

Federal Intellectual Property Protection for Computer Software Audiovisual Look and Feel: The Lanham, Copyright, and Patent Acts

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INTRODUCTION

The judiciary should brace itself for a surge of computer software-related litigation in the coming years. The Patent Office, once hostile toward claims involving software,¹ now commonly issues patents for software inventions.² As a result,

[t]he threat of [patent infringement] accusations is casting a pall over software development More companies are filing patents, and, most likely, will soon turn to litigation to guard them.³

This imminent litigation is apt to involve the "look and feel"⁴ of computer software audiovisual displays,⁵ as well as legal theories of protection in addition to patent law. The means and scope of protection available for look and feel remain uncertain, yet the "stakes of this debate are enormous."⁶

This comment reviews the means and scope of protection for computer software look and feel available from federal statutory sources: trade dress protection under Section 43(a) of the Lanham Act of 1946,⁷ the Copyright Act of 1976,⁸ and the Patent Act of 1952.⁹ In this context we see the full presence and force of competing interests in the structure of the nation's industrial policy. As a result, the analysis of one body of law helps answer questions in another.

Specifically, this comment proposes that the focus of the doctrine of functionality under Section 43(a) of the Lanham Act be adopted for analyzing the idea/expression dichotomy in copyright law, as well as the functional/nonfunctional distinction of design patent protection. Some courts applying the doctrine of functionality in trade dress cases treat the label "functional" as a legal conclusion, not a metaphysical fact. If trade dress protection for a product feature would unduly hinder competition, the feature is deemed functional and not protected. This form of analysis proves useful in the areas of copyrights and design patents. Further, it is consistent with the underlying rationale for such distinctions in each body of law: enough protection should be provided to reward innovation, but in no event should product protection become a market monopoly.

Section I of this comment describes computer software audiovisual look and feel, and examines the market for the technology. Section II explores the availability of trade dress protection for computer software look and feel under Section 43(a) of the Lanham Act. Section III discusses copyright protection and develops a proposal for refocusing the idea/expression analysis under the Copyright Act based on the doctrine of functionality under the Lanham Act. Section IV considers the validity of utility and design patents for computer software look and feel, and advances a proposal, based on the doctrine of functionality under the Lanham Act, for refocusing the functional/nonfunctional distinction of design patents. This comment is followed by an appendix which provides an illustrated guide to the technology discussed herein.

I. THE LOOK AND FEEL OF COMPUTER SOFTWARE AUDIOVISUAL DISPLAYS

Computer programs manifest themselves in any number of ways.¹⁰ Similarly, the term "look and feel," also known as "total concept and feel," has been used by copyright law in a number of contexts.¹¹ Applied to computer software, it has been used in reference to the look and feel of written program instructions¹² as well as the look and feel of a program's audiovisual displays.¹³ This comment is concerned only with the latter. This section will describe the technology at issue and consider it within its market context.

A. The Technology

A computer program normally generates audiovisual displays as one means of communicating with the user, a part of the user interface. The user interface is the means by which the software and user interact to achieve the desired result.¹⁴ Normally one uses a typewriter-like keyboard or a pointing device (such as a "mouse") to issue commands to the program or enter other information, including data. All or part of these commands may be visible on screen and available for selection from a "menu." Selecting a command may execute a function or produce a list or "submenu" of additional choices. Executing a command usually results in visual feedback to the user on the computer's display. (Further information may be found infra, in the appendix, which provides an illustrated

guide to computer software look and feel; it describes four products that are, or have been, the subject of look and feel litigation.)

Look and feel includes individual audiovisual displays, as well as dynamic elements in the user interface. ¹⁵ Unlike a motion picture, a program's screens are usually designed to follow a functional, not chronological, order. ¹⁶ Look and feel is "the sequence of the screens and the choices presented, the layout of the screens, and the method of feedback to the user" ¹⁷ One manufacturer described the look and feel of its computer's user interface this way: "Just listing the elements ... doesn't do it justice ... it's the way they all work together -- the gestalt." ¹⁸

Listing the elements of the interface doesn't do it justice because copyright owners are not seeking protection for just the elements. Were that the case, "a plagiarist would escape by immaterial variations." ¹⁹ Rather, developers seek protection against those competitors who use the same or similar audiovisual displays, presented in the same or similar structure, sequence, and organization. This explains the nebulous character of the term "look and feel," and the difficulty courts have in defining the scope of protection. "[A]s soon as literal appropriation ceases to be the test, the whole matter is necessarily at large" ²⁰

B. The Market

Software has been a significant and growing element of the economy; by 1988, the worldwide market for software reached an estimated \$50 billion. ²¹ Software is produced by large and small firms, and there is a trend toward mass-marketed programs. ²² In spite of somewhat uncertain intellectual property protection, the market seems to have fared well. For example, while U.S. electronics manufacturers have suffered at the hands of offshore competition, U.S. software developers continue to dominate the world market. ²³

In the market, the look and feel of software may be of tremendous importance to the developer and is often of greater commercial value than the programming code that implements it. ²⁴ While traditionally it has been an item of commercial value, microcomputer markets are moving toward "standard user interfaces" among programs, ²⁵ i.e., software developers apply the same principles and techniques of a single user interface to the various programs developed for a computer. In effect, standardized interfaces dramatically reduce the time it takes to learn a new application program. Similar functions and commands are executed similarly, so users do not have to learn a new means of interacting with every new program. The result is that, in markets with standard user interfaces, programs are expected to look and feel the same.

Given this understanding of the technology and its market, the following sections examine available federal protection.

II. THE LANHAM ACT OF 1946

[T]here is no part of the law which is more plastic than unfair competition, and what was not reckoned an actionable wrong 25 years ago may have become such today.

-- Learned Hand ²⁶

The Lanham Act ²⁷ codifies the federal law of trademarks in the United States. Section 43(a) of the Lanham Act ²⁸ prohibits the false designation of a product's origin or a false description of a product's contents. ²⁹ One form of false designation of origin is trade dress misappropriation, i.e., copying a competitor's trade dress ³⁰ in order to capitalize on the reputation of the competitor.

Section 43(a) was intended to establish a uniform federal law of unfair competition. ³¹ Although there appears to be no case in which a Section 43(a) claim has been litigated in the context of computer software look and feel, one commentator predicts trade dress protection under Section 43(a) may soon be extended to such cases. ³² In light of that prediction, this section analyzes the scope of trade dress protection in the context of computer software look and feel.

A plaintiff seeking relief under a theory of trade dress misappropriation must establish that (1) the trade dress of their product has acquired a "secondary meaning" in the marketplace; ³³ (2) there exists a likelihood of confusion on the part of consumers as to the source of the product; and (3) the appropriated elements are "nonfunctional" in nature. ³⁴

A. Secondary Meaning

Trade dress has secondary meaning if in the minds of the public, the primary significance of a product feature or term is to identify the source of the product rather than the product itself. ³⁵

There is no telling how long it might take for a producer to become identified with the trade dress, although courts have noted that the velocity with which reputations may be acquired or lost differs among industries.³⁶

It is conceivable that consumers of computer software might associate the look and feel of certain software products with a particular developer as the source of that software. One commentator claims this is the case with the Macintosh interface, "[which is] clearly closely associated with Apple Computer."³⁷ This claim is untenable, however. Since virtually all software developers for the Macintosh have adopted Apple's standard user interface for Macintosh software products, the look and feel of such products tells consumers nothing as to who is the source of the product. The developer might be Apple Computer, Microsoft, or any of hundreds of different software developers who market products for the Macintosh computer. Consumers may associate the Macintosh interface with Apple Computer in some manner, but they will not assume that Apple Computer is the source of every product using the interface.

Secondary meaning is more likely to attach in computer markets such as that of the IBM PC, where there has not yet developed a de facto standard for user interfaces.³⁸ Perhaps the best example would be the distinctive interface introduced by Lotus Development Corporation for its spreadsheet product, 1-2-3.³⁹ It was frequently referred to in the market as the "Lotus" interface, suggesting the required identification between the look and feel of the product and its developer for a finding of secondary meaning.⁴⁰

B. Likelihood of Confusion

Likelihood of confusion "exists when customers viewing the mark would probably assume that the product or service it represents is associated with the source of a different product or service identified by a similar mark."⁴¹

Actual confusion, however, is not the test.⁴² What actions a competitor must take to avoid confusion depend on the circumstances; clear labeling of the source may not be enough.⁴³

It would seem that consumers must be exposed to the look and feel of software prior to purchase for the requisite likelihood of confusion to exist.⁴⁴ Stated another way, no confusion is likely to occur if consumers never have the opportunity to see, and subsequently be confused by, a software product's audiovisual displays. In the case of mass-marketed software, consumers are generally less sophisticated, the products tend to be low-cost, and the marketing techniques of developers are similar.⁴⁵ Such consumers are less likely to have seen the product demonstrated before purchase. Purchasers may buy solely on the basis of recommendations,⁴⁶ packaging, advertising, etc., and never have the opportunity to be confused by the appearance of a program's audiovisual displays.

Nonetheless, where consumers generally are exposed to the look and feel of a product prior to purchase⁴⁷ the potential likelihood of confusion could exist.

