incentive to create in some industries.

For individual inventions, this recognition is achieved by granting a right to exclude others in the form of patents, while subjecting them to temporal limitation and substantive limitations by the texts of claims. For a field of technology, this is implemented as a subject matter limitation.[115] This is because for a utilitarian instrumentalist institution, the identification of areas where incentives of patenting would be beneficial is necessary.

The practices of the patent offices and case law show that the acceptance of conceptually instantiated ideas, as in the case of business methods, subsumes the categorical test of patent eligibility to an individual test of novelty, non-obviousness/inventiveness, or technical utility/industrial

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113 *See supra* nn. 51-54 and accompanying text.

114 *See e.g.* Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, Stanford Law & Economics Olin Working Paper No. 291 at 1-3 (Aug. 2004) (available at http://ssrn.com/abstract=582602 (accessed April 5, 2005)); *see generally* Drahos, *supra* n. 31 (arguing for the instrumentalist view of intellectual property rather than the proprietarian view); Samuel A. Oddi, *Un-Unified Economic Theories of Patents—The Not-Quite-Holy-Grail*, 71 Notre Dame L. Rev. 267 (1996) (where a general review of economic theories of patents reflecting this utilitarian instrumentalism is made); Yoshiyuki Tamura, *Kinouteki Chiteki Zaisan Hou no Riron [Functional Theory of Intellectual Property]* (Tokyo: Shinzansha 1996) (arguing for an incentive oriented functional theory of intellectual property).

115 *See supra* nn. 50-54 and accompanying text.

applicability. One aspect of subject matter reconfiguration is that a conceptual instantiation may not categorically identify fields of knowledge that requires patent incentives, which would maximize the social utility of the patent institution as a whole.[116] As such, it is difficult to justify patent subject matter reconfiguration with incentives based on utilitarian instrumentalism.

If utilitarian instrumentalism does not explain subject matter reconfiguration, why does such change occur? One explanation may be the thesis of proprietarianism. Drahos argued that underlying changes in normative foundation can be observed in patentable subject matter expansion and that it is an indication of the growing dominance of proprietarianism in the patent institution.[117] While he admits that the expanding right—either as subject matter expansion, accretion, or emulation—is an inherent evolutionary process of the patent institution due to the abstract nature of the goal of IP, he argues that there is a possibility that some expansion can no longer be justified with implied instrumentalist mandates of the IP institution, and can only be seen to be justified by proprietarianism.[118] The three core beliefs in the proprietarianism model that Drahos identified are useful in finding a normative meaning in business method patenting and subject matter reconfiguration.[119] According to Drahos, IP proprietarianism is based on a belief in the moral priority of property rights over other rights and interests, a belief in the first connection thesis and the existence of a negative commons.[120]

First, based on Drahos's definition, one could characterize subject matter reconfiguration as observed in business method patenting as proprietarian. An IP proprietarianism is based on the moral priority of IP rights over other rights and interests. By arguing that patent is a property right, the power that a patent grants to the right holder becomes justified as an element of a right, but not as a general restraint on the behaviour of others. Finding monopolistic control by a patent holder becomes a rare exception, and not something every patent inherently possesses.[121] The patent right itself becomes an end, not a means to a more fundamental value or right in society.

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116 See Stern, *supra* n. 68, at 129 (arguing that the subject matter rule is now so inclusive it is useless as a tool of legal analysis).

117 *See* generally, Drahos, *supra* n. 31.

118 *Id.* at 202.

119 *Id.*

120 *Id*. at 201-02.

121 Edmund W. Kitch, *Elementary and Persistent Errors in the Economic Analysis of Intellectual Property*, 53 Vand. L. Rev. 1727 (2000) (arguing monopoly is a misnomer).

This belief is found in the arguments in favour of business method patents. The most commonly heard argument is that of the necessity to treat all industries equally. It is unjust to single out one field of industry (i.e. the e-Commerce industry) and discriminate against it, while the other industries can benefit from exclusionary rights.[122] This argument fundamentally supports the idea that the patent institution is to be used as a tool to achieve a specific policy goal. At the same time it ignores the fact that patent protection is not for all values created by all industries. By emphasizing the importance of treating all values in an identical manner, this argument leads to the equalizing of all values, created by any human endeavour, as a property right.

