

WHAT THE USER INTERFACE FIELD THINKS OF THE SOFTWARE COPYRIGHT "LOOK AND FEEL" LAWSUITS (AND WHAT THE LAW OUGHT TO DO ABOUT IT)

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The software copyright look and feel lawsuits have created a climate of uncertainty in the user interface design field [3, 4]. Although individuals may have opinions about how these lawsuits should be decided, it is difficult for them to know how representative their views are. This column will report on a survey on the user interface field's perspective on these lawsuits which was conducted at the sixth ACM Conference on Computer-Human Interaction (CHI '89) on May 2, 1989. This forum was chosen because the annual CHI meeting is the largest gathering of user interface researchers, designers, and developers — the people who have the most to gain or lose by the outcome of the look and feel controversy. (An in-depth report on the survey findings, which includes detailed statistical analysis, is available [4]). The column will compare the results of this survey with a report jointly written by 10 intellectual property scholars[1] concerning copyright protection for look and feel and other aspects of user interfaces. The CHI survey results are, in general, consistent with the scholars' conclusions based on copyright principles.[4] The legal experts see a basis in copyright law for denying copyright protection to look and feel, which is what the user interface field thinks would be in the field's best interest.

The results of the CHI survey can be summarized briefly: More than 80 percent of the 667 respondents to the survey opposed copyright protection for the look and feel of user interfaces, although they strongly supported copyright protection for source and object code. They regard the kind

of strong copyright protection being sought in the current look and feel lawsuits as likely to have a negative effect on their own work and on the user interface design community and industry. They oppose strong copyright protection for user interfaces because they think such protection would adversely affect the climate of open exchange and discussion of research and design innovations that has brought progress to the field.

Background on the CHI Survey

To assist the user interface design community in becoming more aware of the legal issues involved in the current round of look and feel lawsuits, Pamela Samuelson, organized and moderated a 90 minute legal debate on copyright protection for user interfaces as a plenary session at CHI '89.[2] The debate featured Jack Brown, the chief lawyer for Apple Computer in the Apple-Microsoft litigation, and Thomas Hemnes, a former defense lawyer in the Lotus case. They debated the legal perspectives on the pros and cons of protecting the look and feel of software user interfaces through copyright law. Michael Lesk of Bell Communications Research was an industry discussant.

Brown's argument emphasized the significant amount of creative work that went into the design of a user interface and the role of copyright in protecting those whose intellectual labor had produced a valuable product from those who found it easier to imitate a creative work than to do something creative themselves. Hemnes pointed out that

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not every valuable intellectual product was protectable by copyright law. Moreover, copyright law should and would respect nonprotection of certain aspects of intellectual works would further progress in a field.

We realized the CHI legal debate would provide a unique and efficient opportunity to survey a large sample of the user interface field about the legal issues. Such a survey should not be distributed until after the lawyers had had their say, so that the audience would have been educated about the terms of the legal controversy and each side had presented its view. As the debate drew to a close, Samuelson informed the audience about the survey being distributed to them, and said that although judges would make the final rulings on the look and feel lawsuits, this was a chance for representatives of the user interface design community to vote on the legal issues, and urged them to do so. Before filing out of the auditorium, 667 members of the audience filled out the survey.

A Profile of the Survey Respondents

The survey asked a number of questions about the respondents and their firms so it would be possible to analyze whether characteristics of the respondents or their firms might predict their views on the look and feel lawsuits and related issues. For example, respondents were asked to select from a list of job functions the one or two descriptions that best fit (1.68 was the average rate of response by job function). Table 1 shows the respondents' profile by job function for the most frequently indicated categories.

Table I Respondent Population by Job Function

User interface designer	44%
Researcher	32%
Software engineer	29%
Human factors engineer	15%
Manager	15%
Faculty	8%
Consultants	6%
Students	6%

Respondents were also asked to identify the one best description of the organization or company for which they work. Table II reflects the results of this question.

Table II Respondent Population by Employer

Computer manufacturer	26%
R and D organization	23%
University	20%
Software vendor	14%
Other	17%

The survey did not ask respondents to identify the organization or firm for which they worked, but since the respondents made up 42 percent of the total conference

registration, his information provides a reasonable substitute without compromising the identity of particular respondents. The 10 organizations with the highest number of attendees at CHI'89 were, in decreasing rank order: IBM, Hewlett-Packard, Apple, MCC (the host organization in Austin), AT&T, Texas Instruments, Xerox, Bell Communications Research, the University of Michigan, and Carnegie-Mellon University. In addition to look and feel litigants Hewlett-Packard, Apple, and Xerox in positions two, three, and five, there were several representatives each from Ashton-Tate, Lotus, and Microsoft in attendance.