C. Doctrine of Functionality

The courts, not the Congress, have insisted that protected elements be limited to "nonfunctional" features.⁴⁸ The reason for this limitation is an overriding public policy of preventing market monopolization.⁴⁹ "[A] product feature is functional if it is essential to the use or purpose of the article or if it affects the cost or quality of the article."⁵⁰ Judicial inquiry is addressed to "whether the whole collection of elements taken together are functional."⁵¹ Although courts refuse to protect functional features, "functional elements that are separately unprotectable can be protected together as part of a trade dress."⁵²

Is computer software look and feel functional? As a product feature, it certainly plays a "functional" or "utilitarian" role. For almost all software programs, a user interface is essential to the use or purpose of software -- by definition, it is the means by which the user interacts with the software to achieve the desired result.⁵³

Perhaps specific features need to be defined more precisely, e.g., are "pull-down" menus⁵⁴ essential to the use or purpose of software? Probably not. Products have displayed menus in many different ways, and some display no menu at all.⁵⁵ They do not affect the "cost" of the product, in the sense of reducing production costs. On the other hand, pull-down menus, as well as look and feel generally, may be said to affect the quality of the product in terms of ease of use, efficacy, or salability.

This "plain language" application of the rule shows that the line between functionality and nonfunctionality "is not brightly drawn in every case."⁵⁶ In fact, the distinction is unworkable unless one recognizes, as Judge Rich did in In re Morton-Norwich Products, Inc.,

⁵⁷ that the designation is a legal conclusion, rather than the prerequisite to one. It is necessary to distinguish between de facto functionality and de jure functionality. ⁵⁸

De facto functionality is functionality in the lay sense, *i.e.*, directed toward a use or purpose. As noted above, a feature that is de facto functional may or may not receive protection. Similarly, a feature that at one point is nonfunctional may become functional later. ⁵⁹ De jure functionality refers to the legal conclusion: what product features may be copied (de jure functional) and what features may be protected (de jure nonfunctional).

Given that de jure functionality is a conclusion, the question remains as to what considerations precede the conclusion. A single, clear criterion emerges from the case law: whether protection against imitation will unduly hinder the competitor in competition. ⁶⁰ Courts seek to balance and reconcile the public's interest in making use of a design, the public's interest in "producer identification," ⁶¹ and the originator's interest in being the sole vendor. ⁶²

This criterion is consonant with the rationale for the doctrine of functionality: to prevent market monopolization. ⁶³ If trade dress protection is available only when such protection still allows for effective market competition, then no monopolies will result. Consequently, where competitors may fairly compete without imitating trade dress, protection should be extended to such trade dress without regard to metaphysical distinctions between de facto functional and de facto nonfunctional features.

Applying this test to the look and feel of computer software, we find that situations exist where competition might, and might not, be unduly hindered by trade dress protection. For example, in markets with standard user interfaces, consumers are likely to insist that products adhere to these standards. ⁶⁴ Products with similar capabilities following the same interface guidelines are expected to have a similar appearance and organization. Broad trade dress protection would prevent effective competition among similar products and result in excessive market power for a vendor. Opportunities for protection in such markets must necessarily be very narrow.

Where no standard user interface exists, the argument that user interface features are de jure nonfunctional is much stronger. However, the existence of alternative user interfaces is not conclusive. If an interface is particularly efficient, or if for other reasons the only means of effective competition is through imitation, ⁶⁵ then no protection should be granted.

It appears that Section 43(a) provides a viable cause of action in certain situations, particularly where the appropriation takes place in a market with no standard user interface, where consumers are exposed to the look and feel of software before it is purchased, and where the grant of protection would not unduly burden competition in the relevant market.

However, the potential importance of trade dress protection for computer software look and feel is limited by two factors. First, copyright protection is likely to remain more attractive as a means of protection to software developers than trade dress. Copyright protection is available at little or no cost, while trade dress protection is not available until sufficient time and marketing efforts have established the necessary secondary meaning. While trade dress protection lasts indefinitely, the minimum duration of copyright protection is already much longer than the expected useful life of most software products. ⁶⁶ Further, the trade dress rubric of "confusion as to source of the product" results in a narrower scope of protection than copyright. ⁶⁷

Second, a trade dress theory of protection is tenable only in a software market without a standard user interface; historically, the IBM PC market has been such a market. The present trend toward standard user interfaces, ⁶⁸ however, will necessarily be a trend away from the applicability of Section 43(a) to look and feel.

III. THE COPYRIGHT ACT OF 1976

Copyrightable subject matter is described by the Copyright Act as:

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. ⁶⁹

Two categories of copyrightable works applicable to computer programs include "literary works" and "audiovisual works." ⁷⁰ Literary works include the written programming instructions of software as stored on the computer. ⁷¹ Computer software video displays are considered audiovisual works. ⁷²

Audiovisual works are defined as a "series of related images which are intrinsically intended to be shown by the use of machines"⁷³ As such, all aspects of computer software displays would ordinarily come within the scope of copyright protection; this includes audiovisual look and feel.⁷⁴

There is an affirmative statutory limit on otherwise copyrightable subject matter, however, and it is discussed in the following section.

A. The Idea/Expression Dichotomy

Section 102(b) of the Copyright Act provides:

In no case does copyright protection ... extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery⁷⁵

This limitation is known as the "idea/expression" dichotomy,⁷⁶ and has proven itself to be extremely difficult to administer.⁷⁷ Judge Learned Hand's famous "levels of abstraction" test⁷⁸ shows how a line might be drawn, but does not offer guidance on where to draw it.⁷⁹ "Obviously, no principle can be stated as to when an imitator has gone beyond copying the 'idea,' and has borrowed its 'expression.' Decisions must therefore inevitably be ad hoc."⁸⁰

The difficulty in distinguishing idea from expression should come as no surprise. How is it possible for an idea to exist, except in some expression? How is it possible to excise an idea from its expression without recasting it into another expression, for example by stating the idea more abstractly, or contemplating it in a different medium?⁸¹

The "unprincipled" nature of these determinations forces courts to grapple with a metaphysical issue.⁸² They are set adrift without guidance as to how to separate by law what seems inseparable in fact. Ad hoc determinations where no clear criteria exist leave attorneys unable to map for their clients reliable bounds of protection. Further, the uncertainty of protection diminishes the incentive effect for authors and hinders the promotion of useful arts and sciences.

This need not be the case.

B. Refocusing the Idea/Expression Analysis

This comment proposes a new focus for analyzing the limits of copyrightable subject matter found in Section 102(b).⁸³ The proposal is this: courts should distinguish "de jure idea" from "de facto idea." Where the grant of copyright protection to a feature would unduly hinder competition within the market for a writing, the feature should be held a de jure idea and dedicated to the public domain. Protection would unduly hinder competition when society's interest in competitive markets outweighs society's interest in rewarding the author.

This proposal reflects a test of balancing, not metaphysics, that is required by the very rationale of distinguishing idea from expression. It is consonant with the purpose of copyright law: to create the most efficient balance between society's interest in competitive markets, and incentives⁸⁴ for the production and dissemination of information.⁸⁵ Further, it is fully consistent with the Copyright Clause of the Constitution. As Justice O'Connor states:

The Patent [and Copyright] Clause itself reflects a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant advance in the "Progress of Science and the useful Arts."⁸⁶

This general form of analyzing the scope of copyrightable subject matter has several advantages. First, it focuses on considerations that courts are much more experienced at resolving, making it administrable.⁸⁷ Second, the focus in no way departs from the wording or the purpose of the Copyright Act; rather this proposal adds the necessary gloss to Section 102(b). Third, this analysis will promote the progress of useful arts and sciences by balancing the need to encourage innovation with the need to foster markets for such work. Finally, this analysis will result in greater predictability of protection.⁸⁸

Applied to computer software look and feel, the proper analysis requires placing the subject matter in the context of its market. Where a market has adopted a standard user interface, the use of such standards in software design becomes essential to effective competition. In such a market, courts should recognize a virtual per se rule: the general look and feel of computer software audiovisual displays is a de jure idea and unprotectable.⁸⁹

More specifically, consider two uses of "icons" in the Macintosh interface. "Disk" icons⁹⁰ display a small graphic image selected by the developer that appears on screen and identifies the disk when it is inserted into the computer. The graphic images can be fanciful. Another form of icon, a "tool" icon,⁹¹ exists when a program is running, and the icon represents a certain command or function that is available. For instance, a "paint" program for drawing pictures might have a column of icons that represent tools to draw boxes, circles, ovals, freehand strokes, lines, and so on. The purpose of these icons is to represent the capability without words, using only small pictures.

Protection for original disk icons would probably not hinder competition at all. Protection for original tool icons might present a different problem. There may be very few ways to represent a software command or function, or there may be many ways to represent it but only a few that effectively convey to a user the command or function represented by the icon. If protection for certain tool icons would allow a less-than-acceptable number of developers to monopolize the only effective means of expressing the capability of a certain tool, the tool icons should be a de jure idea and unprotectable.⁹²

Where a market has no standard user interface, however, competitors can generally compete effectively without copying a competing product's look and feel. The wide competitive playing field justifies a wider scope of protection for authors in such markets. On the other hand, circumstances may exist in these markets where protection would nonetheless unduly hinder competition. The extraordinary success of a product might result in formidable barriers to entry. For example, a vast installed base of users may be unwilling to purchase similar products with different user interfaces because of retraining costs. At some point, society's interest in competition in that market will no longer tolerate the use of copyright protection as a means of perpetuating market domination.

In conclusion, copyright law should shield original works of authorship; that shield should not, however, be misapplied as a barrier to market entry.

IV. THE PATENT ACT OF 1952

The law of patents in the United States is governed by the Patent Act of 1952.⁹³ Two different forms of patents are relevant to this issue and will be discussed separately: utility patents and design patents.

