

CHARTING THE COLLAPSE OF THE PATENT-COPYRIGHT DICHOTOMY: PREMISES FOR A RESTRUCTURED INTERNATIONAL INTELLECTUAL PROPERTY SYSTEM

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INTRODUCTION

Governments adopt intellectual property laws in the belief that a privileged, monopolistic domain operating on the margins of the free-market economy promotes long-term cultural and technological progress better than a regime of unbridled competition.<sup>1</sup>

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<sup>1</sup> Intellectual property laws typically provide qualified creators with temporary grants

Ordinary tangible goods that acquire value by satisfying known human needs in more or less standardized ways cannot escape the price-setting function of the competitive market. In contrast, intellectual goods acquire value by deviating from standard solutions to known human needs in ways that yield more efficient outcomes or that capture the public's fancy. Because intellectual goods define relevant market segments in terms of the novelty or the originality they purvey, their creators invent their own markets by stimulating demand for goods that did not previously exist.<sup>2</sup>

By the end of the twentieth century, the role of intellectual property rights in stimulating post-industrial economic development had become so vital that it figured on the agenda for the Uruguay Round of multilateral trade negotiations.<sup>3</sup> The Final Act embodying the results of that Round incorporates an Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS" Agreement) into the Marrakesh Agreement Establishing the World Trade Organization ("WTO").<sup>4</sup> The universal minimum standards

of exclusive property rights that derogate from the norms of free competition in order to overcome the "public goods" problem inherent in the commercial exploitation of intangible creations. See, e.g., ROBERT P. BENKO, PROTECTING INTELLECTUAL PROPERTY RIGHTS—ISSUES AND CONTROVERSIES 17-19, 21 (1987) [hereinafter BENKO] (stressing that "knowledge goods . . . create problems of market failure, externalities, and appropriability" and citing the relevant literature); WILLIAM KINGSTON, INNOVATION, CREATIVITY AND LAW 79-106 (1990); see also Wendy J. Gordon, *Fair Use as Market Failure: A Structural and Economic Analysis of the Betamax Case and its Predecessors*, 82 COLUM. L. REV. 1600, 1610-32 (1982) (stressing role of intellectual property rights in market formation) [hereinafter Gordon, *Fair Use*]. The "public good" characteristic of information and intangible creations generally stems from their indivisibility; no single person's consumption diminishes its availability to others. See, e.g., BENKO, *supra*, at 21; Steven N. S. Cheung, *Property Rights and Invention*, in 8 RESEARCH IN LAW AND ECONOMICS—THE ECONOMICS OF PATENTS AND COPYRIGHTS 5-18 (1986) [hereinafter ECONOMICS OF PATENTS AND COPYRIGHTS] (contrasting views of Arrow with those of Bentham, Taussig, Pigou, and Plant, among others); see also Stanley M. Besen & Leo J. Raskind, *An Introduction to the Law and Economics of Intellectual Property*, 5 J. ECON. PERSP. 3, 5 [hereinafter Besen & Raskind] (stating that the "objective of intellectual property protection is to create incentives that maximize the difference between the value of the . . . property . . . created and used and the social cost of its creation, including the cost of administering the system"); Edmund W. Kitch, *Patents: Monopolies or Property Rights?*, in ECONOMICS OF PATENTS AND COPYRIGHTS, *supra*, at 31 [hereinafter Kitch].

<sup>2</sup> See, e.g., BENKO, *supra* note 1, at 22-23 (literary, artistic, and scientific works largely "define a society and create new products and markets"); Paul Roubier, *Unité et synthèse des droits de propriété industrielle*, in ETUDES SUR LA PROPRIÉTÉ LITTÉRAIRE ARTISTIQUE: MELANGE MARCEL PLAISANT 161, 162-66 (1960) (stressing that "industrial competition ends—despite everything—in a process of constant renewal"); see also Michael Lehmann, *Property and Intellectual Property—Property Rights as Restrictions on Competition in Furtherance of Competition*, 20 INT'L REV. INDUS. PROP. & COPYRIGHT L. (IIC) 1 (1989).

<sup>3</sup> See Ministerial Declaration of Punta del Este of September 20, 1986, General Agreement on Tariffs and Trade Doc., MIN. DEC. No. 86-1572 (Sept. 20, 1986), reprinted in LAW AND PRACTICE UNDER THE GATT, III.A.3 (K. Simmonds & B. Hill eds. 1989); see generally J.H. Reichman, *Intellectual Property in International Trade: Opportunities and Risks of a GATT Connection*, 22 VAND. J. TRANSNAT'L L. 747, 751-68 (1989) [hereinafter Reichman, *GATT Connection*] (contrasting theses of major protagonists in multilateral trade negotiations).

<sup>4</sup> See Final Act Embodiment of the Results of the Uruguay Round of Multilateral Trade Negotiations, Marrakesh Agreement Establishing the World Trade Organization, signed at

of protection set out in the TRIPS Agreement tend to detach intellectual property rights from their historical roots in territorial law and to align them more closely with general norms of public and private international law applicable to older, more tangible forms of property.<sup>5</sup>

In so doing, however, the drafters of the TRIPS Agreement undertook no new economic or legal analysis to justify or validate the elevation of pre-existing intellectual property rights to the status of universal norms.<sup>6</sup> On the contrary, they deliberately built upon the Paris Convention for the Protection of Industrial Property (1883) and the Berne Convention for the Protection of Literary and Artistic Works (1886),<sup>7</sup> as progressively developed<sup>8</sup> and

Marrakesh (Morocco), April 15, 1994 [hereinafter WTO Agreement], Annex 1C, Agreement on Trade-Related Aspects of Intellectual Property Rights [hereinafter TRIPS Agreement], reprinted in THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS—THE LEGAL TEXTS 1-19, 365-403 (GATT Secretariat, ed. 1994).

<sup>5</sup> See generally J.H. Reichman, *Universal Minimum Standards of Intellectual Property Protection Under the TRIPS Component of the WTO Agreement*, 29 INT'L LAW 345 (1995) [hereinafter Reichman, *Universal Minimum Standards*]; J.H. Reichman, *The TRIPS Component of the GATT's Uruguay Round: Competitive Prospects for Intellectual Property Owners in an Integrated World Market*, 4 FORDHAM INTELL. PROP., MEDIA & ENTERT. L.J. 171, 173-78, 191-202, 224-42 (1993) [hereinafter Reichman, *TRIPS Component*]; see also Paul Edward Geller, *Intellectual Property in the Global Marketplace: Impact of TRIPS Dispute Settlements?*, 29 INT'L LAW 99, 101-03 (1995) [hereinafter Geller, *Dispute Settlements*]; J.H. Reichman, *Beyond the Historical Lines of Demarcation: Competition Law, Intellectual Property Rights, and International Trade After the GATT's Uruguay Round*, 20 BROOKLYN J. INT'L L. 75 (1993) [hereinafter Reichman, *Competition, Intellectual Property and Trade*]. The industrialized countries' demand for improved international protection of intellectual goods within the framework of a GATT agreement can be construed as a collective declaration that pre-existing rules of public international law that disfavored intangible forms of property must change in order to keep pace with changed economic conditions. See Reichman, *GATT Connection*, *supra* note 3, at 810-11. However, harmonization at the international level requires states to abandon deeply entrenched local practices, and consensus remains hard to achieve even among countries that are otherwise similarly situated. See, e.g., HAROLD C. WEGNER, PATENT HARMONIZATION—BY TREATY OR DOMESTIC REFORM 23-26, 44-77 (1993) [hereinafter WEGNER] (discussing bases of United States resistance to proposed patent harmonization treaty).

<sup>6</sup> For the grudging acceptance of orthodox legal and economic justifications of intellectual property rights, and the continuing resistance to these justifications in certain quarters, see *infra* notes 46-52 and accompanying text.

<sup>7</sup> Paris Convention for the Protection of Industrial Property, March 20, 1883, as last revised at Stockholm, July 14, 1967, 21 U.S.T. 1583, T.I.A.S. No. 6923, 828 U.N.T.S. 305 [hereinafter Paris Convention]; Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, as last revised at Paris, July 24, 1971, 828 U.N.T.S. 22 [hereinafter Berne Convention]. The TRIPS Agreement requires all WTO member countries to comply with articles 1 through 21 of the Berne Convention (1971) and the Appendix thereto, but not with Article 6<sup>bis</sup> on moral rights. See TRIPS Agreement, *supra* note 4, art. 9. It also mandates compliance with articles 1-12 and 19 of the Paris Convention. See TRIPS Agreement, *supra* note 4, art. 2(1).

<sup>8</sup> The Paris and Berne Conventions, *supra* note 7, were revised at periodic intervals up to 1967 and 1971, respectively. See, e.g., G.H.C. BODENHAUSEN, GUIDE TO THE APPLICATION OF THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY AS REVISED AT STOCKHOLM IN 1967, 9-11 (1968) [hereinafter BODENHAUSEN]; WORLD INTELLECTUAL PROPERTY ORGANIZATION (W.I.P.O.), GUIDE TO THE BERNE CONVENTION FOR THE PROTECTION OF LITERARY AND ARTISTIC WORKS (PARIS ACT 1971) at 6 (1978) [hereinafter GUIDE TO THE BERNE CONVENTION]. For the gradual formation of consensually recognized international

supplemented by other international agreements.<sup>9</sup> These "Great Conventions," as they are known, established a worldwide constitutional framework that directly or indirectly configures the various domestic systems on which it rests.<sup>10</sup> Their nineteenth-century conceptual underpinnings remain central to the operations of the international intellectual property system as further broadened and strengthened by the TRIPS Agreement.

This Article is one in a series of studies<sup>11</sup> that questions the

minimum standards of protection, see, e.g., STEPHEN P. LADAS, PATENTS, TRADEMARKS AND RELATED RIGHTS: NATIONAL AND INTERNATIONAL PROTECTION 59-94, 1884, 1887-88, 1904-05 (1975) [hereinafter LADAS, INDUSTRIAL PROPERTY]; David Ladd, *To Cope With the World Upheaval in Copyright*, 19 COPYRIGHT (W.I.P.O.) 289, 290 (Oct. 1983) (stressing that, in the past, "domestic law-making served as a precursor of gradual elaboration of the Berne Convention"). The failure of later efforts to revise the Paris Convention gave rise to multilateral trade negotiations to resolve the impasse.

<sup>9</sup> The single most important treaty supplementing both the Paris and Berne Conventions is now the TRIPS Agreement, *supra* note 4. Examples of other important treaties that supplement the protection of industrial property under the Paris Convention include the Patent Cooperation Treaty, June 19, 1970, 28 U.S.T. 7645, with regulations at 28 U.S.T. 7813; Convention on the Grant of European Patents, October 5, 1973, 1160 U.N.T.S. 231 [European Patent Convention]; The Treaty on Intellectual Property in Respect of Integrated Circuits, opened for signature at Washington, May 26, 1989 [IPIC Treaty]; The Madrid Agreement Concerning the International Registration of Marks, April 14, 1891, as last revised July 14, 1967, Stockholm, U.N.T.S. 11852; Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, April 28, 1977, 32 U.S.T. 1241, 17 I.L.M. 285 with regulations at 32 U.S.T. 1252; International Convention for the Protection of New Varieties of Plants, December 2, 1961, 33 U.S.T. 2703, 815 U.N.T.S. 89 [UPOV], as last revised March 19, 1991; Hague Agreement Concerning the International Registration of Industrial Designs and Models, June 2, 1934, 205 L.N.T.S. 179, as amended at the Hague, Nov. 28, 1960 [Hague Agreement]. The TRIPS Agreement mandates compliance with main provisions of the IPIC treaty covering integrated circuit designs. See TRIPS Agreement, *supra* note 4, art. 35.

On the copyright side of the ledger, the Universal Copyright Convention, Sept. 6, 1952, 6 U.S.T. 2731, 216 U.N.T.S. 133, as last revised July 24, 1971, 25 U.S.T. 1341 [hereinafter U.C.C.], constructed a bridge between Berne and non-Berne countries that has diminished in importance since the United States adhered to Berne in 1989. See, e.g., STEPHEN M. STEWART WITH HAMISH SANDISON, INTERNATIONAL COPYRIGHT AND NEIGHBORING RIGHTS 146-49 (2d ed. 1989) [hereinafter STEWART]. Of growing importance, in contrast, are the treaties regulating so-called rights allied to or neighboring on copyright law. See, e.g., International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, done at Rome, Italy, Oct. 26, 1961, 496 U.N.T.S. 43 [hereinafter Rome Convention]; Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms, done at Geneva, Switzerland, Oct. 29, 1971, 25 U.S.T. 309, 866 U.N.T.S. 67; see generally WORLD INTELLECTUAL PROPERTY ORGANIZATION (W.I.P.O.), GUIDE TO THE ROME CONVENTION AND TO THE PHONOGRAMS CONVENTION 7-13 (1981) [hereinafter GUIDE TO THE ROME CONVENTION]. The U.S. does not adhere to the Rome Convention.

<sup>10</sup> See, e.g., I LADAS, INDUSTRIAL PROPERTY, *supra* note 8, at 14-15; SAM RICKETSON, THE BERNE CONVENTION FOR THE PROTECTION OF LITERARY AND ARTISTIC WORKS: 1886-1986, at 39-41, 917-21 (1987) [hereinafter RICKETSON].

<sup>11</sup> See, e.g., J.H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 COLUM. L. REV. 2432 (1994) [hereinafter *Legal Hybrids*]; Pamela Samuelson, Randall Davis, Mitchell D. Kapor, & J.H. Reichman, *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308 (1994) [hereinafter Samuelson et al., *Manifesto*]; see also Jerome H. Reichman, *Electronic Information Tools—The Outer Edge of World Intellectual Property Law*, 24 I.I.C. 446 (1993) [hereinafter Reichman, *Electronic Information Tools*]; J.H. Reichman, *Computer Programs as Applied Scientific Know-How: Implications of Copyright Protec-*

capability of this inherited institutional framework to meet the needs of creators, innovators and investors operating under the changed conditions of an Information Age.<sup>12</sup> It re-examines certain negative economic premises underlying the patent and copyright paradigms and explains how these premises are tacitly implemented in a compartmentalized, bipolar framework that supports the international intellectual property system as historically conceived. The Article then suggests that a proliferation of hybrid legal regimes falling outside this classical framework routinely violates its cardinal economic premises and disrupts the historical balance between free competition and legal incentives to create. Once these hybrid or deviant regimes are taken into account, the real structure of the international intellectual property system as it empirically operates at the end of the twentieth century differs radically from the bipolar structure embodied in the Great Conventions at the end of the nineteenth century.

The Article concludes with the thought that efforts to balance the public and private interests at stake in devising legal incentives for twenty-first-century innovation are likely to produce cycles of under- and overprotection until the economic implications of existing hybrid legal regimes are better understood. Another study, entitled *Legal Hybrids Between the Patent and Copyright Paradigms*,<sup>13</sup> has recently begun this task. Meanwhile, the discrepancies between the nineteenth-century historical construct and the twentieth-century empirical realities charted in this Article suggest that the TRIPS Agreement could yield fewer beneficial results than anticipated and, in some areas, could even compound the social disutilities stemming from an obsolete and increasingly dysfunctional institutional framework.<sup>14</sup> The Article ends by reaffirming the need for a new intellectual property paradigm<sup>15</sup> specifically devised for the conditions that induce legislators everywhere to enact hybrid regimes that deviate from the legal and economic logic of the international intellectual property system as historically conceived.

*tion for Commercialized University Research*, 42 VAND. L. REV. 639, 648-67 (1989) [hereinafter Reichman, *Programs as Know-How*].

<sup>12</sup> See, e.g., STEPHEN SAXBY, THE AGE OF INFORMATION 11-40 (1990); ANNE WELLS BRANSCOMB, WHO OWNS INFORMATION? 174-86 (1994); EJAN MACKAAY, ECONOMICS OF INFORMATION AND LAW 107-72 (1982).

<sup>13</sup> See *supra* note 11.

<sup>14</sup> See also Reichman, *Competition, Intellectual Property Rights and Trade*, *supra* note 5, at 113-19.

<sup>15</sup> See generally *Legal Hybrids*, *supra* note 11, at 2504-2557.

## I. BIPOLAR STRUCTURE OF THE INTERNATIONAL INTELLECTUAL PROPERTY SYSTEM

The term "intellectual property" was not coined until the late nineteenth century. Only when Josef Kohler and Edmond Picard perceived that copyright, patent, and trademark laws had more in common with each other than with the older forms of property known to Roman law was it recognized that a new class of rights in intangible creations had arisen.<sup>16</sup> Their use of the term "intellectual property" thus coincided with the drive for international regulation of both artistic and industrial property, a movement destined to produce a fully articulated and universally recognized legal discourse in little more than a century.<sup>17</sup>

### A. Nature and Limits of the Dominant Intellectual Property Paradigms

Taken together, the Paris and Berne Conventions purport to subdivide the international intellectual property system into two hermetically sealed compartments separated by a common line of demarcation. Literary and artistic property rights occupy one of these compartments; so-called industrial property rights occupy the other.<sup>18</sup>

#### 1. The Patent and Copyright Subsystems

The origins of the bipolar structure can be traced to cornerstone provisions of the Great Conventions extant since their inception and to corresponding state practices recognized by most

<sup>16</sup> See 1 STEPHEN P. LADAS, *THE INTERNATIONAL PROTECTION OF LITERARY AND ARTISTIC PROPERTY* 9-10 (1938) [hereinafter LADAS, *ARTISTIC PROPERTY*]; see also PIERRE RECHT, *LE DROIT D'AUTEUR: UNE NOUVELLE FORME DE PROPRIÉTÉ* 229-33 (1969); Paul Edward Geller, *International Copyright Law: An Introduction*, in 1 *INTERNATIONAL COPYRIGHT LAW AND PRACTICE* § 1[3] [a] (P.E. Geller rev. ed., 1994) ("Copyright might well be said to be . . . a bundle of rights in search of a doctrine") [hereinafter *INTERNATIONAL COPYRIGHT LAW AND PRACTICE*].

