

**The Design Patentability of Computer-
Generated Icons:
the Virtual Article of Manufacture**

by Kenneth R. Carter

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**The Design Patentability of
Computer-Generated Icons, the Virtual Article of Manufacture**¹

Kenneth R. Carter

INTRODUCTION

On May 10, 1988 the United States Patent and Trademark Office issued U.S. Design Patent No. 295,632 to the Xerox corporation.² This was the first ever issued design patent for a computer icon and commentators heralded Xerox for having derived a new form of patent protection for computer software heralding a potential revolution in intellectual property protection for the “look and feel” of computer programs.³

The Computer’s growing importance in everyday life has been driven by the continual and rapid falling of the cost of computer technologies. The cost of semi-conductors which comprise computer memory has been falling at an exponential rate.⁴ This processing power has been largely employed to generate graphical images. Computer applications which make use of graphics to develop the interface between the computer user and the functional aspects of the software have blossomed. New generations of computer software employing “graphical user

¹ The title was chosen because of the Patent and Trademark Office’s nomenclature for computer icons. See, *Patent and Trademark Office Guidelines for Examination of Design Patent Applications For Computer-Generated Icons*, 61 Fed. Reg. 11380 (1996).

² There were five others issued subsequently. See, Daniel J. Kluth & Steven W. Lundberg, *Design Patents: A New Form of Intellectual Property Protection for Computer Software*, 70 J. PAT. & TRADEMARK. OFF. SOC’Y. 847, 847 (1988).

³ *Id.*; See also, Wrenn, *Comment: Federal Intellectual Property Protection for Computer Software Audiovisual Look and Feel: The Lanham, Copyright and Patent Acts*, 4 HIGH TECH. L.J. 279, 287 (1990).

⁴ In 1961, memory cost one dollar per bit; however, in 1995 the same dollar could buy just under 400,000 bits. See, NICHOLAS NEGROPONTE, *BEING DIGITAL* 107 (1995). This is almost a 1177 fold decrease in the price of computer memory.

interfaces”⁵ are more accessible to people because software relying on images is easier for most people to use than computer software which relies on text alone. A graphical use interface is comprised of what are referred to as “computer-generated icons.” The arrangement of these icons to comprise graphical interfaces is commonly referred to as “look and feel.” The look and feel is not only important to the marketing of a computer product but also in developing consumer loyalty for subsequent versions of a particular application.

A competitive software market compels these software developers to use icons to attract consumers as users and creates a demand for intellectual property protection for the look and feel of these interfaces. “In view of the contraction of ‘look’ protection in copyright cases, companies should consider adding trade dress protection and design patent protection as complimentary forms of protection to copyright.”⁶ Design patents for computer-generated icons would provide protection for graphical user interfaces’ look and feel, but only if they are deemed statutory subject matter.

A decade after the Xerox patents were issued, the fruits of design patents as intellectual property protection for computer-generated icons has yet to be harvested. This is because the Patent and Trademark Office (“PTO”), due to difficulties in articulating statutory subject matter, has changed its position on the design patentability of these icons. Starting in 1990, the PTO began rejecting design patent applications on the grounds that the applications failed to claim a design which was statutory subject matter. In order to satisfy the requirements for statutory matter, a design must satisfy all of the requirements of a utility patent.⁷ The design must also be

⁵ The term of art, “graphical user interface” is often abbreviated to “GUI” and pronounced “gooey.” *Id.* at 105. However, the author will use the full term.

⁶ David L. Hayes, *What’s Left of Look and Feel: A Current Analysis* (Part III) 10 COMPUTER LAWYER 13, 13 (July 1993).

⁷ *See*, 35 U.S.C. § 171 (1952).

ornamental and embodied in an “article of manufacture” in order to be protectable.⁸ Defining and claiming an appropriate article of manufacture has proven to be problematic. Such rejections have started to stagnate development of what appeared to be a promising and vivacious new area of law. However, the PTO has published the Guidelines for Examination of Design Patent Applications For Computer-Generated Icons.⁹

This Note strives to elucidate the tests for subject matter for design patents and to identify a genus of articles of manufacture in which computer-generated icons may be embodied thus fulfilling the legal requirements. Computer programmers and designers use the word “virtual” to describe objects which exists solely in the ephemeral memory of a computer. As this word has entered common usage in the American lexicon, it will provide, at least, a conceptual means to describe an article of manufacture which a patentee may claim in order to obtain a design patent. Thus, in the nearly ten years since the PTO issued the Xerox design patents the change in the way computers are understood and described will bring the design elements of a graphical user interface under the penumbra of the subject matter of design patents.

To achieve this end, Part I of this Note lays out a background by discussing what a graphical user interface is. Part I further discusses what is a graphical user interface’s look and the rationale for protecting it from unauthorized duplication. Part II and Part B looks at how other forms of intellectual property protection fail to give complete protection by themselves. Part II looks at protection under the Copyright Act of 1976 while Part B looks Trade Dress protection under the Lanham Act. Part gives the necessary background in the subject matter for patents while Part gives the necessary background of the requirements for obtaining a design

⁸ *See, Id.*

⁹ *See, Patent and Trademark Office Guidelines for Examination of Design Patent Applications For Computer-Generated Icons, 61 Fed. Reg. 11380 (1996).*

patent. Part chronicles a recent trend of cases which hold that the Xerox patents and their progeny are invalid for failure to claim an article of manufacture. Finally, Part proposes how claiming a “virtual article of manufacture” will cure the want of statutory subject matter.

I. “LOOK AND FEEL” OF GRAPHICAL USER INTERFACES

A. GRAPHICAL USER INTERFACE

A computer program is a complex entity; however, the Copyright Act of 1976 (“Copyright Act”) adequately defines a computer program from a legal stand point. “A ‘computer program’ is a set of statements or instructions to be used directly or indirectly in a computer to bring about a certain result.”¹⁰ Computer programs are used to achieve at least three different tasks: 1) arithmetic calculations; 2) logical operations; 3) storage and display of results.¹¹ A computer which runs the program is comprised of several basic elements including: a central processing unit, ethereal memory, input devices, output devices and storage devices.¹² The statements comprising a computer program are written in computer languages called machine language based on a binary code of “yes” and “no.”¹³ The computer languages then build higher level languages called source code.¹⁴

The combination of the computer hardware and programs are completely transparent to most users. That is to say that the user is completely unaware of their existence and how they function together.¹⁵ The only part of a program which is accessible to most users is the user interface. This arrangement of technology creates a dichotomy between the user interface and the “back-end” where the computer performs thousands, if not millions, of instructions per

¹⁰ 17 U.S.C. § 101 (1988).

¹¹ Lotus Dev. Corp. v. Paperback Software Int’l, 740 F. Supp. 37, 42 (D. Mass. 1990).

¹² *Id.* at 43.

¹³ *Id.* at 43-44.

¹⁴ *Id.*

second to complete the tasks inputted from the user via different commands. The interface is the means by which the user can exercise control over the computer by instructing the programs to perform specific functions.¹⁶

In early computer programs, the interface was perfected by what is called a command line. A command line interface consists of alphanumeric or character based interface and does not employ the animation which a graphical user interface uses.¹⁷ Many on-line systems such as VAX and UNIX, or stand alone systems such as IBM DOS still incorporate the command line. The computer presents the user with a prompt such as “\$” or “c:\” at the beginning of the command line to indicate that the computer is ready to receive instructions. This type of system is somewhat unwieldy and thus limits the use of the computer to those with technical training. In order to operate the system the user must know off-hand the commands for executing functions.¹⁸ A typographical error will prevent the user from commanding the computer.

In order to facilitate this process and expand the use of a computer to a greater range of possible users, the Xerox Corporation, at its Palo Alto Research Center (PARC) facilities, began to develop a menu and pointing system.¹⁹ By the late 1970s, Xerox developed a computer system called Smalltalk which had moveable rectangular overlapping windows, window tabs that represented files, and information.²⁰ The system also incorporated a point and click

¹⁵ *Apple Computer, Inc. v. Microsoft Corp.*, 799 F. Supp. 1006, 1017 (N.D. Cal. 1992).

¹⁶ Lance L. Vietzke, *Software as the Article of Manufacture in Design Patents for Icons*, 21 AM. INTELL. PROP. L. ASS’N. Q.J. 138, 151 n. 97 (1993).

¹⁷ *Apple Computer*, 799 F. Supp. at 1018.

¹⁸ Vietzke, *supra* note 16, at 151 n. 97.

¹⁹ NERGOPONTE, *supra* note 4, at 105. Ivan Sutherland conducted similar research projects at the Massachusetts Institute of Technology since 1963. *Id.* at 103.

²⁰ *Apple Computer*, 799 F. Supp. at 1017.

manipulation of the windows and tabs by using a hand operated pointing device called a mouse,²¹ which was developed at the Stanford Research Institute.²²

Advances in technology, most notably the amount of processing power and ephemeral memory available in a stand alone computer, have made graphical user interface possible. A graphical user interface is generated and displayed by a computer by illuminating dots on the monitor screen called pixels.²³ A significant amount of memory is required to control the pixel to generate graphical images.²⁴ In 1979, Motorola introduced its 68000 microprocessor which could be used in a stand alone microcomputer to create a graphical interface.²⁵

Later, designers such as Steve Jobs and Larry Testle (who developed the Macintosh interface after visiting the Xerox PARC facilities), were able employ graphical user interfaces incorporating a comprehensive set of images in an inexpensive commercially successful personal computer.²⁶ This gave rise to the graphical user interface based on pictorial icons representing word commands that is widely used today.²⁷ Icons were originally called “glyphs,”²⁸ short for hieroglyphic, because the icon has a symbolic nature. The advantage of the graphical user interface over text based interfaces is that the user learns to identify the icon with the function which it symbolizes. This makes the program more “user friendly” than a system based on

²¹ *Id.*

²² *Id.*

²³ *Id.* at 1018; The computer graphics community coined the term “pixel” which comes from the words “picture” and “element.” NEGROPONTE, *supra* note 4, at 106.

²⁴ NEGROPONTE, *supra* note 4, at 103-06.

²⁵ *Apple Computer*, 799 F. Supp. at 1018.

²⁶ *Id.*

²⁷ NEGROPONTE, *supra* note 4, at 103-05.

²⁸ *Id.* at 105.

textual commands alone. The icon is lacquered with meaning and represents a specific function, calling up the function which it represents when the user “clicks on” it.²⁹

B. LOOK AND FEEL

The term “look and feel” refers to the audiovisual display of a computer program.³⁰ Look and feel would thus include not only the subject matter of the computer program but also the interface. Look and feel goes beyond the literal display on the screen to include the impression of the total interface.³¹ This is because the ordinary user is able to recognize and attribute not just individual elements of the interface, but combinations and arrangements of those elements as well.³² These are the non-literal elements of a computer program.³³ More specifically, the term “look” refers to the visual aspects of the display and the aural output of the program.³⁴ “Feel” refers to the “interactive” element of the design of the interface. It is the dynamic structure or hierarchy of the program such as essential navigation, sequence organization of the flow of the program, and key strokes or mouse commands.³⁵ It is often argued that the exact

²⁹ *Apple Computer*, 799 F. Supp. at 1018.

³⁰ *See*, *Atari v. North American Philips Consumer Electronics*, 672 F.2d 607, 614 (7th Cir. 1982), *cert denied*, 459 U.S. 880 (1982); *Digital Communications Assoc. v. Softklone Distr. Corp.*, 659 F. Supp. 449, 465 (N.D. Ga. 1987); *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F. Supp 1127 (N.D. Cal. 1987).

³¹ Wrenn, *supra* note 3, at 283.

³² The term “look and feel” was coined to refer to the total picture which the observer receives and not just the literal elements. *See generally*, *Nichols v. Universal Pictures*, 45 F.2d 119 (2d Cir. 1930).

³³ *See*, David L. Hayes, *What’s Left of ‘Look and Feel’: A Current Analysis (Part I)* COMPUTER LAW., May 1993 at 1, 1.