A. Utility Patents

Thomas Jefferson⁹⁴ drafted the first description of proper subject matter for utility patents, and the substantive statutory requirements have seen little change since the Patent Act of 1793.⁹⁵ Section 101 of the Patent Act of 1952 defines patentable subject matter as "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof"⁹⁶ Committee reports accompanying the Patent Act indicate that Congress intended statutory subject matter to include "anything under the sun that is made by man."⁹⁷

This broad scope of patentability is narrowed, however. Congress has relied on the Patent Office and the judiciary to resolve questions of subject matter patentability on a case-by-case basis, providing only the barest statutory guidance.⁹⁸ Consequently, subject matter patentability is shown by coming within the plain language of the statute and avoiding areas excepted by the judiciary.⁹⁹

Patent applications for computer programs are generally made in the form of "process" claims.¹⁰⁰ The following sections will analyze such claims and the relevant judicial doctrines of exclusion.

1. Process Claims

The Patent Act defines process to mean "process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material."¹⁰¹ A dictionary definition of the term includes "a particular method of doing something, generally involving a number of steps or operations."¹⁰²

A plain reading of the statute suggests that the de facto functional, interactive aspects of a program's user interface constitute a process -- for example, the process of making a greeting card in Broderbund Software, Inc. v. Unison World.¹⁰³ Computer "implemented processes are encompassed within 35 U.S.C. [§] 101 under the same principles as other machine implemented processes, subject to judicially determined exceptions"¹⁰⁴ The question, then, is whether the judiciary will except such a process from the statutory definition.¹⁰⁵

2. Judicially Determined Exceptions

Three doctrines potentially relevant to computer software look and feel exclude mathematical algorithms, printed matter, and mental steps from patentable subject matter. ¹⁰⁶

a. Mathematical algorithms

This doctrine has been relevant in the few cases on patents involving software to reach the Supreme Court. The Court's last decision on the issue, Diamond v. Diehr, ¹⁰⁷ was the first Supreme Court case in which a patent including a computer program was upheld as within Section 101 patentable subject matter. In Diehr, the Court applied the test of In re Freeman. ¹⁰⁸

The first step of the Freeman test is to determine whether the claim directly or indirectly states an algorithm. ¹⁰⁹ If so, the second step is to analyze the claim to ascertain whether, in its entirety, it wholly preempts the use of that algorithm (in which case it is nonstatutory subject matter). ¹¹⁰ In the case of look and feel, we never reach the second step of the Freeman test. A user interface does not directly or indirectly state a (mathematical) algorithm. Its implementation may involve the use of mathematical formulae in programming, but it would probably not depend on any one algorithm as a means for implementing the screen displays. ¹¹¹ Such programming issues are transparent to the user and unnecessary in describing or implementing the process.

Diehr, as well as the Patent Office's Manual of Patent Examining Procedure, ¹¹² provides guidelines on the patentability of computer programs when they involve an algorithm. They are silent, however, on how to analyze claims that do not involve algorithms. The conclusion is that this doctrine, which involves the only Supreme Court pronouncements on the patentability of software-related inventions, will not exclude computer software look and feel from patentable subject matter.

b. Printed matter

In the case of computer programs, both the written source code and the audiovisual displays are arguably printed matter. Historically, patents were denied when the sole distinction over the prior art involved printed matter. ¹¹³ The rationale was that printed matter did not relate to the physical structure of the invention and therefore was not within the scope of the patent statute. ¹¹⁴

Where printed matter relates to the physical structure of the invention, however, courts have upheld the patentability of such inventions. For example, an accounting system utilizing columns covered with movable strips of paper was treated as a "structure," rather than printed matter, and held to be patentable. ¹¹⁵ Similarly, an educational mathematical device in the form of a band containing digits printed at certain intervals could not be excluded from patentable subject matter simply because the differences between the invention and prior art were to be found in the content of printed matter. ¹¹⁶

Computer software source code and audiovisual displays play active, essential, de facto functional roles in the operation of the computer and any process implemented thereby. In particular, dynamic audiovisual displays in a user interface play a structural role analogous to the movable strips of paper in In re Hansen. ¹¹⁷ Consequently, as a general rule, the look and feel of computer software should not be excluded from patentable subject matter on the grounds that the invention takes the form of printed matter. ¹¹⁸

c. Mental steps

In the 1940's the "mental steps" doctrine gained express recognition in the Patent Office, Ninth Circuit Court of Appeals, and the Court of Customs and Patent Appeals, and excluded processes composed of "purely mental steps" from patentable subject matter. ¹¹⁹ Some cases suggested that a patentable process must operate to transform and reduce matter to a different state or thing. ¹²⁰ "It is self-evident that thought is not patentable." ¹²¹

When the issue of patents involving software arose in the 1960's, the Patent Office refused to allow such applications, relying in part on the mental steps doctrine. ¹²² Software-implemented processes might fall into the doctrine's scope of exclusion since a process taking place wholly within a software program would not necessarily operate to transform and reduce matter to a different state or thing. ¹²³ One might analogize the steps executed in a computer program to a "thought process" that could be performed mentally by a human.

Look and feel-related processes, on the other hand, arguably transform audiovisual displays and reduce them to a different state; for example, the manipulation of phosphors by cathode rays to create video displays on a computer monitor could provide the necessary

nexus to physical matter to make such processes patentable. ¹²⁴ The process reflected in computer software look and feel cannot fairly be likened to a situation where a human could readily achieve the same result with pen and paper. A human might mentally follow the programming steps in software source code (with great difficulty), but the only practical value of following such steps in the case of computer software look and feel is to implement a user interface on a computer.

It seems beyond questions that ... computers ... are in the technological field.... How can it be said that a process having no practical value other than enhancing the internal operations of those machines is not likewise in the technological or useful arts? ¹²⁵

While convincing arguments may be made that look and feel- related patents would not violate the traditional mental steps doctrine, such arguments may be unnecessary. The continued existence of the doctrine has been called into question, ¹²⁶ and its viability is discussed below.

From 1969 to 1972, the Court of Customs and Patent Appeals dismantled the mental steps doctrine while reviewing software-related applications rejected by the Patent Office. ¹²⁷ As stated in In re Musgrave: ¹²⁸

We cannot agree with the board that these claims (all the steps of which can be carried out by the disclosed apparatus) are directed to non-statutory processes merely because some or all the steps therein can also be carried out in or with the aid of the human mind or because it may be necessary for one performing the processes to think. All that is necessary, in our view, to make a sequence of operation steps a statutory "process" within 35 U.S.C. § 101 is that it be in the technological arts so as to be in consonance with the Constitutional purpose to promote the progress of "useful arts." ¹²⁹

The C.C.P.A. noted that the exclusion of "purely mental steps" from patentable subject matter might lead to a correct result if construed to encompass only those steps which are incapable of being performed by a machine; the fact that machine-implemented steps could also be performed by a human mentally did not make them "purely mental steps." ¹³⁰

Surprisingly, the Supreme Court's subsequent decision in Gottschalk v. Benson ¹³¹ made a fleeting reference to the unpatentability of "[p]henomena of nature, ... mental processes, and abstract intellectual concepts" ¹³¹ Professor Chisum suggests that this "disturbingly terse" reference to the mental steps doctrine may have been inadvertent and not intended to discard developments in the C.C.P.A. ¹³² The reference is made without a discussion of, or even citation to, the lower court cases on the mental steps doctrine. "It is quite irregular for any court to accomplish so much by a short, ambiguous, dogmatic statement." ¹³³

The Supreme Court's decision in Parker v. Flook quoted the Benson language, ¹³⁴ but identified it as the "established rule that a law of nature cannot be the subject of a patent." ¹³⁵ Earlier in the Flook opinion, the Court referred to the argument that a patentable process must operate to change materials to a different state or thing; ¹³⁶ however, the Court appears to disclaim this view without actually rejecting it. "As in Benson we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents." ¹³⁷

Two years later in Diamond v. Diehr, ¹³⁸ the Supreme Court stated: "Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas." ¹³⁹ The Court cited Flook and Benson, and yet omitted reference to "mental processes." The Diehr Court then stated that Flook and Benson stood for no more than the long-established rule that "principles" were not patentable processes.

"[A] new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter. Likewise, Einstein could not patent his celebrated law that $E=mc^2$; nor could Newton have patented the law of gravity." ¹⁴⁰

This suggests that the use of the term "mental processes" in Benson, and as quoted by Flook, was never intended to refer to the mental steps doctrine. ¹⁴¹ It would appear that, for all intents and purposes, the mental steps doctrine has not been squarely before the Supreme Court since the doctrine was repudiated by the C.C.P.A. in the late 1960's and early 1970's.

Lower court decisions, both before and after Diehr, have upheld the patentability of computer programs that do not appear to change materials to a different state or thing. ¹⁴² Thus, the current state of the law appears to be that as stated in Musgrave, i.e., a process is not made unpatentable simply because some or all of the machine-implemented steps could also be performed by a human mentally.

Consequently, the mental steps doctrine should not survive to exclude look and feel-related processes from statutory subject matter. Alternatively, if the doctrine does survive, the Court should hold that look and feel-related processes have a sufficient nexus to the transformation of matter and the technological arts to avoid the exclusive effect of the mental steps doctrine.

