The Idea/Expression Dichotomy in Cyberspace: A Comparative Study of Web Page Copyrights in the United States and in China

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The Idea/Expression Dichotomy in Cyberspace: A Comparative Study of Web Page Copyrights in the United States and in China

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Digital technology poses an enormous impact on the creation and dissemination of works of authorship. First of all, all kinds of information, including text, sound, graphics, and motion pictures, etc., are capable of being stored in a unitary digital format (i.e. translated into a sequence of binary digits), and with several clicks on the mouse being replicated and disseminated to every corner of the world, suffering nearly no quality degeneration. In addition to improving physical media in which works of authorship subsist, digital technology also gives rise to new modes of intellectual creation, of which the most typical are multimedia works. While Chinese courts hasten to extend copyright protection to new forms of digital works in cyberspace, one of the major challenges to them is how to preserve the delicate balance of traditional copyright law between providing incentives to intellectual creation and securing the public interest in free flow of information.

This article will examine to what extent the traditional notion of "the idea/expression dichotomy" may work to maintain a balanced copyright system in the digital environment, taking as an example copyright controversies with respect to the most common type of multimedia, i.e. web pages. This article suggests that courts fully take into account network effects of the computer and internet industries in drawing the line between unprotected ideas and protectable expressions.

By comparing related copyright regimes in the United States and in China, the second and third sections of this article will introduce the notion of the idea/expression dichotomy and its chaotic applications to copyright cases regarding computer and internet technologies. In the next Section, this article will explore the unique market phenomenon, namely network effects, in computer and internet industries and propose how China should draw the line between ideas and expressions in the context of computer and internet industries featured with network effects. The final section will summarise the main conclusions of this article and try to invoke some further policy considerations which, though beyond the scope of this article, nevertheless entail even more serious attention from the Chinese copyright profession.

The Idea/Expression Dichotomy in the United States

Under the American doctrine of the idea/expression dichotomy, copyright law does not protect abstract ideas contained in copyrighted works, but only covers the original expressions of authors. However, this doctrine was not always applied with consistency, especially in copyright cases associated with new technologies. There are actually two contradictory approaches of applying the idea/expression dichotomy to such new subject-matters as computer interfaces and web page designs: while one approach protects the overall organisation and sequencing of a copyrighted work without distinguishing protectable expressions from unprotectable ideas, the other one defines the elements dictated by industrial standards as unprotectable ideas and leaves them in the public domain.

The notion of the idea/expression dichotomy

American copyright literature usually traces the origin of the idea/expression dichotomy back to the seminal case of Baker v. Selden, although several cases actually pre-dated Baker in this respect. In Baker, the plaintiff owned copyright in a series of books that explained a bookkeeping system annexed with certain forms consisting of ruled lines and headings, illustrating this system. The defendant was accused of copyright infringement, because it made and used account books arranged on substantially the same system, employing forms with slightly different columns and headings. In ruling in favour of the defendant, the Supreme Court held that "there is a clear distinction between the book, as such, and the art which it is intended to illustrate. . . . The description of the art in a book, though

3 See 17 U.S.C. 102(b).
6 See Baker v. Selden, n.6 above, at 100.
7 Ibid.
entitled to the benefit of copyright, lays no foundation for an exclusive claim to the art itself." 8 This holding of the idea/expression dichotomy was apparently codified in the US Copyright Act of 1976,9 which provides: "In no case does copyright protection for an original work of authorship extend 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 such work."10

Closely related to the idea/expression dichotomy is the "merger" doctrine. This doctrine was said to also originate from a portion of Baker's holdings that "where the art it teaches cannot be used without employing the methods and diagrams used to illustrate the book, or such as are similar to them, such methods and diagrams are to be considered as necessary incidents to the art, and given therewith to the public".11 Based on this holding, subsequent courts withheld copyright even from original expressions where the underlying idea could effectively be expressed only in one way or a very limited number of ways.12 The policy concern of this doctrine is that, "when the 'idea' and its 'expression' are thus inseparable . . . protecting the 'expression' in such circumstances would confer a monopoly of the 'idea' upon the copyright owner . . . " 13

Although the idea/expression dichotomy is such a time-honoured doctrine, it has long been subject to fierce criticisms for its failure to provide practical guidelines underneath its metaphysical surface.14 The intricacy lies in the fact that very few, if any, works contain exclusively either ideas or expressions.15 Indeed, almost any work can be abstracted into a spectrum of various levels of generality, at the one extreme of which is the principal goal or theme of the work and the other extreme is the literary expression.16 The illusion of a clear division between the two extremes was best acknowledged by Judge Hand, who after decades of copyright experience declared that "no principle can be stated as to when an imitator has gone beyond the 'idea' and has borrowed its 'expression.' Decisions must therefore inevitably be ad hoc".17 In this sense, the idea/expression dichotomy in most cases may intend courts not to preclude the copyrightability of certain works or certain portions of works,18 but to weigh whether the takings from the plaintiff's work have crossed the boundary and constituted actionable appropriation of the plaintiff's expressions on a purely case-by-case basis.19

Application of the idea/expression dichotomy in cyberspace

Although applying the idea/expression dichotomy directly to web page copyright infringement appears to be a matter of first impression in the United States,20 the most vivid description that the authors ever read of the idea/expression dichotomy is to analogise a work of authorship to a "Swiss cheese": a piece of expression full of idea holes. See Leslie A. Kurts, "Speak to the Ghost: Idea and Expression in Copyright" (1993) 47 U. Miami L. Rev. 1221 at p.1233. See Nichols v Universal Pictures Corp 45 F. 2d 119, 121 (2nd Cir. 1930) ("Upon any work . . . a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. The last may be no more than the most general statement of what the play is about . . . ; but there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright could prevent the use of his 'ideas', to which, apart from their expression, his property never extended."). This holding of Judge Hand was later been refined as an "abstraction test" by subsequent courts. See Honorable Jon O. Newman, "New Lyrics for an Old Melody; The Idea/Expression Dichotomy in the Computer Age" (1999) 17 Cardozo Arts & Ent. L. J. 691 at p.694 (discussing that the phrase "abstraction test" was first used in the copyright context in 1970s). See Peter Pan Fabrics, Inc v Martin Weiner Corp, 274 F. 2d 487, 489 (2nd Cir. 1960).

Some possible narrow exceptions include the merger doctrine and the "useful article" doctrine. For more detailed discussions of the former, see nn.11–13 above and the accompanying text. The "useful article" doctrine basically means that the design of an article with intrinsic utilitarian function cannot be considered a copyrighted work until its aesthetic features can be separated from its utilitarian aspects. For the precise definition and implication of the "useful article", see 17 U.S.C. §101.

This application of the idea/expression dichotomy is best illustrated in a "bifurcated" test of copyright infringement. See Arinstein v Porter 154 F. 2d 464, 68 U.S.P.Q. 288 (2nd Cir. 1946) (holding that, in order to prevail in a copyright case, the plaintiff must prove, in addition to the copyright ownership, "(a) that defendant copied from plaintiff's copyrighted work and (b) that the copying (assuming it to be proved) went so far as to constitute improper appropriation.")

20 See Xuan-Thao N. Nguyen, "Should It Be A Free All? The Challenge of Extending Trademark Protection to the Look and Feel of Web Sites in the Evolving Internet" (2000) 49 Am. U. L. Rev. 1233 at p.1243 ("there currently exists no reported case law addressing the look and feel of a web site.").