<sup>17</sup> See, e.g., 1 LADAS, *INDUSTRIAL PROPERTY*, *supra* note 8, at 3 (stating that international protection of industrial property rights "could not possibly begin before the last century" and emphasizing that maturation of industrial property law often coincided with its international protection). See generally Arpad Bogisch, *The First Hundred Years of the Paris Convention for the Protection of Industrial Property*, 19 *INDUS. PROP.* 191 (1983); Arpad Bogisch, *The First Hundred Years of the Berne Convention for the Protection of Literary and Artistic Works*, 22 *COPYRIGHT (W.I.P.O.)* 291 (1986).

<sup>18</sup> See, e.g., 1 LADAS, *INDUSTRIAL PROPERTY*, *supra* note 8, at 1 (stating that "the division of intellectual property into literary or artistic and industrial property is very generally admitted"). Industrial property rights in this context embrace both legal monopolies to stimulate individual creations, such as patents, utility models, and design rights, and the very different regimes concerned with trademarks, trade names, appellations of origin and unfair competition in general. The assimilation of these diverse rights under a single rubric termed "industrial property" within a comprehensive, foundational treaty was largely a matter of convenience and historical accident. See, e.g., 1 *id.* at 2-3, 2 *id.* at 967-70 (stressing the comparatively recent origins of most intellectual property rights).

developed intellectual property systems. On the one hand, Article 1 of the Berne Convention established "a Union for the protection of the rights of authors in their literary and artistic works."<sup>19</sup> Such works, categorized at length in Article 2(1), should receive automatic and mandatory protection in the domestic copyright laws of the member states.<sup>20</sup> To avoid censorship and to liberate authors from overt and covert forms of patronage,<sup>21</sup> these laws entitle almost all independently created works falling within the designated subject matter categories to a generous but relatively soft form of protection against copying only that lasts a long period of time.<sup>22</sup>

On the other hand, Articles 1(1) and 1(2) of the Paris Convention established "a Union for the protection of industrial property"<sup>23</sup> and identified certain legal institutions as the "object" of industrial property protection, namely, "patents, utility models, industrial designs, trademarks, service marks, trade names, indications of source . . . and the repression of unfair competition."<sup>24</sup> While some international minimum standards and the rule of national treatment apply to all these institutions,<sup>25</sup> the Paris Convention entrusted the protection of industrial creations primarily to "the various kinds of industrial patents recognized by the laws of

<sup>19</sup> See Berne Convention, *supra* note 7, Preamble, art. 1; GUIDE TO THE BERNE CONVENTION, *supra* note 8, at 5-11.

<sup>20</sup> See Berne Convention, *supra* note 7, arts. 2(1), 2(6). Article 2(1), which derives from article 4 of the 1886 text, states that the "expression 'literary and artistic works' shall include every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression," and then provides a detailed list of mandatory subject matters. *Id.*; cf. 17 U.S.C. § 102(a) (1988) (providing copyright protection for "original works of authorship" and listing eligible subject-matter categories).

<sup>21</sup> See 1 LADAS, *ARTISTIC PROPERTY*, *supra* note 16, at 10-11; RICKETSON, *supra* note 10, at 3-8.

<sup>22</sup> See Berne Convention, *supra* note 7, arts. 2(1), 2(6), 5(2), 7(1) (requiring minimum term of life plus fifty years). Although the Berne Convention imposes no international minimum standard of eligibility, the domestic copyright laws are remarkably similar in the following respects: only originality or subjective novelty is required, not objective novelty; only the form or expression is protected, not ideas; and proof of independent creation constitutes a valid defense to an action for infringement. See, e.g., GUIDE TO THE BERNE CONVENTION, *supra* note 8, at 12, 17; ALAIN STROWEL, *DROIT D'AUTEUR ET COPYRIGHT—DIVERGENCES ET CONVERGENCES* 391-401, 468-81, 623-33, 644-51 (1993); 1 PAUL GOLDSTEIN, *PRINCIPLES, LAW AND PRACTICE* §§ 1.2 - 1.10 (1989 and Supp. 1994) [hereinafter GOLDSTEIN]. But see IVAN CHERPILLOD, *L'OBJET DU DROIT D'AUTEUR* 59-109, 183-85 (1985) (rejecting idea-expression distinction in both theory and practice). State practice generally recognizes the principle that forbids discrimination on the basis of artistic merit. See, e.g., GUIDE TO THE BERNE CONVENTION, *supra* note 8, at 12-13; *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239, 251 (1903).

<sup>23</sup> See Paris Convention, *supra* note 7, art. 1(1).

<sup>24</sup> *Id.* art. 1(2) (stating that the "protection of industrial property has as its object patents, utility models, [etc.]" (emphasis added)).

<sup>25</sup> See *id.* art. 2(1) (rule of national treatment "as regards the protection of industrial property"); 1 LADAS, *INDUSTRIAL PROPERTY*, *supra* note 8, 271-76 ("unionist treatment"); BODENHAUSEN, *supra* note 8, at 13-16.

the countries of the Union."<sup>26</sup> The patent paradigm and variants thereof classically confer a tougher form of protection on strict formal and substantive conditions for a relatively short period of time.<sup>27</sup>

## 2. The Historical Line of Demarcation

Because the domestic patent and copyright regimes afford fundamentally different types of protection, the line of demarcation between the Paris and Berne Conventions becomes of paramount importance. A line that appears unclear or poorly defended will tempt entrepreneurs to circumvent the strict prerequisites of patent law, with its basic requirements of novelty, utility, and nonobviousness, in order to shelter industrial creations within the more receptive and generous embrace of copyright law, which applies without regard to artistic merit.<sup>28</sup> An unclear line of demarcation also leads to the risk that the same subject matter will attract different proprietary regimes. This, in turn, renders classical intellectual property theory incoherent and breeds endless contradictions.<sup>29</sup>

A body of historical evidence pertaining to industrial design makes it logical to characterize this line of demarcation in terms of a discredited dichotomy between "art" and "utility."<sup>30</sup> However, the international conventions did not expressly sanction this inter-

<sup>26</sup> Paris Convention, *supra* note 7, art. 1(4) (not defining patents and recognizing, among others, "patents of importation, patents of improvement, patents and certificates of addition, etc.")

<sup>27</sup> See, e.g., JAY DRATLER, JR., *INTELLECTUAL PROPERTY LAW: COMMERCIAL, CREATIVE AND INDUSTRIAL PROPERTY* § 103[1] (1992) [hereinafter DRATLER] ("Patents provide the strongest protection of any form of intellectual property"). The domestic patent laws normally apply stringent requirements of objective novelty and nonobviousness (or an "inventive step"), which limit the patent paradigm to exceptional or non-routine advances in the art. See, e.g., 35 U.S.C. §§ 102, 103, 271(a), (b) (1994); DRATLER, *supra* (stating that the patent law's "right to exclude is well-nigh absolute"). A weakness of the Paris Convention is that it imposes no international minimum standards concerning the subject matter of patentability, substantive prerequisites, or duration. However, the TRIPS Agreement, *supra* note 4, arts. 27-34, now mandates the extension of patentability to virtually all fields of technology recognized in developed patent systems, prolongs patent protection to a uniform term of twenty years from the date of filing (formerly seventeen years from issuance in U.S. law, 35 U.S.C. § 154 (1994)), and lays down detailed obligations concerning the exclusive rights to be granted. See generally Reichman, *Universal Minimum Standards*, *supra* note 5, pt. II.A; Reichman, *Competition, Intellectual Property and Trade*, *supra* note 5, at 98-105.

<sup>28</sup> See 35 U.S.C. §§ 102, 103 (1994); *Baker v. Selden*, 101 U.S. 99 (1879); *supra* note 22 (principle of nondiscrimination as to merit).

<sup>29</sup> See, e.g., J.H. Reichman, *Overlapping Proprietary Rights in University-Generated Research Products: The Case of Computer Programs*, 17 COLUM.-VLA J.L. & ARTS 51, 60-109 (1992) [hereinafter Reichman, *Overlapping Proprietary Rights*]; Marie-Angèle Pérot-Morel, *La double protection des dessins et modèles*, in *LE DROIT D'AUTEUR AUJOURD'HUI* 117-20 (Isabelle de Lamberterie ed., 1991) (case of commercial designs).

<sup>30</sup> See, e.g., FRANÇOIS PERRET, *L'AUTONOMIE DU RÉGIME DE PROTECTION DES DESSINS ET MODÈLES* 26-29 (1974); see also *Mazer v. Stein*, 347 U.S. 201 (1954).

pretation or others, equally intractable,<sup>31</sup> that appeal to philosophical or even political biases. Rather, the Great Conventions took a more empirical approach, adopted for mundane economic purposes, that turned on the definition of "industrial property" in Article 1(3) of the Paris Convention.<sup>32</sup>

This definition deliberately left nothing to the discretion of the member states. It dictated that "industrial property shall be understood in the broadest sense and shall apply not only to industry and commerce proper, but likewise to agricultural and extractive industries and to all manufactured or natural products, for example, wines, grain, tobacco leaf, fruit, cattle, minerals, mineral waters, beer, flowers, and flour."<sup>33</sup> In effect, this provision casts "industrial property" in terms of every conceivable product available for sale on the general products market in order "to avoid excluding . . . activities or products which would otherwise run the risk of not being assimilated to those of industry proper."<sup>34</sup> Its sole major exclusion is for those literary and artistic works subject to domestic copyright laws that were later covered by Article 2(1) of the Berne Convention and by Article I of the Universal Copyright Convention (U.C.C.).<sup>35</sup>

Apart from the rule of national treatment, states members of the Paris Union are seldom required to take any particular action with regard to any of the product categories listed in this broad definition of industrial property.<sup>36</sup> The industrial property defined in Article 1(3) thus constitutes the true subject matter of protection under the Paris Convention, as distinct from the legal regimes, such as the domestic patent and trademark laws, through which its protection may or may not be perfected.<sup>37</sup> At the same time, the

<sup>31</sup> See generally J.H. Reichman, *Design Protection in Domestic and Foreign Copyright Law: From the Berne Revision of 1948 to the Copyright Act of 1976*, 1983 DUKE L.J. 1143, 1153-70 [hereinafter Reichman, *Design Protection*] (citing authorities).

<sup>32</sup> Paris Convention, *supra* note 7, art. 1(3).

<sup>33</sup> *Id.*, art. 1(3) (definition of industrial property) (emphasis added).

<sup>34</sup> BODENHAUSEN, *supra* note 8, at 25.

<sup>35</sup> See Berne Convention, *supra* note 7, art. 2(1), U.C.C., *supra* note 9, art. I (obliging member states "to provide for the adequate and effective protection of the rights of authors and other copyright proprietors in literary, scientific and artistic works").

<sup>36</sup> Paris Convention, *supra* note 7, art. 2(1) (mandating national treatment); BODENHAUSEN, *supra* note 8 at 25; I LADAS, *INDUSTRIAL PROPERTY*, *supra* note 8, at 265; see also *supra* note 27.

<sup>37</sup> See, e.g., BODENHAUSEN, *supra* note 8, at 24, 25. To the extent that these states choose to protect intangible industrial property rights in any of the products within article 1(3) of the Paris Convention, and do so by means of the legal institutions set out in article 1(2), then they must recognize the minimum international standards that apply to these legal institutions in addition to the rule of national treatment. See Paris Convention, *supra* note 7, arts. 1(2), 2(1); I LADAS, *INDUSTRIAL PROPERTY*, *supra* note 8, at 263-65, 271-76; BODENHAUSEN, *supra* note 8, at 13-16. If, however, states members choose to protect "industrial property"—as objectively defined in article 1(3)—outside the confines of these

definition of industrial property functionally determines the jurisdictional reach of the Paris Convention in relation to the international copyright conventions. In effect, this line of demarcation appears to turn not strictly on the "art versus utility" criterion, but rather on the distinction between "products" of industrial and commercial activity "in the broadest sense"<sup>38</sup> that are sold on the general products market, and literary and artistic "productions"<sup>39</sup> that are not.

In principle, the patent and copyright subsystems thus meet each other face to face across this common frontier.<sup>40</sup> The clarity of this juncture is enhanced by noting that domestic and international industrial property laws normally exclude technical writings as such from eligibility as patentable subject matter.<sup>41</sup> Conversely, technical and utilitarian writings normally fall within the jurisdiction of national and international copyright laws, at least to the extent of their expression and not their ideas.<sup>42</sup>

That this line of demarcation has become less air tight and unequivocal over time than the nineteenth-century draftsmen had intended cannot be denied. The old puzzle of industrial art (*i.e.*,

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legal institutions or by means of new legal institutions not known to the founding fathers, then only the rule of national treatment but not the minimum standards would continue to apply. In either case, subject only to the cardinal principle of national treatment set out in article 2(1), the states members remained largely free to determine both the nature and level of protection to be afforded any product category, in keeping with their own economic self-interest *vis-a-vis* other states participating in a competitive world market. See Paris Convention, *supra* note 7, art. 2(1); Reichman, *GATT Connection*, *supra* note 3, at 847-48, 851-53. The TRIPS Agreement, *supra* note 4, greatly limits this freedom. See *supra* note 27.

<sup>38</sup> Paris Convention, *supra* note 7, art. 1(3) (definition of industrial property).

<sup>39</sup> For the technical distinction between literary and artistic productions in general and the "works" that are objects of international copyright protection, see Berne Convention, *supra* note 7, art. 2(1).

<sup>40</sup> See also *infra* notes 98-100 and accompanying text, and Figure 1.

<sup>41</sup> See, e.g., PETER D. ROSENBERG, *PATENT LAW FUNDAMENTALS* § 6.02[3] (2d ed. 1994) (stating that "printed matter by itself is nonstatutory subject matter," although printed matter "in combination with physical means . . . may engender a new functional relationship") (emphasis deleted). In U.S. law, the technical rationale is that an arrangement of words conveys novelty of concepts rather than of physical structure. *Id.* For echoes of the international demarcation line in the U.S. Constitution, see U.S. CONST., art. I, § 8, cl. 8 (distinguishing "Authors and Writings" from "Inventors and Discoveries"); see also DRATLER, *supra* note 27, § 1.01[3] (noting constitutional authority for treating inventions and works of authorship as "distinct fields of subject matter" and stating that, at the time of the Industrial Revolution "printed matter was the only commercially significant subject of copyright law and the fields of industrial technology and publishing were quite distinct").

<sup>42</sup> See *supra* note 20 (quoting Berne Convention, *supra* note 7, art. 2(1)); 17 U.S.C. § 101 (definitions of pictorial, graphic and sculptural works and of literary works), §§ 102(a), (b), 113(a) (1988); Baker v. Selden, 101 U.S. 99 (1879); 2 GOLDSTEIN, *supra* note 22, §§ 8.4 (factual works), 8.5 (functional works). For parallel practices in foreign copyright law, see Reichman, *Electronic Information Tools*, *supra* note 11, at 449-51; see also Jane C. Ginsberg, *Creation and Commercial Value: Copyright Protection of Works of Information*, 90 COLUM. L. REV. 1865, 1881-1900 (1990) (distinguishing between low- and high-authorship works and criticizing personality-based theories of copyright protection).

commercial designs) and the new puzzle of industrial literature (*i.e.*, computer programs), for example, conjure up endless ambiguities.<sup>43</sup> For present purposes, nonetheless, it suffices to establish, first, that "industrial property" and "literary and artistic works" entirely occupied the classical intellectual property universe at the international level,<sup>44</sup> and second, that the predominant legal subsystems operating within that universe of discourse were historically separated by a line of demarcation cast in terms of the general products market. As will be seen from the next section, this bipolar structure rested upon a shrewd economic calculus.

### B. Negative Economic Premises Underlying the Dominant Legal Paradigms

The liberal economic system of the nineteenth century formally recognized only two fundamental exceptions to the general norms of competition, one for patentable inventions that took a major step beyond the pre-existing prior art, and another for literary and artistic works subject to the very different and far more generous modalities of the copyright paradigm.<sup>45</sup> Since then, economists have become increasingly convinced that the exceptions to the rules of competition that patent and copyright laws carve out for inventors and authors at any given level of innovation actually stimulate competition in the long run by eliciting the production of scarce intangible goods and by elevating routine technical skills to ever higher levels.<sup>46</sup> Succinctly stated, this body of law

<sup>43</sup> See, e.g., Reichman, *Design Protection*, *supra* note 31, at 1153-1170; Samuelson et al., *Manifesto*, *supra* note 11, at 2347-56.

<sup>44</sup> After the Second World War, additional international conventions recognizing rights related to copyright or "Neighboring Rights Conventions" were adopted, with a view to strengthening the protection of performances, sound recordings, and broadcasts. See *supra* note 9; Herman Cohen Jehoram, *The Nature of Neighboring Rights of Performing Artists, Phonogram Producers and Broadcasting Organizations*, 15 COLUM.-VLA J.L. & ARTS 75 (1990).

<sup>45</sup> Article 2 of the Paris Convention, as redacted in 1883, also recognized industrial designs for purposes of national treatment, without mandating their protection. See Convention of Paris for the Protection of Industrial Property, Mar. 20, 1883, art. 2, reprinted in WORLD INTELLECTUAL PROPERTY ORGANIZATION [W.I.P.O.], 1 MANUAL OF INDUSTRIAL PROPERTY CONVENTIONS, item A-1 (1978). The protection of designs was mandated in 1958. See Paris Convention, *supra* note 7, art. 5quinquies. Utility models are also recognized for purposes of national treatment and priority. See *id.* arts. 1(2), 2(1), 4A(1).