In conclusion, it appears that computer-implemented processes involving audiovisual look and feel are within the statutory scope of patentable subject matter and are not categorically excluded by the judicial doctrines relating to mathematical algorithms, printed matter, or mental steps. These inventions, if they meet the further requirements of the Patent Act such as novelty,¹⁴⁴ nonobviousness,¹⁴⁵ and disclosure,¹⁴⁶ are the proper subjects of valid patents.

B. Design Patents

The first design patent law was enacted in 1842 and defined subject matter as "any new and original design for a manufacture, whether of metal or other material or materials" or any of a list of items, such as for the printing of fabrics, design for a statue, any ornament to be placed on an article of manufacture, etc.¹⁴⁷ In 1902 it was amended to define subject matter as "any new, original, and ornamental design for an article of manufacture" and eliminating the enumerated items.¹⁴⁸ The courts have added a further requirement to the statutory language: designs that are primarily functional or dictated by functional considerations are not proper subject matter for design patents.¹⁴⁹

The Patent Office granted the first design patents for computer displays on May 10, 1988 to Xerox Corporation.¹⁵⁰ United States Design Patent No. 296,339, dated June 21, 1988, states as its claim the "ornamental design for an icon for freehand drawing softkey display or the like, as shown and described." This demonstrated that the Patent and Trademark Office believed design patentability tests, including subject matter, had been met.¹⁵¹ One commentator proclaimed that "Xerox has discovered a new form of protection for the 'look and feel' of software."¹⁵²

This novel development warrants further analysis; the scope and requirements of design patent protection are discussed further in the following sections.

1. Article of Manufacture

The term "article of manufacture" has been construed broadly. In the case of a design patent claim for a water fountain with rotating sprays, the court held "a manufacture is anything made 'by the hands of man' from raw materials, whether literally by hand or by machinery or by art. Certainly the fountains are so made."¹⁵³ Computer monitors are made this way as well, and consequently their ornamentation (including audiovisual displays appearing on the monitor) is likely to be included within a broad construction of the term "article of manufacture."

2. Nonfunctional Ornamental Design

"Ornamental implies that the design must be the product of aesthetic skill and artistic conception."¹⁵⁴ However, a design that is "primarily functional" or "dictated by functional considerations" is not proper subject matter for design patents.¹⁵⁵ There are two reasons for this rule of functionality. First, where function dictates configuration, there is no ornamental creativity.¹⁵⁶ "It was certainly not the intent of the law to grant monopoly to purely conventional design which is in itself little more than a necessary response to the purpose of the article designed."¹⁵⁷ Further, design patent protection for functional features would in effect grant a utility patent, while circumventing Section 101 subject matter requirements.¹⁵⁸

Computer software look and feel is often the product of aesthetic skill and artistic conception;¹⁵⁹ in most cases "aesthetic quality is critical."¹⁶⁰ The question is whether look and feel is "primarily functional" or "dictated by functional considerations." Here again we encounter what is a test of metaphysics.¹⁶¹ Fortunately, the rationale for the distinction here appears to be the same as that in the case of trade dress and copyright law: the scope of legal protection must be balanced against society's interest in competitive markets.¹⁶² Further, design patent law may not be used as a means of attaining what amounts to a utility patent.¹⁶³

3. Refocusing the Functional/Nonfunctional Analysis

This comment proposes that courts applying design patent law adopt a concept of de jure functionality.¹⁶⁴ The ornamental design of

an article of manufacture is de jure functional if protection would unduly hinder competition, without regard to the de facto functional or de facto nonfunctional nature of the design. Additionally, the subject matter of utility patents is de jure functional, and not the proper subject matter of design patents. However, if protection for an ornamental design is not an attempted "end run" around utility patent protection, and further would not result in the undue hindrance of competition, then such protection should be upheld as valid.

Whether the scope of protection in Xerox's design patents extends to the look and feel of the audiovisual displays remains uncertain. In fact, it was the Xerox Star interface that was the inspiration for the Macintosh interface.¹⁶⁵ The recently patented screens by Xerox may bear a familial relationship to the Macintosh interface and virtually all graphics-based user interfaces available. If that familial similarity suggests that design patents could be used by Xerox to secure judgments or injunctions against virtually all major software developers (and thereby bestow market monopoly power on Xerox), then the patents should be adjudicated invalid. On the other hand, if granting protection to Xerox would protect their interest without unduly burdening competition, then the ornamental features of the patented displays should be de jure nonfunctional, and validly protected.¹⁶⁶

Further, if Xerox's audiovisual displays embody a look and feel that is within the scope of utility patent subject matter,¹⁶⁷ and protection for that aspect of the user interface is not disclaimed in the design patent they received, then the patent should be adjudicated invalid with respect to those aspects.

CONCLUSION

The myriad ways in which computer programs manifest themselves make them unamenable to per se rules of protection or exclusion from federal sources of intellectual property protection. Consequently, courts are forced to distinguish between various manifestations in a program, often applying rules that on their face require a metaphysical separation of what otherwise seems inseparable. This approach frequently leaves courts, counsel, and clients without reasoned principles to guide their actions.

A better approach is to abandon metaphysics and analyze each case in light of the rationale for the rule. If, in the case of trade dress, the rationale of limiting protection to nonfunctional features is to protect our interest in producer identification without unduly hindering competition, then we may safely protect trade dress as long as competition has not been unduly hindered.

The rationale for distinguishing idea from copyrightable expression is to promote writings by rewarding authors, without unduly hindering competition for such works. Consequently, we may safely reward the author by protecting an aspect of her work as long as competition in the market for such works is not unduly hindered.

Finally, the rationale applies to design patents, with further deference to the scope of utility patent protection, and the same result should follow. We may safely protect the ornamental design of an article of manufacture as long as protection would not unduly hinder competition and would not result in protection for the subject matter of utility patents without meeting the requisite tests.

This approach is more administrable for the courts, focusing on more familiar tenets of competitive analysis rather than the metaphysics of new technologies. This approach is wholly consistent with the purpose of the statutory and judicial rules; it cuts to the very rationale of the rules and provides the necessary gloss to statutory language. Further, the results are consistent with the constitutional grant of authority under which the federal statutes are enacted.

* Candidate for J.D. 1990, Boalt Hall School of Law, University of California, Berkeley; B.A. 1983, University of Washington. This comment received second prize in the 1989 Nathan Burkan Memorial Competition at Boalt Hall School of Law, University of California, Berkeley.

1 In 1966, the President's Commission on the Patent System recommended that computer programs *per se* be excluded from patent protection. This recommendation was based in part on the Patent Office's inability to deal with the administrative burden of examining such claims. THE PRESIDENT'S COMM. ON THE PATENT SYSTEM, "TO PROMOTE THE PROGRESS OF ... USEFUL ARTS" IN AN AGE OF EXPLODING TECHNOLOGY 14 (1966). See also *Diamond v. Diehr*, 450 U.S. 175, 197 (1981) (Stevens, J., dissenting).

2 Maier, *Software Protection--Integrating Patent, Copyright and Trade Secret Law*, 69 J. PAT. & TRADEMARK OFF. SOC'Y 151, 157 (1987). Although the Patent Office does not track software-related patents as a separate category, attorneys and industry executives claim that top U.S. companies have doubled, and even quadrupled, the number of applications they file. Bulkeley, *Will Software Patents Cramp Creativity?*, Wall St. J., Mar. 14, 1989, at B1, col. 5. IBM alone files approximately 200 software-related

patents each year. *Id.*

3 Bulkeley, *supra* note 2, at B1, col. 3. Patents are also used for defensive purposes. "We use patents principally as trading material for our own freedom of action in the marketplace." *Id.* at B1, col. 5 (statement of Roger S. Smith, IBM's director of intellectual property law). *See also* Fisher, *Software Industry in Uproar over Recent Rush of Patents*, N.Y. Times, May 12, 1989, at 1, col. 5.

4 Section I, *infra*, defines and describes this subject matter in greater detail. Briefly, the look and feel of computer software audiovisual displays refers to "the sequence of the screens and the choices presented, the layout of the screens, and the method of feedback to the user" *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F. Supp. 1127, 1137 (N.D. Cal. 1986).

5 *See, e.g.*, the following patents which, if litigated, are likely to involve issues of computer software look and feel: U.S. Patent No. 4,823,108 issued Apr. 18, 1989 to Gary W. Pope and assigned to Quarterdeck Office Systems, for an "improved display system and memory architecture and method for displaying images in windows on a video display"; U.S. Patent No. Re. 32,632, issued Mar. 29, 1988 to William D. Atkinson and assigned to Apple Computer, Inc., for a "display system" composed of pull-down menus used in conjunction with the Apple mouse; U.S. Patent No. 4,646,250 issued Feb. 24, 1987 to John F. Childress and assigned to IBM, for a "data entry screen for an interactive data entry system" that provides a means of identifying to the user fields where data may be entered and fields where data must be entered; U.S. Patent No. 4,486,857 issued Dec. 4, 1984 to Paul C. Heckel and assigned to Quickview Partners, for a "display system for the suppression and regeneration of characters in a series of fields in a stored record."

6 Beutel, *Trade Dress Protection for the "Look and Feel" of Software: A New Source of Proprietary Rights Protection for the Software Industry?*, 5 COMPUTER LAWYER, Oct. 1988, at 2.

7 15 U.S.C. § 1125(a) (1988). The Lanham Act codifies U.S. trademark law.

8 17 U.S.C. §§ 101-810 (1988).

9 35 U.S.C. §§ 1-376 (1982 and Supp. V 1987).