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one may nevertheless obtain some foresight from well-developed user interface cases there. By its nature, user interface is probably the closest analogy to a web page given that both aim to help users to interact with the computer and explore the full utilities of the program or the website; both contain appealing graphics, text, animations and, sometimes, accompanying sounds; and therefore both serve the dual purposes of function and aesthetics. In the United States, there are two contradictory lines of user interface cases, i.e. "total concept and feel" and "analysing dissection".

The "total concept and feel" approach was first introduced by a case dealing with pictorial works, in which the court held the defendant liable for substantially imitating the "total concept and feel" of the plaintiff's greeting cards, such as the mood portrayed, the combination of artwork and the arrangement of words. This seemingly convenient approach was soon transplanted into the computer arena by the well-known Whelan case.

21 This article uses the term "user interface" in its broad sense, which consists of both graphical user interface ("GUI") like any version of Windows and command line interface (or "menu command hierarchy") like Lotus 1–2–3. See Free On-Line Dictionary of Computing, copyright 1993 by Denis Howe, available at http://foldoc.doc.ic.ac.uk/foldoc/Dictionary.ge.

22 In the case of user interface, it is the user's own personal computer; and in the case of homepage, it is the content provider's long-distance server.

23 Given this close resemblance, some commentators even named certain interactive web pages as "web site user interface", see Lisa M. Byers, "Look and Feel Protection of Web Site User Interfaces: Copyright or Trade Dress?" (1998) 14 Computer & High Tech. L. J. 221.

24 See Roth Greeting Cards v United Card Co 429 F. 2d 1106 (9th Cir. 1970). Some commentators seemed to use "total concept and feel" and "look and feel" interchangeably, referring to non-local elements in applications programs such as pattern, structure, arrangement or presentation of a work. See, e.g., Arthur R. Miller, "Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONFU?" (1993) 106 Harv. L. Rev. 977 at p.998 n.102; Michael J. Schallop, "Protecting User Interfaces: Not as Easy as 1–2–3" (1996) 45 Emory L.J. 1553, at p.1556 n.137. Nevertheless, the two terms have some minor differences: first, as pointed out above, "total concept and feel" is a term with less precise legal implications, originating from copyright cases regarding pictorial works. In contrast, "look and feel" is actually not a legal term but a term created by the computer industry. Therefore there appears to be no precise legal definition for it: on one occasion, it was referred to as the counterpart of "total concept and feel"; on another occasion, it was equated with the user interface per se. See John Pinheiro and Gerard LaCroix, "Protecting the 'Look and Feel' of Computer Software" (1985) 1 HTIJ 411 at p.416. Secondly, in a copyright case, the "total concept and feel" approach is mostly invoked in examining the substantial similarity between the disputed works at the stage of infringement determination. The "look and feel" test is, however, normally an aid for courts to test the copyrightability of a subject-matter at a much earlier stage. See Lotus Development Corp. v Paperback Software Intern 740 F. Supp. 37, 64-65 (D.Mass., 1990).

25 See Roth Greeting Cards, n.24 above, at 1110. This approach was further refined by two cases concerning juvenile television shows. See Reehor v Children's Television Workshop 533 F. 2d 87 (2nd Cir. 1976) (holding that the defendant's television show improperly copied the "total concept and feel" of a children's illustrated book); Sid & Marty Kroft Televisi Prod Inc v Medamedia 562 F. 2d 1157 (9th Cir. 1977) (holding that the defendant's commercials infringed the "total concept and feel" of a series of cartoon morning shows).

26 See Whelan Associates, Inc v Jaiden Dental Laboratory, Inc 797 F. 2d 1222 (3rd Cir. 1986) (holding for the plaintiff because, except the general purpose or function, everything else in an application program was copyrightable expression and the two disputed programs are similar in overall structure, sequence and organisation, which was also cited in the "SSO" approach). Most commentators regarded the Whelan case as the origin of the "total concept and feel" approach in computer software cases. See, e.g., Alfred C. Yen, "A First Amendment Perspective on the Idea/Expression dichotomy and Copyright in a Work's 'Total Concept and Feel'" (1989) 38 Emory L.J. 393, at pp.412-515 (discussing the Whelan case and its influences on the subsequent "total concept and feel" line of interface cases); Karen S. Kovach, "Computer Software Design: User Interface—Identi Virtual Expression?" (1991) 60 U. Cin. L. Rev. 161 at pp.171-177 (discussing several cases applying the Whelan rule into interface cases); Mark A. Lemley, "Conveyance in the Law of Software Copyrightability?" (1995) 10 High Tech. L. J. 1 at p.5 (equating the "SSO" approach with "total concept and feel").


28 See ibid at 1130.

29 See ibid at 1131.

30 See ibid at 1135.

31 See ibid at 1137.

32 See, e.g., Digital Communications Associates, Inc v Softkline Distributing Corp 650 F. Supp. 449 (N.D. Ga. 1987) (holding that copyright in the arrangement of "main menu" status screen was infringed); Manufacturers Technologies, Inc v Games, Inc 706 F. Supp. 984 (D. Conn. 1989) (holding that copyright on status screen display was infringed where the defendant copied the "total concept and feel"); Lotus Development Corp v Paperback Software Intern, n.24, above (holding that menu command structure, including choice of command terms, the structure and order of those terms and their presentation on the screen, constituted copyrightable expressions).

33 See, e.g., Alfred C. Yen, n.26 above, at p.416 (criticising the Broderbund case as "completely removed copyright's most important limiting doctrine (i.e. the idea/expression dichotomy)"); Leslie A. Kunts, n.15 above, at p.1241 ("Focusing on similarities in the look and feel of a work, on its overall impressions, will likely lead to overprotective results."); Amaury Cruz, n.4 above, at p.246 (stating that courts applying the "total concept and feel" test in software cases have continued protected expression with unprotected ideas).
The "analysing dissection" approach was rooted in Judge Hand's influential "abstraction" test\(^34\) and compellingly revitalised in the computer area by the *Altai* court's "abstraction-filtration-comparison" test.\(^35\) The most prominent of "analysing dissection" cases was arguably *Apple Computer v Microsoft Corp.*\(^36\) In *Apple*, the plaintiff forcefully argued that the "total concept and feel" of its works—that is, the selection and arrangement of related images and their animation—must be compared with that of the [defendant's] GUIs for substantial similarity."\(^37\) The plaintiff further asserted that dissecting its works into discrete elements was inapplicable here because the defendant "virtually mimicked the composition, organization, arrangement and dynamics of the [plaintiff's] interface."\(^38\) The court rejected the "total concept and feel" approach by reasoning that "the unprotectable elements have to be identified, or filtered, before the works can be considered as a whole."\(^39\) Applying well-recognised doctrines of merger,\(^40\) *scènes à faire,\(^41\) scènes à faire* and originality, the court filtered out basic ideas of "desktop metaphor" interfaces, expressions that were indistinguishable from the ideas or elements that had become indispensable or standardised in the user interface treatment.\(^42\) Finally, the court concluded that after the filtering-out step, all the remaining similar elements were either *de minimis* or had been licensed by the plaintiff.\(^43\) This "analysing dissection" approach was warmly appraised by a few scholars for being faithful to the idea/expression dichotomy intended by Judges Holmes\(^44\) and Hand,\(^45\) and being mindful of the industrial standards of software architecture.\(^46\)

### The Idea/Expression Dichotomy in China

Although Chinese copyright laws do not explicitly provide the idea/expression dichotomy, Chinese courts have long recognised and applied this doctrine in various copyright cases.\(^47\) Nevertheless, China seemingly has not achieved an appropriate and consistent approach to the idea/expression dichotomy in cyberspace, as evidenced by two contradictory internet-related cases which are close analogies to the "total concept and feel" and "analysing dissection" approaches in US interface cases.