The first-connection thesis that is identified by Drahos is a means of justifying the individual act of appropriation of the property right.[123] This is a question of on what basis are individuals allowed to claim rights or take something out of the commons and claim it as privately owned. The first-connection thesis explains that the appropriation is justified because the value in the abstract object is first realized by the person who first made the connection between the object and its value.[124] Prior to making this connection, the value of the object did not exist. Other related justifications—such as Lockean labour justification,[125] or the first investor, or

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[122] A variation on this type of argument is found in TRIPs art. 27.1, obligating the member states not to discriminate in the fields of technology. Combining both arguments, *see e.g.* AIPPI, *Final Resolution of March 30-2001 Patentability of Business Methods* (2001) (available at http://www.aippi.org/reports/resolutions/res-q158-e-Congress-2001.htm (accessed Nov 6. 2001)). For the treaty obligation argument, *see e.g.* J.R. Kuester & L.E. Thompson, *Risks Associated with Restricting Business Method and E-Commerce Patents*, 17 Ga. St. U. L. Rev. 657, 685 (2001). However, this is based on the assumption that a business method is a field of technology. Although indirectly, this interpretation is also found in the text of the EPO's Technological Board's decision on IBM computer program products. It considered paragraphs 2 and 3 of Article 27 concerning exclusion from patentability together with Article 27(1) and interpreted it as "meaning that it is the clear intention of TRIPs not to exclude from patentability any inventions, whatever field of technology they belong to, and therefore, *in particular, not to exclude programs for computers as mentioned in and excluded under Article 52(2)(c) EPC*."

[123] *See* Drahos, *supra* n. 31, at 202.

[124] *Id.* at 201-02.

[125] John Locke, *The Second Treatise of Government* 16-30 (Liberal Arts Press 1952). In a grossly simiplified form, Locke's argument can be summarized as that God has given the world to people in common, that every person has a property in his own person, that a person's labour belongs to that person, that a person makes the common his property whenever he mixes his labour, that the right of property is conditioned on "where there is *enough and as good left* in common for others" and that the right is limited to "as much as any one can make use of to any advantage before it *spoils*." Thus, the first person who

even Hegelian recognition of personhood could be used.[126] Without investments, inventions will not be created.[127] Whether through conception or reduction to practice, their value would not have otherwise been realized at that given time. Therefore, the first person who creates the invention is entitled to claim rights over the same. The person who had invested resources—will power, labour, time, money or any other material and immaterial resources deserves the protection.

However, as the first connection thesis denies cumulative research or the existence of public domain knowledge,[128] it results in a situation where unless the inventor creates something out of nothing, or unless the inventor first gives up all of what is owed to others, a claim for exclusive rights to an invention is not possible. This idea of the inventor who creates out of nothing is still debated. Foucault's famous essay seriously challenges this concept.[129] Boyle and others with his thesis of a romantic author/inventor, substantively questioned the existence of such a creator.[130] From Boyle's perspective, the discovery of an idea should not differ from a new instantiation of some known idea, and thus should be patentable. The first-connection thesis would see no reason to distinguish idea from its instantiation. As long as it has not been claimed by others, a known idea is presumed to be without right, as the first connection did not already happen.

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mixes the labour with the intellectual commons may be rewarded with the property right to that mix.

126 G.W.F. Hegel, *Philosophy of Right* 64-65 & remarks to 43 (T.M. Knox trans., Claredon Press 1942) (Hegel believed that property that is the product of will exists in things that are "external by nature" and this justified inalienability of those that constitute "personality and the universal essence" of self consciousness. However, expression would embody them in something external and alienate them and in this way they can be put in the category of property.); *see also* Radin, *supra* n. 47, at 35-45.

127 *See* Nozick, *supra* n. 44, at 181-82 (arguing that the patent does not restrict others' liberty as the liberty related to an invention would not have existed if it had not been invented).

128 *See* Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 Science 641, 641-788 (May 1, 1998) (available at http://www.sciencemag.org/ cgi/content/full/280/5364/698?maxtoshow =&HITS=10&hits=10&RESULTFORMAT=&author1=eisenberg&searched =1107708786339_2037&stored_search=&FIRSTINDEX=10&fdate=10/1/1995&tdate =2/28/2005 (accessed Mar. 31, 2005)); *see generally* Ordover, *supra* n. 48.

129 Michel Foucault, *Foucault Reader* 101-120 (Pantheon Books 1984) (reprinted from Foucault's *What Is an Author*).

130 *See* James Boyle, *Shamans, Software, and Spleens—Law and the Construction of the Information Society* (Harvard 1996); *see also* Keith Aoki, *Surveying Law and Borders: (Intellectual) Property and Sovereignty: Notes Toward a Cultural Geography of Authorship*, 48 Stan. L. Rev. 1293 (1996).

