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ARTICLE

HOW COPYLEFT USES LICENSE RIGHTS TO SUCCEED IN THE OPEN SOURCE SOFTWARE REVOLUTION AND THE IMPLICATIONS FOR ARTICLE 2B

Robert W. Gomulkiewicz[*]

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To stay free, software must be copyrighted and licensed.[1]

I. INTRODUCTION

The computer industry moves from one "next great thing" to the next "next great thing" with amazing speed. Graphical user interface, object-oriented programming, client-server computing, multimedia software, Java applets, the network computer, and the Internet have all been hailed as technological breakthroughs at one time or another. Some of these promising developments fizzle, some evolve and succeed slowly, and some revolutionize the industry overnight.[2] Led by a group of software developers known as "hackers,"[3] the latest "next great thing" is "open source" software.

The word "source" refers to software in source code form.[4] Source code is the collection of instructions a computer programmer writes to tell a computer what to do.[5] A programmer writes source code in a certain programming language, such as

[1] Debian GNU/Linux, *What Does Free Mean? or What Do You Mean by Open Software?* (visited Mar. 7, 1999) <http://www.debian.org/intro/free>. The Debian Organization is a group of over 300 software developers who have banded together to create a free, open-source operating system in their spare time. *See* Debian GNU/Linux, *About Debian* (visited Jan. 5, 1999) <http://www.debian.org/intro/about>. The name Debian comes from the names of the original creator of the Debian software, Ian Murdoch, and his wife, Deb. *See id.*

[2] *See generally* BILL GATES, THE ROAD AHEAD (1996) (chronicling the computer revolution).

[3] Developers who have a passion for exploring the details of programming call themselves "hackers." *See* ERIC S. RAYMOND, THE NEW HACKER'S DICTIONARY 233 (3d ed. 1997). Hackers distinguish themselves from "crackers"—those who use programming prowess for mischief or malicious purposes. *See id.* at 234; Richard Stallman, *The GNU Operating System and the Free Software Movement*, *in* OPENSOURCES 53, 53 (Chris DiBona et al. eds., 1999). *See generally* STEVEN LEVY, HACKERS (1984).

[4] Source code is "[h]uman-readable program statements written in a high-level or assembly language," as opposed to object code, which is computer readable. COMPUTER DICTIONARY 337, 443 (Microsoft Press 1991).

[5] *See* Apple Computer v. Franklin Computer, 714 F.2d 1240, 1243 (3d Cir. 1983); Josh McHugh, *For the Love of Hacking*, FORBES, Aug. 10, 1998, at 94, 96.

Basic, Pascal, C++, or Java.[6] The source code is understandable to anyone proficient in that language. Using a software tool, source code is converted into a form called binary or executable code that a computer can execute.[7]

The word "open" in the context of open source software refers to source code that is freely available and modifiable.[8] Most software publishers distribute their software to the mass market in binary form only.[9] They treat source code as a trade secret and license it selectively on a confidential basis.[10]

The open source software movement claims at least two major advantages over traditional commercially developed software. First, hackers claim that by making source code widely available and freely modifiable, programmers can develop higher quality software and fix bugs faster than commercial software developers.[11] Second, they believe that products based on open source software will be relatively inexpensive compared to traditional commercial software.[12] Hackers think they have

[6] *See Apple Computer*, 714 F.2d at 1243; Jeffery M. Gott, Note, Lotus Development Corporation v. Borland International: *The United States Court of Appeals for the First Circuit Takes a Step Backward for the Copyright Protection of Computer Programs*, 30 CREIGHTON. L. REV. 1349, 1355 & n.54 (1997) (explaining the process of programming a computer, from identifying the problem, to creating a flowchart, to drafting the source code in a programming language such as Basic or Pascal, which is then transformed into "object code," which the computer can understand).

[7] *See* GATES, *supra* note 2, at 24-29; KENNETH C. LANDON ET AL., INFORMATION TECHNOLOGY AND SOCIETY § 7.5 (1996) (explaining that the computer "understands" ideas when expressed in machine language—binary digits—and that programming language using symbolic, English like statements must be translated into binary in order to be executed).

[8] *See* Debian GNU/Linux, *What Does Free Mean? or What Do You Mean by Open Software?*, *supra* note 1.

[9] *See* McHugh, *supra* note 5, at 96 (explaining that usually "you just get the 1s and 0s," referring to binary code).

[10] *See* Robert W. Gomulkiewicz & Mary L. Williamson, *A Brief Defense of Mass Market Software License Agreements*, 22 RUTGERS COMPUTER & TECH. L.J. 335, 359-60 (1996) (noting that source code licenses "pertain to sensitive information that may represent a company's must valuable business asset"); Maureen A. O'Rourke, *Drawing the Boundary Between Copyright and Contract: Copyright Preemption of Software License Terms*, 45 DUKE L.J. 479, 493-94 & n.56 (1995) (stating that most license contracts are confidential).