#### The notion of the idea/expression dichotomy

Chinese copyright laws fall short of any provision that directly addresses either the idea/expression dichotomy or the merger doctrine. However, one could probably identify similar notions implied in Chinese copyright laws, after consolidating segments of statutory language in several different places. For instance, the Chinese Copyright Law provides that "this Law does not cover: . . . (2) current events and news; and (3) calendar, common numerical tables and common forms and formulas."\(^48\) This provision, if properly interpreted, to a sizeable extent overlaps with s.10(b) of the US Copyright Act of 1976.\(^49\) Furthermore, TRIPSs, to which China is a member country, explicitly provides that "Copyright shall extend to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such."\(^50\) Because international treaties and conventions in civil law areas are basically self-executing in China,\(^51\) Chinese courts may directly quote related provisions in TRIPSs as legal grounds to differentiate uncopyrightable ideas and copyrightable expressions.

Among the most frequently cited copyright cases in China is *Li Shuxian and Wang Qingxiang v Jia Yinhua,* which could be regarded as a classic in respect of the idea/expression dichotomy.\(^52\) As the widow of Pu yi (the last emperor in Chinese history), one of the plaintiffs used to retain the defendant to help sort out Pu yi's diaries and other posthumous manuscripts, aiming at jointly writing a biography about Pu yi's life after his dethronement.\(^53\) For unknown reasons, she changed her mind and terminated the co-operation with the defendant. Based on the materials selected and arranged

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34 See Nichols v Universal Pictures Corp 45 F. 2d 119, 121 (2nd Cir. 1930).
35 See Computer Associates Int'l Inc v Altai, Inc 982 F. 2d 693 (2nd Cir. 1992). In *Altai*, the court took three steps in determining software copyright infringement: first, it abstracted the software into different levels of generality; secondly, it filtered out uncopyrightable elements including the underlying ideas, efficiency considerations and other elements dictated by external factors; thirdly, it compared what left after the above two steps for substantial similarity. This "abstraction-filtration-comparison" test was reported to receive immediate applause from the courts of most circuits. See Mark A. Lemley, n.26 above, at pp.15-16.
36 See Apple Computer v Microsoft Corp 35 F. 3d 1435 (9th Cir. 1994).
37 ibid. at 1442.
38 ibid.
39 ibid. at 1446.
40 See nn.11–13 above and the accompanying text.
41 "Scènes à faire" was referred to here as the situation that features in a work are a practical matter indissociable, or at least standard, in the treatment of a given idea. See Apple Computer v Microsoft, n.36 above, at 1444.
42 See Apple Computer, n.36 above, at 1444-1445. ibid. at 1447.
43 See Baker v Selden, n.4 above.
44 See Nichols v Universal Pictures, n.16 above.
45 See, e.g., Timothy S. Teter, "Merger and the Machines: An Analysis of the Pro-Compatibility Trend in Computer Software Copyright Case" (1993) 45 Stan. L. Rev. 1061 at p.1097 (describing the Apple case as a full application of the merger doctrine); Michael J. Schlopp, n.24 above ("the Apple decision properly applied a utilitarian limitation to exclude functionally expressive individual elements from user interface copyright.").
49 See World Trade Organization, Agreement on Trade-related Aspects of Intellectual Property Rights ("TRIPS"), Art.9.
50 See General Principles of Civil Law of the People's Republic of China, Art.142: "If any international treaty concluded or acceded to by the People's Republic of China contains provisions differing from those in the civil laws of the People's Republic of China, the provisions of the international treaty shall apply, unless the provisions are ones on which the People's Republic of China has announced Reservations."
52 ibid.
mostly by the defendant, she co-authored with the other plaintiff a book entitled Puyi’s Second Half of Life.54 After being rejected, the defendant decided to create a book with the same theme independently and finally published the one entitled The Last Emperor’s Second Half of Life.55 The two plaintiffs brought an action against the defendant, claiming that the defendant plagiarised 70 per cent of their book.56 The court acquitted the defendant in that all similarities between the two books were unavoidably dictated by the same theme (biography of the same historic character), the same underlying historic materials (diaries and other posthumous manuscripts).57 This case indicated that the idea/expression dichotomy might nevertheless be well rooted in Chinese judicial practice, absent direct statutory endorsement.58

Application of the idea/expression dichotomy in cyberspace

Confronted with the challenges brought by new forms of intellectual creation in cyberspace, Chinese courts surprisingly seemed to never struggle over the issue whether such new digital works are eligible for copyright protection. This may largely be explained by the following two reasons: first, Chinese copyright laws generally impose no fixation requirement for copyright eligibility.59 Hence Chinese courts did not go to as great lengths as their American counterparts60 to find that the digital form per se did not prevent works from copyright protection. For instance, in the first reported internet-related copyright case,61 the court held that, although an essay was first published in its author’s personal homepage, it was eligible for copyright protection provided that it satisfied all threshold requirements for a literary work. Secondly, although Chinese copyright laws list nine categories of eligible copyright subject-matters, this list is considered open-ended and only illustrative rather than exclusive.62 Therefore new categories of intellectual creations in cyberspace would not be prevented from copyright protection simply because legislators never conceived of them at the time of legislation.63 In 2000, the Supreme Court of the PRC explicitly confirmed the above two points and put an end to this copyrightability issue.64 However, the intricacy of the idea/expression dichotomy seems to persist in cyberspace, as demonstrated by two recent Chinese internet-related cases.65 In each of these cases,66 the dispute was between two online content providers concerning their portal websites67; and the defendant was charged with non-literally copying the plaintiff’s homepage. Similar fact patterns nevertheless gave rise to sharply divergent rulings.68

In the Ruide case, the defendant contended that, though the accused homepage was similar with the plaintiff’s in some graphics, menus, icon arrangements and layouts, these elements were widely adopted in the internet industry and therefore fell into the scope of unprotected ideas in the public domain.69 Seemingly giving little credit to the defendant’s contentions, the court began its discussion with the copyrightability of