³⁴ *Id.*

³⁵ *Id.*

scope of look and feel may be hard to define.³⁶ This is because a graphic user interface the is more than its elements alone, it is “gestalt.”³⁷

The scope of the look and feel protection varies directly as the interface is more developed and distinctive. Plagiarism is not limited to *de minimus* variations and common elements.³⁸ In order to entice software developers to bring their products to the market, these property rights which society grants must adequately protect the software’s look and feel so that the developer can recover the costs of development.³⁹ The computer software industry has high development costs and rapid obsolescence. While the market place is growing, the cost of the software product at the point of sale is declining.

Imagine the disincentive to software development if after months of work another company could come along and copy your work and market it under it’s own name . . . without legal restraints to copying, companies like Apple could not afford to advance the state of the art.⁴⁰

This protection is needed to aid new companies in the software market, such as i/o 360 digital design,⁴¹ and encourage the development of new ideas and new systems, thereby furthering competition.

³⁶ *Id.*; Wrenn, *supra* note 3, at 283.

³⁷ Wrenn, *supra* note 3, at 283. *But cf.*, Apple Computer, Inc. v. Microsoft Corp., 799 F. Supp. 1006, 1016 (N.D. Cal. 1992). (“Sticking stubbornly to a ‘look and feel’ or ‘gestalt’ theory of this lawsuit, Apple was apparently of the belief that these passwords would automatically get its case around summary judgment motions and to a jury, regardless whether any of the visual displays that potentially comprise this “look and feel” are themselves protectable expression”).

³⁸ Wrenn, *supra* note 3, at 283.

³⁹ *See generally*, REPORT OF THE PRESIDENT’S COMMISSION ON THE PATENT SYSTEM (Nov. 17, 1966).

⁴⁰ Quote attributed to William F. Gates, III, President and CEO of Microsoft, Inc. (circa 1983), (last visited Jan. 31, 1997) <<http://ucsub.colorado.edu/wschaffet/microsuck.html>>.

⁴¹ *See e.g.*, Janet Abrams, *i/o 360*, INDUS. DESIGN MAG., Jan.-Feb. 1996, at 59, (describing i/o 360 digital design’s programmers and designers as envisioning the future of graphical user interface design as incorporating two- and three-dimensional elements with “[r]ich color,

In order to properly manage such development law makers must balance the competing interests of developers, users, and the market place at large to ensure that the market fosters the development of a ready supply of computer software. However, at present, no intellectual property frame work fully addresses the needs of software developers and the need for such protection is growing.⁴² The three primary forms of federal intellectual property protection (copyright, trade dress, and patent) have been used to protect the look and feel of software interfaces.⁴³ The primary vehicle for this has been intellectual property law, expressly copyright protection. In recent case decisions, there has been a trend to curtail such protection.⁴⁴ Employing trade dress protection may not offer complete protection either. The standards of inherent distinctiveness and secondary meaning may be difficult to overcome.⁴⁵ Design patents, however, may be used to plug holes in an incomplete look and feel doctrine.⁴⁶

II. OTHER FORMS OF LOOK AND FEEL PROTECTION

A. COPYRIGHT LOOK AND FEEL

subtle animations and careful choices of typography (influenced, no doubt, by [Dindo] Magallanes' studies with Ellen Lupton, Irma Boom and Alex Isley) add[ing] up to [an interface] with a definite caché").

⁴² Ken Liebman et al., *The Shape of Things to Come: Design Patent Protection for Computers*, COMPUTER LAW., Nov. 1992, at 1; Kluth & Lundberg, *supra* note 2.

⁴³ Wrenn, *supra* note 3, at 280. While using trade secrets to protect the functional parts of software is fairly common; it is counter productive to protecting the look and feel. From the moment the user turns on the computer, the designer wants nothing secret about the interface. If it is not easy for the user to learn how to operate the system, then the advantages gained by using graphics are defeated and the software will not be competitive in the market. *See infra* note 272 and accompanying text.

⁴⁴ *See generally*, Apple Computer, Inc. v. Microsoft Corp., 799 F. Supp. 1006 (N.D. Cal. 1992); Ken Liebman et al., *supra* note 42; Hayes, *supra* note 6 at 13.

⁴⁵ Hayes, *supra* note 6, at 13.

⁴⁶ Kluth and Lundberg, *supra* note 2, at 858.

The cases which have attempted to apply copyright protection to the look and feel of computer programs “can fairly be characterized collectively as a mess.”⁴⁷ In order to establish copyright infringement for graphical user interfaces, a plaintiff must show the existence and ownership of a valid copyright and copying of the copyrighted elements (or their combination).⁴⁸ Independent creation is a complete defense to copyright infringement.⁴⁹ “Copyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.”⁵⁰ A computer program (defined as “a set of statements or instructions”⁵¹) is copyrighted when the programmer writes the instructions into the ephemeral memory of the computer and saves them in a storage device such as a hard drive.⁵² The source and object codes of a computer program are copyrightable if the code is original.⁵³ The source and object codes are considered literary works within the meaning of the Copyright Act,⁵⁴ while the interface is considered an audio visual work.⁵⁵ The extent of

⁴⁷ Hayes, *supra* note 33, at 1.

⁴⁸ Computer Assocs. v. Altai Inc., 982 F.2d 693 (2d Cir. 1992).

⁴⁹ *Id.*

⁵⁰ 17 U.S.C. § 102 (1988).

⁵¹ 17 U.S.C. § 101.

⁵² Hayes, *supra* note 33, at 1-3.

⁵³ Lotus Dev. Corp. v. Paperback Software Int’l, 740 F. Supp. 37, 42, 45 (D. Mass. 1990); Apple Computer Inc. v. Franklin Computer Co., 714 F.2d 1240, 1243 (3d Cir. 1983); Digital Communications Assoc. v. Softklone Distr. Corp., 659 F. Supp. 449, 465 (N.D. Ga. 1987); Broderbund Software, Inc. v. Unison World, Inc., 648 F. Supp. 1127 (N.D. Cal. 1987). *See also*, 17 U.S.C. § 102.

⁵⁴ Whelan Assoc. v. Jaslow Dental Laboratory, 799 F.2d 1222 (3d Cir. 1986).

⁵⁵ The Copyright Act defines an audio visual works as:

works that consist of a series of related images which are intrinsically intended to be shown by the use of machines or devices such as projectors, viewers or electronic equipment, together with accompanying sounds, if any, regardless of the nature of the materials objects, such as films or tapes, in which such works are embodied.

17 U.S.C. § 101. *See also*, Data East USA, Inc. v. Epyx, Inc., 862 F.2d 204 (9th Cir. 1988).

copyright protection for the look and feel of the graphical user interface as an audio visual work is not always easily determined.⁵⁶ This is because copyright protection is not afforded to a procedure, process, system, method of operation, concept, principle or discovery.⁵⁷ In 1974, Congress created the National Commission on New Technological Uses of Copyrighted Works (“CONTU”) to study copyright issues that should be addressed in the Copyright Act of 1976.⁵⁸ However, CONTU never addressed the issue as to whether the look and feel of the interface was protectable.⁵⁹

1. Expression-Idea Dichotomy

Copyright protection is available only to the expression of an idea and not the underlying idea.⁶⁰ The underlying idea is considered a procedure, process, system, method of operation, concept, principle or discovery.⁶¹ This “idea/expression dichotomy”⁶² is the defining standard between things which are the subject of copyright and those which are the subject of utility patents.⁶³ The distinction between the protectable elements of a graphical user interface and the unprotected is not always readily determinable because the combination of such elements may

⁵⁶ Hayes, *supra* note 33, at 1-3.

⁵⁷ “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.” 17 U.S.C. § 102(b) (1976).

⁵⁸ H.R. REP. NO. 1476, 94th Cong. 2d Sess. (1976), *reprinted in* U.S.C.C.A.N. 1976, p. 5650, 5731.

⁵⁹ Lotus Dev. Corp. v. Paperback Software Int’l, 740 F. Supp. 37, 50 (D. Mass. 1990).

⁶⁰ *Id.* at 42.

⁶¹ *Id.*

⁶² Computer Assoc. v. Altai, Inc., 1992 WL 139364, at *9 (2d Cir. 1992) (“Congress made no special exception for computer programs. To the contrary, the legislative history explicitly states that copyright protects computer programs only to the extent that they incorporate authorship in programmer’s expression of original ideas, as distinguished from the ideas themselves.”).

⁶³ Allen Grogan, et al., *Reconciling Copyright Protection for Computer Programs with the Exclusion of Protection for Systems*, COMPUTER LAW., Feb. 1992, at 1, 2.

be an original work of authorship.⁶⁴ Then it must be determined what parts of the computer program are functional as a system or process and therefore not within the scope of what Congress intended to protect.⁶⁵ The hierarchical structure of a program when comprised of all its elements may constitute a system,⁶⁶ thus limiting much protection under copyright. The courts have applied the doctrine in *Baker v. Seldon*⁶⁷ to the interface problem to determine the idea and the copyrightable expression of that idea.⁶⁸ The menu structure and commands are expressions of underlying ideas incorporated in the program.⁶⁹

In determining the existence of a valid copyright the fact-finder must determine what elements of a particular interface are copyrightable.⁷⁰ One early case in which *feel* was protected under copyright was *Digital Communications v. Softklone*.⁷¹ Copyright protection was afforded to a compilation of commands, against the infringing work's verbatim copying of a screen display in which the interface displayed the first two letters of a command in capitals and the command could be effectuated by the users' typing those two capital letters.⁷² The court rejected a defense of standardization.⁷³

However, when considering the idea/expression dichotomy in terms of look protection the court held the following five basic visual elements of the Apple graphical user interface unprotectable ideas:

⁶⁴ *Id.*

⁶⁵ *Id.* at 4-5.

⁶⁶ *Id.* at 3-4.

⁶⁷ 101 U.S. 99 (1879) (holding that the text describing a method for double entry book keeping as copyrightable but the method described was not copyrightable).

⁶⁸ *Lotus Dev. Corp. v. Paperback Software Int'l*, 740 F. Supp. 37, 53-54 (D. Mass. 1990).

⁶⁹ *Grogan*, *supra* note 63, at 2.

⁷⁰ *Hayes*, *supra* note 33, at 2-3.

⁷¹ 659 F. Supp. 449 (N.D. Ga. 1987).

⁷² *Id.*

⁷³ *Id.* at 460.

(1) use of windows to display multiple images on a computer screen and facilitate interaction with the information contained in the windows; (2) use of icons to represent familiar objects from the office environment and facilitate organization of information stored in the computer's memory [examples of these were: folders, documents and a trash can⁷⁴]; (3) manipulation of icons to convey instructions and to control operation of the computer; (4) use of menus to store information or functions of the computers in a place that is convenient to reach, but saves screen space for other images; and (5) opening and closing of objects as a means of retrieving, transferring or storing information.⁷⁵

2. Look and Feel Infringement

Further increasing the difficulty in determining the scope of copyright look and feel protection is a determination of what is a sufficient use or combination of protectable and unprotectable elements from the copyrighted work to the alleged infringing work so as to trigger infringement.⁷⁶ Infringement is determined by comparison of the elements of the copyrighted work and the alleged infringing work as well as the arrangement and combination of those elements.⁷⁷ The arrangement and combination of the elements in the design of the interface could be copyrightable if the interface is comprised of all copyrightable elements, or a combination of copyrightable and uncopyrightable elements.⁷⁸

Protection will be different if the alleged infringing work is a "clone" or nearly verbatim reproduction of the copyrighted interface.⁷⁹ In *Lotus Development Corp. v Paperback Software*

⁷⁴ The Xerox Corporation had already been issued design patents for file divider icon and a trash can icon. See U.S. Design Patent No. 295,631, Dated May 10, 1988; U.S. Design Patent No. 295,632, Dated May 10, 1988.