[11] *See* Eric S. Raymond, *The Cathedral and the Bazaar* (visited Jan. 6, 1999) <http://www.linux.it/GNU/cathedral-bazaar/cathedral-bazaar.htm> (positing that a "bazaar" of hackers can create software superior to that of software created by closed off "cathedrals," such as large software corporations).

[12] *See* Bruce Perens, *The Open Source Definition*, *in* OPENSOURCES, *supra* note 3, at 171, 172; *Software Professionals Petition Federal Government to Consider Open Source Software* (visited Jan. 6, 1999) <http://linuxtoday.com/stories/2080.html> (discussing how the government's use of open source software could decrease costs associated with their computer use).

started a revolution that will overtake the leading commercial software publishers of today.[13]

The fact that another revolution has begun in the computer industry is not a surprise. The surprise is that licensing, known as "copyleft,"[14] is at the heart of the revolution.[15] This Article examines the origins and continuing momentum of the open source revolution. It then discusses the principles of open source licensing and why licensing is central to the open source revolution. The Article concludes by discussing the implications that copyleft licensing principles have for proposed Article 2B of the Uniform Commercial Code ("UCC"), a provision that would govern software licenses. The Article points out that in order to foster innovative developments such as the open source revolution, Article 2B needs to, among other things, validate the enforceability of standard-form mass-market licenses, preserve the ability of software developers to freely allocate risk, and provide sensible contract default rules.[16]

II. HISTORY AND EMERGENCE OF THE OPEN SOURCE MOVEMENT

The open source software movement has roots in the hobbyist and scientific communities. In these communities, software developers routinely distribute source code so they can collaborate on projects or simply exchange information about programming.[17] As such, the developers freely view and modify

[13] *See History of the Open Source Effort* (visited Dec. 23, 1998) <http://www.opensource.org/history.html>; Mark Leibovich, *Meet the Spreading Grass-Roots Threat to Microsoft*, WASH. POST, Dec. 3, 1998, at A1 (illustrating that in an open source environment, software giants such as Microsoft "would be forced to assimilate or succumb"); *see also* Esther Dyson, *Open Mind, Open Source*, RELEASE 1.0, Nov. 1998 <http://www.edventure.com/release1/1198.html> (tracing the evolution of the open source movement).

[14] "Copyleft" is a pun on copyright, meaning to reverse the exclusive nature of copyrights by giving away (*i.e.*, licensing) the copyright rights. *See* Stallman, *supra* note 3, at 59.

[15] Some scholars equate the free flow of information with the placement of information in the public domain. They argue that licensing stifles information flow. *See* Pamela Samuelson, *Legally Speaking: Does Information Really Want to be Licensed?* (visited Jan. 5, 1999) <http://www.sims.berkeley.edu/~pam/papers/acm_2B.html>. "If information ever wanted to be free, it must have changed its mind because under UCC2B, information seems intent on being licensed." *Id.* The open source movement squarely refutes that premise. Arguably, licensing results in greater information flow than would be the case if publishers were forced to give up their information for free.

[16] For an example of how current Article 2 principles are applied, see *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447 (7th Cir. 1996).

[17] *See* Leibovich, *supra* note 13, at A1 (noting that when the Internet was first created, hackers were "encouraged to build on the creations of their peers"); *see also* Perens, *supra* note 12, at 172.

the source code they receive.[18] The Internet gives developers the ability to distribute code quickly, broadly, and to collaborate with partners all over the world.

The principles of free modification and free distribution of source code were institutionalized in 1985 by Richard Stallman, who founded the Free Software Foundation to encourage software development based on these principles.[19] Developers who subscribed to the principles of free modification and distribution of source code came to be known as the "free software" community.[20] Use of the word "free" in this context connotes non-proprietary, not necessarily non-commercial. As Mr. Stallman puts it: "Think 'free speech,' not 'free beer.'"[21]

Although the free software community zealously believed in the superiority of its approach to software development, in the beginning, free software products barely made a ripple in the marketplace.[22] The most successful free software products were tools for software developers.[23] Hackers used software created by other hackers, but businesses and consumers used commercially developed software products.[24] The Internet changed that equation, however, even though most users were unaware that a revolution was beginning.

Many of the software programs integral to the infrastructure of the Internet and World Wide Web are free software programs.[25] The software program known as BIND allows Web site addresses to be written in plain English.[26] The Sendmail electronic mail router routes virtually every piece of email sent

[18] *See The Open Source Movement Takes Off* (visited Jan. 6, 1999) <http://www.cnet.com/Content/Reports/Features/Review98/ss04.html>.

[19] *See* Richard Stallman, *A Serious Bio* (visited Jan. 6, 1999) <http://www.fsf.org/people/rms.html>; *see also* Eric S. Raymond, *A Brief History of Hackerdom*, *in* OPENSOURCES, *supra* note 3, at 19, 24-25; Stallman, *supra* note 3, at 60.