54 ibid.
55 ibid.
56 ibid.
57 ibid.
59 There is an important twist in Chinese copyright laws that fixation is a prerequisite only for software copyright. See Chinese Software Regulation of 1991, Art.5 and the new Chinese Software Regulation of 2001, Art.5: "Software that enjoys protection under this Regulation must be independently developed and be fixed in a tangible object."
60 See e.g. Stere Electronics, Inc v Kaufman 669 F. 2d 852, 855 (2d Cir. 1982) (holding that putting work in memory devices of a computer satisfies the statutory requirement of a copy in which the work is fixed); Advanced Computer Services of Michigan Inc v MAI Systems Corp 843 F. Supp. 356, 363 (E.D. Va. 1994) (holding that the electronic information residing in RAM is sufficiently fixed).
62 See Chinese Copyright Law of 2001, Art.3: “For the purpose of this Law, works refer to those in the literary, artistic and scientific domain that are created in the following forms: (1) literary works; (2) verbal works; (3) musical, dramatic, Qu Yi, choreographic, and acrobatic works; (4) works of fine art and architectural works; (5) photographic works; (6) cinematographic works and works created by the cinematographic-like means; (7) architectural plans, product plans, maps, illustrations and other graphic works and model works; (8) computer software; (9) other works provided by laws and regulations.”
63 See Chen Jianchu, “Contributions of Chinese Courts to Copyright Law in Digital Era” (the author, a judge in the Beijing Higher People’s Court, stated that original digitalised works should be protected as copyrighted works of authorship, albeit not being explicitly listed in the copyright law), available at www.rmgfh.com.cn/public/detail.php?id=345566&site_id=6&content=6&author.
64 See Chinese Internet Copyright Interpretation (Issued on December 21, 2000), Art.2: “Works of authorship protected under the Copyright Law shall include digitalised forms of all categories of works of authorship enumerated in Article 3 of the Copyright Law. Other intellectual creations in the network environment, which do not fit into the scope of works enumerated in Article 3 of the Copyright Law but are original in the literary, artistic and scientific domain and capable of being duplicated in a tangible form, should be protected by people’s courts.”
65 See Ruide (Group) Co v Oriental Information Service Ltd, Beijing People’s Court of Haidian District, (Hai Zhi Chu Zi no.21, 1999), its facts and holdings are available at www.ange law.com/sxblaieisit/courtb4.htm; Beijing Chuanglan Telecommunication and Network Ltd v Beijing Huiming International Commercial Consulting Company, Beijing People’s Court of Haidian District (Hai Zhi Chu Zi no.112 1999), its facts and holdings are available at www.bgj.gov.cn/sxws/file.asp?id=22&ppsh=undefined.
66 ibid.
67 By “portal”, this article refers to a website that aims to be an entry point of World Wide Web, typically offering a search engine and/or links to useful pages, and possibly news and other services. Popular examples are Yahoo! and MSN. See Free On-Line Dictionary of Computing, n.21 above.
68 The two cases were actually heard by the same court, albeit equipped with different judges. Besides, Ruide was decided five months earlier than Chuanglan.
69 See Ruide (Group) Co v Oriental Information Service Ltd, n.65 above.
the plaintiff's homepage. It stated that, while individual elements like phrases, graphics and icons might be in the public domain, the combination and organisation of these elements sufficed to bear original expressions.\(^{70}\)

Next, the court held that the plaintiff had established a prima facie case of copyright infringement because of the substantial similarity between the two homepages in the overall combination and organisation of text, graphics and icons.\(^{71}\) To the extent that the defendant was also found liable for substantial similarity in "overall structure, sequencing and, arrangement of screens", the Ruide case could be squarely in the line of "total concept and feel" cases in the United States.\(^{72}\)

By contrast, although the court in the Chuanglian case did not preclude the right to copy a homepage either,\(^{73}\) it eventually declined to find copyright infringement based merely on similarity in overall layout and organisation of the two disputed homepages.\(^{74}\) The court reasoned that the disputed homepages were substantially different, given that all similar layouts and organisations in two homepages were either dictated by the nature of the same business that the parties engaged in, or had been widely adopted as common practice in the business.\(^{75}\) The court indicated that these industrial standards fell into the public domain and were free for competitors to imitate, despite not explicitly referring to the idea/expression dichotomy. To the extent that the court in the Chuanglian case compared the disputed works for substantial similarity only after filtering out unprotectable elements mandated by the nature of the related business, it could be deemed as siding with "analysing dissection" courts in the United States.\(^{76}\)

The notion of network effects

Network effects refer to such a market phenomenon that "the utility that a user derives from consumption of the good increases with the number of other agents consuming the good".\(^{82}\) The classic example of network effects is telephone communication. A telephone network containing only two or very few telephones would be of little market value since no rational consumer is willing to buy different telephones to call different locations. The larger the scale of the network the consumer belongs to, the more useful her telephone is.\(^{83}\) Another slightly different example is the QWERTY layout of keyboards.\(^{84}\) Although a typewriter is able to work well without connection to any other one, the uniformity of keyboard layout designs will substantially enhance the

Proposals for the Idea/Expression Dichotomy in Cyberspace

It may be premature to predict which of the above two approaches will eventually prevail in cyberspace while internet industries are still in their infancy. However, as one jurist insightfully pointed out, the choices among varied approaches to the idea/expression dichotomy are "important ones of policy, not linguistics, and they should be made with the underlying considerations".\(^{77}\) The idea/expression dichotomy is a safeguard for the public domain,\(^{78}\) and has significant constitutional and economic implications, including fostering free speech\(^{79}\) and balancing copyright protection and effective competition.\(^{80}\) Among all the pertinent considerations, this article will particularly emphasise that, faced with cases arising from such emerging markets as computer technology and the internet, courts must take heed of their unique economic features, e.g. "network effects".\(^{81}\) In order fully to realise network effects, stimulate market competition and ultimately enhance consumer welfare, Chinese copyright laws should define industrial standards as unprotectable ideas to facilitate their widespread imitation or adoption. In this sense, the "analysing dissection" approach would be preferable to the "total concept and feel" one in copyright cases with respect to user interfaces and homepage designs.

70 ibid.
71 ibid. Here, the court might arguably imply a leeway for the defendant to rebut the prima facie case by showing that the similarity was due to elements in the public domain.
72 See Ruide (Group) Co v Oriental Information Service Ltd, n.65 above.
73 See Beijing Chuanglian Telecommunication and Network Ltd v Beijing Huimeng International Commercial Consulting Company, n.65 above.
74 ibid. The court also pinpointed the individual graphic images and short phrases already in the public domain.
75 ibid. Please note that the defendant here was nevertheless held liable for copyright infringement, based on other facts than copying the plaintiff's homepage.
76 See Beijing Chuanglian Telecommunication and Network Ltd v Beijing Huimeng International Commercial Consulting Company, n.65 above.
77 See Laws Development Corp v Borland Intern Inc 49 F. 3d 807, 822 (1st Cir. 1995) (concurring opinion).
78 See Feist Publications, Inc v Rural Telephone Service Company, Inc 499 U.S. 340, 349-350 (1990) ("copyright assures authors the right to their original expression, but encourage others to build freely upon the ideas and information conveyed by a work . . . . This principle, known as the idea/expression or fact/expression dichotomy, applies to all works of authorship.")
79 See Harper & Row Publishers v Nation Enterprises 471 U.S. 539, 556 (1985) (holding that the idea/expression "strikes a definitional balance between the First Amendment and the Copyright Act by permitting free communications of facts while still protecting an author's expression").
80 See Herbert Rosenthal Jewelry Corp v Kulpian 446 F. 2d 738 (9th Cir. 1971) ("the guiding consideration in drawing the line between idea and expression is the preservation of the balance between competition and protection").
81 See below for a detailed treatment of "network effects".
82 See Michael L. Katz and Carl Shapiro, "Network Externalities, Competition, and Compatibility" (1985) 75 Am. Econ. Rev. 424 at p.424 (1985). While most commentators use "network externalities" interchangeably with "network effects", some others prefer "network externalities" only to mean those cause market failures, such as pollution and congestion. See S. J. Liebowitz and Stephen E. Margolis, "Network Externality: An Uncommon Tragedy" (1994) 8 J. Econ. Persp. 133 at p.135. To avoid confusion, this article will stick with the term "network effects".
83 See Howard A. Shelanski & J. Gregory Sidak, "Antitrust Divestiture in Network Industries" (2001) 68 U. Chi. L. Rev. 1 at p.8 ("[t]he individual consumer's demand to use (and hence her benefit from) the telephone network ... increases with the number of other users on the network whom she can call or from whom she can receive calls.")
84 See generally Paul A. David, "Clio and the Economics of QWERTY" (1985) 75 Am. Econ. Rev. 332.
utility of typewriters in that consumers can freely switch from one to another without undergoing retraining or, in a lesser degree, adapting their working habits repeatedly. Computer software and the internet, while being industries also characterised by network effects (“network industries”), exhibit a hybrid nature of the above two examples. One the one hand, the more a software can work in harmony with others or the more contents are linked online, the more valuable the software or internet is. On the other hand, if some specific facets of software and internet (namely user interfaces and web page layouts) can be standardised to a considerable extent, consumers’ switching costs will be reduced correspondingly.