10 Computer programs are usually seen as a set of statements or instructions. *See, e.g.*, 17 U.S.C. § 101 (1988). But courts and agencies must routinely distinguish specific manifestations of programs from programs *per se*. *See, e.g.*, *Diamond v. Diehr*, 450 U.S. 175 (1980) (algorithms contained in program instructions); *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F. Supp. 1127 (N.D. Cal. 1986) (the look and feel of computer software audiovisual displays); *Synercom Technology, Inc. v. University Computing Co.*, 462 F. Supp. 1003 (N.D. Tex. 1978) (data input formats); NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, FINAL REPORT 23 (1978) [hereinafter CONTU REPORT] (data bases, *e.g.* encyclopedias or dictionaries, stored in magnetic form and accessed by a computer program); 53 Fed. Reg. 38,110 (1988) (policy decision on copyrightability of digitized typefaces stored in computer programs).

11 *See, e.g.*, *Sid & Marty Krofft Television Prods. v. McDonald's Corp.*, 562 F.2d 1157 (9th Cir. 1977) (total concept and feel of television shows and commercials); *Roth Greeting Cards v. United Card Co.*, 429 F.2d 1106, 1110 (9th Cir. 1970) (total concept and feel of greeting cards).

12 Written programming instructions (or "source code") was the subject of *Whelan Assocs. v. Jaslow Dental Laboratory*, 797 F.2d 1222 (3d Cir. 1986), *cert. denied*, 479 U.S. 1031 (1987), and is outside the scope of this comment.

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

14 Other elements of the computer system, such as the keyboard, central processing unit, memory storage devices, video display, printers, etc., may be involved in the process of achieving the desired result. To the extent that they interact with the user directly, they are part of the user interface (*e.g.*, pressing keys on the keyboard to issue a command).

15 For examples of dynamic aspects of a user interface, see *infra* Appendix, Figures _____, _____, and accompanying text.

16 LaPlant, *Mac 'Look and Feel' Legal Issues Remain Unclear*, InfoWorld, Jan. 5, 1987, at 23.

17 Broderbund Software, Inc. v. Unison World, Inc., 648 F. Supp. at 1137.

18 J. Koltnow, *Who Can Use the Macintosh Interface?*, OUTSIDE APPLE, Oct. 1986 (emphasis added) (a newsletter published by Apple Computer, Inc., for outside developers).

19 Nichols v. Universal Pictures Corp., 45 F.2d 119, 121 (2d Cir. 1930), *cert. denied*, 282 U.S. 902 (1931).

20 *Id.*

21 O'Connor, *Software Firms Fear Patents May Stifle Innovation*, San Jose Mercury News, Mar. 6, 1989, at 1A, col. 5.

22 CONTU REPORT, *supra* note 10, at 38.

23 See O'Connor, *Don't Expect Japan's Start to Rise on the Software Industry Horizon*, San Jose Mercury News, Feb. 12, 1989, at 1F, col. 1. "For all their efforts elsewhere, the Japanese have yet to unravel the enigmatic software business, and it doesn't appear likely they will anytime soon." *Id.* (assessment of Heidi Roizen, president of the Software Publishers Association). "The Japanese, Roizen maintains, don't grasp many aspects of this process and fail to deliver in key respects, such as user interfaces." *Id.* at 1F, col. 3.

24 Beutel, *supra* note 6, at 2 ("So called 'Human Factors Engineering' has become a critical and increasingly expensive aspect of new software development"); see also Ranney, *'Look and Feel' Discussed as Major Copyright Issue*, InfoWorld, Nov. 11, 1985, at 13.

25 See Bonner, *User Interface Wars: The Next Wave*, PC COMPUTING, Nov. 1988, at 74 ("By all accounts, standardized graphics-based operating environments will rule the computer marketplace by the early 1990's").

26 Ely-Norris Safe Co. v. Mosler Safe Co., 7 F.2d 603, 604 (2d Cir. 1925) (Hand, J.), *rev'd*, 273 U.S. 132 (1927).

27 15 U.S.C. §§ 1051-1127 (1988). Unlike the Patent and Copyright Acts, constitutional authority for the Lanham Act comes from the Commerce Clause. Trade-Mark Cases, 100 U.S. 82, 91 (1879). The Commerce Clause grants Congress the power "To regulate Commerce ... among the several States" U.S. CONST. art. I, § 8, cl. 3.

28 15 U.S.C. § 1125(a) (1988). The section prohibits:

[U]se in connection with any goods or services, ... [of] a false designation of origin, or any false description or representation,

Id. The Trademark Law Revision Act of 1988 amended Section 43(a), effective November 16, 1989, to clarify that false statements about another person's product are actionable. See S. REP. NO. 100-515, *reprinted in* 1988 U.S. CODE CONG. & ADMIN. NEWS 5577, 5603.

29 Beutel, *supra* note 6, at 2.

But [Section 43(a)] should be construed to include only such false descriptions or representations as are of substantially the same economic nature as those which involve infringement or other improper use of trademarks.

Bernard Food Indus. v. Dietene Co., 415 F.2d 1279, 1283 (7th Cir. 1969), *cert. denied*, 397 U.S. 912 (1970). See also Truck Equip. Serv. Co. v. Fruehauf Corp., 536 F.2d 1210, 1216 (8th Cir. 1976), *cert. denied*, 457 U.S. 1126 (1982).

30 Trade dress traditionally has been defined as the "packaging, size, shape, color, design, or name which has been affixed to goods or services." Beutel, *supra* note 6, at 3. See also Bauer, *A Federal Law of Unfair Competition: What Should be the Reach of Section 43(a) of the Lanham Act?*, 31 UCLA L. REV. 671, 688 n.70 (1984). In recent years courts have extended trade dress protection to, among other things, imitation of the features of a product where those features are "nonfunctional." *Id.* at 688 n.71.

31 See Bauer, *supra* note 30, at 681.

32 Beutel, *supra* note 6, at 3.

33 A plaintiff might not be required to establish secondary meaning if the trade dress of their product is "inherently distinctive." *See* *Chevron Chem. Co. v. Voluntary Purchasing Groups, Inc.*, 659 F.2d 695, 702 (5th Cir. 1981), *cert. denied*, 457 U.S. 1126 (1982). *Accord* *AmBrit Inc. v. Kraft, Inc.*, 812 F.2d 1531, 1535 (11th Cir. 1986), *cert. denied*, 481 U.S. 1041 (1987); *Blau Plumbing, Inc., v. S. O.S. Fix-it Inc.*, 781 F.2d 604, 608 (7th Cir. 1986).

34 *See* *Fuddruckers, Inc. v. Doc's B.R. Others, Inc.*, 826 F.2d 837, 842 (9th Cir. 1987). *See also* Beutel, *supra* note 6, at 3.

35 *Inwood Laboratories v. Ives Laboratories*, 456 U.S. 844, 851 n.11 (1981). Moreover, Professor McCarthy described secondary meaning this way:

Take as an example, a descriptive word like BEST for milk. ... [The] descriptive connotation [*i.e.*, "highest quality"] is the "primary meaning" of the word "best." Extensive advertising and sales, over a period of time, by the seller of BEST milk may give the word "best" a new and different meaning to milk buyers. ... That is, BEST serves as a commercial symbol identifying the milk of one source and serving to distinguish that milk from milk sold by all other dairies. ... This new, trademark function of the descriptive word "best" is called the "secondary meaning" of "best"

1 J. MCCARTHY, TRADEMARKS AND UNFAIR COMPETITION, § 15:2 (2d ed. 1984) (footnotes omitted).

36 *See, e.g.*, *Stewart v. Hudson*, 222 F. 584 (E.D. Pa. 1915).

[B]ecause of the rapid development of the automobile business itself, it has produced such an alertness of mind toward everything connected with it, and a readiness and willingness to accept and adopt novelties, that there is the same relative difference in the speed with which the reputation of builders and others may be acquired and lost, and good wills grow up and decline.

Id. at 586.

37 Beutel, *supra* note 6, at 4.

38 This trend is away from this characteristic, however, even in the IBM PC market. *See* Bonner, *User Interface Wars: The Next Wave*, PC COMPUTING, Nov. 1988, at 72.

39 For an illustration and a description of 1-2-3, see *infra* Appendix, Figure 3, and accompanying text.

40 Over time, however, other developers appropriated the interface for various products. The subsequent failure of Lotus to prevent these appropriations could leave it vulnerable on two counts. First, the existence of non-Lotus products using the interface weakens the identification consumers make with respect to Lotus as the sole developer of products with the Lotus interface. Second, inaction by Lotus may subject it to a defense of laches.

41 *Fuddruckers, Inc. v. Doc's B.R. Others, Inc.*, 826 F.2d 837, 845 (9th Cir. 1987) (emphasis in original) (quoting *Lindy Pen Co. v. Bic Pen Corp.*, 725 F.2d 1240, 1243 (9th Cir. 1984) (Lindy Pen 1) (quoting *Alpha Industries*, 616 F.2d at 443) (emphasis added), *cert. denied*, 469 U.S. 1188 (1985)).

42 *Truck Equip. Serv. Co. v. Fruehauf Corp.*, 536 F.2d 1210, 1221 (8th Cir. 1976). However, it may be relevant evidence to support a finding of secondary meaning, *i.e.*, deliberate copying of trade dress suggests that it has secondary meaning, which is why it was copied. *See* *Fuddruckers, Inc. v. Doc's B.R. Others, Inc.*, 826 F.2d at 844.