⁷⁵ *Apple Computer, Inc. v. Microsoft Corp.*, 799 F. Supp. at 1026.

⁷⁶ Hayes, *supra* note 33, at 2.

⁷⁷ *Id.* at 2.

⁷⁸ See Zimmerman, *Substantial Similarity of Computer Programs After Brown Bag*, COMPUTER LAW., July 1992, at 6, 14.

⁷⁹ *Lotus Dev. Corp. v. Paperback Software Int'l*, 740 F. Supp. 37 (D. Mass. 1990).

Int'l, the court pronounced a three-step test to determine copyrightable expression and substantial similarity to establish copyright infringement:

First, in making the determination of “copyrightability,” the decisionmaker must focus upon alternatives that counsel may suggest, or the court may conceive, along the scale from the most generalized conception to the most particularized, and choose some formulation -- some conception or definition of the “idea” -- for the purpose of distinguishing between the idea and its expression

Second, the decisionmaker must focus upon whether an alleged expression of the idea is limited to elements essential to expression of that idea (or is one of only a few ways of expressing the idea) or instead includes identifiable elements of expression not essential to every expression of that idea

Third, having identified elements of expression not essential to every expression of the idea, the decisionmaker must focus on whether those elements are a substantial part of the allegedly copyrightable “work.”⁸⁰

The first part of this test is an abstraction test to determine the extent of the underlying idea and the extent of its expression. The second part of the test determines which expressions of the idea underlying the program are expressed in the interface and therefore copyrightable. The third part of the test determines if there is a sufficiency of copying to invoke infringement. Although an element of the interface design may be unprotectable an original combination of such elements may be copyrightable.⁸¹ Because the comparison is based on the elements and the combination of elements in the interface design, the extent of copyright protection is different for the look or visual components of the interface and the feel or interactive elements of the program. “Looking at the various decisions as a group . . . it appears that the scope of ‘look’ protection has generally been contracted while ‘feel’ protection has generally been expanded.”⁸²

⁸⁰ *Id.* at 60-61.

⁸¹ *Apple Computer, Inc. v. Microsoft Corp.*, 779 F. Supp. 133, 135 (N.D. Cal. 1991).

⁸² David L. Hayes, *What's Left of 'Look and Feel': A Current Analysis (Part II)* COMPUTER LAW., June 1993, at 1, 1.

3. Externalities

Courts have considered the effects of externalities of granting copyright protection to the look and feel of user interfaces.⁸³ In *Apple Computer, Inc. v. Microsoft Corp.*⁸⁴ the court examined the doctrines limiting the extent of copyrightability and applied these factors to the elements graphical user interface. One such doctrine, called merger, is when there exists only one way (or only one practical way due to technical or conceptual constraints) to express an idea.⁸⁵ The functionality also limits copyrightability. When purely functional consideration dictate the design of the interface, the design is beyond the realm of copyright.⁸⁶ Moreover, when graphical user interfaces are, or become, so closely tied to the functional purpose of the software, or the design becomes standard across the industry, then there is no creative effort to employ such design elements.⁸⁷ This is the “scènes à faire” category of works which lack originality and is therefore not copyrightable.⁸⁸ In its decision, the court also articulated the need for standardization, further limiting the scope of copyright protection stating that “overly inclusive copyright protection can produce its own negative effects by inhibiting the adoption of compatible standards.”⁸⁹ The application of the doctrines limited the extent of copyright protection for Apple’s graphical user interfaces.

B. TRADE DRESS LOOK AND FEEL

⁸³ Hayes, *supra* note 33, at 2.

⁸⁴ 799 F. Supp. 1006 (N.D. Cal. 1992).

⁸⁵ *Id.* at 1021.

⁸⁶ *Id.* at 1023. *See also, supra* notes 61 to 67 and accompanying text. The functionality test for a design patent is markedly different. The design to be patented is functional when substantially every part of the shape is dictated by the utility which the article performed. For a further discussion see *infra* note 206 and accompanying text.

⁸⁷ *Apple Computer*, 799 F. Supp. at 1022.

⁸⁸ *Id.* at 1022.

⁸⁹ *Id.* at 1026.

Software developers may seek trade dress to protect the look and feel of their graphical user interfaces. Such protection may be afforded to the configuration of the software as a consumer product.⁹⁰ Congress' power to grant trade dress protection arises from its power to regulate interstate commerce as provided in the commerce clause of the Constitution, rather than the authorship clause which grants Congress the power to grant patents and copyrights.⁹¹ Such "unfair competition," as trade dress is some times called, is codified in Section 43(a) of the Lanham Act.⁹² Trade dress protection for graphical user interfaces comes in the form of creating liability for any person who falsely designates the origin of the software product or creates a product so similar as to be likely to cause confusion as to the product's origin.⁹³ Without such

⁹⁰ Liebman et al., *supra* note 42, at 1-2, 4-7.

⁹¹ Wrenn, *supra* note 3, at 284. The constitutional power to regulate unfair competition is: "Congress shall have Power . . . To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes." U.S. CONST. art. I § 8, cl. 3; *see also*, Const. art. I § 8, cl. 8, ("Congress shall have Power . . . To Promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries").

⁹² The Lanham Act creates civil liability for:

Any person who, on or in connection with any goods or services, or any container for goods, uses in commerce any word, term, name, symbol, or device, or any combination thereof, or any false designation of origin, false or misleading description of fact, or false or misleading representation of fact, which--

(A) is likely to cause confusion, or to cause mistake, or to deceive as to the affiliation, connection, or association of such person with another person, or as to the origin, sponsorship, or approval of his or her goods, services, or commercial activities by another person, or

(B) in commercial advertising or promotion, misrepresents the nature, characteristics, qualities, or geographic origin of his or her or another person's goods, services, or commercial activities,

shall be liable in a civil action by any person who believes that he or she is or is likely to be damaged by such act.

15 U.S.C., § 1125(a) (1988). It is interesting to note that if a software product is not sold in interstate commerce, within Congress's ability to regulate, then there may be not federal trade dress protection. This is not such an academic problem when considering that there is oftentimes reproduction of software between individuals or the custom development of software using authoring tools which would not travel in interstate commerce.

⁹³ Wrenn, *supra* note 3, at 284.

protection, other potential infringers could capitalize on the reputation, efforts, and good will of other competitors in order to deceive the consuming public into purchasing its products, thinking that the product comes from another source.⁹⁴ In order to gain such protection the software developer must establish three elements: 1) distinctiveness of the product; 2) likelihood of confusion by consumers between the infringing and original products; and 3) nonfunctionality of the product's design elements on which protection is sought.⁹⁵

1. Distinctiveness

There are two ways to show the distinctiveness of the configuration of a product to get trade dress protection. These are "inherent distinctiveness" and "secondary meaning."⁹⁶ Inherent distinctiveness is the creation of a product configuration which has a "distinct visual image" to the consumer for that product.⁹⁷ Such a determination is made *ad hoc*, considering what the consumer recognizes as distinctions in between programs of the same type.⁹⁸ When applied to a computer user interface, in order to rise to the level of distinctive, this may be a part of the interface or the whole interface.⁹⁹ The more ornamental features an interface has (color and design elements),¹⁰⁰ the more likely it is to be distinctive.¹⁰¹ However, a problem arises in showing that the interface is inherently distinctive when industry standards are pervasive.¹⁰²

⁹⁴ *Id.* at 285.

⁹⁵ *Fuddruckers v. Doc BR Others Inc.*, 836 F.2d 837, 842 (9th Cir. 1987).

⁹⁶ *Hayes, supra* note 6, at 13.

⁹⁷ *Ambrif v. Kraft, Inc.*, 805 F.2d 974, 979 (11th Cir. 1986); *Fuddruckers*, 836 F.2d at 844.

⁹⁸ *Hayes, supra* note 6, at 13.

⁹⁹ *Id.*

¹⁰⁰ Many operating systems now allow the user to change the color or placement of design elements. Such customization of the interface might undermine the distinctiveness of the interface.

¹⁰¹ *Hayes, supra* note 6, at 14.

¹⁰² *Id.*

Thus, when a new interface or an improvement on an existing interface is introduced, many other interfaces may be, at first, indistinguishable to the consumer despite important distinctions.

An alternative to inherent distinctiveness is showing that the product configuration of the interface has secondary meaning.¹⁰³ Secondary meaning in the product or the feature is when consumers can identify the source of the software merely by looking at the interface.¹⁰⁴ If the consumer can identify the product configuration, the interface, with the source of the software then it is said to have secondary meaning.¹⁰⁵ This is oftentimes created by advertising or long term exclusive use of the product configuration over time.¹⁰⁶

The existence of secondary meaning or inherent distinctiveness is determined from the stand point of the consumer and is demonstrated with consumer surveys to show how, and if, consumers are likely to recognize the trade dress.¹⁰⁷ If the consumer can distinguish the look and feel of the interface then it might have secondary meaning.¹⁰⁸ Secondary meaning may afford more protection based on corporate images, thereby favoring established players in the market who can afford to advertise or who have had long-term exclusive use of interface design elements.¹⁰⁹ Thus, secondary meaning has been of limited use to computer designers (especially new market players) because it only affords protection to well distributed, well recognized

¹⁰³ *Id.* at 13

¹⁰⁴ *Inwood Labs v. Ives Labs*, 456 U.S. 844, 851 n. 11 (1981).

¹⁰⁵ Liebman et al., *supra* note 42, at 1.

¹⁰⁶ *Id.* at 2.

¹⁰⁷ *Id.* at 1.

¹⁰⁸ Wrenn, *supra* note 3, at 286.

¹⁰⁹ Such elements may otherwise be standard across the industry. *See Hayes, supra* note 6, at 13.

products.¹¹⁰ However, the deliberate copying of the interface will create a presumption of secondary meaning.¹¹¹

One problem that computer software developers may encounter with developing secondary meaning is bundling. Many programs are sold as a group or come with the purchase of a new computer. In this way many consumers may not be able to identify the origin of software. Similarly, when a developer writes for a particular environment, say Windows or Macintosh, then they may use standard interface elements.¹¹² The user will be unaware of the source of the software, so there can be neither inherent distinctiveness nor secondary meaning in the interface configuration.¹¹³ Moreover, the user may or may not associate the software with the computer, Windows or Macintosh, but does not necessarily know the source of the software.¹¹⁴ Moreover, in order to acquire and insure the continued existence of secondary meaning, developers must be vigilant about protecting their graphical user interfaces from competing products or they will lose distinction because there will be other products which look and feel similar to theirs.¹¹⁵ Finally, since one must rely on the perceptions of consumers to get trade dress protection, the software developer may be at the whims of marketing trends.

2. Nonfunctional

¹¹⁰ *Id.*

¹¹¹ *See* Transgo, Inc. v. Ajax Transmission Parts Corp., 768 F.2d 1001 (9th Cir. 1985), *cert. denied*, 474 U.S. 1059 (1986). In *Fuddrucker v. Doc BR Others Inc.*, 836 F.2d 837, 844 (9th Cir. 1987); however, the Ninth Circuit refused to hold that evidence of deliberate copying shifts the burden of proof on the issue of secondary meaning.

¹¹² Wrenn, *supra* note 3, at 286.

¹¹³ *Id.*

¹¹⁴ *Accord, Id.*

¹¹⁵ *Id.* at 287 n. 40.