By first connecting an idea with its instantiation, a value is created in both. If someone first comes across with a new idea or a discovery, and claims it by first connection, there is no reason not to grant rights on that idea. As long as there is evidence of first connection, supported by novelty, non-obviousness/inventiveness, and industrial applicability/utility, there is no reason to distinguish a new idea or discovery from their application. Following the first-connection thesis, there is no reason to distinguish business methods, mental steps and other human skills from technology. Incentives-based identification (subject matter eligibility) is not necessary as long as there is an identification of the first-connection.

Drahos's third concept, the belief in the negative commons can be seen as a result of the first two aspects.[131] As it more concerns the IP institution in general, it can be seen in the treatment of the sources, knowledge, and ideas upon which a new knowledge is based, ignoring the public domain's needs of replenishment. The assumption of patent law is that after its temporary protection, the knowledge should go to the intellectual commons to replenish its reserve.[132] Before the very first patent right is granted, especially as related to incremental research, a vast pool of knowledge on which a patented invention is based is presumed to exist in a state of a "positive" intellectual common. At the same time, the disclosure of knowledge by patent should also replenish the commons. However, the existence of patents of narrow scope that surround an idea stops this cycle. The existence of conflicting patents where improvement patents cannot be exercised without the permission of the basic patent holder create anti-commons problems, whereby not all patented subject matter is truly in the public domain.

Changes by patent subject matter reconfiguration actively define the intellectual commons in a negative context. In principle, all values and knowledge could be appropriated, with a few exceptions, thus create a situation which can be called a "if value, then right" system of intellectual property.[133] Those with the belief in the negative commons see no reason to distinguish idea and instantiation. Both idea and instantiation, prior to the act of appropriation, are in the negative commons realm. Thus any new connection or identification discovery may be claimed, unless there are conflicting claims, and the first connection would ensure there are no conflicting claims. When countries accord patentability to business methods,

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131 *See* Drahos, *supra* n. 31, at 202.

132 *See supra* nn. 50-54 and accompanying text. This is one interpretation of the objective of patent law. *See also* Rose, *supra* n. 42, at 104-05, 108.

133 Rochelle Dreyfuss, *Expressive Genericity: Trademarks as Language in the Pepsi Generation*, 65 Notre Dame L. Rev. 397, 405 (1990); *see also* Drahos, *supra* n. 31, at 208-10.

they essentially reconfigure patentable subject matter as any human endeavour or "anything under the sun that is made by man"[134]—any human activity that can be objectified. This redefines the commons as a negative commons, with the private rights as the norm, and intellectual commons as the exception.

Although proprietarianism may not be the sole explanation for subject matter reconfiguration, it is very difficult to justify subject matter reconfiguration with traditional instrumentalism. At the same time proprietarianism could have negative consequences. One such consequence can be most obviously found in the post-grant aspect of a patent, that is, in the behaviour of the right holders. As a moral theory, IP proprietarianism does not expect the anti-competitive behaviours of the right holder, such as patenting for the sake of blocking, hold-up, racings to patent, or other strategic use of the patent.[135] According to this belief, a patent is assumed to be traded and it is expected that the dynamics in the transactions of patents and its licenses will lead to an almost automatic commercialization of the patented invention. However, even when the cost of the transaction is zero, bargaining could be seen as non-cooperative. Opportunistic individuals will not only trade to maximize their preference, but also will maximize their preference by refusing to trade. In a situation that resulted from what Cooter calls the Hobbes theorem as opposed to the Coase theorem,[136] the institution of law needs to minimize the inefficiencies by regulating threats and other non-cooperative solutions as well. The self-correcting path to efficiency that forms the basis of proprietarianism will not occur without trade.

There is a related problem in the concern for competition and the question of access. The waste of overuse of the commons can be avoided by trading in a transactional cost-free world. However, whenever a new property right is created, underuse may create waste, and the tragedy of the anti-commons can occur. Heller explains that "a resource is prone to underuse [in] a tragedy of the anti[-]commons" when multiple owners each have a "right to exclude others from a scarce resource, and no one has an effective privilege of use."[137] Value or utility, or simply more knowledge, will not be created if the use is too costly. Applying this concept to patents,

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134 *Diamond,* 447 U.S. at 309; *State St. Bank*, 149 F.3d at 1373.