Obviously, network industries will generate a strong natural dynamic of “compatibility” or “standardisation”, in order to enlarge the network scale and therefore fully realise network effects. Standardisation in software and internet industries is normally achieved in one of the following three ways.

First of all, the government may decree certain standards. For example, the National Institute of Standards and Technology is the governmental body responsible for industrial standard setting in the United States. The virtues of governmental standards could include being easy to implement and open to the public. However, such a standard-setting approach may not be very popular in the software or internet industries. Understandably, in fast-growing areas of technology and commerce, governmental bureaucracy, generally without technical expertise or market participation, can hardly react rightly and in a timely fashion to the market dynamics.

Secondly, entrepreneurs in the industry may negotiate to agree on certain standards. These negotiations usually happen within some private standard-setting organisations consisting of main players in their industries. The typical example is the Internet Engineering Task Force (“IETF”), which develops and maintains the TCP/IP Protocols and other internet architectures. The standards achieved and advanced by an inclusive standard-setting organisation will have similar enforceability to those imposed by the government, but be more reflective of market expectations. There are two major concerns among negotiators in the process of de jure standardisation. First, they want the best standards for the industry. Therefore such a process may entail substantial costs in working on the technical efficiency of proposed standards. Secondly, they want the best standards for themselves. In the case of negotiations after the emergence of relevant markets, each negotiator may have already invested substantially in, and gained customer loyalty to, its own standards. With such vested interests, none of the negotiators will be willing to agree on another’s standards. To this extent, de jure standardisation could be even more lengthy and costly than necessary for technical efficiency considerations.

Finally, in industries with strong network effects, standardisation will tend to come into being naturally via market competition, absent the above two methods. Several market players competing with incompatible standards will usually lead to de facto standardisation by

85 The article will follow some economists to refer to as “switching costs” all inconveniences, e.g. relearning, habit adaptation, reformatting in the case of computer files, caused by switching from one product to another (usually supplied by a different manufacturer). See Joseph Farrell and Paul Klemperer, “Competition and Lock-In: Competition with Switching Cost and Network Effects” (draft), available at http://cmialab.berkeley. edu/users/jfarrell/jfpp/lockin.pdf.

86 Some commentators use “physical networks” or “direct networks” to describe telephone-like network effects which depend on physical connection or communication and “virtual networks” or “indirect networks” to describe QWERTY-like network effects which depend on consumers’ positive feedbacks. See Michael L. Katz and Carl Shapiro, “Systems Competition and Network Externalities” (1994) 8 J. Econ. Persp. 93 at p.95. For the purpose of this article, the follow discussions will be tailored specifically for the latter kind of network effects.

87 See, e.g., Peter S. Menell, “The Challenges of Reforming Intellectual Property Protection for Computer software” (1994) 94 Colum. L. Rev. 1644 at pp.1647-1648 (“the social value generated by computer technology depends significantly on the extent to which network externalities are realized”); Margaret Jane Radin, “Online Standardization and The Integration of Text and Machine” (2002) 70 Fordham L. Rev. 1125 at p.1130 (“the more people who are on the Internet through use of this standard [TCP/IP] protocol, the more valuable the Internet is for each user”).

88 See Lotus Dev Corp v Borland Int’l Inc, n.77 above, Brief Amicus Curiae of Economic Professors and Scholars in Support of Respondent, No.94–2003. (“Certain aspects of programs must be identical in order for users of different programs to share these network benefits; these aspects will predictably include interfaces.”). Products are "compatible" in a broad sense if they work together easily. Standardisation means making products similar enough to be compatible. See Joseph Farrell, “Standardization and Intellectual Property” (1989) 30 Jurimetrics J. 35 at p.36.

89 Information about National Institute of Standards and Technology is available at www.nist.gov. Its Chinese counterpart is the Standardization Administration of China, at www.csbs.cn.net/home.asp.

91 See Mark A. Lemley and David McGowan, “Legal Implications of Network External Economic Effects” (1998) 86 Calif. L. Rev. 479 at p.342 (“This is an inherent danger of bureaucracy, particularly when it attempts to regulate such a fast-moving area of commerce as the Internet”). There exist some exceptions. For example, government agencies such as the Advanced Research Projects Agency of the National Science Foundation played a role in the development of the internet. Ibid. at p.541.

92 This method of standardisation is called de jure or formal standardisation. See Joseph Farrell, n.89 above, at p.40.


94 Information about the Internet Engineer Task Force is available at www.ietf.org.

95 See Joseph Farrell, n.89 above, at p.41 (stating that a standard-setting organisation with a dominant market share, even though not completely inclusive, will coerce the rest of the industry into consistency).

96 See Mark A. Lemley and David McGowan, n.91 above, at p.517 (describing private standard-setting organisations as more market-oriented than governmental ones).

97 See Joseph Farrell, n.89 above, at p.40.

98 See ibid. at p.41.

99 See ibid. at pp.41–42.

1 See Michael L. Katz and Carl Shapiro, “Technology Adoption in the Presence of Network Externalities” (1986) 94 J. Pol. Econ. 822, 824 (“there is another way to enjoy the full benefits of network externalities: achieve de facto standardization by having all consumers use the same technology”). Some commentators also called it informal standardisation. See Joseph Farrell, n.89 above, at p.42.
the means of so-called "tipping"\textsuperscript{2}: once a set of standards has its market share accumulated to a certain point, consumer choices will suddenly all tip towards it and the rest of the competing standards will therefore die out.\textsuperscript{3} Given the limitations of the former two paths of standardisation, instances of tipping towards \textit{de facto} standards are prevalent in network industries, as illustrated by MS-DOS over Macintosh,\textsuperscript{4} VHS over Beta-max,\textsuperscript{5} and the remarkable QWERTY keyboard.\textsuperscript{6} Although \textit{de facto} standardisation ultimately results from consumer choices, technical superiority or low price are in most cases not their only, or even major, concerns.\textsuperscript{7} Other possible determinants include \textit{ex ante} dominant market position,\textsuperscript{8} marketing strategies,\textsuperscript{9} first-move advantages\textsuperscript{10} and even luck.\textsuperscript{11}