The courts have read into section 43(a) of the Lanham Act the requirement that the elements of a product configuration which are to be protected by trade dress be nonfunctional.¹¹⁶ Such a requirement is a check on the possibility of a broad expanse of the trade dress monopoly.¹¹⁷ Is a graphic interface protectable as being nonfunctional? This question is dependent on how the interface's utilitarian requirements are viewed in light of the legal standards.¹¹⁸ Icons facilitate operation of the program but are not required. The same tasks can be accomplished by other arrangements.¹¹⁹

The doctrine of nonfunctionality is broken down into two classifications, *de facto* and *de jure* functionality.¹²⁰ *De facto* functionality is when the element itself can be considered functional while *de jure* functionality is a legal conclusion.¹²¹ *De facto* functionality can be shown by the "design of a 'utilitarian' object . . ." ¹²² A design is functional when it is required to accomplish a desired task.¹²³ The economy of the design also demonstrates functionality. If the design makes the product cheaper to produce or to use, this may evidence functionality.¹²⁴ Moreover, the existence of an alternative interface design is not dispositive of nonfunctionality thereby limiting the effectiveness of trade dress protection.¹²⁵ The standard for *de jure* functionality is if the elements of the design of the interface or their combination would create

¹¹⁶ *In re Morton-Norwich*, 671 F.2d 1332, 1336 (C.C.P.A. 1982).

¹¹⁷ *In re Dieister Contractor Co.*, 289 F.2d 496, 504 (C.C.P.A. 1961).

¹¹⁸ Wrenn, *supra* note 3, at 288.

¹¹⁹ See *infra* part VI.C.

¹²⁰ *Morton Norwich Prods.*, 671 F.2d at 1337.

¹²¹ *Id.*

¹²² *Id.* at 1338-39.

¹²³ *Id.*

¹²⁴ *Id.* at 1339.

¹²⁵ Wrenn, *supra* note 3, at 291. Since the existence of an alternate design is within the standard of nonfunctionality for design patents, design patents may afford some protection when trade dress protection is not available because of nonfunctionality requirements. See *infra* part VI.C.

such a broad monopoly so as to inhibit fair competition in the market. The justification for trade dress protection is to identify the source of the product.¹²⁶ Thus, in the software industry where there are standard interfaces there would not be much opportunity for trade dress protection because a trade dress protection may exclude others from using industrial standards.¹²⁷

¹²⁶ Wrenn, *supra* note 3, at 290.

¹²⁷ *Id.*

3. likelihood of confusion

Finally, in order to enforce trade dress protection for a user interface against potential infringers, the developer must be able to demonstrate that there is a likelihood of confusion by customers as to the source of the software.¹²⁸ There is only tortious conduct under the Lanham Act when a competing interface is likely to confuse the consumer as to the origin (or developer) of the software. If the interface is similar yet its source is clearly identified, such identification may defeat any grounds for relief.¹²⁹ In any regard, this is a factual question which depends on whether consumers had been exposed to the products prior to purchase.¹³⁰ The impact of a developer's marketing and the sophistication of consumers will have an impact on the likelihood of confusion test.¹³¹

III. OBTAINING A DESIGN PATENT

A. CONDITIONS FOR A VALID PATENT

Utility patents are available for processes, machines, manufactures, compositions of matter (including living things like monoclonal antibodies¹³²), improvements, and methods of doing business.¹³³ Patents are also available for designs.¹³⁴ A patent is a constitutionally sanctioned monopoly to exclude others from making, using, or selling the patented invention for a term of fourteen to twenty years.¹³⁵ The rationale mandates a *quid pro quo*. In order to get the

¹²⁸ Digital Equipment Corp. v. C. Itoh & Co., 229 U.S.P.Q. 598 (D.N.J. 1985).

¹²⁹ *Id.*

¹³⁰ MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION § 8:2.

¹³¹ Wrenn, *supra* note 3, at 287.

¹³² Diamond v. Chakrabarty, 447 U.S. 303 (1980).

¹³³ 35 U.S.C. § 101 (1952)

¹³⁴ 35 U.S.C. § 171 (1952).

¹³⁵ The constitutional source of the patent grant is Article I, Section 8 Clause 8 which provides that "Congress shall have Power . . . To Promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective

patent, the patentee must sufficiently disclose how his invention works. This information enters into public domain after the life of the patent.

The monopoly allows the patentee to recover research and persuasion costs. A free market abhors the existence of a monopoly as it is an inefficient market structure transferring wealth from all market participants to the monopoly holder. Yet without the patent monopoly individuals and corporations have less incentive to engage in innovation and are likely to copy other's existing technologies. Fortunately for us, the framers of the Constitution understood and granted Congress the power to issue patents. Thomas Jefferson, in framing the original U.S. patent system,¹³⁶ argued:

If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself in to the possession of every one, and the receiver cannot dispossess himself of it That ideas should freely spread from one to another over the globe¹³⁷

The Patent Act of 1952 (hereinafter, "Patent Act") is the most modern form attempting to achieve this goal.

1. The Patent System

The prosecution of a patent is done by submitting an application to the PTO.¹³⁸ The application must be in writing and include: the name of the inventor(s)¹³⁹ specifications,

Writings and Discoveries." U.S. CONST. art. I, § 8 cl. 8. The term of a utility patent was recently increase from seventeen years from date of issue to twenty years from the date of filing. 35 U.S.C. §154(a)(2) (1995). "Patents for designs shall be granted for the term of fourteen years from the date of the grant." 35 U.S.C. § 173 (1952).

¹³⁶ See generally, Wrenn, *supra* note 3, at 289.

¹³⁷ 6 WRITINGS OF THOMAS JEFFERSON 180-181, (H.A. Washington ed. 1854).

¹³⁸ The PTO was established by 35 U.S.C. § 1.

drawings, claims, an oath and a fee.¹⁴⁰ The application is then reviewed by the PTO examiners who issue or reject the application.¹⁴¹ The information contained in the patent application is maintained in secret until the patent issues and then is “disclosed” to the public.¹⁴²

Since patents are issued on priority of invention and filing and since independent creation of the invention is not a defense in patent law only one patent will issue.¹⁴³ The date of invention and reduction to practice will be used to determine priority.¹⁴⁴ Thus the PTO (or the court) must decide which patent has priority. The primary question in determining who invented first is reduction of the invention to practice by diligence. If the first inventor has concealed, abandoned, or suppressed the invention he may lose the right to patent.¹⁴⁵ The applicant can appeal a rejection within the PTO to the Board of Appeals and then to the Court of Appeals for the Federal Circuit.¹⁴⁶ The Applicant may also, by filing suit in the United States District Court for the District of Columbia, seek to enjoin the Commissioner of Patents and Trademarks to issue a patent, which will review the patent application *de novo*.¹⁴⁷ Nonetheless, much deference is given to expertise of the examiners at the PTO and in litigation over a patent, issued patents

¹³⁹ Only a natural person, not legal persons, is entitled to a patent and must be named as the inventor(s) in the prosecution of a patent. 35 U.S.C. § 102(f).

¹⁴⁰ 35 U.S.C. § 111; 37 C.F.R. 1.51 (1996).

¹⁴¹ 35 U.S.C. § 301; 37 C.F.R. 1.501 (1996); *see also*, MANUAL OF PATENT EXAMINATION PROCEDURE § 2202 (1995).

¹⁴² 35 U.S.C. § 122 (1952).

¹⁴³ *Christie v. Seybold*, 55 Fed. 69 (6th Cir. 1893).

¹⁴⁴ Two applicants filed for a patent for the same invention within a day of each other, the first inventor is the first to reduce the invention to practice and will get the patent (not necessarily the first to conceptualize or the first file). This is to encourage inventors to complete the invention and to file promptly. *Id.*

¹⁴⁵ 35 U.S.C. § 102 (1975).

¹⁴⁶ 37 C.F.R. § 1.191 (1996).

¹⁴⁷ *Id.*

are presumed to be valid; however, will not restrain the courts from reviewing patents for invalidity.¹⁴⁸

2. Specifications and Claims

The patent application must disclose the invention by including specifications of the invention and at least one claim which describes the invention.¹⁴⁹ In the legal sense, the claims are the invention as they define the meets and bounds of the intellectual property.¹⁵⁰ This is

¹⁴⁸ 35 U.S.C. § 282 (1984) (each claim is also valid irrespective of other claim). *See also, infra* part V.B.

¹⁴⁹ The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112 (1975). By contrast to utility patents, design patents are allowed only a single claim. 37 C.F.R. § 1.153(a) (1996) (“More than one claim is neither required nor permitted”).

¹⁵⁰ Infringement of the patent will be determined by the scope and breath of the claims allowed by the PTO. *See McGill, Inc. v. John Zink Co.*, 736 F.2d 666 (Fed. Cir 1984).

referred to as “enabling disclosure.”¹⁵¹ It is the central *quid pro quo* of a patent grant because it “is necessary to give to the public after the privilege shall expire, the advantage for which the privilege is allowed, and it is the foundation of the power to issue the patent.”¹⁵² At the end of the life of the patent, the knowledge disclosed (specified and claimed) in the patent becomes public domain.¹⁵³ Therefore, the applicant must specify the invention so that “any person of skill in the art” could produce the invention.¹⁵⁴ In the patent application, the applicant must clearly describe the invention and can be his own lexicographer to create and define words to describe the invention so long as he uses the words consistently.¹⁵⁵

The disclosure requirement is also justified as means of limiting the scope of such a potent property right. If the patent were not so limited, the design could be ubiquitously used on other items.¹⁵⁶ This effect would be twofold. First, the patentee would receive a windfall by allowing him to exclude others from using the design in an unlimited number of contexts.¹⁵⁷ Moreover, without such disclosure, the public would not know with any certainty the extent of the monopoly¹⁵⁸ making it more difficult for good faith inventors to avoid infringement of the

¹⁵¹ See *supra*, note 149 and accompanying text

¹⁵² *Grant v. Raymond*, 31 U.S. (6 Pet.) 218 (1832).

¹⁵³ *Id.*

¹⁵⁴ 35 U.S.C. § 112 (1975); see also, Examination Guidelines for Computer Related Inventions, 61 Fed. Reg. 7478, 7480 (Feb. 28, 1996). The person of ordinary skill means those who have an understanding of the technology which make possible the invention. See *Tannage Patent Co. v. Zahn*, 66 F. 986, 988 (C.C.N.J. 1895).

¹⁵⁵ *Tannage Patent Co.*, 66 F. at 988; See also, 35 U.S.C. §112. *J.T. Eaton & Co. v. Atlantic Paste & Glue Co.*, 106 F.3d 1563 (Fed. Cir. 1997) (citing *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (inventor as lexicographer may define his terms in the patent disclosure)).

¹⁵⁶ *Ex parte Strijland*, 26 U.S.P.Q.2d 1259, 1263 (B.P.A.I. 1992).

¹⁵⁷ *Id.*

¹⁵⁸ *Id.*

patent,¹⁵⁹ lowering the predictability,¹⁶⁰ and creating a need to provide remedies for infringement¹⁶¹ and damages.¹⁶²

An extremely important balance between broad and narrow use of language in describing the invention therefore exists. The broader the claim, the greater the grant of rights; however, it is also more likely that the PTO will reject the application.

3. Novelty

Novelty is a condition precedent insuring that the information disclosed in the patent is valuable consideration for the exchange patent monopoly, by not granting an applicant a patent on existing idea; he must disclose some new information.¹⁶³ The term “prior art” is used to describe all the inventions which are known or used by the public. Prior art can be inventions, ways of doing things, or ideas published in articles. Because novelty is a requirement of patentability, any prior art makes something unpatentable, or at least limits the claims to what is new.¹⁶⁴ The Patent Act further places the requirement of novelty on the invention because the underlying reason for a patent is adding to the wealth of human knowledge and if something is not new then it does not add to that stock.¹⁶⁵

¹⁵⁹ *Id.*

¹⁶⁰ *See Id.*

¹⁶¹ 35 U.S.C. § 271 (1975).

¹⁶² 35 U.S.C. § 289 (1975).

¹⁶³ “A person shall be entitled to a patent unless-- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for the patent . . .” 35 U.S.C. 102(a) (1975).

¹⁶⁴ 35 U.S.C. § 102.

¹⁶⁵ The court has read into the statute the requirement that the knowledge contemplated by 102(a) must be available to the public in order to be considered prior art. *Application of Borst*, 345 F.2d 851 (C.C.P.A. 1965).