[20] *See What is Free Software* (visited Jan. 6, 1999) <http://gnudist.gnu.org/philosophy/free-sw.html>.

[21] *See* Tim O'Reilly, *The Open-Source Revolution*, RELEASE 1.0, *supra* note 13 (quoting Richard Stallman); *see also* Stallman, *supra* note 3, at 56-57.

[22] *See* Keith W. Porterfield, *Information Wants to be Valuable: A Report from the First O'Reilly Perl Conference* (visited Feb. 2, 1999) <http://www.netaction.org/articles/freesoft.html>; Guido van Rossum, *Open Source Summit Trip Report* (visited Feb. 2, 1999) <http://www.ssc.com/lg/issue28/rossum.html> (stating that corporate America is slow to discover open source software and its advantages).

[23] *See* Porterfield, *supra* note 22.

[24] *See* van Rossum, *supra* note 22 (stating that, despite management preference for commercial software, software engineers sometimes prefer the open source versions over the commercial products).

[25] *See* O'Reilly, *supra* note 21.

[26] *See, e.g.*, McHugh, *supra* note 5, at 99.

over the Internet.[27] The Apache Web server is the most popular Web server software for hosting Web sites.[28] Furthermore, free software languages such as Perl, Tcl, and Python are used in the development of popular Web sites such as Yahoo! and Amazon.com.[29]

This quiet revolution became a public event in January 1998 when Netscape shocked most people by announcing that it would give away the source code to its Navigator Web browser software.[30] Netscape's move was inspired, at least in part, by a paper written by hacker Eric S. Raymond, entitled *The Cathedral and the Bazaar*,[31] which argues that software developed based upon an open source model is technically superior to software developed by teams employed by commercial software developers.[32] At about the same time, a free software product, the Linux operating system,[33] became known as the operating system product that would challenge popular products such as Windows, Windows NT, and various UNIX derivatives such as Solaris and SCO UNIX.[34]

The hacker community moved quickly to seize the opportunity to advance the free software movement.[35] In order to set aside the anti-commercial baggage associated with the "free software" label, the hackers coined the term "open source" software.[36] In addition, they adopted criteria for defining open

[27] *See id.* (explaining that Sendmail routes about 80% of Internet e-mail).

[28] *See* O'Reilly, *supra* note 21 (stating that "[t]he most recent Netcraft Web server survey . . . shows Apache with 53 percent of all visible web servers").

[29] *See id.*

[30] *See id.*; *see also* Alex Lash, *Netscape Gives Up Secret Recipe* (visited Dec. 19, 1998) <http://www.news.com/SpecialFeatures/0,5,18653,00.html>.

[31] *See* O'Reilly, *supra* note 21. *The Cathedral and the Bazaar* can be found at <http://www.linux.it/GNU/cathedral-bazaar/cathedral-bazaar.htm>.

[32] *See* Raymond, *supra* note 19.

[33] *See* McHugh, *supra* note 5, at 96-97 (discussing how Linux was started and how it has since evolved).

[34] *See, e.g.*, Randy Weston, *Linux Gaining Respect* (visited Dec. 20, 1998) <http://www.news.com/News/Item/0,4,24436,00.html>; *see also* Matthew Broersma, *Is New Group Trying to Take Over Linux?* (visited Dec. 20, 1998) <http://www.zdnet.com/zdnn/stories/zdnn_smgraph_display/0,3441,2129430,00.htm> (discussing the increased attention Linux is receiving as an alternative to Microsoft operating systems); John Markoff, *Little Known Project Developing Alternative Software to Windows*, N.Y. TIMES, Jan. 18, 1999, at C2. *See generally* Charles C. Mann, *Programs to the People*, TECH. REV., Jan.-Feb. 1999, at 36 (describing how the Linux-based GNOME open source project hopes to "'take the desktop back from Microsoft'" (quoting Eric Raymond)).

[35] *See History of the Open Source Effort*, *supra* note 13 (noting that Netscape's announcement gave the movement "a precious window of time"); Eric S. Raymond, *OSI Launch Announcement* (visited Dec. 20, 1998) <http://www.opensource.org/osi-launch.html> (stating that, in 10 months, the "Open Source" campaign has had remarkable success).