<sup>46</sup> See, e.g., F.M. SCHERER, *INNOVATION AND GROWTH* 127 (1984) ("What is needed for a rapid state of technological advance is the proper blend of competition and monopoly."); Lehmann, *supra* note 2, at 11-15; see also Michael Lehmann, *The Theory of Property Rights and the Protection of Intellectual and Industrial Property*, 16 I.I.C. 525 (1985) [hereinafter Lehmann (1985)]; William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325 (1989); Edmund W. Kitch, *The Nature and Function of The Patent System*, 20 J. L. & ECON. 265 (1977) [hereinafter Kitch, *Patent System*]. Consumers and users are thought to benefit from these exceptions, despite the diminished price competition, by gaining the opportunity to choose new products or processes over previously available products and processes that are perceived as inferior.

grants creators a bundle of exclusive property rights devised to overcome the "public good" problem arising from the intangible, indivisible and inexhaustible nature of intellectual creations, which allows them to be copied by second comers who have not shared in the costs and risks of the creative endeavor.<sup>47</sup>

The literature also attributes a number of important ancillary functions to the temporary monopolies emanating from these regimes. Patents, for example, stimulate disclosure of major discoveries that might otherwise remain under trade secret law.<sup>48</sup> In addition, both patents and copyrights provide a winner-take-all reward in case of commercial success, which helps to overcome the risk aversion inherent in prospecting for path-breaking discoveries or for artistic works that enrich the culture or that capture the pub-

<sup>47</sup> See *supra* note 1. Intellectual goods in general are "scarce" before the acts of creation and divulgence, when risk aversion is high and the success of the innovative enterprise uncertain. The scarcity of any particular intellectual good tends to vanish with creation and disclosure, absent the fictitious "portable fences" of intellectual property law, backed by the power of the state. These fences neutralize essential attributes of property that possession would ordinarily confer and restrict the possessors' rights to use the achievements embodied in the artifacts even within the confines of their private estates. See, e.g., MACKAAY, *supra* note 12, at 115-17; Wendy J. Gordon, *An Inquiry Into the Merits of Copyright: The Challenges of Consistency, Consent, and Encouragement Theory*, 41 STAN. L. REV. 1343, 1378-84 (1989) [hereinafter Gordon, *Inquiry*] ("Because the nature of intellectual property and tangible property boundaries differ, the natures of 'trespass' and 'infringement' differ. Yet the boundaries function alike in identifying what constitutes 'property.'"). To the extent that neither originators nor the entrepreneurs who exploit their output can erect fences around creations that are both intangible and inexhaustible, second comers who obtain material embodiments of these creations from the stream of commerce may appropriate future profits without having shared in the costs and risks of the creative endeavor. See, e.g., BENKO, *supra* note 1, at 17, 21-24; Lehmann (1985), *supra* note 46, at 534 (stressing vulnerability of technical knowledge and information); Hans Ullrich, *The Importance of Industrial Property and Other Legal Measures in the Promotion of Technological Innovation*, 28 INDUS. PROP. 102, 103-04 (1989). In effect, exclusive intellectual property rights substitute relatively long statutory periods of artificial lead time for the uncertain period of natural lead time that competition in intellectual achievements otherwise tends to produce. Cf. *Legal Hybrids*, *supra* note 11, at 2438-42. But see BENKO, *supra* note 1, at 19 (critics of intellectual property system believe innovators gain sufficient natural lead time over competitors who must master technological know-how). Exclusive intellectual property rights also mandate a contractual relation between creator and exploiter that prevents competitors from using the creator's contribution in specified ways without paying for the privilege. See, e.g., Roubier, *supra* note 2, at 164 (stressing that the exclusive right to reproduce, which constitutes an essential element of intellectual property, gives intellectual creations the quality of "goods" in both the legal and economic sense of the term). This, in turn, allows the market for intellectual creations to develop and organize itself with a relative degree of efficiency, in keeping with the efficiencies generally thought to derive from the recognition of property rights in material objects. See, e.g., Ejan MacKaay, *Economic Incentives in Markets for Information and Innovation*, 13 HARV. J.L. & PUB. POL'Y 867, 885-906 (1990) [hereinafter MacKaay, *Economic Incentives*]; Lehmann, *supra* note 2, at 11-15; Wendy J. Gordon, *Asymmetric Market Failure and Prisoner's Dilemma in Intellectual Property*, 17 U. DAYTON L. REV. 853, 854-59 (1992) (discussing conditions for market failure).

<sup>48</sup> See, e.g., Jack Hirshleifer, *The Private and Social Value of Information and the Reward to Inventive Activity*, 61 AM. ECON. REV. 561, 569-73 (1971); Rebecca S. Eisenberg, *Proprietary Rights and the Norms of Science in Biotechnology Research*, 97 YALE L.J. 177, 190-91 (1987).

lic's fancy.<sup>49</sup> Exclusive property rights facilitate a reasonably efficient allocation of resources to the tasks of transferring major scientific breakthroughs to industry,<sup>50</sup> or of organizing the costly public dissemination of artistic works whose commercial value cannot be determined in advance.

Whether, and under what conditions, such a system actually delivers a relatively efficient market for intellectual goods remains controversial,<sup>51</sup> and little would be served either by rehashing the abundant literature this enduring controversy still elicits or by reviewing in detail the positive modalities by which states implement the mature patent and copyright paradigms.<sup>52</sup> Of primary concern here, instead, are certain *negative economic premises* that appear to underlie the dominant legal paradigms but that have attracted less attention from scholars and publicists. To understand why the classical intellectual property system has begun to break down, one must first grasp the nature and role of these negative premises. One must then test the accuracy of the behavioral assumptions on which they rest against the realities of legislative and judicial action in the second half of the twentieth century, a task that has been carried out in another study.<sup>53</sup>

For example, the positive modalities of patent law are known to provide inventors in developed countries with an absolute right of exclusion for a relatively short period of time if they satisfy the strict substantive prerequisites of novelty, utility, and above all, nonobviousness.<sup>54</sup> Yet, one also finds at least four negative eco-

<sup>49</sup> See Kitch, *Patent System*, *supra* note 46, at 266-75.

<sup>50</sup> *Id.* at 276-80.

<sup>51</sup> See, e.g., George L. Priest, *What Economists Can Tell Lawyers About Intellectual Property: Comment on Cheung*, 8 RES. IN L. AND ECON. 19, 21 (John Palmer ed., 1986) (stating that there is no consensus about the effect on social welfare of intellectual property systems); see also Tom G. Palmer, *Are Patents and Copyrights Morally Justified? The Philosophy of Property Rights and Ideal Objects*, 13 HARV. J.L. & PUB. POL'Y 817 (1990); David Vaver, *Some Agnostic Observations on Intellectual Property*, 6 INTELL. PROP. J. 125 (1990); Stephen Breyer, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 HARV. L. REV. 281 (1970); Roger E. Meiners & Robert J. Staaf, *Patents, Copyrights, and Trademarks: Property or Monopoly?*, 13 HARV. J.L. & PUB. POL'Y 911, 912-13 (1990). For a major statement of the negative view, tempered by a certain realism, see STAFF OF SENATE SUBCOMM. ON PATENTS, TRADEMARKS AND COPYRIGHTS, SENATE COMM. OF THE JUDICIARY, 85TH CONG., 2D SESS., AN ECONOMIC REVIEW OF THE PATENT SYSTEM 80 (Comm. Print 1958) (FRITZ MACHLUP) (finding that "[i]f we did not have a patent system it would be irresponsible . . . to recommend instituting one"). In effect, most of these scholars continue to fight the Great Patents Controversy of the nineteenth century, see Fritz Machlup & Edith Penrose, *The Patent Controversy in the Nineteenth Century*, 10 J. ECON. HIST. 1, 3-9, 11-29 (1950), whereas mainline economic opinion focuses attention on issues concerning scope of protection and licensing.

<sup>52</sup> See *supra* notes 20-22, 27, 46-50 and accompanying text.

<sup>53</sup> See *infra* text accompanying notes 109-180; see also *Legal Hybrids*, *supra* note 11, at 2453-2504.

<sup>54</sup> See 35 U.S.C. § 101-103, 271 (1994); WEGNER, *supra* note 5, at 77-134; *supra* note 27.

conomic premises implicit in the structural arrangements given these modalities:

- 1) Unpatented innovations remain subject to price competition and may be imitated if disclosed;<sup>55</sup>
- 2) Undisclosed, unpatented innovations may be reverse-engineered but not stolen;<sup>56</sup>
- 3) Patented inventions are not infringed by nonequivalent innovation;<sup>57</sup>
- 4) Unfair competition law should not repress imitation of unpatented products in the absence of confusion or deception.<sup>58</sup>

Similarly, the positive modalities of copyright law (or of "authors' rights" laws as they are known in most non-English-speaking countries)<sup>59</sup> provide virtually all authors and artists who independently create their own works with relatively soft protection against copying only that lasts a very long period of time.<sup>60</sup> By the same token, one also finds at least four negative economic premises implicit in the structural arrangements given these modalities:

- 1) Noncopyrightable productions or components thereof remain subject to price competition and may be imitated if disclosed.<sup>61</sup>
- 2) Nonprotectable ideas underlying clusters of independent creation may be used but may not be stolen [built-in reverse-

<sup>55</sup> See, e.g., *Bonito Boats, Inc. v. Thunder Craft Boats Inc.*, 489 U.S. 141, 151, 156-60 (1989) ("free exploitation of ideas will be the rule, to which the protection of a federal patent is the exception"); *Compco Corp. v. Day-Brite Lighting, Inc.*, 376 U.S. 234, 237 (1964); *Sears Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225 (1994).

<sup>56</sup> See Uniform Trade Secrets Act § 1(2), 1(4), 14 U.L.A. 438 (1985) [hereinafter U.T.S.A.] (adopted by a majority of states); *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 476, 490 (1974).

<sup>57</sup> Under the doctrine of equivalents, second comers will not avoid infringement by making trivial variations if their product or process "performs substantially the same function [as the patented invention] in substantially the same way to obtain the same result." *Graver Tank & Mfg. Co., Inc. v. Linde Air Products Co.*, 339 U.S. 605, 608 (1950); see also Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839, 853-68 (1990) (stressing complex economics applicable to the determination of equivalents in specific cases); Martin J. Adelman & Gary J. Francione, *The Doctrine of Equivalents in Patent Law: Questions That Pennawalt Did Not Answer*, 137 U. PA. L. REV. 673 (1989).

<sup>58</sup> See *Bonito Boats*, 489 U.S. at 159 (The "protection" guaranteed a particular design under the law of unfair competition is thus limited to the context where consumer confusion is likely to result.).

<sup>59</sup> See, e.g., STROWEL, *supra* note 22, at 17-27; see also Paul Edward Geller, *Toward an Overriding Norm in Copyright: Sign Wealth*, 159 REVUE INTERNATIONALE DU DROIT D'AUTEUR. [R.I.D.A.] 2, 13-30 (1994) [hereinafter Geller, *Sign Wealth*] (discussing historical differences between "copyright" and "authors' rights" traditions).

<sup>60</sup> See, e.g., 17 U.S.C. §§ 101, 102, 103, 106, 304, 501 (1988); *supra* note 22.

<sup>61</sup> See, e.g., 17 U.S.C. § 301 (1988), *supra* note 55.

- engineering].<sup>62</sup>
- 3) Cultural policies are not applicable to the general products market.<sup>63</sup>
  - 4) Unfair competition laws should not limit users' rights in the absence of confusion or deception.<sup>64</sup>

### 1. Patents for Inventions

Taken together, these negative premises serve to remind both partisans and critics of the patent system that its strict substantive prerequisites—when faithfully applied—implicitly ensure that the great bulk of nonpatentable innovation remains subject to price competition on the general products market. The competitors' rights freely to imitate any unpatented products once distributed to the public thus constitute a normative premise of the free-market economy, one that presumably benefits consumers by gearing prices to production efficiencies and to incremental technical progress.<sup>65</sup>

Historically, the right to imitate subpatentable products and the ability to do so did not go hand in hand. Had it been otherwise, unpatented tangible products would have remained as vulnerable to instant duplication as so many intangible intellectual creations are by their very nature. The ensuing lack of appropriability would have diminished incentives to invest in ordinary product development. Today, it is sometimes hard to recall just how difficult it was to reverse-engineer ordinary industrial products by proper means in the late nineteenth and early twentieth centuries.<sup>66</sup> The legal duty to do so gave innovators a period of

<sup>62</sup> See, e.g., 17 U.S.C. §§ 102(b), 106, 107 (1988); *Baker v. Selden*, 101 U.S. 99 (1879); *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 111 S.Ct. 1282 (1991); *supra* notes 55-56.

<sup>63</sup> See, e.g., *Baker v. Selden*, 101 U.S. 99 (1879); J.H. Reichman, *Goldstein on Copyright Law: A Realist's Approach to a Technological Age*, 43 STAN. L. REV. 943, 947-48 (1991) [hereinafter Reichman, *Realist's Approach*].

<sup>64</sup> See *supra* notes 55 and 61.

<sup>65</sup> See, e.g., *Bonito Boats*, 489 U.S. at 141; *Sears Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225 (1964); *Compco Corp. v. Day-Brite Lighting, Inc.*, 376 U.S. 234 (1964); *Kewanee Oil Co.*, 416 U.S. at 482-87. See also Paul Goldstein, *The Competitive Mandate: From Sears to Lear*, 59 CALIF. L. REV. 873 (1971).

<sup>66</sup> Despite certain "property-like" qualities, "liability for the appropriation of a trade secret rests on a breach of confidence or other wrongful conduct in acquiring, using, or disclosing secret information." RESTATEMENT (THIRD) OF UNFAIR COMPETITION LAW, cmt. a, at 23-24 (1995); see also *id.* § 40 ("Appropriation of Trade Secrets"); U.T.S.A., *supra* note 56, § 1(2); John C. Stedman, *Trade Secrets*, 23 OHIO ST. L.J. 4, 8 (1962) (trade secrets not protected when the information is independently discovered or when obtained by analysis or inspection of publicly distributed products). Assuming that undisclosed but sufficiently definite information fits within the operative definition of a trade secret, see U.T.S.A., § 1(4), and reasonable precautions are taken to preserve its secrecy, trade secret law confers no exclusive rights to make, use, sell, or reproduce it in the manner of patents or of other statutory intellectual property rights. See, e.g., U.T.S.A., § 1(4); *Bonito Boats*, 489 U.S.



natural lead time in which to secure a foothold in the market and to recuperate their costs of research and development.<sup>67</sup>

By the same token, a competitor's right to shorten the routine innovator's natural lead time by lawful forms of reverse-engineering stimulates investment in research and development looking to future innovation and technical improvements.<sup>68</sup> For this and other reasons, the United States Supreme Court has endowed the competitor's right to reverse-engineer unpatented, noncopyrightable innovation with constitutional underpinnings.<sup>69</sup>

Even with regard to patented inventions meeting the threshold test of nonobviousness, moreover, competitors remain free to work around the matter claimed in the patents and to make use of pre-existing, substitute products and processes whose market-driven costs limit the patentees' own pricing opportunities.<sup>70</sup> How courts apply the doctrine of equivalents in particular cases thus largely determines the negative economic impact of the patent system on day-to-day investment and licensing decisions.<sup>71</sup>

Corollary principles of unfair competition law then allow second comers who take steps to avoid confusing consumers to imitate

at 160; *Kewanee Oil Co.*, 416 U.S. at 476, 490; 2 ROGER M. MILGRIM, MILGRIM ON TRADE SECRETS § 7.08 (1994) [hereinafter MILGRIM]. See also *Rockwell Graphic Sys., Inc. v. Dev Indus. Inc.*, 925 F.2d 174, 179 (7th Cir. 1991) (suggesting that a theory that gave the trade secret holder a property right valid against the world would be preempted by the federal patent statute); *Stedman*, *supra*, at 21-24 (characterizing trade secrets as "a strange form of 'property' that disappears when the information becomes public or others independently make the same discovery").

<sup>67</sup> See Machlup & Penrose, *supra* note 51, at 18 (explaining the view that, in the "exploitation of industrial inventions . . . the head start of the first user should as a rule suffice to enable him to earn enough to cover a reward for the inventor"); Ralph S. Brown, *Design Protection: An Overview*, 34 U.C.L.A. L. REV. 1341, 1388 (1987) ("[T]he originator will have had a head start. That is often the only advantage our system grants . . . and it is often enough."); see also Richard C. Levin, Alvin K. Klevorick, Richard R. Nelson & Sidney G. Winter, *Appropriating the Returns from Industrial Research and Development*, in 3 BROOKINGS PAPERS ON ECONOMIC ACTIVITY 783, 784 (1987) [hereinafter Levin et al.] (finding that, even with patents, gaining lead time and exploiting learning curve advantages are primary methods of appropriating returns from investment).

<sup>68</sup> "The possibility of subsequent independent discovery is the prime risk. . . [i]mplicit in reliance upon trade secret protection." 1 MILGRIM, *supra* note 66, § 5.04[1]. However, trade secret laws require would-be competitors who do not enter licensing contracts to extract an innovator's undisclosed information by proper methods of reverse engineering. See, e.g., *U.T.S.A.*, *supra* note 56, § 1(2). For these purposes, permissible reverse engineering occurs when a second comer starts with the innovator's known product and works backward to derive the process that aided in its development or manufacture. See *Kewanee Oil Co.*, 416 U.S. at 476. The duty to reverse engineer by proper means favors investments in improvements and new applications of the innovation in question. See, e.g., Levin et al., *supra* note 67, at 805-07; David D. Friedman, William M. Landes & Richard Posner, *Some Economics of Trade Secret Law*, J. ECON. PERSP. (Winter 1991), at 61, 67, 69.

<sup>69</sup> See *Bonito Boats*, 489 U.S. at 159-64.

<sup>70</sup> See, e.g., 35 U.S.C. §§ 112, 271(a) (1994); *supra* note 57 and accompanying text.