Prior art must anticipate all of the invention's elements in the patent claim.¹⁶⁶ To encourage inventors to file patent applications quickly, if the invention was described in a printed publication (*viz.* product instructions or advertisements) in this or another country more than one year before filing then such prior art bars the patent.¹⁶⁷ Prior art is uncovered by the PTO in patents and articles in technical materials.¹⁶⁸

4. Non-obviousness

Furthermore, to obtain a patent, the invention must be non-obvious.¹⁶⁹ In determining whether the invention claimed in a utility patent is non-obvious courts consider how the claimed invention differs from the prior art,¹⁷⁰ as well as the level of skill needed to conceive of the invention compared to the level skill of the ordinary person skilled in the art.¹⁷¹ In order to be

¹⁶⁶ *Id.*

¹⁶⁷ A person shall be entitled to a patent unless

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for the patent in the United States.

35 U.S.C. § 102(b).

¹⁶⁸ 37 C.F.R. § 1.107 (1996).

¹⁶⁹ (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains

(c) Patentability shall not be negated by the manner in which the invention was made. Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

35 U.S.C. § 103 (1984).

¹⁷⁰ *Graham v. John Deere*, 383 U.S. 1 (1966).

¹⁷¹ *Id.*

non-obvious, the invention must in some way advance the state of the art.¹⁷² Courts may also look to so-called secondary considerations such as the commercial success of the invention.¹⁷³ As this determination is based on what is different between the claims and the prior art, the determination of non-obviousness is fact intensive.

The determination of the non-obviousness of a design patent is not as rigorous as that of a utility patent.¹⁷⁴ Because the appearance of the design is the subject matter of the invention claimed in the patent, a finding that the design is non-obvious is based largely on a “visual observation” of the design in light of the prior art.¹⁷⁵ Moreover, secondary considerations are not as important in determining non-obviousness because an objective determination is not so readily made.¹⁷⁶

Unfortunately, in an action for infringement of a design patent there are rarely any of the “signposts” of patentability which enable an objective evaluation of the obviousness vel non of utility inventions. Since the design patent covers only optional esthetic features, there is never a long-felt need or an unsuccessful search, and it is rarely possible to allocate the specific portions of the profits on a commercial product which are respectively attributable to its utilitarian advantages and to its visual appeal. Thus, in the final analysis, a court’s evaluation of the patentability of a design is essentially subjective and personal artistic tastes are unpredictable and inexplicable - one viewer’s mural is another’s graffiti.¹⁷⁷

¹⁷² *Id.* at 14 (citing S. REP. NO. 1979, 82d Cong., 2d Sess. (1952); H.R. REP. NO. 1923, 82d Cong., 2d Sess. (1952), *reprinted in* U.S.C.C.A.N. 1952, p. 2394).

¹⁷³ *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387 (Fed. Cir. 1988) (holding that non-obviousness may be demonstrated by a nexus between commercial success and the patented invention).

¹⁷⁴ *Plantronics, Inc. v. Roanwell Corp.*, 403 F. Supp. 138 (S.D.N.Y. 1975).

¹⁷⁵ *Appliaction of Glavas*, 230 F.2d 447 (C.C.P.A. 1956); *Blumcraft v. Brenner*, 247 F. Supp. 978 (D.C.D.C. 1965).

¹⁷⁶ *Plantronics*, 403 F. Supp. at 159-160.

¹⁷⁷ *Id.*

However, courts have wrestled with the question of which standard to apply to determine if the design is non-obvious. The two standards view the design alternatively from the vantage point of the so-called “ordinary person” or the “ordinary designer:”

As written, and as interpreted in cases dealing with utility patents, the statutory non-obviousness requirement focuses not on some hypothetical “ordinary” person, or layman, but on one “reasonably skilled” in the applicable art. There is disagreement among the Circuits, however, when the non-obviousness requirement is carried over as it must be according to 35 U.S.C. § 171 into the design patent area. . .[T]he Ninth Circuit applied the level of knowledge of an “ordinary intelligent man” as the standard by which obviousness or non-obviousness of a design should be determined, following the lead of the Court of Customs and Patent Appeals, which had said concerning obviousness:

The test is inherently a visual test, for the design is nothing more than appearance, and the appearance is that of the article as a whole. . . . No special skill is required to determine what things look like, though individuals react differently. It is bound to be an individual reaction

On the other hand, the Second, Third, Sixth, Eighth, and District of Columbia Circuits have phrased their standard for design obviousness in terms of the “worker of ordinary skill in the art” or the “ordinary designer,” though those courts recognize that novelty and ornamentality distinct requirements of design patentability contained in 35 U.S.C. § 171 are to be assessed from the viewpoint of the “ordinary observer.”¹⁷⁸

These two standards will impact the patentability of icons because ordinary persons and ordinary designer will have different knowledge about icons which would be prior art and what would have been obvious to the person skilled in the art at the time of invention.¹⁷⁹

¹⁷⁸ Sidewinder Marine, Inc. v. Starbuck Kustom Boats and Prods., Inc., 597 F.2d 201, 207-208 (10th Cir. 1979) (citations and footnotes omitted).

¹⁷⁹ See discussion *infra* parts VI.A, VI.B.

B. ICONS AS STATUTORY MATTER FOR DESIGN PATENTS

1. Conditions for a Valid Design Patent

The first patent act affording design patent protection was enacted in 1842, the section was subsequently revised to its current language in 1902 and preserved in the 1952 omnibus revision of the patent act.¹⁸⁰ A design patent is a patent where the invention is neither a process, machine, manufacture, composition of matter, improvement, or method of doing business but rather an ornamental design. Pursuant to the enabling section, design patents are issued to “[w]ho[m]ever invents any new, original and ornamental design for an article of manufacture . . . subject to the conditions and requirements of this title.”¹⁸¹

There are three central requirements to determining whether an icon constitutes statutory matter: that the design of the icon be ornamental, embodied in an article of manufacture, and describable in the patent application. Moreover, the language that the design patent is “subject to the conditions and requirements of this title” requires the patentee fulfill all requirements for utility patents such as inventorship, application, novelty, and nonobviousness as well.¹⁸²

Design patents further the constitutional goal of promoting the useful arts by protecting the ornamental aesthetic appearance of an article.¹⁸³ Design patents encourage the improvement of appearance which is vital to making a commercial product.¹⁸⁴ This argument has been explained by the fact that the word “ornamental” was substituted for the word “useful” in successive revisions of the Act.¹⁸⁵ Because the design patent only protects ornamental elements,

¹⁸⁰ Vietzke, *supra* note 16, at 152-53.

¹⁸¹ 35 U.S.C. § 171 (1952).

¹⁸² *Chrysler Motors Corp. v. Auto Body Panels of Ohio, Inc.*, 908 F.2d 951 (Fed. Cir 1990).

¹⁸³ U.S. CONST. art. I, § 8, cl. 8.

¹⁸⁴ *Gorham Mfg. Co. v. White*, 81 U.S. (14 Wall.) 511 (1872).

¹⁸⁵ Vietzke, *supra* note 16, at 152.

utilitarian aspects are not protected.¹⁸⁶ The court has pronounced that three types of designs constitute statutory subject matter: 1) designs applied to surfaces, 2) designs which define the shape or configuration of an article, or 3) designs which combines the two.¹⁸⁷ The court has also held that Section 171 requires that the design be embodied in an article of manufacture which is disclosed in the patent application.¹⁸⁸ Additionally, the question of the ephemeral nature of a computer program must be addressed when considering the article of manufacture and the design. However patents should be available for the designs of graphical user interfaces, provided the design meets the statutory requirements.

¹⁸⁶ *Gorham*, 81 U.S. 511.

¹⁸⁷ *In re Schnell*, 46 F.2d 209 (C.C.P.A. 1931).

¹⁸⁸ *In re Zahn*, 617 F.2d 261 (C.C.P.A. 1980). *Fitzgerald v. Arbib*, 268 F.2d 763, 764 (C.C.P.A. 1959) (citing *Dieterich v. Leaf*, 89 F.2d 226) (“to be a controlling authority standing for the proposition that to have an actual reduction to practice in the case of a design for a three-dimensional article, it is required that it should be embodied in some structure other than a mere drawing”).

2. Novelty

The Section 171 requirement that the design be “new and original”¹⁸⁹ imports the condition of novelty for a design patent.¹⁹⁰ There is no justification in giving a patent to one who has not given the public new information; thus, only novel designs can be patented.¹⁹¹ In order to determine whether a design incorporates a novel idea the PTO examines the application in light of the “prior art” in the “analogous arts.”¹⁹² In short, the PTO examiner looks for similar designs which are either embodied in similar articles of manufacture or described in printed publications.¹⁹³ The timing of the invention of the design in respect to the prior art is also important. The invention, as defined by the claim, conceived by the applicant before prior art and the application must have been filed within a year of the public use or publication.¹⁹⁴ If the patentee can show that he conceived of the invention before the prior was known to the public then his invention is not “anticipated” by the prior art and he antedates the prior art.¹⁹⁵

¹⁸⁹ 35 U.S.C. § 171 (1952).

¹⁹⁰ *Application of Bartlett*, 300 F.2d 942 (C.C.P.A. 1962). The novelty requirement is codified in 35 U.S.C. § 102(a), (b) (1975).

¹⁹¹ See *supra* part V.B.

¹⁹² MANUAL OF PATENT EXAMINATION PROCEDURE § 1504.02 (1995).

¹⁹³ 35 U.S.C. § 102.

¹⁹⁴ *Id.*

¹⁹⁵ See generally, *Application of Foster*, 343 F.2d 980 (1965) (an applicant can swear by use of a Rule 131 Affidavit that his invention was earlier).

The test employed by the PTO to determine if the design is novel is whether “the prior art shows an article of ‘substantially the same appearance’ to the ordinary observer.”¹⁹⁶ This does not, however, require the designer to reinvent the wheel for each design to be patented. The standard is not so rigorous. In *Application of Bartlett, et al.*,¹⁹⁷ the application for a design patent for a plastic tile which looks like marble was rejected because of prior art. The design of the prior art was a random pattern created on the tile by smearing pigments unidirectionally. On appeal the new design was held to be novel because the design was made by smearing pigments in two directions.¹⁹⁸ Applying the standard to designs for icons, is highly fact intensive and the court must look at the new design and decide if other icons look so much the same that they appear to be substantially the same.

However, a question arises when designers use as interface elements, images of objects which already exist independent of graphical user interfaces. Interface design elements such as push buttons, pages, and desk tops have existed in the real world and designers have made use of them as icons because of their symbolic nature. The design need only be compared to the

¹⁹⁶ *Id.* (citing *In re Glavas*, 109 U.S.P.Q. 50, 52 (C.C.P.A.).

¹⁹⁷ *Application of Bartlett*, 300 F.2d 942 (The test for novelty is that the average observer takes the design for new and not a mere modification).

¹⁹⁸ *Id.*

analogous arts such as other computer icons, for example, a button.¹⁹⁹ Because push buttons have been used on everything from automobiles to toasters they cannot be novel. However, toasters are not analogous to computers. The idea of designing command buttons as a control device in a computer interface is novel as design.

3. Ornamental or Functional

Some commentators have suggested because functional considerations determine the design of computer icons they are not “ornamental” designs within the meaning of 35 U.S.C. § 171.²⁰⁰ Because the design patent is issued based on the ornamental nature of the patented design,²⁰¹ it protects only appearance, not the function or the utility of the article of manufacture. This does not, however, mean that the article must be completely useless in order to constitute statutory subject matter. The subject matter must be the product of aesthetic skill, but need not be attractive.²⁰² Courts, as well as the PTO, are loathe to engage in the determination of what is aesthetically pleasing.²⁰³ However, irrespective of skill in the aesthetics of the design, if the design is concealed from the user in the ordinary use of the article, the design cannot be appreciated and is not considered an ornamental design within the meaning of Section 171.²⁰⁴

There may be a blending of the configuration of functional and ornamental considerations which do not pose a bar to patentability. The test for the distinction between what

¹⁹⁹ Buttons are commonly used today in both Macintosh and Windows based programs so they are no longer novel. However, this would not preclude the use of another type of symbolic controller, say a plug and socket.