Standardisation, as an inherent tendency in network industries, will fully realise network effects and bring various social benefits\textsuperscript{12}: first, standardisation will enlarge consumer welfare. By definition, the value of a consumer product will increase in proportion to the scale of its network.\textsuperscript{13} In addition, consumers may enjoy more flexibility of switching from one product to another without incurring substantial switching costs.\textsuperscript{14} Secondly, standardisation may enhance market competition. Once the standard technologies are established, a player may enter into the market simply by providing complementary components based on such standards rather than by developing the whole self-contained system.\textsuperscript{15} Lowering the costs of market entry will bring opportunities to small entrepreneurs and therefore spark fiercer competition.\textsuperscript{16} In the case that network effects mainly result from switching costs of consumers' arbitrary choices, standardisation will reallocate the focus of competition from technically indifferent standards to service, price and additional features which would arguably benefit consumers more.\textsuperscript{17} Thirdly, standardisation will likewise promote technology innovation (at least within the standards) in which more players will get involved and to which more resources will be shifted from standards competition.\textsuperscript{18}

On the other hand, network industries may often undergo a side effect of standardisation, namely "lock-in": markets are lastingly dominated by some inferior or obsolete standards.\textsuperscript{19} Lock-in in the context of network effects may stem from the following three reasons: first, because the result of market tipping hinges on much more determinants than mere technical superiority, there is an inherent possibility that standardisation will settle down on some inferior standards.\textsuperscript{20} Secondly, when consumers have invested considerably in training themselves or in organising their business practices based on the existing standards, high switching costs will render some consumers reluctant to switch even with the emergence of obviously superior standards.\textsuperscript{21} Thirdly, even if some consumers or vendors prefer the new standards to the existing ones, they will nevertheless tend to withhold the switching until there is a clear signal that the overall market will soon tip towards the new ones.\textsuperscript{22} Otherwise, a small proportion of consumers or vendors who switch ahead of the market majority would risk being deprived of all the benefits drawn from the existing network.\textsuperscript{23}

\textbf{The relevance of network effects to the idea/ expression dichotomy}

Network effects, while bearing various pros and cons, are an inherent feature of certain markets, not a market

\textsuperscript{2} See Stanley M. Besen and Joseph Farrell, "Choosing How to Compete: Strategies and Tactics In Standardization" (1994) 8 J. Econ. Persp. 117 at p.118 ("network markets are tippy: the coexistence of incompatible products may be unstable, with a single winning standard dominating the market").

\textsuperscript{3} In reality, such a tipping may not be complete in every case. Minority products may survive in their own tiny networks, if they can cater for certain consumers who care more about special attributes than about network effects. See Michael L. Katz and Carl Shapiro, n.86 above, at p.106.

\textsuperscript{4} See See Mark A. Lemley and David McGowan, n.91 above, at p.592.

\textsuperscript{5} See Margaret Jane Radin, n.87 above, at p.1136.

\textsuperscript{6} See Paul A. David, n.84 above, at p.333.

\textsuperscript{7} See Stanley M. Besen and Joseph Farrell, n.2 (2nd ser.) above, at p.118 ("victory need not go to the better or cheaper product: an inferior product may be able to defeat a superior one only if it is widely expected to do so").

\textsuperscript{8} ibid. at p.118 (attributing MS-DOS's triumph to the support of IBM).

\textsuperscript{9} See S. J. Liebowitz and Stephen E. Margolis, n.82 above, at p.147 (introducing the point that VHS took the advantage of allowing longer video taping time despite its quality inferiority to Betamax).

\textsuperscript{10} To this point, the QWERTY keyboard is probably the most heavily cited example. Enormous vested interests and switching costs prevent a later superior layout from replacing the awkward QWERTY, which were designed for obsolete purposes. See Paul A. David, n.84 above, at pp.334-335.

\textsuperscript{11} Some commentators ascribe the success of VHS to consumers' arbitrary choices; see S. J. Liebowitz and Stephen E. Margolis, n.82 above, at p.147 n.15.

\textsuperscript{12} See Michael L. Katz and Carl Shapiro, n.86 above, at p.823 ("When network externalities are significant, too are the benefits of having compatible products.").

\textsuperscript{13} See Michael L. Katz and Carl Shapiro, n.82 above, at p.424.

\textsuperscript{14} See Joseph Farrell and Paul Klemperer, n.85 above, at pp.6-8.

\textsuperscript{15} See Joseph Farrell, n.89 above, at p.36.

\textsuperscript{16} ibid. at p.38.

\textsuperscript{17} See Michael L. Katz and Carl Shapiro, n.86 above, at p.111 ("For systems that are compatible, the focus of competition shifts from the overall package . . . to the specific cost and performance characteristics of each component individually").

\textsuperscript{18} A good example is that compatibility allows producers and consumers to mix and match components to achieve technical variety; see ibid. at p.109.

\textsuperscript{19} This phenomenon is also called "excess inertia": a socially excessive reluctance to a new superior standard when important network externalities present in the current one. See Joseph, Farrell and Garth Saloner, "Installed Base and Compatibility: Innovation, Product Pronouncements and Predation" (1986) 76 Am. Econ. Rev. 940 at p.940.

\textsuperscript{20} See nn.12-18 (2nd ser.) above, and the accompanying text.

\textsuperscript{21} See Joseph Farrell and Paul Klemperer, n.85 above, at p.6.

\textsuperscript{22} Some commentators have analogised such collective action problems to a group of horses that are unable to escape far while being tied together. See Joseph Farrell, n.89 above, at p.38.

\textsuperscript{23} See Joseph, Farrell and Garth Saloner, n.19 (2nd ser.) above, at p.942 ("Earlier adopters of the new technology would bear a disproportionate share of the transient incompatibility costs. They might be unwilling to do this.".).
failure that entails governmental intervention.\textsuperscript{24} Accordingly, in order to adapt to network effects, copyright law should at least abstain from the attempt to negate them or distort them.\textsuperscript{25} Based on the above brief summary of network effects, this article will proceed to narrow its focus on to user interfaces and homepage designs for the sake of discussion. As mentioned above, the "total concept and feel" approach identified the general design concept as the only idea and all the other contents, including overall sequence and organisation, as expression.\textsuperscript{26} In contrast, the "analysing dissection" approach identified both abstract concepts and elements dictated by industrial standards as unprotectable ideas.\textsuperscript{27} Therefore the prevalence of one approach over the other appears to pivot on the question whether or not copyright law should protect industrial standards with the presence of strong network effects.\textsuperscript{28}

To evaluate the propriety of copyright protection in network industries, one may start with its influences on the realisation of network effects. Network effects will be fully realised by standardisation or, in other words, widespread adoption of certain attributes of products in the market-place.\textsuperscript{29} Conversely, copyright law grants authors and other rightholders a bundle of exclusive rights to use copyrighted attributes.\textsuperscript{30} Hence, if the market standards happen to be copyrighted works, their copyright holder will at least theoretically enjoy an overwhelming power to define the scope of market competition.\textsuperscript{31} These effects of copyright law dramatically increase a market player's stake in the outcome of standardisation and may seriously obstruct the process of standardisation as a result.\textsuperscript{32} In the context of \textit{de jure} standardisation, the more vested interests each negotiator holds, the less likely it will give in to the standards of others. Consequently, by increasing negotiators' vested interests, copyrights in negotiated standards may cause serious difficulty in reaching any agreement on standardisation.\textsuperscript{33} In the context of \textit{de facto} standardisation which is arguably more ubiquitous in network industries,\textsuperscript{34} copyright protection will reinforce the "winner-takes-all" outcome of market tipping.\textsuperscript{35} Under this circumstance, a market player, instead of introducing compatible standards to enlarge its competitor's network, inclines to fight fiercely with incompatible standards to have the market tip towards itself or at least to withhold the market tipping which would turn out to favour its competitor.\textsuperscript{36} As a result, copyright protection on product standards may tend to obstruct standardisation, fragment the market and destroy network effects that would ultimately benefit consumers of network industries.\textsuperscript{37} At a minimum, copyright protection may lengthen the process of market tipping and cause larger social waste. On \textit{de facto} standardisation, vendors and consumers that had a stake in the losing standards have to abandon their original investments in the losing ones.\textsuperscript{38} Understandably, the longer the standardisation takes, the more switching costs the market will suffer.