<sup>71</sup> See, e.g., 4 DONALD S. CHISUM, PATENTS § 18.04[2] (1993) (broader range of equivalents in pioneer patents); Merges & Nelson, *supra* note 57, at 868-80 (favoring strict construction of claims and ample room for improvers under doctrine of equivalents).

unpatented products generally, including those which they have reverse-engineered by proper means.<sup>72</sup> In practice, some courts in all countries, including the United States, periodically deviate from this norm, especially in times of economic downturn.<sup>73</sup> As important new technologies fall into the penumbra between the patent and copyright paradigms, moreover, a growing reliance on misappropriation theories has culminated abroad in statutory anticopying laws outside the framework of classical intellectual property systems.<sup>74</sup> These measures testify to the pressures exerted on the patent and copyright paradigms under modern conditions,<sup>75</sup> even

<sup>72</sup> See, e.g., Paris Convention, *supra* note 7, art. 10<sup>bis</sup> (which was the prototype for Lanham Act, § 43(a) (codified at 15 U.S.C. § 1125(a) (1994)); RESTATEMENT (THIRD) OF UNFAIR COMPETITION LAW § 1 (1995) (recognizing entrepreneur's freedom to compete without liability except for acts or practices pertaining to "deceptive marketing," "infringement of trademarks or other indicia of identification," and "appropriation of intangible trade values" or similar acts or practices); 3 LADAS, INDUSTRIAL PROPERTY, *supra* note 8, at 1675-78 (stressing "public interest in competition and advertising and avoiding dishonesty"). Laws protecting trademarks, trade names, trade dress, service marks, and geographical appellations of origin are specialized applications of general unfair competition norms that enable consumers to identify products and their sources. See, e.g., Besen & Raskind, *supra* note 1, at 20-21; William Landes & Richard Posner, *Trademark Law: An Economic Perspective*, 30 J.L. & ECON. 265, 269-70, 275 (1987) (stressing that trademarks reduce search costs to consumers and stimulate manufacturers to "maintain a consistent quality over time and across consumers"). The extent to which unfair competition law should extend beyond these roots in the "passing off" doctrine to protect innovation and information not otherwise covered by intellectual property laws remains controversial, despite growing recourse to a "misappropriation" rationale for this purpose in both domestic and foreign law. See, e.g., Wendy J. Gordon, *On Owning Information: Intellectual Property and the Restitutory Impulse*, 78 VA. L. REV. 149 (1992) [hereinafter Gordon, *Restitutory Impulse*]; Dennis S. Karjala, *Misappropriation as a Third Intellectual Property Paradigm*, 94 COLUM. L.REV. 2594, 2604-08 (1994). But see Leo J. Raskind, *The Misappropriation Doctrine as a Competitive Norm of Intellectual Property Law*, 75 U. MINN. L. REV. 875 (1991).

<sup>73</sup> See generally ERIC GOLAZ, L'IMITATION SERVILE DES PRODUITS ET DE LEUR PRÉSENTATION 103-21 (1992) (comparing French, German, Belgian and Swiss laws); 3 LADAS, INDUSTRIAL PROPERTY, *supra* note 8, 1675-1717. For periodic deviations by the United States Supreme Court, see *International News Serv. v. Associated Press*, 248 U.S. 215 (1918); *Goldstein v. California*, 412 U.S. 546 (1973). Courts eager to repress what they view as "piracy" tend to equate imitation with confusion as a matter of law. By such means, the United States federal appellate courts have created a judge-made design law out of the traditional protection of trade dress under section 43(a) of the Lanham Act. See generally J.H. Reichman, *Design Protection and the New Technologies: The United States Experience in a Transnational Perspective*, 19 U. BALT. L. REV. 6, 98-123 (1989/1990) [hereinafter Reichman, *Designs and New Technologies*]; see also J.H. Reichman, *Past and Current Trends in the Evolution of Design Protection Law—A Comment*, 4 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 387, 392-97 (1993) [hereinafter Reichman, *Evolution of Design Protection*].

<sup>74</sup> See *Legal Hybrids*, *supra* note 11, at 2474-76 (discussing Swiss Unfair Competition Law of 1986 and Japanese Unfair Competition Law of 1993); see also JEAN-PAUL TRIALLE, UNFAIR AND PARASITIC COMPETITION (Centre de Recherches Informatique et Droit, F.N.D.P. (1990)) (reviewing the protection of information under the unfair competition laws of seven countries); Friedrich-Karl Beier, *The Law of Unfair Competition in the European Community—Its Development and Present Status*, 16 I.I.C. 139 (1985).

<sup>75</sup> See, e.g., Ulrich Loewenheim, *Legal Protection for Computer Programs in West Germany*, 4 HIGH TECH. L.J. 187 (1989) (protection of computer programs in German unfair competition law prior to E.C. Directive on copyright protection for software); Dick van Engelen, *The Misappropriation Doctrine in the Netherlands*, 22 I.I.C. 11 (1991) (discussing role of unfair competition when legislatures cannot keep pace with new technological developments); see

as they enable unfair competition law to perform its historic role of identifying marginal cases in need of legislative relief.<sup>76</sup> Nevertheless, the legal mythology of all market economies requires courts formally to acknowledge the competitor's right to imitate pre-existing products, and Supreme Courts everywhere are prone to vindicate this principle at intervals, often in periods of economic growth.<sup>77</sup>

## 2. Literary and Artistic Works

Taken together, the negative economic premises identified above further remind both partisans and critics of intellectual property law that the mature copyright paradigm is predicated on the very absence of the natural lead time that trade secret law attempts to defend. Because authors normally embody their intangible creations in tangible mediums of expression, the distribution of these material supports to the public at large negates any further possibility of concealing the product of creative know-how in the manner of trade secrets.<sup>78</sup> Because every artistic work thus bears its author's intellectual creation on its face, would-be competitors need only obtain some tangible embodiment of that expression to duplicate it without incurring the investment of time, money, or skill inherent in the process of reverse-engineering unpatented in-

also Jean-Marc Mousseron, La protection du savoir-faire [know-how], paper presented to the conference on Exporter Notre Technologie—Protection et Transfert Internationaux des Innovations, 10-14 (University of Ottawa, Canada, Faculty of Law, Nov. 1993) (proposing new unfair competition norm against parasitic copying); Gordon, *Restitutory Impulse*, *supra* note 72.

<sup>76</sup> See, e.g., 3 LADAS, INDUSTRIAL PROPERTY, *supra* note 8, at 1675 (unfair competition law "forms the background and constitutes the general principle of which the law protecting the various branches of industrial property are only special aspects or particular applications"); see also Douglas G. Baird, *Common Law Intellectual Property and the Legacy of International News Service v. Associated Press*, 50 U. CHI. L. REV. 411 (1983); *Developments in the Law—Competitive Torts*, 77 HARV. L. REV. 888, 932-941 (1963/1964).

<sup>77</sup> See, e.g., *Bonito Boats*, 489 U.S. 141; Besen & Raskind, *supra* note 1, at 24-25; see also GOLAZ, *supra* note 73, at 103-21; PETER J. KAUFMANN, PASSING OFF AND MISAPPROPRIATION—AN ECONOMIC AND LEGAL ANALYSIS OF THE LAW OF UNFAIR COMPETITION IN THE UNITED STATES AND CONTINENTAL EUROPE 7-30 (1986).

<sup>78</sup> Cf. Justin Hughes, *The Philosophy of Intellectual Property*, 77 GEO. L. J. 287, 315 (1988); F.D. Prager, *The Early Growth and Influence of Intellectual Property*, 34 J. PAT. OFF. SOC'Y 106, 108-09 (1952). Even in the depths of the anti-patent movement during the nineteenth century, see *supra* note 51, it was widely believed that natural lead time was "too short in the book-publishing business, where cheaper pirated editions can be put on the market almost without delay, making it impossible for the first publisher to earn enough to pay the author." Machlup & Penrose, *supra* note 51, at 18 (citing authority). The legitimacy of copyright law thus escaped challenge at a time when patent laws were being rolled back. Ironically, when the protectionist movement in the late twentieth century succeeded in greatly strengthening United States patent law, see, e.g., Martin Adelman, *The New World of Patents Created by the Court of Appeals for the Federal Circuit*, 20 U. MICH. J.L. REF. 979, 979-82 (1982), the copyright law came under serious abolitionist fire. See, e.g., Breyer, *supra* note 51; Palmer, *supra* note 51.

dustrial innovation. Third parties who rapidly duplicate a successful literary or artistic work may reduce the author's natural lead time to zero, or even minus zero if they possess sufficient market power, simply by selling the same artistic production at a price below the average cost to publish or disseminate the original work.<sup>79</sup> The copyright system thus deals with intellectual goods not protectable as trade secrets that require no reverse-engineering to appropriate.

The system responds by providing long periods of artificial lead time in the form of exclusive property rights to all independent creators without regard to merit and without requiring originators to preselect those works thought to be worth the costs of formal registration or administrative examination.<sup>80</sup> Wary of unreliable value judgements about art and unable to predict which of even the most successful author's future works will capture or recapture the public's fancy, the copyright laws embrace all literary and artistic works simply by virtue of their being creations and leave the assessment of both merit and pecuniary worth entirely to the market.<sup>81</sup>

Unlike patent law, however, copyright law never prevents third parties from independently creating works of authorship similar to those already on the market.<sup>82</sup> Nor does copyright law invest authors with any generally recognized right to control the end use of

<sup>79</sup> See, e.g., BENKO, *supra* note 1, at 21; DRATLER, *supra* note 27, § 1.01[1]; Ralph S. Brown, *Eligibility for Copyright Protection: A Search for Principled Standards*, 70 MINN. L. REV. 579, 596 (1985) [hereinafter Brown, *Eligibility*]; see also Yves Gaubiac, *Les Nouveaux Moyens Techniques de Reproduction et le Droit d'Auteur*, 123 R.I.D.A. 22, 26 (1986).

<sup>80</sup> See, e.g., RICKETSON, *supra* note 10, at 231-232; GUIDE TO THE BERNE CONVENTION, *supra* note 8, at 17; ADOLPH DIETZ, COPYRIGHT LAW IN THE EUROPEAN COMMUNITY: A COMPARATIVE INVESTIGATION OF NATIONAL COPYRIGHT LEGISLATION 32, 30-31 (1978). See also 1 LADAS, ARTISTIC PROPERTY, *supra* note 16, at 269-75; DRATLER, *supra* note 27, § 102[1] (stressing that "patents are the only form of intellectual property whose coverage depends upon the precise legal description of the protected subject matter in a government grant").

<sup>81</sup> See, e.g., *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 111 S. Ct. 1282 (1991); *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239 (1903); *supra* notes 19-22 and accompanying text. In practice, the exclusive rights of copyright law provide a pecuniary reward only to those authors and artists who successfully explore the public's taste. Cf. Kitch, *Patent System*, *supra* note 46 (stressing role of prospecting function in patent system). By thus securing a winner-take-all return for those relatively few creators able to capture the public's fancy, the copyright incentives help to overcome high risk aversion otherwise apt to discourage investment in the dissemination of cultural goods. See, e.g., David Ladd, *The Harm of the Concept of Harm in Copyright*, 30 J. COPYRIGHT SOC'Y 421, 431 (1983) (stressing the negative influence of broad fair use exceptions on risk-taking in authorship and publishing); see also MACKAAY, *supra* note 12, at 115-17. The exclusive rights also permit creators to defray the costs of past failures by preventing second comers from prematurely siphoning off the fruits of any lucky strike that happens to result.

<sup>82</sup> See, e.g., GUIDE TO THE BERNE CONVENTION, *supra* note 8, at 17-18; RICKETSON, *supra* note 10, at 231-32; 1 GOLDSTEIN, *supra* note 22, § 1.2.2.3; see also DRATLER, *supra* note 27, § 1.03[1] (independent creation is no defence to an action for patent infringement).

protected works as such.<sup>83</sup> On the contrary, by encouraging third parties to make free and abundant use of nonprotectable matter underlying the protected expression, *copyright laws foster a built-in process of "reverse-engineering" that enables many independently created and copyrightable works to cluster around common themes or ideas.*<sup>84</sup>

If the exclusive rights bestowed on authors thus stimulate the production and dissemination of literary and artistic works under free-market conditions,<sup>85</sup> the overall objective is "to promote the progress of science" and not just the drive for economic efficiency in general.<sup>86</sup> To this end, domestic copyright laws foster certain cultural policies that are sometimes inconsistent with the efficient allocation of resources on the market for literary and artistic productions as such. For example, incentive theory<sup>87</sup> will not adequately account for the long period of protection, which enables living authors and their immediate heirs to partake of revenues generated many years after the creation of their works, nor for such paternalistic measures as the right to terminate transfers under the United States Copyright Act of 1976, nor the moral rights that permeate foreign copyright laws.<sup>88</sup> True, the incentive

<sup>83</sup> See, e.g., Brown, *Eligibility*, *supra* note 79, at 588-89. Professor Brown states: "The right to control the use of a work, although granted to inventors, has never been part of copyright except as performance may be considered 'use.' Indeed, the absence of a 'use right' helps justify the relatively casual approach to granting copyright as opposed to the more searching tests for patentability." *Id.* See generally FREDERIC POLLAUD-DULIAN, *LE DROIT DE DESTINATION* 279-399 (1989) (noting subtle variations from one national system to another). *But see* F. GOTZEN, *HET BESTIMMINGSRECHT VAN DE AUTEUR* (1975) (favoring generalized right to control end use).

<sup>84</sup> See, e.g., Baker v. Selden, 101 U.S. 99 (1879); Jessica Litman, *The Public Domain*, 39 EMORY L.J. 965, 1015, 1023 (1990); Brown, *Eligibility*, *supra* note 79, at 590, 601-05.

<sup>85</sup> See, e.g., 1 GOLDSTEIN, *supra* note 22, § 1.2.

<sup>86</sup> U.S. CONST. art. I, § 8, cl. 1; L. RAY PATTERSON & STANLEY W. LINDBERG, *THE NATURE OF COPYRIGHT—A LAW OF USER'S RIGHTS* 49 (1991); see also Gordon, *Inquiry*, *supra* note 47, at 1468 (rejecting economic efficiency as overall goal though recognizing need to avoid market failure; and affirming that "[c]reativity is too important to human life, economically, psychologically, and culturally, to have its legal treatment subordinated to the legal policies regulating the tangible domain").

<sup>87</sup> The incentive theory of copyright law, which prevails in the English-speaking countries, emphasizes the need to stimulate optimum production of literary and artistic works and to overcome the problem of appropriability. See, e.g., Landes & Posner, *Copyrights*, *supra* note 46; Gordon, *Fair Use*, *supra* note 1, at 1610-32; see generally Alain Strowel, *L'analyse économique du droit d'auteur—Une revue critique des arguments invoqués*, in *THE SOCIO-ECONOMIC ROLE OF INTELLECTUAL PROPERTY RIGHTS* 105-34 (M. Van Hoecke ed. 1991) (skeptically reviewing the literature as a whole). This approach contrasts with natural rights and personality-based theories that traditionally prevailed in the rest of the world. See, e.g., STROWEL, *supra* note 22, at 81-129; Alfred C. Yen, *Restoring the Natural Law: Copyright as Labor and Possession*, 51 OHIO ST. L. J. 517 (1990); see also Wendy J. Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 YALE L.J. 1533 (1993).

<sup>88</sup> See, e.g., Th. Limpberg, *Duration of Copyright Protection*, 103 R.I.D.A. 53, 68-69, 75-77 (1980); Zecharia Chafee, Jr., *Reflections on the Law of Copyright*, 45 COLUM. L. REV. 503, 507-08 (1945); 17 U.S.C. §§ 203, 304(c) (1988) (termination of transfers); see also Reichman, *Realist's Approach*, *supra* note 63, at 947-48. On moral rights, which prevent those who have

theory of copyright law, which predominates in the United Kingdom and the United States,<sup>89</sup> serves to limit actual inefficiencies by emphasizing the public interest in free competition.<sup>90</sup> However, it underestimates the extent to which all industrialized countries, to varying degrees, have deliberately subordinated efficiency to cultural policy goals in the specialized market for literary and artistic works.<sup>91</sup>

Phrased differently, any efficiencies that copyright law produces in the market for literary and artistic works are an integral part of the larger cultural policy this body of law seeks to implement. By the same token, the most fundamental of all the negative economic premises underlying the mature copyright paradigm is that the peculiar mix of cultural and economic policies it implements on the market for artistic works *should not disrupt competition in the general products market as regulated by the mature patent paradigm.*<sup>92</sup> For this reason, legislators deny copyright protection to "any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied" in original works of authorship.<sup>93</sup> This premise also explains why courts traditionally afford factual and functional works only "thin" protection against literal reproduction,<sup>94</sup> why legislators and courts will not allow the exclusive reproduction rights of copyright law indirectly to prevent

paid to commercialize an author's work from doing so in a manner that could prejudice the author's honor or reputation, see, e.g., Berne Convention, *supra* note 7, art. 6<sup>bis</sup>; W.R. CORNISH, *INTELLECTUAL PROPERTY: PATENTS, COPYRIGHTS, TRADE MARKS AND ALLIED RIGHTS* 309 (2d ed. 1989); Edward J. Damich, *The Right of Personality: A Common Law Basis for the Protection of the Moral Rights of Authors*, 23 GA. L. REV. 1, 8-25 (1988); see generally STYG STRÖMHOLM, *LE DROIT MORAL DE L'AUTEUR* (1967).

<sup>89</sup> See generally STROWEL, *supra* note 22, at 81-173 (noting convergence between copyright and authors' rights systems).

<sup>90</sup> See, e.g., 1 GOLDSTEIN, *supra* note 22, § 1.2; see also Landes & Posner, *Copyrights*, *supra* note 46, at 361 (discussing whether limiting term of protection avoids monopoly profits and tracing costs).

<sup>91</sup> The coherence of these cultural policies may have diminished with the growing attack on the classical view that emphasizes protection of the author's personality as manifested in works of authorship. See, e.g., Paul Edward Geller, *Must Copyright Be Forever Caught Between Marketplace and Authorship Norms?*, in OF AUTHORS AND ORIGINS: ESSAYS ON COPYRIGHT 178-81 (Brad Sherman & Alain Strowel eds. 1994) [hereinafter Geller, *Authorship Norms*]; Robert H. Rotstein, *Beyond Metaphor: Copyright Infringement and the Fiction of the Work*, 68 CHI-KENT. L. REV. 725, 727-28 (1993); Marci A. Hamilton, *Art Speech* (1994-95) (unpublished manuscript, on file with the Cardozo Arts & Entertainment Law Journal). See also György Boytha, *The Justification of the Protection of Authors' Rights as Reflected in Their Historical Development*, 151 R.I.D.A. 53 (1992).