²⁰⁰ Patent and Trademark Office Guidelines for Examination of Design Patent Applications For Computer-Generated Icons, 61 Fed. Reg. 11380 (1996).

²⁰¹ 35 U.S.C. § 171 (1952).

²⁰² Bergstrom v. Sears, 496 F. Supp. 476 (D. Minn. 1980).

²⁰³ *Id.*; see also, Bentley v. Sunset House Distributing Corp., 359 F.2d 140, 149 (9th Cir. 1966) (“The law does not require that the [design] be attractive to us; judges are of the laity in so far as artistic judgment is concerned”).

²⁰⁴ *In re Stevens*, 173 F.2d 1015 (C.C.P.A. 1949).

is functional and what is ornamental is whether the form of the “design is dictated by functional considerations.”²⁰⁵ If so, the design is not ornamental.²⁰⁶ The fact that a part of the design is functional is not a total bar. The examiner must also determine the portions of the design which are patentable. The rejection of the application is only proper when substantially every part of the shape is dictated by the utility which the article performed.²⁰⁷ If an alternate design will produce the same function then the design is ornamental.²⁰⁸ “While Xerox patents to date cover designs which somehow relate to the functioning of the underlying software, designs which are of substantially or completely non-functional nature such as fanciful screen or windows border designs would also be patentable.”²⁰⁹ This test is simpler than the conceptual separability test in copyright law, making design patent litigation easier to manage and more predictable than suit in copyright.²¹⁰

It has been argued that these icons are “surface ornamentation” and not functional because their function is almost completely independent of their shape.²¹¹ However, in addition to describing and claiming the icon’s design, the patent applicant must expressly disclose the manner of use of the icon by claiming its embodiment in a particular article of manufacture.²¹² The design of the icon is not the mere invention of a picture.²¹³

²⁰⁵ Powers Control Group v. Hybernetics, 806 F.2d 234, 237 (Fed. Cir. 1986).

²⁰⁶ Avia Group Int’l, Inc. v. L.A. Gear California, Inc., 853 F.2d 1557 (Fed. Cir. 1988); *Powers Control Group*, 806 F.2d 234; *Ex parte Jaffe*, 147 U.S.P.Q. 45 (P.O.Bd.App. 1964) (the design for a printed circuit board was not patentable as functional). *See also*, DONALD CHISUM, PATENTS § 1.04[2][d] (1988).

²⁰⁷ *Ex parte Levinn*, 136 U.S.P.Q. 606, 607 (C.C.P.A. 1962).

²⁰⁸ *Id.*

²⁰⁹ Kluth & Lundberg, *supra* note 2, at 853.

²¹⁰ *Id.* at 854-55.

²¹¹ Kluth and Lundberg, *supra* note 2, at 852.

²¹² *Ex parte Donaldson*, 26 U.S.P.Q.2d 1250, 1258 (B.P.A.I. 1992).

²¹³ *Id.*

There exists a counter argument that the icon is functional. Icons were originally called “glyphs,” short for hieroglyphic, because the icon or glyph has a symbolic nature.²¹⁴ The importance of the graphical user interface is that the user learns to identify it with the function which the icon symbolizes. This makes the program more “user friendly” than a system based on textual commands alone. Because the icon is lacquered with meaning and represents a specific function, the icon itself has a function, calling up the function which it represents. This argument that the icon is functional in that it represents software function is dictated by the particular configuration of the interface in each case. The PTO will, therefore, examine each application on an *ad hoc* basis in order to determine whether the icon’s design is dictated by its function.²¹⁵

However, applying the legal construct of functionality, the icon can still be deemed ornamental within the meaning of Section 171. Granted, because the icon has symbolic meaning, it is to some degree utilitarian; nonetheless, higher level software - the source and object codes - is performing the computer functions and these functions are can *represented* by a wide variety of graphic images. The limits on this hieroglyphic language is the imagination of the designer on the one hand and the ability of the user to learn the icons symbolic meaning²¹⁶ on

²¹⁴ NEGROPONTE, *supra* note 4, at 105.

²¹⁵ Patent and Trademark Office Guidelines for Examination of Design Patent Applications For Computer-Generated Icons, 61 Fed. Reg. 11380, 11381 (1996) (citing Avia Group Int’l, Inc. v. L.A. Gear California, Inc., 853 F.2d 1557 (Fed. Cir. 1988)).

Compliance with the ornamentality requirement of 35 U.S.C. 171 will be addressed on a case-by-case basis pursuant to prevailing laws, rules, and regulations distinction exists between the functionality of an article and the functionality of the design of the article that performs the function. Based on this distinction, the design of a computer-generated icon may not be dictated by the function associated with the computer-generated icon.

Id.

²¹⁶ Obviously, the icon will be more “user friendly” if it resembles an image which the user can associate with the function which the icon represents.

the other. Thus, if an alternate design for icons can represent the same computer function, then the design of the icon is not “dictated functional considerations,”²¹⁷ and the icon is an ornamental design. However, it is also argued that if a design patent unduly hinders competition then it must be functional as a matter of law and not protectable.²¹⁸ So, the courts must balance the interests of giving incentives to reward innovation against granting a right so broad as to create a monopolistic lock out of all other players in the software market.²¹⁹

The functionality of the icon has never been fully litigated. While functional considerations are important to the development of software, aesthetics are of growing importance. The future of the graphical user interface will present a challenge to designers to create an interface which is inviting, easily understandable, and adapts to the user.²²⁰ The icons which make up a graphical user interface for software are, in essence, aesthetically pleasing pictures.

4. Reduction to Practice

In *Fitzgerald v. Arbib*, the court held that the design must be embodied in a three dimensional object.²²¹ If the applicant does not do so he has not reduced the invention to practice, that is, has not disclosed the invention sufficiently so that someone who is “skilled in the art” can produce the invention.²²² The court’s test of reduction to practice will be considered and may vary with the specificity of the claims in the application for the invention which is the subject of the patent grant.²²³

²¹⁷ Powers Control Group v. Hybernetics, 806 F.2d 234, 237 (Fed. Cir. 1986).

²¹⁸ Wrenn, *supra* note 3, at 281.

²¹⁹ *Id.*

²²⁰ NEGROPONTE, *supra* note 4, at 96.

²²¹ 268 F.2d 763.

²²² *Id.*

²²³ Farrand Optical v. United States, 325 F.2d 328 (2d Cir. 1963).

5. Article of Manufacture

The Patent Act defines statutory subject matter for design patents as “any new, original and ornamental design for an *article of manufacture*.”²²⁴ This phrase has been interpreted to require the patent applicant to claim the design as being appurtenant to a specific article.²²⁵ The PTO must reject the application if the claim does not specify the article in which the ornamental design will be embodied.²²⁶

Section 171 permits patents for ornamentation of an article of manufacture. It seems that the impermanence of a computer icon would bar a patent. The icon’s image is composed of pixels (generated by electrons in the computer’s memory and screen, and not atoms), so it can only be viewed when the computer and screen are electrified. The moment the screen is turned off the temporal image disappears.²²⁷

This issue of the fleeting nature of the article of manufacture which embodies the design was addressed in *In re Hruby*.²²⁸ Hruby applied for a patent claiming the design for a water fountain as article of manufacture although he did not disclose specific means for producing it.²²⁹ The application was rejected because the shape of the water fountain changed, fleeting as each droplet fell and because the fountain was impermanent, existing only with the correct orientation of nozzles and pressure.²³⁰ The Court of Customs and Patent Appeals reversed stating:

²²⁴ 35 U.S.C. § 171 (1952) (emphasis supplied) ; *see also*, *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980)(Congress intended a manufacture to mean “anything under the sun that is made by man”).

²²⁵ *Fitzgerald v. Arbib*, 268 F.2d 763 (C.C.P.A. 1959).

²²⁶ Patent and Trademark Office Guidelines for Examination of Design Patent Applications For Computer-Generated Icons, 61 Fed. Reg. 11380, 11382 (1996).

²²⁷ *Vietzke*, *supra* note 16, at 155.

²²⁸ *In re Hruby*, 373 F.2d 997 (C.C.P.A. 1967).

²²⁹ *Id.* at 998.

²³⁰ *Id.* at 999.

It must be remembered that in a design it is the over-all appearance due to the form or shape of the product that is determinative of patentability and not the minutia of the details that form the design The physicist and philosophers teach us that what we think is solid is not really there at all; that the very concept of solid is something of an illusion and objects are mostly empty space, substance consisting of nuclei with electrons orbiting around them.²³¹

The brain sees and perceives the fountain and not the individual droplets, thus it is the fountain, and not the water, which is the subject of the patent.²³² This is patentable subject matter because the shape alone is what is created by the water and protected by the patent.²³³

Similarly, this logic can be applied to the computer icon. When the computer is off, the icon is not completely lost.²³⁴ Because the computer has storage devices such as a disc drive which holds the software which generates the icon even when the computer is off, the computer can reproduce the software and thus recreate the icon when the computer and the screen are turned back on.²³⁵ The effect of the design does not have to be permanent to be patentable²³⁶ because the essence of a manufacture is “that a manufacture is anything made ‘by the hands of man’ from raw materials, whether literally by hand or by machinery or by art.”²³⁷ Indeed, the icon’s image as generated by a computer and software could be considered as being embodied in an article of manufacture, if the proper article of manufacture is claimed.²³⁸

²³¹ *Id.*

²³² *Id.*

²³³ *Id.*

²³⁴ See e.g., Vietzke, *supra* note 16.

²³⁵ *Id.* “We see no necessary relation between the dependence of these designs made of water and upon the means for producing them and their being an article of manufacture.” *Hruby*, 373 F.2d at 1001.

²³⁶ *Hruby*, 373 F.2d at 1001(citing *In re Boltd*, 344 F.2d 990 (C.C.P.A. 1965)(the “moiré effect,” design of a lampshade, is not apparent until the light is turned on)).

²³⁷ *Hruby*, 373 F.2d at 1000 (citing *Riter-Conly Mfg. Co. v. Aiken*, 203 F. 699 (3d Cir. 1913)).

²³⁸ Vietzke, *supra* note 16, at 152.

IV. DESIGN PATENT LOOK AND FEEL

Because no single form of intellectual property protection gives complete protection to the look and feel of graphical user interfaces, design patents will help software developers supplement other forms of protection. Software developers need not elect only one type of protection because copyright, trade dress, and patent protection are not mutually exclusive. A design can be patented even if copyright protection has been afforded to the design.²³⁹ After a patent on a design expires, trade dress protection is still available if the design would meet the requirements for trade dress protection.²⁴⁰

Granted, a patent is more expensive and requires more steps to obtain than copyright or trade dress;²⁴¹ the added cost and delay is justified by a stronger monopoly, enhanced protection and damages.²⁴² The term of a design patent is fourteen years from the date of issue.²⁴³ While this term is not as long as the duration of copyright protection or trade dress,²⁴⁴ the design patent term should be long enough to cover the commercial life of software.²⁴⁵ Moreover, trade dress will only protect the interface in a limited number of circumstances and may be more applicable to the configuration of the computer hardware and its peripherals.²⁴⁶ A software developer may

²³⁹ *In re Yardley*, 493 F.2d 1389 (C.C.P.A. 1974). However, the U.S. Copyright Office will not register a patented design. 37 C.F.R. § 202.10 (1996).

²⁴⁰ *In re Mogen David Wine Corp.*, 328 F.2d 925 (C.C.P.A. 1964).

²⁴¹ Copyright protection subsist from inception of the copyrighted work and one only needs to file with the Copyright Office to establish a *prima facie* case of validity. 17 U.S.C. §§ 102, 408 (1976).

²⁴² Hayes, *supra* note 6 at 17.