43 *Compare* *Fuddruckers, Inc. v. Doc's B.R. Others, Inc.*, 826 F.2d 837 (different names of restaurants was not enough to obviate potential confusion) *with* *Digital Equip. Corp. v. C. Itoh and Co.*, 229 U.S.P.Q. 598 (D.N.J. 1985) (brand labelling sufficient to avoid confusion, in light of sophistication of end users, sales methods employed, and high costs of goods).

44 See 1 J. MCCARTHY, TRADEMARKS AND UNFAIR COMPETITION, § 8:2 (2d ed. 1984).

45 Beutel, *supra* note 6, at 4.

46 Perhaps "vicarious" exposure might result, when the person on whom the buyer relies for a recommendation has been exposed to the product's look and feel in some way.

47 For example, exposure may take the form of a product demonstration before purchase, or "screen shots" in brochures, advertising, or press reviews of the product.

48 See *In re Morton-Norwich Prods.*, 671 F.2d 1332, 1336 (C.C.P.A. 1982); *In re Mogen David Wine Corp.*, 328 F.2d 925, 932 (C.C. P.A. 1964) (Rich, J., concurring).

49 See *In re Deister Concentrator Co.*, 289 F.2d 496, 504 (C.C.P.A. 1961); *Truck Equipment Serv. Co. v. Fruehauf Corp.*, 536 F.2d 1210, 1219-20 n.12 (8th Cir. 1976). See also Bauer, *supra* note 30, at 688 n.71.

A monopoly exists when there is only one seller. See R. COOTER & T. ULEN, LAW AND ECONOMICS 37 (1988). "Market" monopoly must be distinguished from what might be called a "product" monopoly. Statutory protection under the Lanham, Copyright, and Patent Acts secures certain exclusive rights in a product to producers, authors, and inventors. They are protected as the sole source of the product, and therefore have a monopoly on the product. Where barriers, such as legal protection, make it impossible for competing firms to enter the market with the same *type* of product, the producer, author, or inventor has a *market monopoly*, *i.e.*, the supplier and the industry are the same. See *id.* at 38.

50 *Inwood Laboratories v. Ives Laboratories*, 456 U.S. 844, 850 n.10 (1982).

51 *Fuddruckers, Inc. v. Doc's B.R. Others, Inc.*, 826 F.2d 837, 842 (9th Cir. 1987)

52 *Id.*

53 See *supra* Section I.A.

54 For an illustration and description of pull-down menus, see *infra* Appendix, Figure ____, and accompanying text.

55 Examples of programs that have no menus include operating systems such as MS-DOS and UNIX, some programming languages such as BASIC on the IBM PC, and entertainment programs such as "text adventures." The IBM PC version of WordPerfect, a popular word processor, displays no main menu, although submenus appear after initial commands are selected.

56 *Truck Equip. Serv. Co. v. Fruehauf Corp.*, 536 F.2d 1210, 1218 (8th Cir. 1987).

57 671 F.2d 1332 (C.C.P.A. 1982) (Rich, J., concurring).

58 See *In re Morton-Norwich Prods.*, 671 F.2d at 1337.

59 See, *e.g.*, *Inwood Laboratories v. Ives Laboratories*, 456 U.S. 844 (1981) (arbitrary colors, chosen for capsules containing a drug, came to be used by resellers and consumers to distinguish dosages of the drug). In *Inwood Laboratories*, the Supreme Court upheld the district court's finding that the feature was functional, and now that the patent for the drug had expired manufacturers of generic products could produce the drug and had a "legitimate reason" for using the same colors. *Id.* at 858 n.20. It seems unlikely, however, that the result would be the same if the plaintiff's drug had just been released with arbitrary colors, before the market had come to rely on the color markings as a way to distinguish dosages.

60 See, *e.g.*, *Aro Mfg. Co. v. Convertible Top Co.*, 377 U.S. 476, 522 (1963) ("[T]o grant ... a legally protected monopoly offends the constitutional plan of a competitive economy free from patent monopolies except where there are patentable 'Discoveries.'") (Black, J., dissenting); *Sicilia Di Ri Biebow & Co. v. Cox*, 732 F.2d 417, 429 (5th Cir. 1984) (ultimate inquiry in functionality analysis is whether protecting a feature will hinder competition), *reh'g denied*, 736 F.2d 1526 (5th Cir. 1984); *In re Morton-Norwich Prods.* 671

F.2d at 1341 ("the effect upon competition is really the crux of the matter"); *Truck Equip. Serv. Co. v. Fruehauf Corp.*, 536 F.2d at 1218 ("The question in each case is whether protection against imitation will hinder the competitor in competition"); *Pagliari v. Wallace China Co.*, 198 F.2d 339, 343 (9th Cir. 1952) ("Under such circumstances, since effective competition may be undertaken without imitation, the law grants protection"); *Avery & Sons v. Meikle & Co.*, 81 Ky. 73, 102, 4 Ky. L. Rptr. 759, 776 (1883) ("Care should be taken not to interfere with the freedom of trade, or to foster monopolies ...").

61 See R. COOTER & T. ULEN, *supra* note 49, at 144-45. The ability to identify a product's producer reduces a consumer's search cost. Moreover, it is probably the case that a generic item is of lower quality than a brand name item. For example, the average quality of various consumer goods fell in the Soviet Union after the abolition of marks identifying the producing plant. *Id.* at 144.

On the other hand, some economists say that resources devoted to product differentiation amount to a social waste, obscuring what are otherwise identical products. *Id.* at 145.

62 *In re Morton-Norwich Prods.*, 671 F.2d at 1340; *Vaughn Novelty Mfg. Co. v. G. G. Green Mfg. Corp.*, 202 F.2d 172, 176 (3d Cir. 1953), *cert. denied*, 346 U.S. 820 (1953).

63 See *supra* note 49, and accompanying text.

64 See *supra* Section I.B., for a discussion of the benefits of a standard user interface. For these reasons consumers are likely to shun non-standard products.

65 For instance, it may be costly for users to invest the money and time to learn a new user interface. Where a product has enjoyed a very large market share, and where retraining costs are sufficiently high, the market may be unwilling to accept competitive products unless they offer a similar user interface. If protection is granted here, the vendor is given a *de facto* monopoly.

Such a result is, however, inappropriate under trademark law. No returns above those from producer identification should result from trademark protection. See Burgunder & Heckman, *An Emerging Theory of Computer Software Genericism*, 2 HIGH TECH. L.J. 229, 230 (1987).

66 See CONTU REPORT, *supra* note 10, Appendix H, at H-3 (studies commissioned by CONTU recommended a duration of copyright protection from two to 14 years).

67 *Id.* at 44-45.

68 See Bonner, *supra* note 25, at 74.

69 17 U.S.C. § 102 (1988). The enabling constitutional grant of authority comes from the Patent and Copyright Clause of the Constitution: "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" U.S. CONST. art. I, § 8, cl. 8. This clause contains a grant of authority as well as limitations on that power. See *Graham v. John Deere Co.*, 383 U.S. 1, 5 (1965).

70 See 17 U.S.C. §§ 101, 102 (1988).

71 See, e.g., *Whelan Assocs. v. Jaslow Dental Laboratory*, 797 F.2d 1222 (3d Cir. 1986).

72 See *Data E. USA, Inc. v. EPYX, Inc.*, 862 F.2d 204 (9th Cir. 1988); *Williams Elecs., Inc. v. *Artic Int'l, Inc.*, 685 F.2d 870 (3d Cir. 1982); *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F. Supp. 1127 (N.D. Cal. 1986).

73 17 U.S.C. § 101 (1988).

74 This follows from Professor Nimmer's conclusion that ideas in written form are a writing within the meaning of the Constitution. See *infra* note 76. Even if look and feel involves a synergism of displays, or a "gestalt," it is nonetheless embodied within an audiovisual work.

75 17 U.S.C. § 102(b) (1988). This section was intended to codify, unchanged, the common law idea expression dichotomy as a limit

on copyrightable subject matter. *See* H.R. REP. No. 94-1476, 94th Cong., 2d Sess. 56-57, *reprinted in* 1976 U.S. CODE CONG. & ADMIN. NEWS 5659, 5670 [hereinafter H.R. REP.].

76 This limitation on copyrightable subject matter is an issue of statutory application. Professor Nimmer maintains this is not a requirement of the Copyright Clause of the Constitution:

[T]here seem to be no valid constitutional grounds for denying to an idea the status of a writing. ... Within this frame of reference it seems axiomatic, hardly requiring argument or authority, to conclude that an idea in written form is a writing.

1 M. NIMMER, NIMMER ON COPYRIGHT § 1.08[D] (1988).

77 *See* *Peter Pan Fabrics, Inc. v. Martin Weiner Corp.*, 274 F.2d 487 (2d Cir. 1960) (L. Hand, J.); *see also* Knowles & Palmieri, *Dissecting Krofft: An Expression of New Ideas in Copyright?*, 8 SAN FERN. V.L. REV. 109, 126 (1980); Comment, *Broderbund Software, Inc. v. Unison World, Inc.: "Look and Feel" Copyright Protection for the Display Screens of an Application Microcomputer Program*, 13 RUTGERS COMPUTER & TECH. L.J. 105, 108 (1987).

78 *See* *Nichols v. Universal Pictures Corp.*, 45 F.2d 119, 121 (2d Cir. 1930).

79 *See* 3 M. NIMMER, NIMMER ON COPYRIGHT § 13.03[A] (1988).