[36] *See History of the Open Source Effort*, *supra* note 13 (maintaining that the

source software.[37] Soon, the popular press was writing about the open source movement,[38] and commercial software publishers were taking actions in response. For example, IBM included the Apache Group's Web server in its WebSphere server suite.[39] Oracle announced that it would port its database to Linux.[40] Intel made an investment in Linux distributor Red Hat Software.[41] Corel said it would release a free version of its WordPerfect word processing product for the Linux platform.[42] Within months, the open source movement went from a footnote to an exclamation point; from obscurity to a force to be reckoned with.[43]

III. LICENSING: THE UNNOTICED FORCE BEHIND OPEN SOURCE

The terms "free software" and "open source software" might lead observers of the open source revolution to conclude that hackers make software free or open by placing their code into the public domain; however, hackers employ a different approach.[44] The proponents of open source software rely on owning the

term "free software" was associated with a "confrontational attitude"); *see also* Chris DiBona et al., *Introduction* to OPENSOURCES, *supra* note 3, at 1, 3; Perens, *supra* note 12, at 173. Not all hackers are happy with this change in terminology. *See* Stallman, *supra* note 3, at 69-70; *Bruce Perens Resigns from OSI* (visited Mar. 12, 1999) <http://slashdot.org/articles/99/02/18/0927202.shtml> (complaining that "Open Source Software has de-emphasized the freedoms involved in free software").

[37] *See The Open Source Definition* <http://opensource.org/osd.html> (visited Jan. 13, 1999) (laying out the terms with which an open source program must comply).

[38] *See, e.g.*, Lee Gomes, *Linux's Appeal Compels Big Firms to Respond*, WALL ST. J., Oct. 22, 1998, at B20.

[39] *See* McHugh, *supra* note 5, at 95 (describing the strange partnership that IBM formed with the Apache Group as a "loose" confederation of programmers scattered from Munich to Palo Alto).

[40] *See History of the Open Source Effort*, *supra* note 13 (setting out a timeline of events showing the development of the open source movement, and noting that on July 17, 1998, both Oracle and Informix announced that they would port their databases to Linux).

[41] *See* Lisa M. Bowman, *For Red Hat, It's a Red Letter Day* (visited Jan. 5, 1999) <wysiwyg://62/http://search.zdnet.com/pcweek/news/0928/30ahat.html>.

[42] *See* Bob Sullivan, *WordPerfect Will Be Free on Linux* (visited Jan. 10, 1999) <http://www.msnbc.com/news/224349.asp>.

[43] *See* Charles Babcock, *Open Code Frees Up the Net*, INTER@ACTIVE WEEK ONLINE, Oct. 22, 1998; Sam Williams, *The OS Guerrillas* (visited Jan. 5, 1999) <http://www.upside.com/texis/mvm/down_the_toilet?id=363667570> (describing one reporter's introduction to the Linux "revolution" and his realization of the enormity of the movement); *see also* Randy Weston, *Lining up for Linux* (visited Jan. 10, 1999) <http://www.news.com/News/Item/0,4,28614,00.html?pt.ms.feed.ne_home> (declaring that "Linux is out of the closet and in the boardroom"). *But see* Fred Moody, *Charge of the Linux Brigade* (visited Dec. 19, 1998) <http://abcnews.go.com/sections/tech/FredMoody/moody981120.html> (explaining that despite the growing popularity of Linux, there are a number of problems with it).

[44] *See* Perens, *supra* note 12, at 180-81.

copyright in the code and then licensing it according to a very particular mass-market licensing model.[45] Below, this Article describes why hackers use this model, known as copyleft, and the licensing principles embodied in copyleft licensing.

A. *Why Do Hackers Use Licenses?*

Hackers license software, rather than place it in the public domain, because they want to control what is done with their code.[46] Licensing allows hackers to perpetuate their particular software development and distribution model. Without licensing, the open source software development model would be nothing more than an honor system.

Most software publishers choose licensing as a transaction model for the same reasons.[47] The distinction between open source software and typical commercial software is not one based on the absence of a license in one case and the presence of a license in the other case, but instead is based on the presence or absence of certain license terms. The principal terms that characterize open source licensing are explained below.

B. *Principles of Open Source Licensing*

Open source licensing is based on several key principles. These principles are embodied in *The Open Source Definition*,[48] published by the Open Source Initiative, and in sample licenses

[45] *See, e.g.*, *OpenBSD Copyright Policy* (visited Jan. 10, 1999) <http://www.openbsd.org/policy.html>; *see also OpenBSD* (visited Feb. 4, 1999) <http://www.openbsd.org/>. *See generally Introduction to OpenBSD* (visited Feb. 4, 1999) <http://www.openbsd.org/faq/faq1.html#1.1> (describing the operating parameters of OpenBSD).

[46] *See The "Artistic License": Preamble* (visited Jan. 10, 1999) <http://language.perl.com/misc/Artistic.html> ("The intent of this document is to state the conditions under which a Package may be copied, such that the Copyright Holder maintains some semblance of artistic control over the development of the package, while giving the users of the package the right to use and distribute the Package in a more-or-less customary fashion, plus the right to make reasonable modifications."); *GNU General Public License: Preamble* (visited Jan. 10, 1999) <http://www.pft.hro.nl/mindseye/docs/copying-1.html> (explaining to a potential licensor that the intent of the General Public License is to protect the licensor's rights); *OpenBSD Copyright Policy*, *supra* note 45 (explaining that the OpenBSD copyright policy is based on a model that retains the rights of the copyright holder while imposing minimal conditions on the use of the material).