²⁴³ 35 U.S.C. § 174 (1952).

²⁴⁴ Copyright duration is either the life of the author plus fifty years or seventy-five years depending on the nature of the copyrighted work. *See*, 17 U.S.C. §§ 302(a)-(c). The duration of trade dress protection is as long as the product is in use. 15 U.S.C. §§ 1058(a), 1059(a) (1946).

²⁴⁵ Kluth and Lundberg, *supra* note 2, at 858.

²⁴⁶ Liebman et al., *supra* note 42, at 1-2, 4-7.

also choose to protect his software by selling its software with so-called “shrinkwrap licenses.”²⁴⁷

Software vendors are attempting en masse to “opt out” of intellectual property law by drafting license provisions that compel their customers to adhere to more restrictive provisions than copyright (and even patent) law would require. These software license agreements are of two types: bargained agreements for custom software, and unbargained “shrinkwrap licenses” imposed on mass-market purchasers. As software has become a mass-market commodity, the shrinkwrap license has tended to predominate.²⁴⁸

The developer is able to do this since software is commonly licensed to the end user and not sold.²⁴⁹ The developer can easily insert restrictions in the software license prohibiting reverse engineering.²⁵⁰ However, such a license may not fully protect the graphical user interface because the license will only bind the persons who have purchased the software.²⁵¹

Design patents are best suited to protecting the interfaces look by covering individual elements or an entire screen in the interface design. Design patents, in combinations, may afford

²⁴⁷ Such licenses are called shrinkwrap license because they are a single piece of paper containing license terms which has been wrapped in transparent plastic along with one or more computer disks (or printed on the outside of boxes containing software, licenses simply included somewhere within the box, or licenses shrinkwrapped with the owner’s manual accompanying the software) when software is sold. Purchasers of the software are bound by the license terms upon tearing open the plastic wrap and using the computer disks. Mark A. Lemley, *Intellectual Property And Shrinkwrap Licenses*, 68 S. CAL. L. REV. 1239, 1241 (1995).

²⁴⁸ *Id.* at 1239.

²⁴⁹ *Id.* at 1241.

²⁵⁰ For example:

DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS.

* Limitations on Reverse Engineering, Decompilation and Disassembly. You may not reverse engineer, decompile, or disassemble the SOFTWARE PRODUCT, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation.

* Separation of Components. The SOFTWARE PRODUCT is licensed as a single product. Its component parts may not be separated for use on more than one computer.

END USER LICENSE AGREEMENT, Microsoft Windows95.

some protection for the feel of the structure of the program by combining component icons in design of a graphical user interface to form a navigation structure.²⁵² In most graphical user interfaces the user employs command buttons by the act of “clicking” or “double clicking” with a mouse as a process for controlling the interface.²⁵³ Thus, the use of a command button would be non-infringing so long as the ornamentation for its shape and surface is non-infringing.²⁵⁴ However, a design patent will protect the way the icon looks.

Securing a design patent is not expressly difficult. The PTO’s regulations regarding disclosure and claiming requirements for design patent applications are straight forward and only about a page and half long.²⁵⁵ The icon can be easily printed out onto a form application.²⁵⁶ The patentee would want to broadly claim a class of computer software rather than a particular computer application.²⁵⁷ Claiming an icon appurtenant to a specific program may not offer protection from others using the icon in conjunction with other types of software.²⁵⁸ However, the applicant must be careful to draft the claims so as not to describe the icon’s operation as that

²⁵¹ Lemley, *supra* note 247, at 1254.

²⁵² Hayes, *supra* note 6, at 17.

²⁵³ See discussion *infra* part II.A.

²⁵⁴ Gorham Mfg. Co. v. White, 81 U.S. (14 Wall.) 511 (1872) (A change which does not destroy the substantial identity of the design is consider infringing).

²⁵⁵ 37 C.F.R. § 1.151 (1996).

²⁵⁶ The designer may want to reduce the detail in the depiction of the icon so in the event of infringement litigation the patent claim is not given a narrow literal interpretation and affords greater protection. Frank J. DeRosa and Seth Ostrow, *Packing the Most Rights into Design Patents*, INTELL. PROP STRATEGIST Feb. 1996, at 1, 5. This is not hard to do as most graphic generating software can change resolution with a few keystrokes.

²⁵⁷ *Id.*

²⁵⁸ If the icon has a specific meaning, for example cut/paste, then a would-be infringer would not use it for something which could confuse an end-user such as to represent an open/close file function. In such a case the patentee would not want to stop the would-be infringer from so doing because a confused end-user would find the patentee’s software more attractive.

would infringe a utility patent for the software. This is called double patenting and the PTO cannot issue an infringing patent.²⁵⁹

Even though design patent protection is not hard to procure, its protection is substantial. The design patent's look and feel protection is broader and easier to administer than under copyright and utility patents.²⁶⁰ "Generally, determination of the infringement of a design patent is much simpler than the adjudication of utility patents since the primary issue is one that requires no technical expertise."²⁶¹ This is because the standard for infringement is whether the allegedly infringing design appears substantially the same to the ordinary observer.²⁶²

Patent protection is used primarily for preventing other developers from knocking off the look and feel of the designer's product.²⁶³ "Anyone who makes, uses, offers to sell, or sells a patent invention without authority from the patentee has infringed the patentee's rights."²⁶⁴ There is an implied grant of authority by the patentee to the purchaser of the invention to use it in a manner consistent with the sale. However, if a user copies the software outside of that grant, such as to distribute a copy to a friend, then he may be liable in tort for infringing the patent on the icons which the software produces.²⁶⁵

V. THE VIRTUAL ARTICLE OF MANUFACTURE

A. PICTURE STANDING ALONE

The requirement that the design be embodied in an article of manufacture is perhaps the single greatest obstacle to overcome in obtaining a design patent. The first case to apply this

²⁵⁹ 35 U.S.C. § 102(a) (1952); *see also*, DeRosa & Ostrow, *supra* note 257, at 5.

²⁶⁰ Kluth and Lundberg, *supra* note 2 at 855-856.

²⁶¹ *Id.* at 852.

²⁶² Gorham Mfg. Co. v. White, 81 U.S. (14 Wall.) 511 (1872).

²⁶³ Vietzke, *supra* note 16, at 156

²⁶⁴ 35 U.S.C. § 271 (1984).

²⁶⁵ *Id.*

requirement in the context of computer icons was *Ex parte Tayama*.²⁶⁶ Tayama's application specified the design of the icon and an association with the computer function. It did not, however, specify the article of manufacture in which the design would be embodied.²⁶⁷ Tayama only claimed "[t]he ornamental design for AN ICON FOR A SET UP OPERATION, as shown and described."²⁶⁸ In *Tayama*, the Board of Patent Interferences and Appeals ("Board") affirmed the rejection of the application claiming an icon for a computer screen on the basis that the design was a "picture standing alone" and therefore unpatentable.²⁶⁹ Writing for the Board, Commissioner Manbeck reasoned that the standard of disclosure is no lower for applications regarding computer icons than for other design patents and thus the application must disclose an article of manufacture.²⁷⁰ Manbeck further stated that, in order to avoid duplication of potential past errors, the prior issuance of the Xerox patents were not legal precedence on the issue of patentability of the icon.²⁷¹ Instead, the Board relied on the file wrapper²⁷² of Tayama's own application to determine if Tayama had claimed statutory matter.²⁷³

On April 2, 1992 the Board decided three other cases holding that designs for icons were not appurtenant to an article: *Ex parte Strijland*,²⁷⁴ *Ex parte Donaldson*²⁷⁵ and *Ex parte*

²⁶⁶ *Ex parte Tayama*, 24 U.S.P.Q.2d 1614 (B.P.A.I. 1992).

²⁶⁷ The specifications read, "[b]e it known that I, Shuichi TAYAMA, have invented a new, original and ornamental design for AN ICON FOR SET UP OPERATION of which the following is a specification, reference being had to the accompanying drawings forming a part hereof . . ." (Application filed Dec. 30, 1988, by Shuichi Tayama, serial no. 07/291985).

²⁶⁸ *Id.*

²⁶⁹ *Tayama*, 24 U.S.P.Q.2d at 1617.

²⁷⁰ *Id.*

²⁷¹ *Id.* at 1618 (citing *In re Gyurik*, 596 F.2d 1012, 1018 n.15 (C.C.P.A. 1979); *In re Phillips*, 315 F.2d 943, (C.C.P.A. 1963)).

²⁷² A file wrapper is the PTO file of all documents accumulated in the prosecution of a particular patent. It is used to elucidate the interpretation of the patent. *See*, CHISUM, *supra* note 206, at §§ 3:11.03[2][c][iv], 4:18.03[1][a].

²⁷³ *Tayama*, 24 U.S.P.Q.2d at 1618.

²⁷⁴ 26 U.S.P.Q.2d 1259.

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Donoghue.²⁷⁶ *Strijland* and *Donaldson* were appeals of applications by Xerox assigned by its employee designers.²⁷⁷ These cases reasoned that Congress intended to protect the design only when applied to an article. The patent applications did not sufficiently describe patentable subject matter in that they did not designate the particular article.²⁷⁸

Despite the court's affirmation of the rejection of these design patent applications, these cases do not stand for the proposition that computer icons are not patentable subject matter *per se*. Rather each application was defective.

Had appellants' specification [included an article of manufacture], we would have held that the claimed design is statutory subject matter, and the design would have been patentable in the absence of other grounds for rejection. As permitted by 37 CFR Section 1.152, the article may be shown with broken lines. Appellants' Figure 1, which is said to show the design in display position on a screen, is insufficient to constitute a complete disclosure of the appearance of the specified article.²⁷⁹

This dicta illustrates what would rise to the minimum threshold for disclosure. These prior failures illustrate that the design must be claimed as ornamentation to a particular article of manufacture. Nonetheless, we are left with the issue of what can be considered a manufacture within the meaning of Section 171.

A claim that the design is embodied in a cathode ray tube ("CRT"), liquid crystal display ("LCD"), or other type of video graphics array ("VGA") will not suffice to "convert" the design from a picture standing alone.²⁸⁰ The court has also rejected the computer and software as

²⁷⁵ 26 U.S.P.Q.2d 1250.

²⁷⁶ 26 U.S.P.Q.2d 1266 (B.P.A.I. 1992).

²⁷⁷ Vietzke, *supra* note 16 at 147.

²⁷⁸ *Strijland*, 26 U.S.P.Q.2d 1259; *Donaldson*, 26 U.S.P.Q.2d 1250; *Donoghue*, 26 U.S.P.Q.2d 1266. 37 C.F.R. § 1.153(a) (1996) states that "[t]he title of the design must designate the particular article."

²⁷⁹ *Strijland*, 26 U.S.P.Q.2d at 1263.

²⁸⁰ *Id.*

article's being more like a movie projector and screen and thus not subject matter.²⁸¹ The PTO will, however, examine applications which claim a computer screen or part thereof as the article of manufacture.²⁸²

B. SOFTWARE AS THE ARTICLE OF MANUFACTURE

If the icon design is not to be deemed a mere "picture standing alone," then the patent applicant must specify and claim some article of manufacture in which the design is embodied so that the design rises to the level of statutory subject matter.²⁸³ The term manufacture is construed very broadly. The congressional intent of the 1952 Act was that an article of manufacture is "anything under the sun made by man."²⁸⁴ One author, Lance Vietzke suggests that the designer claim the computer software which creates the icon as the article of manufacture.²⁸⁵

Vietzke bases his conclusion largely on *In re Hruby*.²⁸⁶ Arguing a syllogism from the patentable design of the fountain in that case,²⁸⁷ Vietzke concludes that the software is the article of manufacture.²⁸⁸ As previously state, the article of manufacture in which the fountain's design is embodied is not to be found just in streams of water but in the arrangement of the nozzles and

²⁸¹ *Ex parte Tayama*, 24 U.S.P.Q.2d 1614 (B.P.A.I. 1992).