80 *Peter Pan Fabrics Inc. v. Martin Weiner Corp.*, 274 F.2d at 489 (emphasis added).

81 "O body swayed to music, O brightening glance, How can we know the dancer from the dance?" W. B. YEATS, *Among School Children*, in W.B. YEATS: THE POEMS 217 (Finneran ed. 1983).

82 Whether particular ideas and expressions have merged has been called a "somewhat metaphysical issue." *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1253 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984).

83 A similar proposal advocates the adoption by copyright law of trademark's doctrine of genericism in the context of computer software. *See* Burgunder & Heckman, *An Emerging Theory of Computer Software Genericism*, 2 HIGH TECH. L.J. 229 (1988). Proving "genericism" would require a more rigorous showing of anticompetitive effect than would "*de jure* functionality" or its counterpart, "*de jure* idea" as discussed here.

84 Conventional economics theory holds that where it is costly to prevent non-paying beneficiaries from consuming a commodity, the private market may provide sub-optimal amounts of the public good. R. COOTER & T. ULEN, *supra* note 49, at 113. However, "the standard theory ignores the possibility that there may be alternative, less direct means" for rewarding innovation. *Id.* at 114. In the case of software look and feel, developers may be sufficiently motivated to innovate where their main interest is selling a software program, or computer, rather than a user interface *per se*. *See* Breyer, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 HARV. L. REV. 281, 344-345 (1970).

85 *See* *Whelan Assocs. v. Jaslow Dental Laboratory*, 797 F.2d 1222, 1235 (3rd Cir. 1986); *Digital Communications Assoc. v. Softklone Distributing Corp.*, 659 F. Supp. 449, 458 (N.D. Ga. 1987). To the extent that there are other purposes of copyright law this proposal is not inconsistent. Other purposes are "to promote learning, culture and development." *Whelan Assocs. v. Jaslow Dental Laboratory*, 797 F.2d at 1235.

The purpose is to grant enough, but not too much, protection such that, in the long term, optimal amounts of "ideas" are produced *and* available for public use. *See* R. COOTER & T. ULEN, *supra* note 49, at 135.

A copyright law, ... may represent one way of resolving the conflict between the need for book revenues high enough to secure adequate production and book prices low enough not to interfere with widespread dissemination of what is written.

Breyer, *supra* note 84, at 282.

86 *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 109 S.Ct. 971, 975 (1989) (O'Connor, J.).

87 Evaluating the effects on competition should be more familiar territory for courts than deciding whether a window "exploding" from an icon in a computer display is an idea or the expression of one. (For an illustration of this phenomenon, see *infra* Appendix, Figure 4, and accompanying text.)

88 While decisions would continue to be *ad hoc*, they would involve judicial inquiry into competition, not metaphysics, and consequently litigants should be better able to predict trial outcomes.

Predictability may be all there is to the law. "The prophecies of what the courts will do in fact, and nothing more pretentious, are what I mean by the law." O.W. HOLMES, JR., COLLECTED LEGAL PAPERS 167 (1920).

Further, predictability of protection will itself promote free trade.

One well-confirmed result in the literature on bargaining is that bargainers are more likely to cooperate when their rights are clear, and less likely to agree when their rights are ambiguous.

R. COOTER & T. ULEN, *supra* note 49, at 100 (footnote omitted).

89 This approach is appropriate in a dispute between competing software developers in a single computer market, such as that of the Macintosh. A more difficult question arises in a case where, for example, a company such as Apple Computer claims software developers for other computers infringe the copyrights Apple holds in software products it developed for its computers. Enforcing Apple's copyright claims will not unduly hinder competition in the market for Apple's software products (since the alleged infringers have developed products for other computers). However, since Apple is asserting its rights beyond the Macintosh market, it is appropriate to analyze the competitive effects of protection on all markets in which Apple asserts its claims. (That greater market sphere of "microcomputers," however, cannot be characterized at this time as having adopted a standard user interface; where such alternative means of producing competitive user interfaces exists, protection for Apple's copyrights is less likely to unduly burden competition.)

90 For an illustration and description of the type of disk icons discussed here, see *infra* Appendix, Figure 4, and accompanying text.

91 For an illustration and description of a tool icon, see *infra* Appendix, Figure 5, and accompanying text.

92 At this point it is worthwhile to distinguish the analysis of this proposal from a traditional inquiry of whether idea and expression have merged. Merger denies protection to an expression whenever there is only one way, or very few ways, to express an idea. This comment proposes an analysis that would deny protection when, *for any reason*, such protection would unduly hinder competition. There may be *de facto* ideas capable of expression in myriad ways, only one of which is palatable to the market. Similarly, there may be a *de facto* idea that can be expressed in only one way, but because of the availability of substitutes or for other reasons is protectable because such protection will not unduly hinder competition in a generally defined market.

This "icon" example demonstrates how a competition-oriented analysis produces results that are consistent with precedent, yet avoid the problems of metaphysical analysis.

93 35 U.S.C. §§ 101-376 (1982 & Supp. V 1987).

94 While Jefferson was active in establishing the patent system after the adoption of the Constitution, authorship of the empowering constitutional provision has been attributed to James Madison and Charles C. Pinckney. See Fenning, *The Origin of the Patent and Copyright Clause of the Constitution*, 11 J. PAT. OFF. SOC'Y 445 (1930).

95 Annotation, *Patentable Subject Matter*, 65 L. Ed. 2d 1197, 1200 (1980).

96 35 U.S.C. § 101 (1982).

97 Annotation, *supra* note 95, at 1202.

98 Davis, *Computer Programs and Subject Matter Patentability*, 6 RUTGERS J. OF COMPUTERS & LAW 1, 7 (1977).

99 *See, e.g.*, *Parker v. Flook*, 437 U.S. 584, 588 (1977) ("The plain language of Section 101 does not answer the question").

100 U.S. PATENT AND TRADEMARK OFFICE, *MANUAL OF PATENT EXAMINING PROCEDURE* § 2106 (5th ed. rev. 9, Sept. 1988).

An "apparatus" claim will be analyzed as a process claim unless it can be demonstrated the apparatus claim is drawn to a specific machine, distinguishable from other machines capable of performing the identical functions. *In re Pardo*, 684 F.2d 912, 916 n.6 (C.C.P.A. 1982); *see also In re Walter* 618 F.2d 758 (C.C.P.A. 1980). For the purposes of this paper, only the general process claim analysis will be discussed, recognizing a slightly different analysis might apply where a claim is drawn to a specific apparatus.

101 35 U.S.C. § 100(b) (1982).

102 WEBSTER'S NEW UNIVERSAL UNABRIDGED DICTIONARY 1434 (2d ed. 1983).

103 648 F. Supp. 1127 (N.D. Cal. 1986). Part of this process is illustrated and described in the Appendix; *see infra* Appendix, Figures 1-A and 1-B.

104 *In re Johnson*, 200 U.S.P.Q. 199, 210-11 (C.C.P.A. 1978). *See also* PATENT AND TRADEMARK OFFICE, *supra* note 100.

105 The look and feel-related patents that have been issued are evidence that the Patent Office considers such processes proper subject matter for utility patents. *See supra* note 5.

106 In particular factual situations, other doctrines of exclusion might be implicated, such as those pertaining to abstract ideas or methods of doing business.

107 450 U.S. 175 (1981) (process for curing rubber which includes in several steps the use of a mathematical formula and a programmed digital computer).

108 573 F.2d 1237 (C.C.P.A. 1978).

109 The Court has used the term "algorithm" in the sense of a "procedure for solving a given type of mathematical problem" *Gottschalk v. Benson*, 409 U.S. 63, 65 (1972).

110 *In re Freeman*, 573 F.2d at 1245; *see also* White & Redano, *Patent Opportunities for Software-Related Subject Matter*, 4 COMPUTER LAWYER, July 1987, at 13.

The second step of the *Freeman* test has been modified by *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982) and *In re Walter*, 618 F.2d 758 (C.C.P.A. 1980).

111 *See, e.g.*, *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F. Supp. 1127 (N.D. Cal. 1986), where defendant copied plaintiff's audiovisual look and feel without, for all intents and purposes, access to plaintiff's source code; defendant "reverse engineered" the program.

112 U.S. PATENT AND TRADEMARK OFFICE, *supra* note 100.

113 *See In re Hansen*, 154 F.2d 684, 686 (C.C.P.A. 1946); *In re Sterling*, 70 F.2d 910, 912 (C.C.P.A. 1934). *See also In re Miller*, 418 F.2d 1392, 1396 (C.C.P.A. 1969).

114 *In re Hansen*, 154 F.2d at 686.

In early decisions, it appears that most attempts to patent printed matter involved arrangements of information designed to implement a business system; consequently the development of the printed matter exclusion was closely related to the doctrine excluding methods

of doing business from patentable subject matter. *See* Chisum, *The Patentability of Algorithms*, 47 U. PITT. L. REV. 959, 965 (1986).

115 *In re* Hansen, 154 F.2d at 685.

116 *In re* Gulack, 703 F.2d 1381, 1383 (Fed. Cir. 1983).

117 154 F.2d at 685.

118 Two commentators, after discussing *In re Gulack*, declared: "This holding could be characterized as an affirmation of the potential patentability of 'look and feel' presentations of data." White & Redano, *supra* note 110, at 20 (1987).

119 1 D. CHISUM, PATENTS, § 1.03[6] (1988); *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972).