<sup>92</sup> See Baker v. Selden, 101 U.S. 99 (1879); *supra* notes 55 and 63.

<sup>93</sup> 17 U.S.C. § 102(b); see generally Pamela Samuelson, *Computer Programs, User Interfaces and Section 102(b) of the Copyright Act of 1976: A Critique of Lotus v. Paperback*, 55 LAW & CONTEMP. PROBS. 311, 322-23, 325-31 (1992).

<sup>94</sup> See, e.g., *Feist Publications v. Rural Tel. Serv. Co.*, 111 S. Ct. 1282, 1289 (1991); see generally 2 GOLDSTEIN, *supra* note 22, §§ 8.4, 8.5.

the use of unprotectable utilitarian matter by third parties;<sup>95</sup> and why legislators try to dissuade courts from opening unfair competition law to matter denied protection in copyright law.<sup>96</sup>

C. *Apparent Locus of the Deviant Regimes*

The foregoing observations attempted to describe how the world's intellectual property system carves up its universe of discourse and to identify some of the behavioral assumptions that were implicitly made concerning the standard objects of protection. In considering the extent to which late twentieth-century intellectual property law still conforms to these nineteenth-century foundations, it is helpful to visualize the constitutional framework of the Great Conventions as operating within two broad spheres or spectra of protected activity that are geared, respectively, to "industrial" and "artistic" property.<sup>97</sup>

1. A Thickness Syndrome Under the Classical Models

The subdivision between traditional forms of industrial and artistic property underlying the Great Conventions is represented graphically in Figure 1, entitled "Pressure on the Dominant Paradigms: Selected Legal Hybrids." Figure 1 portrays the two traditional spheres as meeting at the line of demarcation identified earlier in this Article, namely, at the general products market, which the patent paradigm nominally governs.<sup>98</sup> The broad ends of the two spectra represent the locus of classical objects of intellectual property protection, namely, patents for inventive but conventionally engineered applications of science to industry,<sup>99</sup> on the

<sup>95</sup> See, e.g., 17 U.S.C. §§ 101, 113(b) (compelling this result when a three-dimensional utilitarian article is portrayed in a two-dimensional copyrighted work, such as a dress design or a boiler design, and a competitor reverse engineers the same design by copying the three-dimensional dress or boiler); *Baker v. Selden*, 101 U.S. at 103 (compelling the same result with regard to literary works); *Sega Enters. Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992); see generally Reichman, *Programs as Know-How*, *supra* note 11, at 693, 693 n.288 (rehabilitating the pristine function of *Baker v. Selden*, which prevents the reproduction rights from indirectly protecting ineligible functional matter); I GOLDSTEIN, *supra* note 22, § 5.2.1.4 (Supp. 1994) (reaching same result on the basis of codified fair-use criterion).

<sup>96</sup> See *supra* notes 55 and 61.

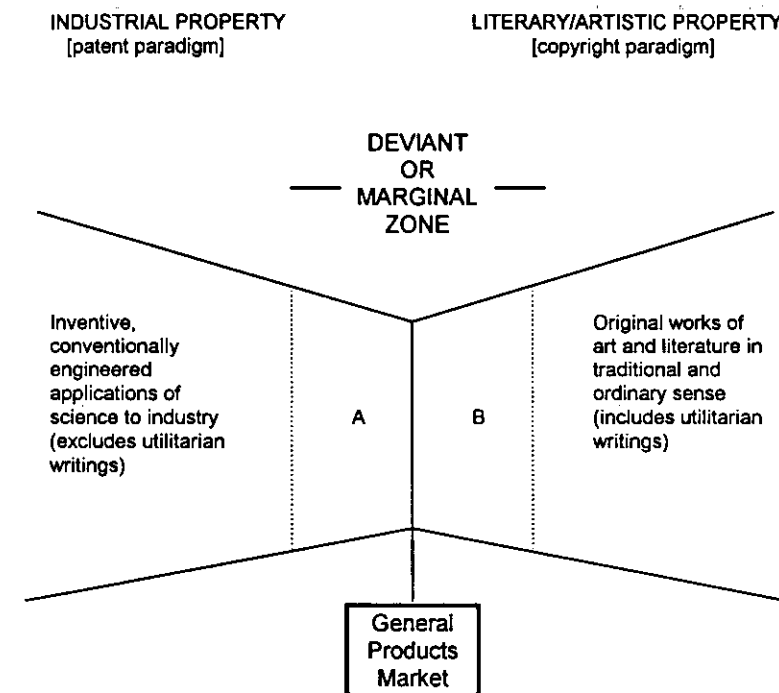
<sup>97</sup> See *supra* text accompanying notes 18-27.

<sup>98</sup> See *supra* text accompanying notes 38-42.

<sup>99</sup> The phrase "inventive but conventionally engineered applications of science to industry" is meant to embrace the traditional subject matters of patentability, but not necessarily such borderline cases as computer programs, industrial designs, plant varieties, and certain products of biogenetic engineering, especially living microorganisms, whose collocation within the modern patent system remains controversial. See, e.g., ROBERT P. MERGES, *PATENT LAW AND POLICY—CASES AND MATERIALS* 35-147, 1001-1005 (1992) (distinguishing computer software, algorithms, business methods, living subject matter, and medical devices as borderline cases and industrial designs as a special case).

one hand and works of art and literature in the traditional and ordinary sense, on the other.<sup>100</sup>

FIGURE 1: PRESSURE ON THE DOMINANT PARADIGMS: SELECTED LEGAL HYBRIDS



That the spectra appear broader at their outer ends signifies that even the standard objects of protection—if otherwise qualified—do not uniformly obtain the maximum scope of protection available under the dominant legal paradigms. Questions always arise concerning the extent to which any given subject matter category (or any particular patent or copyright falling within given subject matter categories) will obtain protection against other than literal or nearly exact copying. The international intellectual property system provides virtually no minimum standards to constrain

<sup>100</sup> See, e.g., *Baillie v. Fisher* [Register of Copyrights], 258 F.2d 425, 426 (D.C. Cir. 1958) (per curiam) (citing *Rosenthal v. Stein*, 205 F.2d 633, 635 (9th Cir. 1953)); Reichman, *Design Protection*, *supra* note 31, at 1174-82.

domestic judicial decisions in this regard.<sup>101</sup> Yet, how courts answer these questions determines the true level of protection available from any given domestic system and greatly affects the overall calculus of social costs and benefits flowing from these systems.<sup>102</sup>

Studies suggest, for example, that courts and administrators provide pioneer inventions with a broader or "thicker" range of equivalents than patents in an already crowded field and that, at the limit, so-called blocking patents covering a broad set of claims may dominate a "subservient" patent that relies on narrower claims to some improved feature of the same invention.<sup>103</sup> Likewise in copyright law, certain disfavored subject matters, such as factual and functional works, routinely received relatively "thin" protection compared with more expressive literary and artistic works.<sup>104</sup> Patent courts, overtly or covertly, often engage in similar discriminations.<sup>105</sup>

<sup>101</sup> This remains true even under the TRIPS Agreement, *supra* note 4, which otherwise elevates the standards of protection generally. The TRIPS Agreement, however, does introduce periodic trade policy review mechanisms as well as binding dispute-resolution mechanisms that could lead to quasi-common-law adjudications at the international level. Arguably, states could challenge or contest the scope of protection practices of other states in these forums. See, e.g., Geller, *Dispute Settlements*, *supra* note 5, at 107-14; Reichman, *TRIPS Component*, *supra* note 5, at 256-63; see also Reichman, *Competition, Intellectual Property and Trade*, *supra* note 5, at 108-09 (predicting future round of multilateral trade talks to establish international guidelines governing misuse of intellectual property rights).

<sup>102</sup> Cf. Merges & Nelson, *supra* note 57, at 908-16 (concluding that rapid technological achievement is encouraged by narrower patents); Geller, *Sign Wealth*, *supra* note 59, at 85-89 (broad derivative rights may limit access to public domain); Paul Goldstein, *Derivative Rights and Derivative Works in Copyright*, 30 J. COPYRIGHT SOC'Y 209 (1983) (protection of derivative works encourages investment in creative expression).

<sup>103</sup> See, e.g., *Westinghouse v. Boyden Power Brake Co.*, 170 U.S. 537, 561-62 (1898); 5 CHISUM, *supra* note 71, § 20.03[3]; Merges & Nelson, *supra* note 57, at 854 (who find that courts relate the range of equivalents to the degree of advance over the prior art, and in the case of a pioneer patent, "will stretch to find infringement even by a product whose characteristics lie considerably outside the boundaries of the literal claims.") Inventions falling between patentable improvements and pioneer inventions receive "an intermediate range of equivalents." *Id.* at 854 n.68 (citing authorities). "Two patents are said to block each other when one patentee has a broad patent on an invention and another has a narrower patent on some improved feature of that invention. The broad patent is said to 'dominate' the narrower one." *Id.* at 860. In such cases, apportioned royalties or cross licensing appears to be the logical result. See, e.g., 5 CHISUM, *supra* note 71, § 20.03 [3].

<sup>104</sup> See, e.g., *Feist Publications v. Rural Tel. Serv. Co.* 111 S. Ct. 1282 (1991) (thin protection of factual works in copyright law); *Baker v. Selden*, 101 U.S. at 102-04; *Atari, Inc. v. North Am. Phillips Consumer Elecs. Corp.*, 672 F.2d 607, 614-16 (7th Cir. 1982) (Posner, C.J.) (discussing a similar spectrum in copyright law, which is thicker for traditional artistic works than for borderline creations); see generally Reichman, *Realist's Approach*, *supra* note 63, at 966-76.

<sup>105</sup> In the United States, for example, courts hostile to design patents seldom recognized any range of equivalents and traditionally afforded relief against servile imitation only. See, e.g., Mathew Nimetz, *Design Protection*, 15 COPYRIGHT L. SYM. (ASCAP) 79, 101 (1967) (showing hostility of U.S. federal courts to design patents); Reichman, *Designs and New Technologies*, *supra* note 73, at 25, 42-43, 51-53 (showing Federal Circuit's willingness to recognize some range of equivalents in recent years). Most countries eventually removed design protection from patent law, in part to square outcomes with legal doctrine.

As a general proposition, the spectra represented in Figure 1 reflect this "thickness syndrome" by indicating a broader scope of protection for some subject-matter categories and a narrower scope of protection for others. Whether a stronger case can be made for creators or for second comers when determining either the range of equivalents in patent law or the breadth of the exclusive rights to prepare derivative works in copyright law varies with the different theories of protection that appeal to different decision makers. Economic analysis provides no clear resolution of these differences.<sup>106</sup>

Experience does nonetheless suggest that a particularly thin scope of protection will turn out to be a characteristic feature of all the intellectual property regimes whose objects of protection deviate from true "inventions" or from the "works of art or literature in the ordinary and historical sense" that fall within the standard patent and copyright subsystems. Industrial designs, for example, seldom obtain more than protection against slavish imitation even when subjected to full or modified patent regimes.<sup>107</sup> Other deviant regimes are explored at length in this investigator's previous studies, especially his *Legal Hybrids* monograph.<sup>108</sup> For present purposes, these rough empirical observations concerning the tensions surrounding scope of protection issues under the dominant intellectual property paradigms—encapsulated here in the notion of a "thickness syndrome"—provide a clue to ascertaining the probable locus of deviant protective phenomena within the larger universe of discourse that the international patent and copyright systems formally stake out.

## 2. The Deviant Regimes

If, under standard operating assumptions, the patent and copyright subsystems meet face to face at a common line of demarcation, as shown in Figure 1, the existence of a "thickness syn-

<sup>106</sup> Compare, e.g., Kitch, *Patent System*, *supra* note 46 (suggesting that under prospecting theory of patent law the granting of a broader scope to an initial inventor may induce more effective development and future invention) with Merges & Nelson, *supra* note 57, at 843-44, 854 (concluding that without "extensively reducing the pioneer's incentives, the law should attempt at the margin to favor a competitive environment for improvements, rather than an environment dominated by the pioneer firm"); see also Peter Jaszi, *Toward a Theory of Copyright: The Metamorphosis of Authorship*, 1991 DUKE L.J. 455, 477-85, 501-02 (criticizing myth of personal creation and resulting doctrinal excesses); Geller, *Authorship Norms*, *supra* note 91, at 178-81 (contending that personality-based copyright theories tend unduly to broaden the scope of protection for literary works).

<sup>107</sup> See, e.g., *Legal Hybrids*, *supra* note 11, at 2463-65 (supporting the proposition in the text and discussing its implications for a unified field approach).

<sup>108</sup> See generally *Legal Hybrids*, *supra* note 11, at 2455-63, 2465-2500.

drome" operating within the dominant paradigms makes it plausible to expect deviant or marginal intellectual property models to occupy a position at or near the narrow ends of the spectra shown in Figure 1. There, for one reason or another, the scope of protection was posited as likely to attain its weakest levels. To facilitate further analysis, Marginal Zones A and B have been added to Figure 1, in keeping with these premises. Figure 1 thus provisionally incorporates selected deviant intellectual property models into the open spectra of industrial and artistic property, in harmony with the "thickness syndrome" identified above.

For example, in Marginal Zone A (on the industrial property side of the dividing line), one finds such deviant protective regimes as utility model laws,<sup>109</sup> registered design laws,<sup>110</sup> plant variety protection laws,<sup>111</sup> and unregistered design protection laws (like that

<sup>109</sup> The pristine purpose of early utility model laws was to protect functional improvements in the design of hand tools and other everyday implements that were achieved by means of novel, three-dimensional forms or shapes. Such improvements typically lacked the level of nonobviousness required for patent protection. See, e.g., *id.* at 2455-59 (citing German, Italian and Japanese authorities); see also Reichman, *Electronic Information Tools*, supra note 11, at 451-55 ("Tool Design in Comparative Industrial Property Law"). Over time, utility model laws tend to degenerate into longer and stronger petty patent regimes that provide patent-like protection of small inventions generally, for a relatively short period of time. In this form, they become less strictly tied to three-dimensional, functional shapes of tools and everyday implements. See, e.g., *Legal Hybrids*, supra note 11, at 2457-59 (noting reform of German utility model law in 1990, which abolished the requirement of a three-dimensional configuration and made electronic circuit designs eligible for the first time). Nevertheless, the European Union seems destined to adopt a community-wide directive mandating the protection of utility models. See, e.g., *Proposal of the Max Planck Institute for a European Utility Model*, 25 I.I.C. 700 (1994); Michael Kern, *Towards a European Utility Model Law*, 25 I.I.C. 627 (1994).

<sup>110</sup> Registered design protection laws normally protect two-dimensional designs or three-dimensional models that enhance the appearance of industrial products by means of their forms or of a particular combination of lines, colors or other features that appeal to the eye. Generally speaking, such laws require registration and deposit, but not necessarily a full examination of the prior art, in addition to objective novelty and some degree of qualitative innovation not rising to the level of nonobviousness. Most design laws exclude functionally determined designs, and they typically provide patent-like protection for a term of ten or fifteen years. See, e.g., *Legal Hybrids*, supra note 11, at 2461-63; see also Reichman, *Designs and New Technologies*, supra note 73, at 8-10, 20-26 (noting that most European countries and Japan have sui generis, registered design laws, but not the United States, which applies patent law to industrial designs). The European Union appears likely to adopt a new, registered design law, with Community-wide application. See Commission of the European Communities, *Proposal for a European Parliament and Council Regulation on the Community Design*, COM (93)342 final at 463 (Dec. 3, 1993) [hereinafter Proposed EC Design Directive].

<sup>111</sup> Plant variety protection laws as initially adopted provided plant breeders with copyright-like protection for novel varieties of certain plants (e.g., sexually reproduced plants in the U.S.) that demonstrate sufficient stability, uniformity and distinctiveness over time. See, e.g., *Plant Variety Protection Act (PVPA)*, Pub. L. No. 91-577, 84 Stat. 1542 (1970) (amended 1980) (current version at 7 U.S.C. §§ 2321-2583 (1988)); see generally *Legal Hybrids*, supra note 11, at 2465-67. Countries adopting similar laws usually adhered to the International Convention for the Protection of New Varieties of Plants (UPOV), supra note 9. In 1991, the member countries amended UPOV and moved toward more patent-like protection. In 1994, the United States amended the PVPA to conform to the 1991 revision

of the United Kingdom enacted in 1988).<sup>112</sup> Also included in this zone are recent unfair competition laws that, to varying degrees, restrain third parties from copying unpatented, noncopyrightable innovation without any corresponding investment of their own.<sup>113</sup> Logically included in this zone, but not analyzed in this investigator's previous studies, are several other hybrid regimes, both existing and proposed, such as sui generis regimes protecting typeface designs;<sup>114</sup> regimes that issue inventors' certificates or that reward individual rationalization proposals (largely a heritage of the centrally planned economies);<sup>115</sup> and, arguably, proposed amendments to the United States patent law that would lower the standards of eligibility for certain discoveries in biogenetic

of the UPOV treaty. See PVPA Amendments of 1994, Pub. L. No. 103-349, 108 Stat. 3136 (1994); see generally *Legal Hybrids*, supra note 11, at 2467-72.

<sup>112</sup> Dissatisfaction with patent-like protection of industrial designs under registered design laws led the United Kingdom to provide copyright-like protection of unregistered designs, whether functionally determined or aesthetic in nature, for a fifteen-year period. See Copyright, Designs and Patent Act, ch. 48, §§ 213-264 (1988) (U.K.); Christine Fellner, *The New United Kingdom Industrial Design Law*, 19 U. BALT. L. REV. 369, 388-89 (1989/90). The Proposed EC Design Directive, supra note 110, also provides for a much less radical regime of unregistered protection, which applies only to appearance designs and would last, without formalities, for three years from the date on which a given design was first made publicly available. See Proposed EC Design Directive, supra note 110, arts. 1(2), 7(a), 12; see also Bernard Posner, *The Proposal for a EU Design*, paper presented to the International Conference on the Legal Protection of Industrial Designs (Tokyo and Kyoto, Japan, Nov. 8-12, 1994).