In contrast, standards in the public domain ("open standards")\textsuperscript{40} may smooth the realisation of network effects. Without being distracted by serious vested interests, the negotiator will focus more on the technical efficiency of negotiated standards during the process of \textit{de jure} standardisation.\textsuperscript{41} In addition, no matter whether actually created the standards that ended up dominating the market, other competitors will liberally imitate such standards and thus help reinforce and even enlarge the network achieved by \textit{de facto} standardisation.\textsuperscript{42}

Assuming that standardisation has been somehow achieved in network industries, copyright law may further exacerbate the lock-in effect of standardisation.\textsuperscript{43} First of all, if copyright subsists in the market standards, the copyright holder will theoretically have a veto to block any use of its proprietary standards in the market-

\textsuperscript{24} See S. J. Liebowitz and Stephen E. Margolis, n.82 above, at p.8 ("While network effects are common and important, network externalities as market failures, we will argue, are theoretically fragile and empirically undocumented.").

\textsuperscript{25} See Mark A. Lemley and David McGowan, n.91 above, at p.503.

\textsuperscript{26} See nn.24–33 (1st ser.) above, and the accompanying text.

\textsuperscript{27} See nn.34–46 (1st ser.) above, and the accompanying text.

\textsuperscript{28} As mentioned above, user interfaces and homepage designs are featured with the "switching costs" type of network effects similar to that of the QWERTY keyboard. See nn.84–88 above, and the accompanying text.

\textsuperscript{29} See n.89 above, and the accompanying text.

\textsuperscript{30} See 17 U.S.C. \textsection 106 or Chinese Copyright Law of 2001, Art.10, for the details of the exclusive rights in copyright works.

\textsuperscript{31} See Joseph Farrell, n.89 above, at p.49 ("Intellectual-property rules determine the boundaries of what is protected, and thus determine the borders at which fighting, or competition, takes place.").

\textsuperscript{32} \textit{Ibid.} (concluding that "standardisation may be slowed or even prevented by strong protection of certain aspects of intellectual work").

\textsuperscript{33} See nn.98–99 above, and the accompanying text.

\textsuperscript{34} See Joseph Farrell, n.89 above, at p.43 ("Clearly, the more a standards body becomes an arena in which to fight over intellectual-property spoils, the less likely it is to reach rapid agree-

\textsuperscript{35} See nn.1–6 (1st ser.) above, and the accompanying text.

\textsuperscript{36} See Stanley M. Besen and Joseph Farrell, n.2 (2nd ser.) above, at p.119 ("A firm that controls a technology that becomes established as a standard can have an extremely profitable market position").

\textsuperscript{37} See Peter M. Menell, "An Analysis of the Scope of Copyright Protection for Application Programs" (7) 41 Stan. L. Rev. 1045 at p.1068 (opining that the availability of legal protection for user interfaces strengthens the adverse incentive to develop incompatible interfaces).

\textsuperscript{38} See \textit{Apple Computer, Inc v Microsoft Corp} 799 F. Supp. 1006, 1025 (N.D.Cal. 1992) (holding that "overly inclusive copyright protection can produce its own negative effects by inhibiting the adoption of compatible standards (and reducing so-called 'network externalities')"). See also \textit{Lensa Development Corp v Borkland Intern Inc} n.71 above, at 818 (1st Cir. 1995) (finding it "absurd" to request users to learn different menu commands for each interface).

\textsuperscript{39} See Stanley M. Besen and Joseph Farrell, n.2 (2nd ser.) above, at p.118.

\textsuperscript{40} Economists also call non-proprietary standards as "unsponsored" standards interchangeably with open standards. See Michael L. Katz and Carl Shapiro, n.1 (2nd ser.) above, at pp.825–826.

\textsuperscript{41} See Joseph Farrell, n.89 above, at p.44 ("With weak protection, participants' interests are more closely aligned.").

\textsuperscript{42} \textit{Ibid.} at p.42 ("This competition within the standard actually reinforces the standard, . . . strengthening still further the incentives for still more rivals to join the bandwagon.").

\textsuperscript{43} For more detailed discussions about the lock-in effect of standardisation, see nn.19–23 above, and the accompanying text.
place.\textsuperscript{44} In the realms of traditional literary or artistic works, copyright protection will normally not impede market competition, because subsequent authors may find non-inferior alternatives at least in economic sense simply by paraphrasing the original expression.\textsuperscript{45} However, copyrighted industrial standards may impose a barrier to market entry in network industries, since any competitor must exactly adopt the identical standards or risk being isolated from the network and finally thrown out of the market.\textsuperscript{46} Arguably, a copyright holder may have incentives to enlarge the network and enhance the values of its own products by widely licensing its standards in the market-place.\textsuperscript{47} But in most cases, a player can hardly resist the temptation of eliminating competitors in total and monopolising the market through copyright protection.\textsuperscript{48} Absent healthy market competition, the standard holder may unduly engage in monopoly pricing (setting a price substantially above the marginal cost) on consumers who have been locked in by the standards.\textsuperscript{49} To make things worse, monopolistic prices may deter many potential consumers who value but hardly afford the products. In the context of network effects, this phenomenon is not only harmful to consumers who are priced out of the network, but also harmful to those already in the network, who would otherwise enjoy a more valuable network enlarged by additional users.\textsuperscript{50}

In contrast, open standards may significantly alleviate the lock-in effects of network industries. First of all, since no player can monopolize the market standards with copyright, more competitors will emerge in the network market with widespread adoption of such standards.\textsuperscript{51} Accordingly, consumers may easily switch from one supplier to another, released from the danger of being locked in by a single supplier.\textsuperscript{52} Moreover, market competition will drive the price down to marginal costs so that more consumers may be induced to participate in the network.\textsuperscript{53} To the extent that price competition within open standards enlarges the network’s scale, it will benefit both existing and potential consumers in the network.\textsuperscript{54}