135 *See generally* Carl Shapiro, *Navigating the Patent Ticket: Cross Licenses, Patent Pools and Standard Setting*, in National Bureau of Economic Research (NBER), *Innovation Policy and the Economy* vol. 1, 119-150 (Adam B. Jaffe et al. eds., MIT 2000) (available at http://mitpress.mit.edu/catalog/item/default.asp?sid=3326FEEE-1978-4EA8-95B7-A602850840BF&ttype=6&tid=6738 (accessed Mar. 31, 2005)).

136 Robert Cooter, *The Cost of Coase*, 11 J. Leg. Stud. 1, 14-20 (1982).

137 Michael A. Heller, *The Tragedy Of The Anticommons: Property in the Transition from Marx to Markets*, 111 Harv. L. Rev. 621, 623-24 (1998).

in 1998, Eisenberg and Heller showed that privatization of upstream biomedical research in the U.S. may create anti-commons problem.[138] New, inventive, and useful technical knowledge may not be generated unless there is enough knowledge in the public domain.[139] They have argued that patent exclusion in the industries where the nature of research is incremental creates the costs that amount to anti-commons problems.[140] As computer programs are most commonly cited as a means of implementing business methods and as the industry structure and the nature of development in computer program design is incremental and cumulative, similar concerns can be raised in business method patents. In general, the computer program industry is characterized by its large numbers of producers and by its high level of competition. More importantly characteristic is its production—the computer program industry is highly incremental and characterized by modular development.[141] It encourages code reuse to promote faster and more efficient programming practices, which leads to more rapid innovation and overall improvement within shorter times. As patent rules based on proprietarianism rewards only the first-connector, there is an incentive to race for patents, defensively or offensively, creating a large amount of patents with very narrow scope of protection. Thus, larger leaps in innovation come with incremental steps. Eventually, the cost of production over time will become too high to give any incentive or reward. As such, patenting in this field would lead to a fragmentation of the market with a large amount of similar, overlapping or blocking patents that result in the tragedy of the anti-commons.[142]

Although market responses such as patent pools, or cross licenses can be suggested as a means of private ordering to correct this problem, they are only open for those with existing patents, and could create more transaction costs and/or cause problems of access to commonly-used industry knowledge, or even more tragic, to an industry standard. The existence of network externalities complicates this by creating a situation where the industry voluntarily shows a tendency to adopt *de facto* standards to achieve compatibility and interoperability.[143] Subjecting them to patents, after the

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138 *See* Heller & Eisenberg, *supra* n. 128.

139 *Id.*

140 *Id.*

141 *See generally* Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 Colum. L. Rev. 2308 (1994).

142 *See* Lawrence Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World* 199-215 (Random House 2002).

143 Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 Cal. L. Rev. 479 (1998).

standards have been accepted widely, could enable a hold-up for a few first movers in the industry. Lemley and McGowan argued that IP law should take into account the network effect—property rights affected by "the right to exclude others from a network" play a crucial role in the markets with network externalities.[144] In this sense, mere ownership of a standard or establishment of a standard may create concern for competition because it could restrict competition between the parties establishing or using the standard. Because it grants the right to arbitrarily choose who not to license to a certain degree, the rights holder, in effect, has control over who may or may not have access to the standard.[145]

Additionally, there is a question of the substantial decrease in the knowledge commons that could be used in business as the result of business method patenting. It has been argued that a decrease has been noticed in the "digital commons" (usually expressed as the "dot-commons" or "e-commons") that forms the basis of the knowledge commons in digital information.[146] One concern of the computer implemented business method patents has been the level of general abstractness that could be inherent in the claims for business method patents.[147] When coupled with the interpretive doctrines that expand the scope, potentially to a functional equivalent that goes beyond the computing implementation of an invention, it raises a further concern over the competition and the question of the proper scope of patent protection for this type of patent.[148]

VI. CONCLUSIONS

To include business methods as patentable subject matter, courts and patent offices in the U.S., Japan, and Europe have commonly redefined the meaning of "invention of technology", from physical instantiation, i.e., physical transformation, to conceptual instantiation, i.e., useful information. Although the extent varies, the practical definition of patentable subject

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144 *Id.* at 490.

145 *Id.* at 515-23; *see also* Joseph Farrell, *Standardization and Intellectual Property*, 30 Jurimetrics J. 35, 42-44 (1989); Michael L. Katz & Carl Shapiro, *Technology Adoption in the Presence of Network Externalities*, 94 J. Political Econ. 825 (1986); Nari Lee, *Standardization and Patent Law—Is Standardization a Concern for Patent Law?* (Oct. 2004) (available at http://ssrn.com/abstract=610901 (accessed April 5, 2005)); Shapiro, *supra* n. 135, at 120.