120 *See, e.g.*, *Cochrane v. Deener*, 94 U.S. 780, 788 (1877). Professor Chisum maintains that this language in *Cochrane* was dictum, and when taken in context was intended as an inclusive description, not a preclusive description (*i.e.*, processes that operate in such a way are patentable, but are not the only processes that may be patented). *See* Chisum, *supra* note 114, at 967 n.30.

121 *In re* Abrams, 188 F.2d 165, 168 (C.C.P.A. 1951). In discussing this case, Professor Chisum cautions that "[o]ne must naturally be leery of a proposition which a court can justify only by reference to its self-evident truth." Chisum, *supra* note 114, at 968 n.35.

122 *See* Bender, *Computer Programs: Should They be Patentable?*, 68 COLUM. L. REV. 241, 255-56 (1968).

123 For example, this objection was avoided in *Diamond v. Diehr*, 450 U.S. 175 (1980), where software and computers were used in conjunction with other steps and devices to cure rubber. A process manifest in the audiovisual displays of a computer software program, however, is not likely to reduce physical matter to a different state or thing. *But see infra* note 124, and accompanying text.

124 One might argue this example goes too far and would make such things as television shows patentable. Television shows as such, however, are not fairly called processes, and therefore do not come within the broad language of 35 U.S.C. § 101. On the other hand, a user interface implemented through audiovisual displays is fairly called a process.

125 *In re* Benson, 441 F.2d 682, 688 (C.C.P.A. 1971), *rev'd*, *Gottschalk v. Benson*, 409 U.S. 63 (1972).

126 *See* Chisum, *supra* note 114, at 967-92; von Spakovsky, von Spakovsky & Graffeo, *The Limited Patenting of Computer Programs: A Proposed Statutory Approach*, 16 CUMB. L. REV. 27, 31 (1985-1986).

127 *See* Chisum, *supra* note 114, at 969 (citing *In re* Musgrave, 431 F.2d 882 (C.C.P.A. 1970); *In re* Mahony, 421 F.2d 742 (C.C.P.A. 1970); *In re* Bernhart, 417 F.2d 1395 (C.C.P.A. 1969); *In re* Prater, 415 F.2d 1378 (C.C.P.A. 1968), *reh'g*, 415 F.2d 1393 (C.C.P.A. 1968)).

128 431 F.2d 882 (C.C.P.A. 1970).

129 *In re* Musgrave, 431 F.2d at 893. The court in *Musgrave* noted that steps involving the exercise of subjective judgment without restriction might violate the definiteness of disclosure requirements in 35 U.S.C. § 112. *Id.*

130 *In re* Musgrave, 431 F.2d at 889-90.

131 409 U.S. 63 (1972).

13132 *Gottschalk v. Benson*, 409 U.S. at 67 (emphasis added).

13233 Chisum, *supra* note 114, at 981.

13334 *Id.*

13435 *See supra* note 132, and accompanying text.

13536 *Parker v. Flook*, 437 U.S. 584, 589 (1978).

13637 *Id.* at 588 n.9 (citing *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876)).

13738 *Id.*

13839 450 U.S. 175 (1981).

13940 *Diamond v. Diehr*, 450 U.S. at 185.

14041 *Diamond v. Diehr*, 450 U.S. at 185 (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948))).

14142 Professor Chisum notes that "a process consisting partially or wholly of `mental steps' does not exist in nature and can be quite specific"; consequently there was no basis for the Court in *Benson* to lump mental steps with phenomena of nature or abstract concepts. *See Chisum, supra* note 114, at 981.

14243 *See In re Pardo*, 684 F.2d 912 (C.C.P.A. 1982) (a means of allowing a computer to process commands in any order received, rather than sequentially); *In re Taner*, 681 F.2d 787 (C.C.P.A. 1982) (a seismic prospecting method); *In re Toma*, 575 F.2d 872 (C.C.P.A. 1978) (a means of translating between natural languages, *e.g.*, from Russian to English); *In re Freeman*, 573 F.2d 1237 (C.C.P.A. 1978) (a process of typesetting using concatenation points to position characters); *In re Chatfield*, 545 F.2d 152 (C.C.P.A. 1976), *cert. denied*, 434 U.S. 875 (1977) (a time sharing method for operating computer programs simultaneously); *Paine Webber, Jackson & Curtis, Inc. v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*, 564 F. Supp. 1358 (D. Del. 1983) (a methodology to effectuate a highly efficient business system).

14344 *In re Musgrave*, 431 F.2d 882, 889-90 (1970). *See also supra* note 129, and accompanying text.

14445 35 U.S.C. § 102 (1982).

14546 35 U.S.C. § 103 (1982 & Supp. V 1987).

14647 35 U.S.C. § 112 (1982).

14748 Act of August 29, 1842, ch. 263, § 3, 5 Stat. 543, 544.

14849 *See* 35 U.S.C. § 171 (1982).

149 *See Powers Control Corp. v. Hybrinetics, Inc.*, 806 F.2d 234 (D.C. Cir. 1986); *see also* 1 D. CHISUM, PATENTS §1.04[2][d] (1988).

15051 Kluth & Lundberg, *Design Patents: A New Form of Intellectual Property Protection for Computer Software*, 5 COMPUTER LAWYER 1 (Aug. 1988).

15152 It appears that the Patent and Trademark Office has since reversed its opinion, and currently maintains that computer software video displays are not within the statutory subject matter of design patents. Statement of Gerard Goldberg, Group Director, Group 230, U.S. Patent and Trademark Office, at Prentice-Hall Conference on Patent Protection for Computer Software: The New Safeguard, in San Francisco, Cal. (September 25, 1989).

15253 *See Kluth & Lundberg, supra* note 151, at 1.

15354 *In re Hruby*, 373 F.2d 997, 1000 (C.C.P.A. 1967).

15455 See Kluth & Lundberg, *supra* note 151, at 3.

15556 Powers Control Corp. v. Hybrinetics, Inc., 806 F.2d 234 (D.C. Cir. 1986).

15657 D. CHISUM, *supra* note 150.

15758 Applied Arts Corp. v. Grand Rapids Metalcraft Corp., 67 F.2d 428, 430 (6th Cir. 1933) (invalidating a design patent covering a combination ash receiver and electric lighter for use in automobiles).

15859 D. CHISUM, *supra* note 150.

It is unclear whether this concern for protecting the scope of utility patent protection extends to the Copyright Act or the Lanham Act.

A strong argument may be made that the statutory scope of protectable subject matter is mutually exclusive in the case of utility patents and copyrights. The Constitution expressly distinguishes between science, authors, and writings on the one hand, and useful arts, inventors, and discoveries on the other. See U.S. CONST. art. I, § 8, cl. 8. Further, the codification of the idea expression dichotomy expressly excludes from copyright protection any "process" or "discovery," mirroring the Patent Act and its constitutional grant of power. See 17 U.S.C. § 102(b) (1988).

Nonetheless, courts have often held that patent, copyright, and trademark laws stem from different concepts, offer different kinds of protection, and are not mutually exclusive. See *In re Penthouse Int'l*, 565 F.2d 679, 683, n. 3 (C.C.P.A. 1977). See also 1 J. MCCARTHY, TRADEMARKS AND UNFAIR COMPETITION § 6:1 (2d ed. 1984).

The Lanham Act, on the other hand, was enacted under a broader authority: the Commerce Clause. See *Trade-Mark Cases*, 100 U.S. 82, 91 (1879). Decisions regarding trademark law's doctrine of functionality do not reflect a deference to the Patent Act; rather they are concerned with the effect of protection on competition. See *supra* Section II.C. Consequently, a process which was also a product feature could conceivably qualify for both trade dress and utility patent protection.

15960 See, e.g., *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F. Supp 1127, 1134 (N.D. Cal. 1986) ("The ... designer of any program that performed the same functions as 'Print Shop' had available a wide range of expression governed predominantly by artistic ... considerations"); see also *infra* Appendix, Figures 1-A and 1-B (illustrations of "Print Shop").

16061 Presentation by Cathy Hemingway, Ph.D., at the West Coast Computer Fair, in San Francisco, Cal. (March 17, 1989) (Dr. Hemingway is Vice President of Sobell Associates and a user interface consultant to Sun Microsystems).

16162 Compare the requirement here of "nonfunctional" to that of trademark law ("nonfunctional"), see *supra* Section II.C., and that of copyright law ("expression, not idea"), see *supra* Section III.A.

16263 See *supra* notes 49 and 85, and accompanying text.

16364 Although design patents are subject to the additional tests of novelty, nonobviousness, etc., these tests are applied to the subject matter of the design patent (the ornamentation). Where, as a practical matter, protection of ornamentation also results in protection of subject matter within the scope of utility patents, a utility patent-in-effect is obtained, while only the ornamentation, not the machine or process, has been evaluated for novelty, nonobviousness, and so on.

16465 For the source of this distinction, see the discussion of the doctrine of functionality in trademark law, see *supra* Section II.C., and accompanying text. For a similar proposal made by this paper in the context of copyright's idea expression analysis, see *supra* Section III.B.

16566 See Parker & Flynn, *Apple Microsoft Suit Ruling Fails to Clear Contract Issue*, InfoWorld, Mar. 27, 1989, at 93, col. 5.

16667 User interfaces that predate the subject of Xerox's design patents would normally have no reason to fear the patents' validity. Such interfaces would be part of the prior art, and Xerox's work must be sufficiently novel and nonobvious in light of such prior art.

16768 See the discussion on this issue *supra*, Section IV.A.