[47] An alternative transaction model might be a first sale under copyright. *See* 17 U.S.C. § 109(a) (1994); *see also* Gomulkiewicz & Williamson, *supra* note 10, at 352-56 (explaining why most software publishers use licensing rather than copyright first sales as the transaction model in the mass market).

[48] Those whose license agreements meet the Open Source Definition may be able to license the "Open Source" mark from the Open Source Initiative. *See* Perens, *supra* note 12, at 174.

published by the Free Software Foundation and others, such as the GNU General Public License, the GNU Library General Public License, the Artistic License, and the Berkeley Software Design-style license. If a license does not comply with these principles, the software cannot (at least according to the open source community) be labeled "open source."

1. Unencumbered Redistribution. The license may not restrict any party from either selling or giving away open source software.[49] According to Mr. Stallman: "Since 'free' refers to freedom, not to price, there is no contradiction between selling copies and free software."[50] This license condition protects the freedom to chose to redistribute either gratis or for a fee.

Why would anyone pay for free software? Fees may cover the cost of media or duplication. Fees are also earned by including additional software with the free software or by providing training or services. Moreover, fees might be attributable to the benefits associated with acquiring from a trusted distributor with a well-known brand name, such as Red Hat's version of Linux.

2. Source Code Form. The license agreement must license the software in source code form.[51] The source code provided under the license must be in the preferred form a programmer would need to modify the program.[52] To quote the Open Source Initiative: "We require access to un-obfuscated source code because you can't evolve programs without modifying them. Since our purpose is to make evolution easy, we require that modification be made easy."[53]

3. Derivative Works. The license agreement must grant the licensee the right to create modifications and derivative works.[54] The license must explicitly permit distribution of software built from modified or derivative source code.[55]

4. The Author's Attribution and Integrity. Open source licensing requires that the author of a particular piece of code be acknowledged.[56] This requirement is often satisfied by retaining the author's copyright notice on the code he or she creates as the code is passed on and modified further.[57] As described by open source pioneer Eric S. Raymond, this credit-giving is

[49] *See Rationale for the Open Source Definition* (visited Jan. 13, 1999) <http://www.opensource.org/osd-rationale.html>. "By constraining the license to require free redistribution, we eliminate the temptation to throw away many long-term gains in order to make a few short-term sales dollars. If we didn't do this, there would be lots of pressure for cooperators to defect." *Id.*

[50] Stallman, *supra* note 3, at 56.

fundamental to perpetuating open source software. Mr. Raymond postulates that hackers contribute many hours of volunteer labor to a development project because they highly value the reputation it gives them within the hacker community.[58] Without this incentive, the open source movement would not exist on any significant scale.

Hackers may also believe that those who contribute code to an open source development may not want to have their reputation soiled if their code is grafted to shoddy code. Therefore, a license may require that derivative works be labeled with a different version number, or that their source code be distributed unmodified along with a mechanism that combines this code with modifications and derivatives when the software is actually compiled into binary or executable form for use by the computer. In addition, certain open source licenses prohibit the use of the name of the author of a given piece of code to endorse or promote products derived from that code.[59]

5. No Warranties. The license agreement must provide the software "as is," with no warranties either as to product performance or non-infringement of third-party intellectual property rights.[60] The purpose of this term is straightforward: shift risk away from the code developer.[61]

6. Self-Perpetuating License Terms. The rights attached to the software must apply to everyone to whom the software is redistributed.[62] In other words, the licensee must agree to pass the open source license terms on to its licensees, and require

[51] *See The Open Source Definition*, *supra* note 37 (requiring the program to include source code and allowing distribution in source code as well as in compiled form).

[52] *See id*. (warning that "[d]eliberately obfuscated source code is not allowed").

[53] *Rationale for the Open Source Definition*, *supra* note 49.

[54] *See The Open Source Definition*, *supra* note 37 (requiring derivative works to be allowed "to be distributed under the same terms as the license of the original software").

[55] *See id*.

[56] *See Rationale for the Open Source Definition*, *supra* note 49 (stating that "users have a right to know who is responsible for the software they are using").

[57] Further, the license may require that the source code be redistributed as a pristine base source with distinguishable patches. In this manner, the original is distinguishable from modifications. *See id*.

[58] *See* Eric S. Raymond, *Homesteading the Noosphere*, (visited Dec. 19, 1998) <http://www.tuxedo.org/~esr/writings/homesteading/homesteading-6.html>; *see also* DiBona et al., *supra* note 36, at 13.

[59] *See, e.g., The BSD License* (visited Jan. 10, 1999) <http://www.opensource.org/bsd-license.html>; *Apache JServ Public License* (visited Jan. 10, 1999) <http://www.apache.org/java/jserv/license.html>.

those licensees to pass the terms on to all subsequent licensees. For example, the right to create derivatives must follow the software throughout the chain of distribution. Warranty disclaimers must also be passed on.