None of the factors characterizing the survey respondents were found to predict statistically significant differences in their answers to the questions concerning the role of copyright and patent in the protection of various aspects of software or concerning predicted effects of strong copyright protection. In view of the support the survey gives to the minimalist interpretation of the appropriate reach of copyright law as applied to software,[2] it is worth pointing out that the respondents were among the leading designers and researchers in their field, responsible for creating many of the most commercially valuable user interfaces in the software industry. They typically worked for commercial firms that rely on copyright law to protect their software products.[4]

Survey Findings on Protection of Look and Feel

One of the principal findings of the survey was that the user interface field thinks that the look and feel of user interfaces should not be given protection by copyright or patent law. Some 77 percent of the respondents with an opinion felt that look and feel should not be given protection by either copyright or patent law, 82 percent opposed copyright protection for look and feel.

Quite a few of the survey respondents explained their reasons for opposing legal protection for look and feel of user interfaces. Some said they weren't sure what look and feel meant. Some were unsure how similar interfaces could be in look and feel before infringement might be found. Others thought that look and feel related largely to functionalities of the interface which copyright should not protect. Still others expressed concern for the effect on the users, as well as the industry, if the pending look and feel lawsuits established strong copyright protection for user interfaces.[4]

In addition to asking about look and feel, the survey asked for views about legal protection of five other aspects of user interfaces, all of which (either explicitly or implicitly) are at issue in the current round of look and feel cases. The survey revealed even stronger opposition to copyright protection for commands, user interface functionalities, and screen sequence than to look and feel protection as well as strong (but somewhat less opposition) to such protection for screen layouts (See Table III). Icons were the aspect of user interfaces for which there was strongest sympathy for protection, but not even this feature enjoyed majority support among respondents. Strongest opposition was registered as to protection of commands and user interface functionalities, with more than 9 of every 10 respondents objecting to their protection by copyright.

Table III Support for Copyright &/or Patent for Software Aspects

<i>aspect</i>	<i>cop.</i>	<i>pat.</i>	<i>both</i>	<i>either</i>
source code	71%	10%	12%	7%
object code	65%	10%	11%	15%
pseudocode	39%	7%	6%	48%
module design	18%	16%	6%	60%
algorithms	8%	32%	7%	53%
commands	6%	4%	2%	88%
icons	37%	3%	3%	57%
scr. layout	25%	4%	2%	69%
scr. sequence	13%	6%	2%	79%
look & feel	15%	5%	3%	77%
UI functionality	4%	12%	2%	83%

Because many of these features overlap significantly with the kind of look and feel being sought to be protected in the lawsuits, it is not surprising the respondents would view protection of these aspects of interfaces in much the same way they viewed protection of look and feel.

However, opposition to protection of look and feel was not part of wholesale rejection of intellectual property protection for software, as Shown in Table III. The respondents overwhelmingly supported intellectual property (and mainly for copyright) protection for source and object code. Fully 93 percent of those with an opinion supported intellectual property protection, either through copyright or patent, for source code. The 85 percent support for object code protection was nearly as strong.

As a group, the respondents strongly supported copyright protection for source and object code, they did not support copyright protection for pseudocode or modular design. Least of all did they support copyright protection for algorithms, although nearly 40 percent of the respondents supported patent protection for algorithms.

Predicted Negative Effect From Copyright Protection for Look and Feel

Another major finding of the CHI survey was that the respondents regarded the kind of strong copyright protection being sought in the look and feel lawsuits as likely to have a clear negative effect both on the industry/community and on their own work.

In response to a survey question about the effect such protection would have "on your own work", the average rating (on a five-point scale ranging from "1" for "significant negative effect" to "5" for "significant positive effect") was 2.049, a clear overall expectation of a negative effect. But it was not just a minority of respondents with "significant negative" votes who swayed the average. 72 percent expected a negative impact on their own work (ratings of "1" or "2") if the current lawsuits established strong copyright protection, while only nine percent expected the effect on their work to be positive (ratings of "4" or "5").