One may argue that, without intellectual property incentives, vendors would be discouraged to engage in technology innovations; as a result, consumers would be more likely locked in by obsolete or inferior standards.\textsuperscript{55} Although this argument makes theoretical sense, it cannot be inferred that copyright protection should necessarily cover industrial standards. First, experience has proved that an obsolete or inferior standard may persist regardless of the existence of intellectual property incentives. The best example is the QWERTY keyboard.\textsuperscript{56} When a competing keyboard was first introduced in the market-place, it was much more efficient than the QWERTY keyboard and did enjoy patent protection. But it still could not prevail over the QWERTY because of huge switching costs.\textsuperscript{57} Secondly, with copyright protection, a competitor may be even more ready to establish inferior technologies as market standards by the means of “penetration pricing.”\textsuperscript{58} Penetration pricing refers to a market strategy in which a vendor temporarily prices a product below its marginal costs to seek a dominant position in the market-place.\textsuperscript{59} Without copyright protection, penetration pricing, however, ceases to be a rational option, because a competitor would be unable to recoup investments later through the monopoly price in excess of marginal costs.\textsuperscript{60} Thirdly, even though industrial standards entail certain intellectual property incentives, patent law seems to be a more appropriate vehicle than copyright law. As was discussed above, every time a network industry switches from the existing standards to new ones, it incurs substantial switching costs.\textsuperscript{61} Therefore it is economically inefficient to promote the creation and adoption of every small development in industrial standards.\textsuperscript{62} In order to spur truly advanced innovations that generate social benefits exceeding related switching costs, any legal protection of industrial standards should satisfy more exacting thresholds, such as utility, novelty and non-obviousness under patent

\textsuperscript{44} Of course, copyright must be subject to fair use, statutory licence and other some limitations. See, e.g. 17 U.S.C. §§107–122. However, copyright per se will have some chilling effects on standards adoption. See Peter S. Menell, n.37 (2nd ser.) above, at p.1095.

\textsuperscript{45} See Louis Dev Corp v Borland Int’l, Inc, Brief Amici Curiae, n.88 above, (“Copyright law . . . traditionally protects only ‘expression’ for which there exist close economic substitutes.”).

\textsuperscript{46} See Peter S. Menell, n.37 (2nd ser.) above, at p.1101 (“in the context of standardized interfaces exact duplication is key”).

\textsuperscript{47} On the other hand, licensing could be retarded by many factors, such as disagreement on loyalty. See Joseph Farrell, n.89 above, at p.44.

\textsuperscript{48} See Peter S. Menell, n.37 (2nd ser.) above, at p.1069 (stating that the interface owner “prefer not to license, even at a price that give the owner the full static surplus”).

\textsuperscript{49} See Louis Dev Corp v Borland Int’l, Inc, Brief Amici Curiae, n.88 above (arguing that monopoly pricing is likely to be particularly harmful in markets in which network effects and user switching costs are important).

\textsuperscript{50} Ibid. (“when network effects are important, there is an additional effect: those who do buy get a less valuable product as a result of the smaller network. Thus, where network effects are present, the ordinary pricing inefficiency of monopoly is likely to be amplified”).

\textsuperscript{51} See Michael L. Katz and Carl Shapiro, n.86 above, at p.111 (“because compatibility prevents one firm from gaining control of the market, it tends to intensify competition later in the product life-cycle.”).

\textsuperscript{52} See Stanley M. Besen and Joseph Farrell, n.2 (2nd ser.) above, at p.121 (stating that compatibility render users “less likely to be locked-in to a single firm’s product”).

\textsuperscript{53} See Michael L. Katz and Carl Shapiro, n.1 (2nd ser.) above, at p.825 (“In absence of well-defined property rights, free entry into the supply of a technology will lead to marginal costs pricing”).

\textsuperscript{54} See Mark A. Lemley and David McGowan, n.91 above, at p.533.

\textsuperscript{55} See, e.g., David Friedman, “Standards as Intellectual Property: An Economic Approach” (1994) 19 U. Dayton L. Rev. 1109, at pp.1110–1111 (suggesting that the proprietary control of market standards should not be problematic.)

\textsuperscript{56} See generally Paul A. David, n.84 above (discussing the reasons that the QWERTY keyboard consistently dominates the market).

\textsuperscript{57} This competing keyboard was called the “Dvorak” keyboard, which was patented in 1932; ibid. at p.332.

\textsuperscript{58} See Michael L. Katz and Carl Shapiro, n.1 (2nd ser.) above, at p.625.

\textsuperscript{59} Ibid. at p.815.

\textsuperscript{60} See Joseph Farrell, n.89 above, at p.42 (“With unsponsored (open, or competitively supplied) technologies competing in the marketplace, price is not a strategic variable.”).

\textsuperscript{61} See nn.84–85 above, and the accompanying text.

\textsuperscript{62} See Peter S. Menell, n.37 (2nd ser.) above, at p.1095 (“Because it is often costly to change standards, it is not efficient to switch whenever small improvements become available.”).
law,\(^\text{63}\) than the modest originality under copyright law.\(^\text{64}\)

In short, copyright law should classify standardised elements in user interfaces or homepage designs as uncopyrightable ideas, given that copyright protection on industrial standards will negate network effects, distort market competition and ultimately reduce social welfare.\(^\text{65}\)

**Conclusion**

The baseline of this article is that copyright law must strike a delicate balance between providing incentives to intellectual creation and securing the public interest in the free flow of information. To further these dual purposes, copyright law on the one hand grants authors a bundle of exclusive rights in copyrighted works,\(^\text{66}\) and on the other hand establishes such safety valves as the idea/expression dichotomy to safeguard the public’s privileges in liberally utilising the ideas and information conveyed by the works.\(^\text{67}\) Therefore, when copyright law is expanding its coverage on to new subject-matters in cyberspace, it must also pay proportionate attention to these traditional doctrines to avoid depriving the public of the welfare brought by new information technology. This is especially important for China, where copyright statutes seemingly failed to give detailed and practical guidelines about the idea/expression dichotomy even before the advent of digital technology. Therefore this article argues that substantial legislative effects must be dedicated to these aspects as an indispensable part of China’s digital copyright agenda.

Furthermore, the urgent need of legislative progress in Chinese copyright law may also lie in a deeper policy consideration that could be inferred from the above discussions but far beyond the coverage of this article.

From an international perspective, the international harmonisation of copyright law seems to be an irreversible tendency, as digital technology and the internet have blurred the geographic boundaries of information utilisation. As discussed above in the context of network effects, the winner in the standard-setting will take the benefits of the whole network, and the loser will incur substantial switching costs.\(^\text{68}\) To the extent that copyright harmonisation will standardise copyright regimes in various counties, international copyright law may also be deemed as a special “network”.\(^\text{69}\) In order to ensure that the outcomes of such standardisation or harmonisation “tip” towards the Chinese people, China must promptly develop a sophisticated (or “competitive” in the context of network effects) copyright system and take initiatives to participate in the standard-setting in international copyright arenas. Otherwise, the Chinese people would risk being locked in some inferior international standards in the same fashion as the tragedy of QWERTY.\(^\text{70}\)

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\(^{64}\) See Peter S. Menell, n.37 (2nd ser.) above, at p.1009.

\(^{65}\) This position seems to be in conformity of the original meaning of the idea/expression dichotomy. See, e.g., Baker v. Selden, n.6 (1st ser.) above (“The description of the art in a book, though entitled to the benefit of copyright, lays no foundation for an exclusive claim to the art itself. The latter can only be secured, if it can be secured at all, by letters-patent . . .”).


\(^{68}\) See nn.92 (1st ser.)–11 (2nd ser.) above, and the accompanying text.

\(^{69}\) See Margaret Jane Radin, n.87 above, at p.1128 (using patent and copyright harmonisation as examples of standardisation taking place in legal areas).