7. Non-Discriminatory. The license must not discriminate against any indiviual or group.[63] In addition, the license must not restrict the use of the software in a particular field or e ndeavor.[64] For example, the license may not restrict use of the software for business purposes or use in a controversial field of research, such as genetic engineering.[65]

8. Non-Contamination. The license must not place restrictions on other software distributed along with it.[66] "For example, the license must not insist that all other programs distributed on the same medium be open source software."[67]

IV. IMPLICATIONS OF OPEN SOURCE LICENSING PRINCIPLES FOR ARTICLE 2B

A. "Take-it-or-leave-it" Is Fundamental

Use of mass-market licenses is crucial to software publishers.[68] Article 2B would validate most industry standard mass-market licensing practices. As a result, however, Article 2B has provoked criticism. Some critics of Article 2B do not want to give credence to mass-market licenses because they are non-negotiated, standard-form, take-it-or-leave-it licenses.[69] These

[60] *See, e.g.*, *Apache JServ Public License*, *supra* note 59 (specifying the "as is" terms of the licensing agreement and disclaiming all warranties).

[61] *See, e.g.*, *id*. (disclaiming all forms of liability of the project or its contributors).

[62] *See id*.

[63] *See The Open Source Definition*, *supra* note 37.

[64] *See id*.

[65] *See id*.

[66] *See id*.

[67] *Id*. This condition fixes a bug in the GNU General Public License, which was often called the "General Public Virus" because code might inadvertently become free code by distributing it along with code originally licensed under the General Public License.

[68] *See* Robert W. Gomulkiewicz, *The License the Product: Comments on the Promise if Article 2B for Software and Information Licensing*, 13 BERKELEY TECH. L.J. 891, 896-97 (1998).

[69] *See, e.g.*, Zachary M. Harrison, Note, *Just Click Here: Article 2B's Failure to Guarantee Adequate Manifestation of Assent in Click-Wrap Contracts*, 8 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 907, 915 (1998) (describing the use of click-wrap licensing transactions as lacking any bargaining between the vendor and user

critics want to return to a contracting model in which the parties meet, dicker, write terms down, and then sign a record of their transaction.[70] Other critics seek to regulate the terms that may be used in mass-market licenses.[71] Still other critics go so far as to say that mass-market licenses are not contracts at all.[72]

The open source movement could not operate without non-negotiated, standard-form, take-it-or-leave-it mass-market licenses.[73] The open source license transaction takes place between two anonymous parties over the Internet based on the licensor's standard form.[74] The licensee typically manifests assent by clicking an "I agree" button or by using, modifying, or distributing the software.[75] The license terms are non-negotiable, take-it-or-leave-it[76] because the open source licensing model depends upon certain license terms being in the license agreement.[77] Without those terms, the software being licensed cannot be considered open source software. Moreover, the open source licensing model demands that the licensee sub-license those exact terms to other licensees of the software.[78]

regarding the license terms, and binding the party even though the party never signs the license); *see also* CEM KANER & DAVID PELS, BAD SOFTWARE 314-16 (1998).

[70] *See, e.g.*, Memorandum from Jean Braucher & Peter Linzer to Members of the American Law Institute (May 5, 1998) <http://www.ali/Braucher.htm>. *But see* ProCD, Inc. v. Zeidenberg, 86 F.3d 1447, 1451 (7th Cir. 1996); RESTATEMENT (SECOND) OF CONTRACTS § 211 cmt. a (1991).

[71] *See* Cem Kaner & Todd Paglia, *Consumer Issues and Article 2B* (visited Mar. 12, 1999) <http://www.badsoftware.com/alidec97.htm>.

[72] *See, e.g.*, Mark A. Lemley, *Intellectual Property and Shrinkwrap Licenses*, 68 S. CAL. L. REV. 1239, 1249-52 (1995); *see also* David A. Rice, *Public Goods, Private Contract and Public Policy: Federal Preemption of Software License Prohibitions Against Reverse Engineering*, 53 U. PITT. L. REV. 543, 562 (1992) (distinguishing between licenses and contracts).

[73] *See* Perens, supra note 12, at 179 (expressing hope that standard-form, no-signature licenses will be upheld by the courts).

[74] *See, e.g.*, *GNU General Public License, Terms and Conditions for Copying, Distribution and Modification*, § 5 (visited Jan. 10, 1999) <http://www.opensource.org/gpl-license.html> (providing an example of a standard form).

[75] *See* Perens, *supra* note 12, at 179 ("The license must be automatic, no signature required."). The implication for Article 2B is that it must allow parties to manifest assent in a variety of ways. *See* U.C.C. § 2B-111 (Proposed Draft Feb. 1999).

[76] *See* Perens, *supra* note 12, at 177 ("To be Open Source, all of the terms below must be applied together, and in all cases.").