The most radical form of unregistered design protection for appearance designs, as distinct from functionally determined designs, is currently provided by the United States federal appellate courts' broad reading of Lanham Act § 43(a). These courts treat product configurations as unregistered "appearance trade dress," protectable under Lanham Act § 43(a) for an indefinite period of time. See, e.g., Reichman, *Designs and New Technologies*, supra note 73, at 98-123 (citing authorities); see further Reichman, *Evolution of Design Protection*, supra note 73, at 392-97 (appearance trade dress from *Bonito Boats v. Thunder Craft Boats*, 489 U.S. 141 (1989) to *Two Pesos v. Taco Cabana*, 112 S. Ct. 2753 (1992)); J.H. Reichman, *Design Protection and the Legislative Agenda*, 55 LAW & CONTEMP. PROBS. 281, 284-90 (1992) [hereinafter Reichman, *Designs and Legislative Agenda*].

<sup>113</sup> See, e.g., *Legal Hybrids*, supra note 11, at 2472-76 (discussing Swiss unfair competition law of 1986 and Japanese unfair competition law of 1993). The Swiss law focuses on protecting investment in unpatented technologies in general, and carries no specified time limit for the innovator's reasonable return on his or her investment. The less open-ended Japanese law simply forbids slavish duplication of new industrial product configurations for a three-year period from the time the relevant products become available to the public. See Federal Law on Unfair Competition 1986 [Switzerland], art. 5(c) (effective March 1, 1988), reprinted in 5 INDUS. PROP. LAW & TREATIES (Supp., Sept. 1988); The Unfair Competition Act [Japan], Law No. 47/1993, § 2(3) (May 19, 1993).

<sup>114</sup> See Vienna Agreement for the Protection of Type Faces and Their International Deposit and Protocol Concerning the Term of Protection, June 12, 1973, Records of the Vienna Diplomatic Conference on the Protection of Typefaces 1973, at 10 (W.I.P.O. 1980); see also Phillip W. Snyder, *Typeface Design After the Desktop Revolution: A New Case for Legal Protection*, 16 COLUM.-VLA J.L. & ARTS 97 (1991).

<sup>115</sup> See, e.g., Stojan Pretnar, *Inventor's Certificates, Rationalization Proposals and Discoveries*, in 14 INTERNATIONAL ENCYCLOPEDIA OF COMPARATIVE LAW: COPYRIGHT AND INDUSTRIAL PROPERTY, ch. 6 (Eugene Ulmer ed. 1983).

engineering.<sup>116</sup>

Similarly, in Marginal Zone B (on the artistic property side of the dividing line), one finds such deviant regimes as sui generis laws protecting computer programs (now largely superseded);<sup>117</sup> laws protecting integrated circuit designs on copyright-like principles;<sup>118</sup> and miscellaneous sui generis laws protecting such items as data bases and catalogues,<sup>119</sup> applied art,<sup>120</sup> and engineering projects.<sup>121</sup> Also included in this zone is the European Union's ex-

<sup>116</sup> See, e.g., H.R. 587, 104th Cong., 1st Sess. (1995) (proposing to overrule *In re Durden*, 763 F.2d 1406, 1410 (Fed. Cir. 1985), by mandating that a novel input or output could make a process as a whole nonobvious).

<sup>117</sup> France protected computer programs under a sui generis law, built on modified copyright principles, that was attached to the Copyright Law of 1985. See *Legal Hybrids*, *supra* note 11, at 2481-83 (citing authorities). Although it formally recognized computer programs as copyrightable works, the French law explicitly excepted computer programs from many principles of copyright law and otherwise established a sui generis regime. However, the European Community's Directive on the Legal Protection of Computer Programs, Council Directive 91/250, 1991 O.J. (L 122) 42 [hereinafter EC Directive on Computer Programs], will override inconsistent provisions of the 1985 French law in the interest of harmonizing copyright law in the E.U. See, e.g., André Lucas, *The Council Directive of 14 May 1991 Concerning the Legal Protection of Computer Programs and Its Implications in French Law*, 14 EUR. INTEL. PROP. REV. 28, 31 (1992).

<sup>118</sup> See, e.g., Semiconductor Chip Protection Act of 1984 (SCPA), Pub. L. No. 98-620, 98 Stat. 3347 (1984) (codified as amended at 17 U.S.C. § 901 *et seq.* (1988)) [hereinafter SCPA] (providing copyright-like protection for one class of functional designs, viz., "mask works" or integrated circuit designs); IPIC Treaty, *supra* note 9 (internationalizing this approach); *Legal Hybrids*, *supra* note 11, at 2478-80.

<sup>119</sup> In the Nordic countries, sui generis laws protecting non-copyrightable compilations against slavish imitation have existed for several decades. See, e.g., Gunnar Karnell, *The Nordic Catalogue Rule, in PROTECTING WORKS OF FACT 67-72* (E.J. Dommering & P.B. Hugenholtz eds., 1991). More recently, the Commission of the European Communities has proposed an innovative Directive on the Legal Protection of Databases, loosely modeled on the Nordic Catalogue rule, that protects electronic information tools outside of the domestic copyright laws. See Proposal for a Council Directive on the Legal Protection of Databases, COM(92)24 final at SYN 393 (1992) [hereinafter First EC Directive on Databases]; Amended Proposal for a Council Directive on the Legal Protection of Databases, COM(93)464 final at SYN 393 (1993) [hereinafter Amended EC Directive on Databases]; see also *Legal Hybrids*, *supra* note 11, at 2493-98 (analyzing and criticizing these proposals).

<sup>120</sup> See Berne Convention, *supra* note 7, arts 2(7), 7(4) (allowing lesser degree of copyright protection for works of applied art). The inclusion of designs in both Marginal Zones A & B of Figure 1 results from the fact that works of applied art overlap industrial designs as such in most domestic intellectual property systems, while the criteria for distinguishing one from the other produce uncertain results. See, e.g., Reichman, *Designs and New Technologies*, *supra* note 73, at 8-17 (citing authorities); Reichman, *Design Protection*, *supra* note 31, at 1153-59, 1182-86, 1213-23. Nevertheless, apart from the U.S. (and one or two other countries), which still protects industrial designs under the full patent paradigm, and France, which still protects them under the full copyright paradigm, see *infra* note 124 and accompanying text, most developed countries during the second half of the twentieth century resorted to registered, sui generis design laws built on modified patent principles.

<sup>121</sup> While many countries, including the United States, treat technical drawings, blueprints and engineering projects differently from other copyrightable works, see, e.g., 17 U.S.C. § 113(b); Reichman, *Electronics Information Tools*, *supra* note 11, at 448-51, one country—Italy—protects noncopyrightable engineering projects under a neighboring rights law built on liability principles. See Italian Copyright Law, Law No. 633 of April 22, 1941, as amended through July 29, 1989, art. 99; EDUARDO PIOLA CASELLI, CODICE DEL DIRITTO DI AUTORE 510-511 (1943); PAOLO GRECO & PAOLO VERCELLONE, I DIRITTI SULLE OPERE

perimental adaptation of copyright law to computer programs,<sup>122</sup> as well as certain aberrational experiments in the domestic copyright laws, such as full copyright protection of functional designs in the United Kingdom (now superseded);<sup>123</sup> full copyright protection of mostly non-functional appearance designs in France;<sup>124</sup> and modified forms of copyright protection for certain borderline functional works, such as measures concerning technical drawings and engineering projects in Germany and the United States.<sup>125</sup> Logically included in Marginal Zone B but not highlighted in this or earlier studies are the more traditional rights, related to or "neighboring" on copyright law, which protect performers, broadcasting organizations, and the producers of sound recordings,<sup>126</sup> and which turn out to be less deviant than appears on the surface.<sup>127</sup>

DELL' INGEGNERO 395-96 (1974); see also Antonio Cataudella, *Rilettura delle norme a tutela degli autori di progetti di ingegneria*, 1988 RIVISTA DEL DIRITTO COMMERCIALI E DEL DIRITTO GENERALE DELLE OBBLIGAZIONE 1. "Article 99 . . . allows authors of engineering projects or other analogous productions who contribute novel (but not nonobvious) solutions to technical problems to obtain a reasonable royalty from third parties who commercially exploit their technical contributions without authorization. This right to 'equitable compensation' lasts twenty years from the date of registration, and appropriate notice must appear on copies of the plans." *Legal Hybrids*, *supra* note 11, at 2477.

<sup>122</sup> See EC Directive on Computer Programs, *supra* note 117. "[T]he European Community, bowing to pressure from the United States, produced the Council Directive on Computer Programs, which adopts a copyright approach while subtly incorporating important tailor-made exceptions and limitations." *Legal Hybrids*, *supra* note 11, at 2484-85; see further *id.* at 2485-88.

<sup>123</sup> "Between 1968 and 1988, British courts . . . protected a 'host of wholly functional, nonregisterable articles designed without regard to appearance' on a par with true literary and artistic works merely 'because they started life as engineering drawings because copying could be indirect as well' as direct, and because it could be done by reproducing a two-dimensional work (the plaintiff's drawing) in three-dimensional form.' Items protected . . . included screws, bolts, washers, clerical collars, paper-mache bedpans, pulley wheels, and plastic knock-down drawers." *Legal Hybrids*, *supra* note 11, at 2489 (quoting Fellner, *supra* note 112, at 373).

<sup>124</sup> The French "unity of art doctrine allows any appearance design to obtain cumulative protection as 'works of art' in copyright law regardless of its status under the design protection law in force. By combining a boundless definition of 'art' with exaggerated deference to the principle of nondiscrimination, French courts have conferred full copyright protection on purely functional designs of all kinds . . ." *Legal Hybrids*, *supra* note 11, at 2489 (citing authorities).

<sup>125</sup> See *supra* note 121 and accompanying text.

<sup>126</sup> See Rome Convention, *supra* note 9 (creating international framework for coordinating domestic laws that protect performers' renditions, broadcasts, and producers of sound recordings); see also Stephen M. Stewart & Hamish Sandison, *Neighboring Rights, in INTERNATIONAL COPYRIGHT AND NEIGHBORING RIGHTS*, *supra* note 9, at 185-220; Cohen Jehoram, *supra* note 44, at 76-84.

<sup>127</sup> "Despite occasional dependence on new technologies, these neighboring rights laws neither stimulate technological innovation nor systematically violate cardinal economic premises underlying the patent and copyright paradigms. On the contrary, they establish the outer limits of artistic property law without blurring or undermining the classical line of demarcation separating artistic from industrial property laws." *Legal Hybrids*, *supra* note 11, at 2500.

Figure 1 thus visually represents a working hypothesis about a putative marginal zone taking root somewhere between the patent and copyright paradigms that is further verified in the *Legal Hybrids* study. The collocation of deviant phenomena in this zone also attempts to portray the relative distance separating deviant objects of protection from the prototypical objects of patent and copyright protection, and it emphasizes the relative proximity of deviant cases to the historical line of demarcation running between industrial and artistic property law. While the reader is advised that the empirical survey of deviant models undertaken in the *Legal Hybrids* study ultimately required a rectification of this working hypothesis and its graphic representation,<sup>128</sup> a glance at the contents of Marginal Zones A and B in Figure 1 suffices to support what all experienced practitioners intuitively know: namely, that the real universe of world intellectual property law is inhabited by constellations of deviant protective modalities that violate its key operating assumptions, especially the negative economic premises set out above.<sup>129</sup>

Some of these misfits or mutants are truly new and readily identifiable with today's important new technologies. Others, however, are almost as old as the world's intellectual property system itself. Whether the latest deviants represent a novel response to new empirical phenomena or merely variants of responses to earlier phenomena that had long challenged the systemic integrity of the classical foundation is investigated in the *Legal Hybrids* article. Some of the preliminary conclusions drawn from that investigation are set out below, and any attempt to reconceptualize the field as a whole<sup>130</sup> must take them into account.

## II. EMPIRICAL LIMITS OF THE CLASSICAL BIPOLAR STRUCTURE

The survey of deviant regimes carried out in the *Legal Hybrids* study confirms that the classical "vision that subdivided world intellectual property law into discrete and mutually exclusive compartments for industrial and artistic property has irretrievably broken down."<sup>131</sup> To the extent that the patent and copyright models underlying the Great Conventions represent a coherent theory about the way intellectual creations behave in the world at large, that theory has been discredited by its inability to account for, or ade-

<sup>128</sup> See *infra* text accompanying notes 151-55.

<sup>129</sup> See *supra* text accompanying notes 45-96.

<sup>130</sup> See further *Legal Hybrids*, *supra* note 11, at 2500-2557.

<sup>131</sup> *Id.* at 2500; see generally *id.* at 2453-2504.

quately deal with, the behavior of so many commercially valuable intellectual creations that actually inhabit that universe.<sup>132</sup>

The real objects of protection that increasingly elude the classical scheme often constitute the cutting edge of technological innovation at the end of the twentieth century; they account for an ever growing share of the gross domestic products in both developed and developing countries.<sup>133</sup> Yet, one cannot reconcile the hybrid legal regimes summoned to protect these creations with the economic justifications of the classical intellectual property system. On the contrary, the proponents of these regimes invariably make a virtue out of a vice by justifying the need for new intellectual property rights in terms of the shortcomings or limits of the dominant legal paradigms.

In these and other respects, the hybrid legal regimes proliferating within today's international intellectual property system resemble the Ptolemaic epicycles with which the earth-centered theory of the universe was continually adjusted in a bygone day.<sup>134</sup> These adjustments enable observers only to account for past deviations from existing norms without being able to predict the behavior of the relevant legal constellations in the future.

### A. Real Locus of the Deviant Regimes

To escape these after-the-fact rationalizations, a helpful first step is to reconsider the theoretical foundations of the classical framework in order to obtain a more precise understanding of how—and where—it empirically accommodates the deviant regimes. As portrayed in Figure 1, regimes protecting industrial property were separated in principle from regimes protecting literary and artistic works by a line of demarcation set out in article 1(3) of the Paris Convention.<sup>135</sup> That line of demarcation relegated the legal protection of "products" to industrial property laws while implicitly confining literary and artistic productions, as non-products, to a specialized market governed by different regulatory principles that were far more generous to creators.<sup>136</sup>

<sup>132</sup> *Id.*; cf. also Hermann Kronz, *Patent Protection for Innovations: A Model* (pt. 1), 7 E.I.P.R. 178, 180 (1983) (stressing irrelevance of patent system to real problem of transforming "technical knowledge into products and investment under much more difficult market entry conditions").

<sup>133</sup> Cf. Reichman, *TRIPS Component*, *supra* note 5, at 263-66; see also Reichman, *GATT Connection*, *supra* note 3, at 754-66.

<sup>134</sup> See THOMAS KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* 69-70 (1970).

<sup>135</sup> See *supra* text accompanying notes 28-44, 65-96.

<sup>136</sup> Compare Paris Convention, *supra* note 7, art. 1(3) ("all manufactured or natural products") with Berne Convention, *supra* note 7, art. 2(1) ("every production in the literary, scientific and artistic domain"). See also P. Bernt Hugenholtz, *Convergence and Divergence in*



## 1. A Permeable Line of Demarcation

The evidence suggests, instead, that *the marginal cases on either side of that line seem to flow into one another without encountering any meaningful resistance from it*. A typeface design converted into a computer program will claim entry into copyright law,<sup>137</sup> as will the digitized design of a dress nominally excluded from the same copyright law on other grounds.<sup>138</sup> Electronic circuit designs traditionally excluded from utility model laws may at different times qualify for protection as an unregistered design, as a computer program, as a technical drawing, as an integrated circuit design, and as a patentable invention, not to mention trade secret protection of the pertinent know-how.<sup>139</sup> That the marginal cases on either side of the dividing line appear to flow into one another also tallies with complaints that the nonobvious standard has been falling lower and lower,<sup>140</sup> or that patent law increasingly protects mathematical formulas and mental steps,<sup>141</sup> or that artistic property law sometimes affords patent-like protection, say, of computer programs.<sup>142</sup>

Given such a permeable line of demarcation and the growing tendency of the two compartments to overlap in practice,<sup>143</sup> legal issues of ownership and scope of protection in any particular case may vary with accidental or trivial aspects of the innovation in question. A university professor may own copyrightable components of a computer program he or she has created, but not the patentable components, because the applicable laws impose different owner-

*Intellectual Property Law: The Case of the Software Directive*, in INFORMATION LAW TOWARDS THE 21ST CENTURY 319, 320 (W.F. Korthals Altes et al. eds. 1992) ("In the old days, cumulative protection by copyright and patent law would have been unthinkable").

<sup>137</sup> See, e.g., Snyder, *supra* note 114, at 113-15 (discussing Copyright Office decision to register computer programs that generate specific typeface design for copyright protection); see also *Eltra Corp. v. Ringer*, 579 F.2d 294, 298 (4th Cir. 1978) (long-standing judicial denial of copyrightability to type-face design had been "acquiesced in by Congress").

<sup>138</sup> Cf. *supra* notes 120-25 and accompanying text (contradictory treatment of industrial art and literature).

<sup>139</sup> See *Legal Hybrids*, *supra* note 11, at 2455-65, 2477-88; see also Reichman, *Overlapping Propriety Rights*, *supra* note 29, at 65. In 1990, the German utility model law was revised to admit electronic circuit designs. See, e.g., Roland Leisegang, *German Utility Models After the 1990 Reform Act*, 20 A.I.P.L.A. Q.J. 1, 2 (1992).

<sup>140</sup> See, e.g., Samuelson et al., *Manifesto*, *supra* note 11, at 2345-47, 2361-64. The heads of both the Italian and Belgian patent offices have voiced such complaints to this author at recent conferences.

<sup>141</sup> See, e.g., *In re Alappat*, 33 F.3d 1526, 1542-45 (Fed. Cir. 1994) (Rich, J.); *id.* at 1545, 1562-68 (Archer, C.J., dissenting); see also Pamela Samuelson, *Benson Revisited: The Case Against Patent Protection for Algorithms and Other Computer Program-Related Inventions*, 39 EMORY L.J. 1025, 1059-1132 (1990); Hugenholtz, *supra* note 136, at 319.