²⁸² Patent and Trademark Office Guidelines for Examination of Design Patent Applications For Computer-Generated Icons, 61 Fed. Reg. 11380, 11382 (1996).

The PTO considers designs for computer-generated icons embodied in articles of manufacture to be statutory subject matter eligible for design patent protection under section 171. Thus, if an application claims a computer-generated icon shown on a computer screen, monitor, other display panel, or a portion thereof, the claim complies with the "article of manufacture" requirement of section 171.

Id. at 11382. The PTO rejected one comment which suggested that the computer's central processing (CPU) be depicted as the article of manufacture. *Id.* at 11381.

²⁸³ *Strijland*, 26 U.S.P.Q.2d 1259.

²⁸⁴ S. REP. NO. 1979, 82d Cong., 2d Sess., 5 (1952); H.R. REP. NO. 1923, 82d Cong., 2d Sess., 6 (1952), reprinted in U.S.C.C.A.N. 1952, p. 2394.

²⁸⁵ Vietzke, supra note 16, at 153-156. "Identifying the software as the article of manufacture produces a logical result." *Id.* at 153.

²⁸⁶ *In re Hruby*, 373 F.2d 997 (C.C.P.A. 1967).

²⁸⁷ *Id.*

control of pressure.²⁸⁹ Like the fountain, the icon is ephemeral and "dependent on something outside of itself for producing the design."²⁹⁰ The software runs on a computer to produce an icon in a similar manner as nozzles and pressure produce a fountain, thus the software is the article of manufacture making the icon statutory subject matter.²⁹¹

Vietzke's proposal that the software is the article is initially enticing, yet *Hruby* could be distinguished on its facts and may not be accepted by a court.²⁹² The *Donoghue* court rejected this argument²⁹³

Appellant asserts that the design depends upon computer hardware and software which forms no part of the invention and need not be disclosed. Appellant relies on *In re Hruby* to support his position. We do not think *Hruby* helps appellant under the circumstances of this case. In *Hruby* the court held that water fountains were configuration of goods-type designs eligible for protection under Section 171. An illustration of a configuration type-design inherently discloses the article of manufacture defined by the shape of the design. The configuration designs in *Hruby* were inherently applied designs. The designs here admittedly are surface ornamentation-type designs.²⁹⁴

This distinction may be academic; however, several other flaws arise when arguing that the design is embodied in the software. Claiming the software as an article of manufacture may cause the patent to be invalid for other reasons. Computer software is a set of instructions or

²⁸⁸ Vietzke, *supra* note 16, at 154-56.

²⁸⁹ *Hruby*, 373 F.2d at 1000-01.

²⁹⁰ Vietzke, *supra* note 16, at 155-56 (discussing *Hruby*, 373 F.2d at 1000-01).

²⁹¹ Vietzke, *supra* note 16, at 155-6.

²⁹² The concept of a fountain is somewhat ethereal as it is merely a cascade of water droplets, yet despite this, the court is more willing to accept it as an article because, as it concedes, people have been familiar with fountains for hundreds of years since Roman times. *See, Hruby*, 373 F.2d at 1000-01. A direct analogy comparing computers to water fountains may not overcome a mental inertia based on a lack of understanding about the functioning of a computer.

²⁹³ *Donoghue*, 26 U.S.P.Q.2d 1266, 1270 (B.P.A.I. 1992).

²⁹⁴ *Id.* (citations omitted).

statements²⁹⁵ and therefore lacks any structure, as an article of manufacture, in which an ornamental design could be embodied. Moreover, software's instructions are not displayed on the screen, these instructions are separate for the interface. The ordinary user of the software cannot actually see the software. Thus, the software is concealed from the user in its ordinary use, so it may not embody an ornamental design within the meaning of Section 171.²⁹⁶ Articles which are hidden from the user in their use cannot be considered ornamental because the article's aesthetic qualities cannot be perceived. The user will only see the results of the software or its output onto the display.²⁹⁷ "It has been held repeatedly that articles which are concealed or obscure in normal use are not proper subjects for design patents, since their appearance cannot be a matter of concern."²⁹⁸

Moreover, because it is the software that creates the icon in the first place it may be difficult to distinguish the software from the design in order to determine the separation of form and function. The Strijland court held that if the icon is an integral part of the computer program, it is functional and not ornamental.²⁹⁹ In rejecting the patent in Tayama, the Board held the disclosed "set up operation" did not suffice as an article of manufacture. Vietzke, however, suggests that if the software is the article of manufacture, only the icon need be shown in the

²⁹⁵ See *supra* note 19 and accompanying text.

²⁹⁶ *In re Steven*, 173 F.2d 1015, 1015 (C.C.P.A. 1949) (affirming a rejection an application for a vacuum cleaner brush -- even though it may be visible under some circumstances it is always concealed in its normal and intended use) See also, *supra* notes 187-188 and accompanying text.

²⁹⁷ This is a subtle, yet important distinction. See *infra* part VIII.C.

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²⁹⁹ *Ex parte Strijland*, 26 U.S.P.Q.2d 1259, 1263 (B.P.A.I. 1992). *Accord*, *Powers Control Group v. Hybernetics*, 806 F.2d 234, 237 (Fed. Cir. 1986).

design drawing in the application.³⁰⁰ Indeed, such an application would be rejected because the PTO guidelines require the application to specify the article of manufacture.³⁰¹

Another wrinkle is the possibility of the court reaching the conclusion that the software which creates the icon is a process or algorithm, and not an article of manufacture. Recently, the PTO changed its examination process of computer related inventions and will first determine whether the applicant's invention claims embody something which is actually an algorithm.³⁰² Although "made by man," the software which embodies the icon's design may be deemed a process, algorithm, or a law of nature.³⁰³

Even a computer program incorporating a formula or algorithm may be patentable.³⁰⁴ However, merely because software is patentable does not necessitate that the invention be considered as an article of manufacture within the meaning of Section 171. Claiming the software as the article of manufacture also raises an issue as to how much of the software must be specified to be considered as the article of manufacture. Would this require disclosure of its operation in order for the patent to issue, thus making the software part of the public information.

³⁰⁰ Vietzke, *supra* note 16, at 153.

³⁰¹ 37 C.F.R. § 1.152. (1996).

³⁰² Department of Commerce, Patent & Trademark Office, Examination Guidelines for Computer Related Inventions, 61 Fed. Reg. 7478, 7479 (1996).

³⁰³ PTO personnel shall adhere to the following procedures when reviewing design patent applications drawn to computer generated icons for compliance with the "article of manufacture" requirement of section 171 Read the entire disclosure to determine what the applicant claims as the design and to determine whether the design is embodied in an article of manufacture.

61 Fed. Reg. 11380, 11381 (1996) (footnotes and citations omitted).

³⁰⁴ *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (*en banc*) (holding computer software patentable as an improvement for a machine and not merely an algorithm); *see also, infra* notes 318, 319 and accompanying text.

C. THE VIRTUAL ARTICLE OF MANUFACTURE

Although it is enticing to claim the computer and the software as the article of manufacture, neither provides statutory subject matter. If icons are to be statutory subject matter then another article must be claimed. The “output” of the operation of the computer and software provides one alternative answer. In regard to designs for icons, the important output which the computer generates is the stream of information which creates an image on the VGA.³⁰⁵ The word “virtual” is used to describe the objects which are depicted by such images.³⁰⁶ An applicant for a design patent should claim a "virtual object" as the article in which to embody the design for the icon.³⁰⁷ Some common examples are: desk tops³⁰⁸ dialog boxes³⁰⁹ command buttons,³¹⁰ or World Wide Web home pages. These objects have shapes and surfaces, not in the traditional tangible sense where one can touch them, but rather the human mind creates the surface when it observes the image.

The fact that the virtual surface is temporal, it only exists when the computer is running the program, is not a bar, as was true of the fountain in *Hruby*.³¹¹ This conclusion is not difficult to justify when the patent property right is conceived of as a right to exclude and not the actual possession of the object.

³⁰⁵ This does not necessarily preclude output and devices associated with “Virtual Reality” or “Force Feedback” systems where video, audio, and tactile sensations are also created.

³⁰⁶ NEGROPONTE, *supra* note 4, at 115-126.

³⁰⁷ Suggested claim might read as follows:

An ornamental design for an article of manufacture as depicted in figure 1.

³⁰⁸ *See generally*, MICROSOFT CORP., MICROSOFT WINDOWS USER’S GUIDE 49-52 (1993).

³⁰⁹ *See, id* at 67-68.

³¹⁰ *See, id* at 68-69

³¹¹ *In re Hruby*, 373 F.2d 997 (C.C.P.A. 1967).

There are several principles of patent law which assist the patent applicant in claiming a virtual article. First, the patentee is his own lexicographer.³¹² In the patent application, the applicant defines the words which describe the design, if such a description is necessary, so long as he uses those words consistently.³¹³ However, in order to provide sufficient disclosure, the applicant must describe the design so that one of ordinary skill in the art could produce the design.³¹⁴ This standard is not what the patent examiner may comprehend but what the ordinary software developer could understand.

The applicant can represent the virtual article with dashed lines in the specifications of the application without claiming the article of manufacture as part of the design.³¹⁵ The reason for this is that the applicant would not be entitled to claim the article as his patent, but rather an article in which the design is embodied. Not only will this specification prevent rejection outright but will also give greater protection against infringement by one who uses the icon on another type of screen that is substantially similar. Claims are commonly construed in light of the specifications provided in the patent. The virtual article specifically claimed would be considered an enabling disclosure in order to "convert" the icon from a picture standing alone.³¹⁶ Moreover, the ornamental features are embodied in structure as is required to constitute statutory subject matter.³¹⁷ Recently, the Court of Appeals for the Federal Circuit decided that computer

³¹² *Graver Tank & Mfg. Co. v. Linde Air Prods.*, 336 U.S. 271 (1950).

³¹³ *Id.*; *See also*, 37 C.F.R. 1.153(a) (1996).

³¹⁴ Department of Commerce, Patent & Trademark Office, Examination Guidelines for Computer Related Inventions, 61 Fed. Reg. 7478, 7480 (1996).

³¹⁵ 37 C.F.R. §§ 1.152, 1.84(b) (1996).

³¹⁶ *See e.g., Ex parte Strijland*, 26 U.S.P.Q.2d 1259, 1263 (B.P.A.I. 1992).

³¹⁷ *Fitzgerald v. Arbib*, 268 F.2d 763 (C.C.P.A. 1959).

software is, despite its employment of algorithms, an improvement for a machine in that within the workings of both the computer and software there is a physical (electronic) transformation.³¹⁸

The Supreme Court has frequently cautioned that courts should not read into the patent laws limitations and conditions which the legislature has not expressed. This same counsel applies to the Board. The Board has no justification within the Patent Act to ignore algorithmic processes or machines as “useful Arts” within the scope of section 101. This court should not permit the Patent and Trademark Office to administratively emasculate research and development in this area by precluding statutory protection for algorithmic inventions.³¹⁹

This caveat and rationale provides justification that the “software machine” through its output, can create an article of manufacture. Although this article exists only in the computer’s memory and VGA, it can be simultaneously ornamented by a design for an icon claimed in a valid patent.

CONCLUSION

In seeking to provide the most efficient intellectual property protection for graphical user interfaces, software developers should consider using design patents in addition to other forms of protection. However, no intellectual property will give so much protection as to defeat all competition in the market. In order to be considered statutory subject matter the design patent application must claim a specific article of manufacture, which may be a virtual computer creation. In each case the patent applicant should claim as generally as possible the article which the icon will ornament so the claim is as broad as possible, giving the greatest amount of protection. The development and continued refinement of computer software technology, paramount to the health of a modern economy, will be fostered by extending property rights to protect the design of a computer icon.

³¹⁸ *In re Alappat*, 33 F.3d 1526 (Fed. Cir 1994).

³¹⁹ *Id.* at 1583 (citations omitted).