[77] In an attempt to enforce this condition, the Free Software Foundation only licenses verbatim copying and distribution of the GPL text. *See id.* at 182.

[78] *See, e.g.*, *GNU General Public License: Preamble*, *supra* note 46 (establishing that any distribution requires: giving recipients all rights held by the giver; providing access to the source code; and sharing terms of the licensing agreement).

B. Risk Shifting Is Fundamental

Article 2B follows the tradition of the common law of contracts, and Article 2 of the UCC by allowing contracting parties, in most instances, to freely allocate risk between them.[79] In software licenses, the parties often allocate the risk of product defects by giving and disclaiming warranties and by limiting the ability to recover incidental or consequential damages. Some observers in the Article 2B process, primarily those who purport to represent consumer interests, do not want to allow licensors to shift the risk of product failure or intellectual property infringement to licensees.[80] They oppose safe harbors for those who wish to disclaim warranties and even advocate for non-disclaimable warranties.[81] They also argue that licensors should not be able to easily limit their liability for damages under mass-market licenses.[82]

The open source software model requires that the software developer make no promises about product quality or non-infringement of intellectual property.[83] This, of course, shifts the risk to the licensee.

Valid reasons underlie this risk-shifting strategy. Open source developers donate their time to develop the product; glory among fellow hackers is the only reward they receive for their work.[84] Consequently, individual hackers are unwilling to assume the risk of a multi-million dollar class action law suit as the

[79] *See, e.g.*, U.C.C. §§ 2B-406, -703 (describing the disclaimer and modification of warranties and the contractual modifications of remedies).

[80] *See* KANER & PELS, *supra* note 69, at 316-18; Margie Wylie, *Shrink-Wrapping the Social Contract* (visited Feb. 3, 1999) <http://www.news.com/Perspectives/mw/mw4_23_97a.html> (presenting concerns about consumer risks in Article 2B).

[81] *See Hillebrand Comment—UCC Article 2B*, (visited Feb. 7, 1999) <http://www.all.org/ali/hillga.html> (providing the text of a letter from Gail Hillebrand of Consumer's Union, to the ALI, articulating consumers' concerns regarding Article 2B and proposing solutions); Memorandum From Todd J. Paglia to A.L.I. (Mar. 10, 1998) <http://www.cptech.org/ucc/ali3-10.html>. *But see* Donald Cohen & Mary Jo Dively, *Treatment of Consumers Under Proposed U.C.C. Article 2B Licenses*, 16 J. MARSHALL J. COMPUTER & INFO. L. 315, 327-31, 334 (1997) (concluding that Article 2B affords more consumer protections than any existing commercial statute).

[82] *See* KANER & PELS, *supra* note 69, at 318, 327.

[83] *See* Perens, *supra* note 12, at 181 (noting that open source licenses "have a common feature: they each disclaim all warranties"). Refer to Part III.B.5 *supra* (discussing the principles of limited warranties as embodied in sample licenses published by the free software foundation and others).

[84] *See, e.g.*, The Apache Group, *License Agreement* (visited Feb. 3, 1999) <http://www.apache.org/docs/LICENSE> ("This software consists of voluntary contributions made by many individuals . . . ."); *see also* McHugh, *supra* note 5, at 99.

consequence of pursuing their passion for hacking code.[85] "Low risk" also means low barriers to entry; anyone can contribute code to the process, not just those who can afford insurance or lawyers to arrange liability-limiting legal structures.[86] Low barriers to entry will also keep the price of open source software low. Bruce Perens, author of the *Open Source Definition*, puts it this way: "If free software authors lose the right to disclaim all warranties and find themselves getting sued over the performance of the programs that they've written, they'll stop contributing free software to the world. It's to our advantage as users to help the author protect this right."[87]

The open source movement's claim of high quality software and its unwillingness to give warranties seems to present a contradiction. The answer to the seeming contradiction lies in the distinction most software developers make between promising quality software and being willing to risk litigation over the promise. To illustrate the issue, consider the impact on a software developer of giving a merchantability warranty and a non-infringement warranty of all intellectual property. Software, even high quality software, has bugs. The software developer may find himself or herself in court straining to prove that the software "passed without objection" even though many users are on record objecting to the bug. As to intellectual property infringement, a patent unknown to the developer may read on the developer's software, or a contributor to an open source development project may have contributed code that infringes a third-party copyright.[88] Merely defending lawsuits of this nature, even if the claim is eventually rejected, would not be financially viable for many software developers.

The need for open source licensors to deflect risk may lead them to add additional contractual terms to standard copyleft licenses. For example, choice of law and choice of venue clauses may become more important as certain jurisdictions make it more difficult to disclaim warranties, limit liability, or enforce standard-form agreements.

[85] *See* Perens, *supra* note 12, at 181; Ira V. Heffan, Note, *Copyleft: Licensing Collaborative Works in the Digital Age*, 49 STAN. L. REV. 1487, 1509 (1997) (stating that legal liability could detract from programmers donating their programming time).