<sup>142</sup> See, e.g., *Whelan Assocs., Inc. v. Jaslow Dental Laboratories, Inc.*, 797 F.2d 1222 (3rd Cir. 1986), *cert. denied*, 107 S. Ct. 877 (1987).

<sup>143</sup> Cf. Frederich-Karl Beier, *The Future of Intellectual Property in Europe*, 22 I.I.C. 157, 161 (1991) (stating that the "areas of industrial property law . . . and copyright law . . . , formerly so neatly segregated, show a noticeable tendency to overlap and grow together").

ship criteria and biases.<sup>144</sup> Unpatented, noncopyrightable applications of know-how that may constitute the commercially most valuable components of the same program will respond to the very different ownership criteria and protective apparatus of trade secret law.<sup>145</sup> The cumulative legal product seems a caricature of the international intellectual property system as conceived at the end of the nineteenth century.

When the hybrid legal regimes are examined one by one, moreover, the evidence confirms *that their objects of protection actually resemble each other more than they resemble either works of art or industrial inventions, the prototypical subject matters of the dominant paradigms*. It is useful to reconsider some of their common characteristics in this light. Few, if any, of the subject matters governed by hybrid legal regimes actually partake of art in the historical and ordinary sense.<sup>146</sup> In addition, none of the hybrid regimes require the strict evaluation of merit characteristic of a mature patent system,<sup>147</sup> while all of them tend to allow the market, directly or indirectly, to validate the eligibility of their respective subject matters or to influence the scope of protection. To the extent that even the validity of traditional utility patents in the United States increasingly depends on secondary factors, such as commercial success and copying, the patent law itself is opening towards market-determined legal outcomes.<sup>148</sup> Finally, most of the deviant subject matters also lead a dualist existence that enables them to compete either as disembodied graphic or verbal representations of copyrightable works or as functional components of material supports that are distributed on the products market.<sup>149</sup>

That the objects of the deviant regimes actually resemble each other more than they resemble works of art or industrial inventions

<sup>144</sup> See generally, Reichman, *Overlapping Proprietary Rights*, *supra* note 29, at 66-88.

<sup>145</sup> See generally *id.* at 88-109; Rochelle Cooper Dreyfuss, *The Creative Employee and the Copyright Act of 1976*, 54 U. CHI. L. REV. 590, 597-600 (1987); see also BRANSCOMB, *supra* note 12, at 138-58.

<sup>146</sup> See generally *Legal Hybrids*, *supra* note 11, at 2455-98 (discussing utility models, industrial designs, plant varieties, technical drawings and engineering projects, semiconductor chip designs, computer programs, and electronic data bases). Exceptions might include works of applied art and certain directories or other compilations that do constitute original and creative works of authorship. See, e.g., *id.* at 2460, 2460 n.122, 2491.

<sup>147</sup> See *supra* note 54 and accompanying text.

<sup>148</sup> See, e.g., *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 1099-1100 (Fed. Cir. 1985); *Alco Standard Corp. v. Tennessee Valley Authority*, 808 F.2d 1490 (Fed. Cir. 1986); *Hybridtech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987). See also Robert P. Merges, *Commercial Success and Patent Standards: Economic Perspectives on Innovation*, 76 CAL. L. REV. 803 (1988) (criticizing this trend).

<sup>149</sup> See *Legal Hybrids*, *supra* note 11, at 2460-64 (case of industrial designs), 2477-78 (case of technical drawings, blueprints and engineering projects), 2480-88, 2493-98 (case of electronic information tools).

is of capital importance in arriving at a systematic clarification of the marginal cases in general. It should be remembered that Kohler and Picard coined the term "intellectual property" because they thought patents, copyrights, and trade marks had more in common with each other than with the categories of tangible property inherited from antiquity.<sup>150</sup> *That the creations governed by hybrid legal regimes resemble each other more than they resemble the true objects of classical copyright and patent systems likewise suggests that one is witnessing the formation of a new intellectual property paradigm that has much to reveal about the economics of competition in a post-industrial marketplace.*

## 2. Overlapping Jurisdictional Spheres

These findings mandate a rectification of the working hypothesis adopted at the outset of this Article. There it was posited that deviant intellectual property regimes were likely to group themselves at the "thin" edges of their respective jurisdictional spheres, as illustrated in zones A and B of Figure 1.<sup>151</sup> What the survey evidence actually reveals is that the patent and copyright paradigms have thrust deeper and deeper into each other's domains in order to provide some makeshift or emergency form of protection for marginal subject matters that resemble each other more than they resemble "inventions" or "works of art."<sup>152</sup> This finding is represented in Figure 2, entitled "Overlapping Jurisdictional Spheres."

One may note parenthetically that nothing emerged from the survey of legal hybrids that undermines the continuing validity of the master paradigms with respect to true inventions or works of art in the ordinary and historical sense. To the extent that current literature continues to challenge or defend the workings of these paradigms with respect to their traditional objects of protection, neither side can take much comfort from the data reported here.<sup>153</sup> *Serious problems arise in the penumbra or intermediate zone emerging between the patent and copyright paradigms.* Analysis of this zone has been handicapped, however, by the difficulties of map-

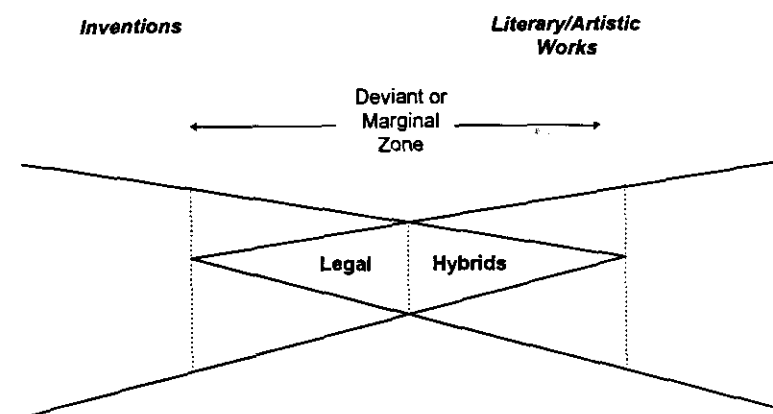
<sup>150</sup> See *supra* notes 16-17 and accompanying text.

<sup>151</sup> See *supra* text accompanying notes 97-130.

<sup>152</sup> Contrary to the classical tenets of the international intellectual property system, in other words, the jurisdictional spheres governing inventions and artistic works overlap each other notwithstanding the historical premises of the Great Conventions, which posited two distinct legal compartments meeting at a common line of demarcation. See *supra* text accompanying notes 29-44.

<sup>153</sup> See *supra* notes 1-2, 51-52 and accompanying text. See also Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655-74 (1994) (critiquing liability rules without evaluating the adverse economic effects of exclusive property rights on small-scale incremental innovation falling in the penumbra between the patent and copyright paradigms).

FIGURE 2: OVERLAPPING JURISDICTIONAL SPHERES



ping its overall dimensions or even of pinpointing its locus within an international intellectual property system still premised on the nonexistence of any operative space between the constituent subsystems of a bipolar structure.

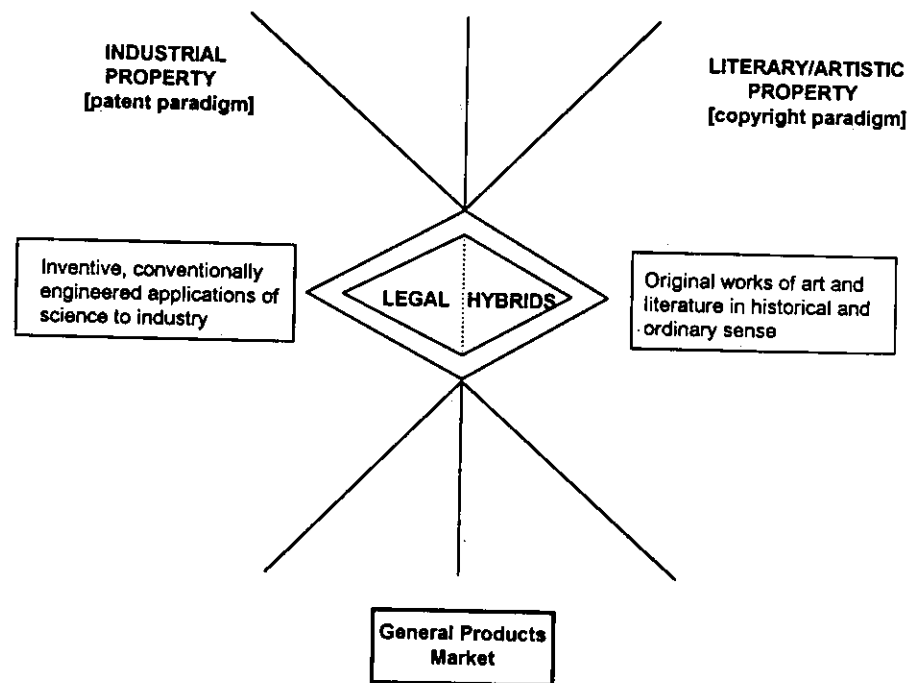
The results of this author's empirical survey of the legal hybrids resolve this paradox by showing that the dominant paradigms actually overlap instead of meeting face to face.<sup>154</sup> As Figure 2 indicates, *the supposedly nonexistent space between the two distinct compartments actually lies within the intersecting regions of the dominant paradigms themselves, on either side of the classical line of demarcation.* The deviant or marginal zone of copyright law thus extends into the industrial property spectrum and mingles almost imperceptibly with its natural constituents; the deviant or marginal zone of industrial property law likewise extends into the sphere of artistic property and mingles almost imperceptibly with its regular constituents. The inability of the classical line of demarcation to impede these developments suggests that the line itself has become increasingly meaningless under modern conditions. The true outlines of the intermediate zone as a whole become visible, indeed, only when the observer ignores that line altogether and focuses attention on the similarities of its overlapping constituent parts rather than on the dissimilarities of "art" and "inventions."

<sup>154</sup> See *Legal Hybrids*, *supra* note 11, at 2453-2504.

To portray how the legal regimes that constitute the intellectual property universe really behave at the end of the twentieth century, therefore, one needs to expunge the classical line of demarcation between the dominant paradigms from within the deviant zone and then to remove that zone from the jurisdiction of the dominant subsystems so that it appears as an entity in its own right. These adjustments conform to the evidence showing that, within the marginal zone, the formal line of demarcation constitutes a permeable non-barrier. They also express the fact that, within the marginal zone, all the constituent members affect the products market in one way or another as will be seen below, and that few, if any, partake of art in the historical and ordinary sense. These adjustments are illustrated in Figure 3, entitled "Real Locus of the Deviant Zone."

The proximity of the deviant zone to the dominant paradigms still conveys a false sense of homogeneity, however, which wrongly suggests that some facile relation between this zone and its bigger and more established neighbors lies readily at hand. In reality, *the classical distinction between patents and copyrights breaks down altogether within the marginal or intermediate zone.* There one finds an amalga-

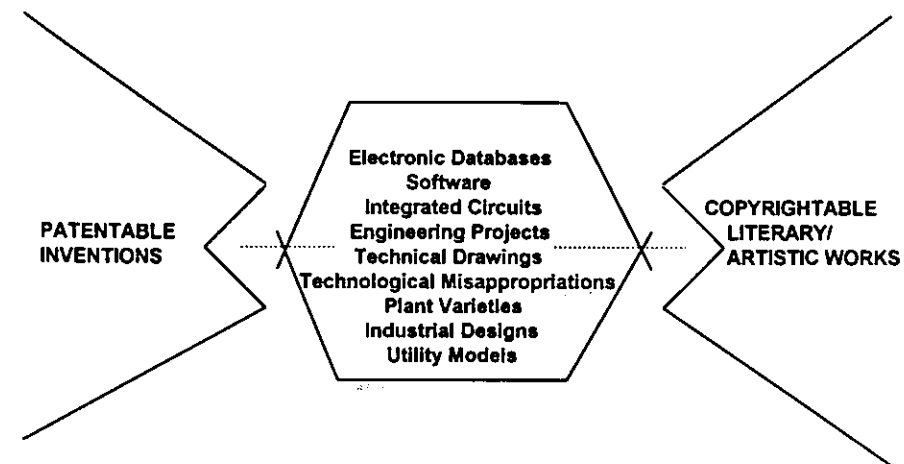
FIGURE 3: REAL LOCUS OF THE DEVIANT ZONE



mation of protective devices drawn from both of the dominant models and meted out in a heterogeneous and sometimes almost haphazard fashion that varies with the artificial legal pigeonholes any given creation happens to fit.

To emphasize the interrelatedness of all the hybrid solutions, one should, therefore, portray the marginal zone as an autonomous entity independent of its evolutionary locus at the juncture of the dominant intellectual property subsystems. One can then logically detach this entity from its historical matrix and situate it at a certain distance from its overarching progenitors, in order to suggest its potentially autonomous character. These adjustments are accomplished in Figure 4, entitled "The Legal Hybrids as a Potentially Autonomous Entity."

FIGURE 4: THE LEGAL HYBRIDS AS A POTENTIALLY AUTONOMOUS ENTITY



Viewed this way, the survey evidence confirms that, in the space where the patent and copyright systems overlap, legal hybrids multiply and thrive notwithstanding the contradictions they breed. This common domain, largely hidden from view by the paradigmatic blinders of ordinary legal thought, operates with a different

legal and economic logic that increasingly distorts and destabilizes the workings of the master paradigms themselves. Identifying the common denominator that underlies these regimes, and devising a unified response to the challenge it poses, then become primary objects of inquiry.

### B. *The Competitive Ethos Under Attack*

All of the marginal cases examined in the *Legal Hybrids* survey violate the negative economic premises of their respective master paradigms.<sup>155</sup> These deviations reveal the extent to which the economic justifications of the dominant intellectual property paradigms no longer meet the needs of those engaged in advanced technological innovation. At the same time, their cumulative anti-competitive effects cast doubt on the wisdom of the ad hoc legislative initiatives that continue to breed new intellectual property rights.

#### 1. Overriding the Negative Economic Premises

On the patents side of the ledger, *all of the hybrid legal institutions protect innovation that normally fails the nonobviousness test of eligibility*. To the extent that economists justify industrial property protection in terms of the technical superiority it engenders,<sup>156</sup> that claim breaks down empirically as one enters the marginal zone. In this zone, one detects a palpable diminution in the strictness of the threshold prerequisites as one moves downwards from the "thick" to the "thin" end of the industrial property spectrum,<sup>157</sup> as shown in Figure 1.

For example, plant varieties, most commercial designs and, increasingly, even utility models need only show some form of "novelty" to qualify under their respective hybrid regimes.<sup>158</sup> Non-commonplace industrial designs that are independently created may qualify for protection under the United Kingdom's unregistered design right of 1988 even if they are functionally determined.<sup>159</sup> This unregistered design right, like the laws protecting

<sup>155</sup> See *supra* text accompanying notes 45-96.

<sup>156</sup> See *supra* notes 45-54 and accompanying text.

<sup>157</sup> See *supra* text accompanying notes 98-107.

<sup>158</sup> See *Legal Hybrids*, *supra* note 11, at 2502, 2502 n. 392 (citing authorities). See also *supra* note 139 and accompanying text (noting codification of lower standard in German utility model law.) All of these subject matters tended to obtain no appreciable range of equivalents when initially protected. However, the UPOV Agreement, as amended in 1991, see *supra* note 111, extends the range of equivalents afforded eligible plant varieties without elevating the standard of eligibility. See *Legal Hybrids*, *supra* note 11, at 2469-70. This would potentially make the latest UPOV model one of the most extreme deviants.

<sup>159</sup> See *supra* note 112; Fellner, *supra* note 112, at 377-78.

integrated circuit designs and even Switzerland's technology misappropriation law, abandon even the pretense of a qualitative standard of achievement.<sup>160</sup> Yet, a statutory indifference to the level of achievement, wherever it materializes, approximates the copyright standard applicable to literary and artistic works.<sup>161</sup>

On the artistic property side of the ledger, meanwhile, *most of the hybrid institutions restrain competition with respect to nonartistic goods that are distributed on the general products market*. This violates the cardinal negative premise limiting application of the copyright paradigm to cultural goods.<sup>162</sup> Such distortions typically occur when creations falling within the marginal zone are susceptible of a "dualist" form of existence. When put forward as disembodied, two-dimensional representations of functional or factual matter, such as source codes of computer programs or as the drawing of an industrial object, they mimic the form of literary or artistic productions. The principle forbidding discrimination on the basis of merit then nudges them into copyright law.<sup>163</sup> When the same matter is subsequently embodied in three-dimensional products, the manufacturer extends copyright protection to market segments on which industrial, rather than cultural exploitation occurs.

The survey of legal hybrids revealed, in short, that the worldwide intellectual property system now routinely dispenses its legal monopolies to *less than nonobvious innovation that competes on the general products market*. Regardless of whether the hybrid legal regimes that increasingly occupy the forefront of attention protect cutting-edge technologies or more traditional forms of innovation, they defy the economic and social justifications for the classical intellectual property systems that were put forward at the end of the nineteenth century.<sup>164</sup>

#### 2. Cumulative Restraints on Trade

The anti-competitive effects likely to ensue from this creeping generalization of the "two-market conundrum"<sup>165</sup> are potentially

<sup>160</sup> See *Legal Hybrids*, *supra* note 11, at 2464-65, 2472-76, 2478-80, 2490.

<sup>161</sup> See *supra* notes 79-84 and accompanying text.

<sup>162</sup> See *supra* text accompanying notes 85-96.

<sup>163</sup> See *supra* notes 80-81, 149 and accompanying text.

<sup>164</sup> See *supra* text accompanying notes 45-52.