146 *See generally* Lessig, *supra* n. 142.

147 Stern, *supra* n. 68, at 105-12.

148 *Id.* at 127-32 (arguing that current U.S. cases encourage broad claims); *see also* Chiappetta, *supra* n. 14, at 353 (calling for a strict reading of scope).

matter in all three regions reflects change understood only from analysis of their respective issued patents, court decisions, and examination guidelines. This could signify the reconfiguration of patentable subject matter.

The reconfiguration can also be observed in the conflated standards of categorical and individual qualification. Thus, to distinguish business methods from other methods, the former has to be defined not only in terms of its essential quality, i.e., what is a business method, but also in terms of its methodological attributes, i.e., how is the method implemented. In contrast, the patentable subject inquiry has traditionally been directed to what is an invention, as opposed to other validity inquiries—novelty, inventive/non-obvious, and industrial applicability, or other utility. Thus, inquiry into business methods as patentable subject matter necessarily conflates these two standards and reconfigures patentable subject matter. First, these conflated standards reduce the significance of patentable subject matter as an independent categorical threshold of patentability. Patentable subject matter categorically identifies the type of knowledge whose creation requires the incentive of the patent right, and thereby promotes the social utility of the patent institution as a whole. Conceptual instantiation as the basis for eligibility fails to provide any qualitative restriction. As such, it fails to identify the types of knowledge whose creation requires the incentive of the patent right. One result is that the novelty, non-obviousness/inventiveness, and the industrial usefulness of the individual implementation of the idea become a sufficient standard of patentability in practice. Furthermore, as reconfiguration removes the inquiry into the incentive-identifying function of patentable subject matter, it is difficult to justify the reconfiguration with incentive-based utilitarian instrumentalism.

In this aspect, reconfiguration reflects a change in the normative justification of the patent institution. It is difficult to justify business method patenting under the traditional utilitarian instrumentalism because to accept its eligibility, it is necessary to change the degree of instantiation from physical manifestation to the conceptual in rules related to patentable subject matter. One consequence is the removal of the function of categorical limitations in patentable subject matter rules, which are subsumed by individual qualifications of each patent application. Thus, patent subject matter rules cannot be relied on to identify the industries where the patent incentive is required and the cost of patents is most justified. As a result, the social utility of the patent institution can be challenged.

The justification for this reconfiguration fundamentally challenges the view that the patent right is an exception to the norm of intellectual commons, to achieve a specific end. The reconfiguration is based on the belief that all values created by any industry should be given patent protection as a right, based on evidence of first-connection with the abstract data useful in a business application—a visibly proprietarian concept. As a

creed, it is not the sole normative influence on the construction of patentable subject matter. However, the reconfiguration of patentable subject matter to protect the values created by business methods with patent property rules, instead of emulating a new system of rights, can be characterized as proprietarian. The emerging proprietarian belief could ultimately change the model of intellectual creation. As the proprietarian belief on the commons redefines the commons negatively, it changes the model of intellectual creations from one based on intellectual commons as the norm, to a model based on the belief in the private domain as the norm, and the commons as the exception.

Based on the comparative exercise of identification of laws regulating patentable subject matter, including cases and rules, international conventions, and administrative decisions and guidelines, patentable subject matter in law is being reconfigured in the U.S., and to a lesser degree, in Japan and in Europe. In all three regions, business method patenting shows signs of subject matter reconfiguration in terms of the function and substance of patentable subject matter rules—i.e., acceptance of conceptual instantiation as the basis of the definition of patentable subject matter.

The reconfiguration of patentable subject matter to protect the values created by business methods with patent property rules, instead of creating a new exclusionary right, could be characterized as proprietarian. As the proprietarian belief of the commons redefines the commons negatively, it changes the model of intellectual creations from the model based on the premises of the intellectual commons as the norm, to a model based on the belief in the private domain as the norm, and the commons as the exception. Without the positive pre-grant incentive identification function of patentable subject matter limitations, patent law's individual pre-grant analysis based on the condition of validity does not and cannot consider the competitive aspect of individual inventions. As a consequence, this might lead to a situation where a patent in itself may become adverse to competition, especially when the network externalities are present and this would result in an overall change in the model of intellectual creation. Business method patents present a question of a social choice on the future of knowledge production and models of intellectual creation. Accepting it as patentable subject matter or rejecting it ultimately reflects this very normative choice of a society.