[86] Low risk can mean high innovation. *See* Virginia I. Postrel, *Hooray for Risk*, FORBES, Dec. 4, 1995, at 106.

[87] Perens, *supra* note 12, at 181.

[88] *See* ANTHONY LAWRENCE CLAPES, SOFTWARS 242 (1993) (explaining that free software tends to be "of uncertain provenance" when it comes to copyright infringement); Stallman, *supra* note 3, at 67-68 (commenting that the worst threat free software faces is software patents).

The unwillingness of open source software developers to give warranties or, even in the absence of written warranties, their inability to inspire confidence that someone will be around at the end of the day to be accountable if something goes wrong, is a shortcoming of the open source value proposition.[89] Customers will have to weigh this shortcoming against the strengths open source licensing offers. Commercial software publishers may attempt to capitalize on this advantage. In response, open source developers may invent creative ways to keep risks low while at the same time convincing customers that they will stand behind their products when the need arises.[90]

C. Other Lessons of Open Source Licensing

Almost all licensors are also licensees.[91] Licensors are often the smaller, less sophisticated of the two parties in a licensing transaction.[92] Licensors employ and consent to license agreements without consulting legal counsel. The open source software phenomenon illustrates these themes in a powerful way.

The implication for Article 2B is that Article 2B's "gap filler" rules, which fill in contract rules in the absence of agreement by the contracting parties, must reflect industry practice. Open source licensors and licensees agree to a core set of license terms, and the rest of the contract, under Article 2B, would be filled in by default rules.[93] These default rules should not shock or amaze

[89] *See* CLAPES, *supra* note 88, at 242-43; *IBM Paints Linux Blue* (visited Jan. 10, 1999) <www.zdnet.com/pcweek/stories/news/0,4153,380769,00.html>; *see also* Ben Elgin, *Netscape to Cut Mozilla's Cord?* (visited Dec. 16, 1998) <http://www.zdnet.co.za/zdnn> (noting the concern over the accountability for liability in a potential merger between Netscape and an open source browser company, Mozilla.org).

[90] Some licenses for open source software have already dealt with this issue. *See, e.g.*, *GNU General Public License, Terms and Conditions for Copying, Distribution and Modification*, *supra* note 74, § 1 ("You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee."). Other open source developers have relied on the users themselves to provide support to each other. *See* Ed Foster, *Best Technical Support Award* (visited Jan. 10, 1999) <http://www.infoworld.com/cglbin/displayPC.pl?79/poy.supp.htm> (touting the Linux user community as the best support staff of 1997).

[91] *See* Micalyn S. Harris, *Feedback: Is Article 2B Really Anti-Competitive?*, CYBERSPACE LAW., Oct. 1998, at 16, 16; Carol A. Kunze, *Hot Button Issue: Mass Market Licenses* (last updated Sept. 28, 1998) <http://www.2BGuide.com/hbimmvc.html> (noting that small software businesses are usually on both sides of a given transaction).

[92] *See* Harris, *supra* note 91, at 16-17; *see also* Letter from Kaye Caldwell, Software Forum, Silicon Valley Software Industry Coalition, to Article 2B Drafting Committee (Jan. 10, 1997) <http://www.2bguide.com/ docs/sfsvsic.html>.

[93] At least some hackers are aware that the written terms of the license agreement do not include all the terms and conditions that apply to the license transaction. *See* Perens, *supra* note 12, at 178.

a hacker.[94] If they do, Article 2B has impeded, rather than contributed to, this revolution in the software industry.

V. CONCLUSION

Mass-market licensing is fundamental to conventional and unconventional[95] software developers alike. In the software industry, the unconventional often gives the conventional a run for its money. The open source software revolution uses licensing to perpetuate what it considers a superior software development model and to provide low cost software to the mass market. Whether open source software will become a "next great thing" that endures, only time will tell.[96] Licensing will be at the center of its success or failure. Article 2B should provide a contract law regime that allows revolutionaries like the open source hackers to succeed.

[94] For a discussion of the misfit between software industry practice and certain Article 2B contract default rules, see Gomulkiewicz, *supra* note 68, at 904-08.

[95] *See* Perens, *supra* note 12, at 173 (describing hackers as "unconventional programmers").

[96] *See* Robert Lemos, *Microsoft, Legal Expert Question Linux's Free Model* (visited Dec. 20, 1998) <http://www.zdnet.com/zdnn/stories/news/0,4386,2143312,00.html> (reasoning that, ultimately, the marketplace will decide the fate of the open source revolution); *see also* Steven Shankland, *"Open Source" Infighting Grows*, CNETNEWS.COM (Feb. 19, 1999) <http://www.news.com/News/Item/0,4,32644,00.html?pt.ms.feed.ne.home> (describing infighting between Eric S. Raymond and Bruce Perens, two prominent figures in the open source movement).