<sup>165</sup> See *supra* text accompanying notes 162-63. The "two-market conundrum" is historically associated with industrial designs. Producers whose product designs gain entry into copyright law *qua* artistic creations may use the exclusive reproduction rights to control commercial exploitation of the underlying material supports *qua* industrial products on the general products market. See, e.g., Reichman, *Designs and New Technologies*, *supra* note 73, at 130-32.

more far-reaching than those that the older marginal cases might have engendered fifty to a hundred years ago. In the nineteenth century, for example, industrial design was truly marginal in the economic sense, because industrial objects reproduced in series still competed on the basis of technical yields, not style;<sup>166</sup> moreover, electronic information processing had yet to be invented. Today, instead, industrial design drives the products market<sup>167</sup> and computer programs constitute a primary engine of economic development.<sup>168</sup> Yet, because virtually every product bears a functionally integrated configuration that could fall within, say, an unregistered design law<sup>169</sup> or increasingly, within a utility model law,<sup>170</sup> and because every computer program is potentially copy-rightable,<sup>171</sup> *the cumulative effect of the marginal cases is to suspend the operation of the normal rules of competition at the very core of the post-industrial economy.*

Taken one by one, the protection provided by each of the hybrid legal regimes seeks to overcome the free-rider problem that threatens to inhibit investment in a particular type of innovation.<sup>172</sup> Taken together, these regimes introduce a strong protectionist bias into domestic economies driven by constant innovation that

contradicts even the liberalizing thrust of multilateral trade negotiations seeking greater competition in an integrated world market. The risk is that liberalization . . . will largely affect traditional products of the industrial revolution, while producers of non-traditional, high-tech products and processes increasingly take ad hoc protectionist barriers for granted on both the domestic and international markets.<sup>173</sup>

<sup>166</sup> See, e.g., F. PERRET, *supra* note 30, at 13 (citing authorities). The marginal character of design protection laws in the nineteenth century was expressed in the phrase, "the poor relations in the family group of industrial property," that commentators often used. See, e.g., 2 LADAS, *INDUSTRIAL PROPERTY*, *supra* note 8, at 828.

<sup>167</sup> See, e.g., D. O. UGHANWA & M. J. BAKER, *THE ROLE OF DESIGN IN INTERNATIONAL COMPETITIVENESS* 346 (1989) (stating that "the review of the literature and our empirical findings reveal that most of the important factors stimulating international competitiveness are design-driven"); see also F. PERRET, *supra* note 30, at 13-17.

<sup>168</sup> See generally SAXBY, *supra* note 12, at 147-258.

<sup>169</sup> See, e.g., *Legal Hybrids*, *supra* note 11, at 2490; see also Reichman, *Evolution of Design Protection*, *supra* note 73, at 397-400.

<sup>170</sup> See, e.g., *Proposal of the Max Planck Institute for a European Utility Model Law*, 25 I.I.C. 700 (1994); Kern, *supra* note 109.

<sup>171</sup> See *supra* notes 117 & 122 and accompanying text; TRIPS Agreement, *supra* note 4, art. 10(1); see further J.H. Reichman, *The Know-How Gap in TRIPS: Why Software Fared Badly, and What Are the Solutions*, 17 COMM/ENT — (forthcoming 1995).

<sup>172</sup> See *supra* notes 107-127 and accompanying text; *Legal Hybrids*, *supra* note 11, at 2442-44, 2511-17.

<sup>173</sup> See generally Reichman, *Competition, Intellectual Property, and Trade*, *supra* note 5, at 94-98. The TRIPS Agreement, *supra* note 4, requires careful evaluation in this light. As re-

The protectionist tide rising with respect to nontraditional objects of legal protection could thus offset competitive gains expected to flow from the harmonization of laws pertaining to more traditional objects of protection whose relative share of total investment in research and development seems likely to decline over time.

These transnational legislative trends have virtually eclipsed the cautious and skeptical view of intellectual property rights that prevailed in the nineteenth and early twentieth centuries. In that period, compelling economic and social justifications were required for any legal monopoly that derogated from the basic norm of free competition. Even the paradigmatic intellectual property regimes recognized in the Paris and Berne Conventions accordingly evolved with strict limitations and exceptions that balance the public interest in competition against specific incentives to create.<sup>174</sup> "In contrast, the hybrid legal regimes appear to have been crafted without comparable inhibitions."<sup>175</sup> They represent an improvised set of responses to sectoral protectionist demands that lack any coherent theoretical foundations and that rest upon altogether different economic premises.

The competitive mandate of nineteenth-century economic law is thus giving way to an assortment of hybrid legal regimes under which virtually every product of important new technologies will come freighted with some improvised grant of exclusive property rights. As the protectionist momentum building up in the sphere of nontraditional innovation continues unabated, moreover, the paradigmatic foundations of the international intellectual property system are further destabilized by the tendency of patent, copyright and trademark laws to mutate under the pressure of events. Both tendencies lack any unifying principle or standards to guide courts and administrators, and history shows that both are likely to breed recurring cyclical states of chronic under- and over-protection.<sup>176</sup>

guards new technologies, in particular, this Agreement either leaves major gaps in the overall fabric of international intellectual property protection or consecrates reliance on the sector-by-sector hybrid regimes. See generally Reichman, *Universal Minimum Standards*, *supra* note 5, pt. II. C.

<sup>174</sup> See *supra* text and accompanying notes 45-51.

<sup>175</sup> *Legal Hybrids*, *supra* note 11, at 2503. For remorse and renewed dedication to free-market principles, see Robert W. Kastenmeier & Michael J. Remington, *The Semiconductor Chip Protection Act of 1984: A Swamp or Firm Ground?*, 70 MINN. L. REV. 417, 438-42 (1985). However, Chairman Kastenmeier was not re-elected and these tenets have seldom influenced subsequent legislative deliberations.

<sup>176</sup> See *Legal Hybrids*, *supra* note 11, at 2503-04. Factors pulling for over- or underprotection already exist on both sides of the classical line of demarcation. On the copyright side of Figure 1, for example, a broad derivative work right sometimes overprotects by favoring overlapping claims to incremental innovation while restricting access to ideas, methods and processes by indirect means and for a very long duration. See, e.g., Reichman, *Electronic*

It may be doubted that nineteenth-century notions of unrestricted competition adequately meet the needs of a post-industrial economy in which the most valuable commercial products often consist of costly, intangible bundles of information that third parties can duplicate without defraying the costs of their own research and development.<sup>177</sup> This theme colors the unified approach proposed in this author's *Legal Hybrids* study,<sup>178</sup> although it is worth noting here that the United States Supreme Court apparently relied on the nineteenth-century view in major recent decisions touching the free-rider problem.<sup>179</sup> Yet, what the empirical survey of legal hybrids showed, if nothing else, was that application of the nineteenth-century competitive model, as adjusted by its classical patent and copyright systems, had become increasingly chimerical in practice. *That model has been overwhelmed by the rise and rapid expansion of a countervailing group of deviant models that apply different and seldom explored economic principles.*

The bigger picture that emerges from the empirical survey of legal hybrids does not, therefore, concern just the evolution of intellectual property rights. It concerns the changing nature of competition in the so-called information society, changes that all the attention bestowed on the classical patent and copyright systems in recent years may paradoxically have obscured. In effect, the hybrid legal regimes "turn the nineteenth-century outlook upside down by presupposing a universe of commercial intercourse in which legal protection becomes a necessary and constant component of eco-

*Information Tools*, supra note 11, at 456-61 ("The Derivative Work at Odds with Information Technologies"). Yet, underprotection can result from the inability of copyright-like models to protect the internal dynamic features of technological innovation, in which idea and expression merge, and also from the lack of any exclusive right to control end use. See Samuelson et al., *Manifesto*, supra note 11, at 2356-65. Similarly, on the industrial property side of Figure 1, "overprotection results from the progressive monopolization of ever smaller aggregates of inventive activity, which elevate social costs in return for no clearly equilibrated social benefits. Yet, the nonobviousness standard and its variants can also induce states of chronic underprotection by excluding the bulk of the incremental innovations that underlie today's most promising technologies." *Legal Hybrids*, supra note 11, at 2504 n.401.

The oscillations of industrial designs between recurring states of over- or underprotection during a two-hundred year period of regulatory activity were charted in this author's earlier studies. See *id.* at 2460-64 (citing authorities). In this and other respects, design protection laws appear to have been a precursor of the many legal hybrids that world intellectual property law would strive to accommodate in the last half of the twentieth century.

<sup>177</sup> See, e.g., Gordon, *Restitutionary Impulse*, supra note 72, at 277-78; Rochelle C. Dreyfuss, *Information Products: A Challenge to Intellectual Property Theory*, 20 N.Y.U. J. INT'L. L. & POL. 897, 908-12 (1988); William Kingston, *The Thesis Chapters*, in DIRECT PROTECTION OF INNOVATION 21-33 (William Kingston, ed. 1987). See also Karjala, supra note 72, at 2596-2601.

<sup>178</sup> See *Legal Hybrids*, supra note 11, at 2504-58.

<sup>179</sup> See, e.g., *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141 (1989); Feist Publications, 111 S. Ct. at 1289-91.

nomie life."<sup>180</sup> If, as the old cliché declares, the classical patent and copyright systems were once islands of protection in a sea of competition, the legal hybrids—taken together—conjure up the vision of a sea of protection in which intrepid entrepreneurs encounter remote islands of free competition.

### 3. Need for a New Intellectual Property Paradigm

Governments seeking to maintain high levels of investment in technological innovation face an increasingly difficult task as the twentieth century draws to a close. They must preserve or restore the bases for healthy competition at a time when information is increasingly becoming the medium from which the most socially valuable artifacts are likely to be constructed.<sup>181</sup> This task will require the elaboration of a new intellectual property paradigm that looks "beyond art and inventions."<sup>182</sup> Such a paradigm must deal directly with the pervasive threat of market failure facing investors in unpatentable, noncopyrightable innovation under present-day conditions, without multiplying ill-conceived, socially harmful regimes of exclusive property rights.<sup>183</sup>

This topic is addressed at length in *Legal Hybrids Between the Patent and Copyright Paradigms*,<sup>184</sup> a monograph that recently appeared in a symposium issue of the *Columbia Law Review*.<sup>185</sup> A companion article in that symposium, co-authored by Pamela Samuelson, Randall Davis, Mitchell D. Kapor and this author, presents concrete proposals for a new intellectual property regime to protect unpatentable, noncopyrightable components of computer programs.<sup>186</sup> Such a regime, built on modified liability principles that break with the exclusive property rights tradition,<sup>187</sup> would implement the unified field approach this author believes should gradually replace all existing hybrid regimes in a restructured

<sup>180</sup> *Legal Hybrids*, supra note 11, at 2504.

<sup>181</sup> See Samuelson et al., *Manifesto*, supra note 11, at 2320-24 ("Program text is, . . . like steel and plastic, a medium in which other works can be created").

<sup>182</sup> See supra text accompanying notes 18-44; see generally *Legal Hybrids*, supra note 11, at 2504-06.

<sup>183</sup> See *id.*, at 2442-44; 2506-19. See also Reichman, *Programs as Know-How*, supra note 11, at 648-67 ("New Directions in Legal Protection of Industrial Know-How").

<sup>184</sup> See supra note 11.

<sup>185</sup> See generally Symposium: Toward a Third Intellectual Property Paradigm, 94 COLUM. L. REV. 2307-2677 (1994).

<sup>186</sup> See Samuelson et al., *Manifesto*, supra note 11, at 2413-29. Samuelson is professor of law at the University of Pittsburgh; Davis is a Professor of Computer Science and Associate Director of the Artificial Intelligence Laboratory, Massachusetts Institute of Technology; Kapor founded Lotus Development Corporation, designed Lotus 1-2-3, and is Chairman of the Board of the Electronic Frontier Foundation.

<sup>187</sup> See *id.* at 2413-29.

intellectual property system.<sup>188</sup>

Taken together, these studies demonstrate that the failure of the patent and copyright models to deal adequately with the most important new technologies, including computer programs, biogenetic engineering, and industrial designs, does not stem from inherent conceptual defects in those models. Rather, the real problems arise from a breakdown of classical trade secret law under modern conditions. In effect, the nineteenth-century view of competition takes it for granted that some measure of natural lead time will result from the duty of second comers to reverse-engineer unpatented, noncopyrightable innovation by proper means.<sup>189</sup> In other words, competition with respect to the products of incremental innovation—as distinct from patentable inventions and copyrightable literary or artistic works—presupposes that trade secret laws (or equivalent laws of confidential information) typically supply enough lead time to overcome the problem of appropriability inherent in public goods.<sup>190</sup>

On analysis, trade secret law can most usefully be conceived as a set of default liability rules regulating relations between members of any given technical community. These rules provide innovators with natural lead time and they require second comers to contribute, directly or indirectly, to the technical community's overall costs of research and development.<sup>191</sup> Although trade secret laws always suffered from the risk of irrational and capricious results at the margins, where secrecy either did not exist at all or proved impervious to reverse-engineering, the total competitive picture entails an "historical dependence of intellectual property systems on a substratum of liability rules."<sup>192</sup>

These ancillary liability rules break down under modern conditions, however, because information becomes a primary medium of construction for the most innovative products and also because

<sup>188</sup> See *Legal Hybrids*, *supra* note 11, at 2519-57.

<sup>189</sup> See *id.* at 2438-42, 2520-25. "On the margins of the pure market economy . . . , trade secret laws (and related laws protecting confidential information) . . . provide a loosely constructed set of liability rules that . . . mediate between the potential for overprotection inherent in statutory grants of exclusive property rights and the potential for underprotection inherent in the competitor's unfettered ability to appropriate the fruits of investment in unpatented incremental innovation. The temporary or "disappearing" quantum of natural lead time they provide solves the free-rider problem . . . without resort to arbitrarily imposed barriers to entry characteristic of all regimes built around exclusive property rights." *Id.* at 2439-40 (citing authorities).

<sup>190</sup> *Id.*, at 2506-11; *supra* notes 1, 65-69 and accompanying text. For empirical evidence, see, e.g., Levin et al., *supra* note 67, at 784. See also Friedman, Landes & Posner, *supra* note 68, at 67-69; Stedman, *supra* note 66, at 8-9.

<sup>191</sup> See *Legal Hybrids*, *supra* note 11, at 2434-36, 2521-25.

<sup>192</sup> See *id.* at 2434-36 (citing authorities).

the design components of new technologies—which transcend the old product-process distinction of patent law—are routinely embodied in the end products that are distributed in the open market. As a result, "incremental innovation bearing know-how on its face" tends to obtain zero lead time from classical trade secret law in most design-rich or design-dependent applications of advanced technical know-how to industry.<sup>193</sup> The resulting threat of market failure leads to the proliferation of hybrid legal regimes, usually built on modified patent and copyright principles, that have cropped up here and abroad. Collectively evaluated, their cumulative restraints on competition appear worse, in the sense of overprotection, than the chronic state of underprotection they seek to redress.<sup>194</sup>

The solution to the real problems facing twenty-first century innovation is not mindlessly to multiply exclusive property rights for each new technology that heaves into sight. Rather, the task is to develop a substitute liability regime that rationalizes the economic functions of classical trade secret law under the very different conditions of an Information Age: it requires, so to speak, the formulation of a "portable trade secret" regime whose economic benefits do not depend on the often socially irrelevant condition of actual secrecy.<sup>195</sup> To this end, the "default liability regime for applied know-how" outlined in the *Legal Hybrids* article<sup>196</sup> is devised specifically for unpatentable, noncopyrightable innovations that fall into the penumbra between the international patent and copyright systems. It provides innovators with short periods of artificial lead time in which to recoup their investment, and it also endows competitors with a menu of standardized, automatic licenses that encourage them to make incremental improvements while contributing to the originator's costs of research and development.<sup>197</sup> This minimalist, pro-competitive approach overcomes market failure and the attendant free-rider problem without multiplying exclusive property rights or creating other barriers to entry.

These and other studies thus confirm that today's most commercially valuable applications of scientific and technical know-

<sup>193</sup> See Samuelson et al., *Manifesto*, *supra* note 11, at 2320-24; *Legal Hybrids*, *supra* note 11, at 2442-44, 2506-19. See also Dreyfuss, *supra* note 177, at 898-905; Wendy J. Gordon, *Assertive Modesty: An Economics of Intangibles*, 94 COLUM. L. REV. 2579, 2585-90 (1995); Richard R. Nelson, *Intellectual Property Protection for Cumulative Systems Technology*, 94 COLUM. L. REV. 2674, 2676-77 (1994).

<sup>194</sup> See *Legal Hybrids*, *supra* note 11, at 2511-19.

<sup>195</sup> See *id.* at 2519-21.

<sup>196</sup> See *id.* at 2504-06, 2529-57.

<sup>197</sup> See *id.* at 2529-57; see also Samuelson et al., *Manifesto*, *supra* note 11, at 2426-29.

how to industry often fall through the cracks of the classical bipolar structure enshrined in existing international conventions, including the TRIPS Agreement.<sup>198</sup> Policymakers charged with the task of restructuring the world's intellectual property system have yet to grasp the true nature of the problems that limit the flow of investment to incremental innovation under present-day conditions. As a result, the bases for healthy competition in an integrated world market risk being constantly undermined by a chronic shortage of natural lead time and by a welter of anticompetitive trade restraints that Ptolemaic tinkering with an obsolete historical construct tends to engender. Sooner or later, unless legislators combat these twin evils in the interests of a more rational and constructive approach that seeks to place both innovators and borrowers in a win-win position over time,<sup>199</sup> an increasingly discredited intellectual property system risks collapsing of its own protectionist weight.

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<sup>198</sup> See *supra* text accompanying notes 6-10, 18-44.

<sup>199</sup> See *Legal Hybrids, supra* note 11, at 2535 ("Default liability rules that improve on existing trade secret laws should . . . promote the interest of the relevant technological community as a whole and the larger public interest with which they must be reconciled . . . Determining the interest of the technical community initially requires a recognition that most of its members do not pertain immutably to either the category of innovators or that of borrowers; they shift back and forth between these categories at different phases in the evolution of particular types of innovation").