The predicted effect "on the user interface design industry/community" was even more strongly negative,

with an average rating of 1.646 on the same five-point scale. Indeed, 86 percent of the respondents expected the kind of strong copyright protection for user interfaces being sought in the "look and feel" lawsuits to have a negative impact on the industry, while only 10 percent viewed the prospect as positive. Table IV gives the results of the respondents' predictions about the likely effect of strong protection on their own work and on the industry.

Table IV Predicted Effect Of Strong Copyright for Interfaces

Effect	+				-
	1	2	3	4	5
Own Work	35%	36%	19%	7%	2%
Ind/comm	57%	29%	4%	7%	3%

Lest the reader interpret these results as only reflecting the opinion of worker bees or ivory-tower types, we hasten to point out that 15 percent of the respondent population identified themselves as managers, and their responses to the prediction questions and the protectability of individual features question did not differ in a statistically significant way from the responses of the respondent group as a whole. The average predicted industry effect among the managers, for example, was 1.74. The average responses by job function closest to the manager predictions were those of faculty (1.76), students (1.73) and user interface designers (1.72). All were still well under a 2.0 rating, which itself was a negative rating. Not a single category of respondents measured by job function predicted even a neutral, let alone a positive, effect on the industry if the look and feel lawsuits established the kind of copyright protection being sought.

When we compared the answers respondents gave concerning their predictions of effect on their own work with their predictions about the industry effect, we noted that while there was some shifting in both directions, people who gave different ratings on the two questions were 3.5 times more likely to move in a more negative direction when predicting the industry effect. Particularly striking was the finding that of the 19 percent of respondents who expected to be unaffected in their own work if the current lawsuits established strong copyright for user interfaces, 69 percent expected a negative effect for that field.

The Extent Of Restriction Perceived At Present

The survey also inquired about the extent of restriction the respondents currently felt about the use they could make of the latest research and design innovations which they saw or learned about at conferences such as CHI. Respondents were asked to select one of four statements that best described their views.

- 1) No restrictions: I can freely use anything I learn about or see,
- 2) Some restrictions: I can't copy exactly, but I am allowed to reimplement or reverse engineer any interesting designs,

- 3) Significant restrictions: I can copy only general concepts or ideas at the research stage, or
- 4) Total restrictions: Once I see it at CHI, I know I can't copy it in any user interface design of my own.

Some 31 percent reported feeling "no restrictions" on use of innovations seen at CHI. Just under half of the respondents (49 percent) felt only "some restriction." Only 1-in-5 respondents reported feeling "significantly" (19 percent) or "totally" (1 percent) restricted in their use of design innovations seen at CHI. (Here, there were some statistically significant responses among respondents by type of employer. Government employees felt least restricted, with 64 percent assuming no restrictions. However, even those who worked for computer manufacturers felt fewer constraints than one might have guessed, with 24 percent perceiving no restrictions, and another 50 percent reporting some restrictions.)

Not surprisingly, the fewer restrictions that people currently felt, the more likely they were to expect a negative effect on their own work if strong copyright protection was established by the current lawsuits about user interface issues. But even those who already feel significant restrictions predicted negative consequences if look and feel protection was established, with an average of 2.303 on the five-point scale as to their own work, and 1.70 as to the industry/community effect. The average response of "no restriction" respondents was 1.464 for the industry/community effect.

How the Legal Debate Affected the Respondents' Views

Perhaps the most dramatic finding from the survey was the fact that the more those in the user interface field learned what how copyright lawyers thought about copyright protection of user interface issues, the more likely they were to think that copyright protection for user interfaces should be weaker, rather than stronger.

Attendees of the CHI legal debate came with some familiarity of the legal issues involved in the look and feel cases. Indeed 64 percent of the respondents rated themselves as "moderately familiar" with the legal issues before the legal debate, and another 9 percent reported being "very familiar" with the issues. Given how much press attention the look and feel lawsuits have received, and given how important this community feels the legal issues to be to the health of their field, this result in itself is not surprising. What was surprising was how people reacted to copyright protection for user interfaces after they had heard the legal debate. Half of the respondents indicated that attending the debate had caused them to change their opinion on copyright protection. Ten times as many changed their minds to thinking that copyright protection should be weaker than changed to thinking it should be stronger.

It was not the case that Jack Brown argued less persuasively than Thomas Hemnes, for Peter Lewis of the New York Times reported both sides of the legal debate to be equally persuasive, (May 7, 1989). Moreover, a number of respondents praised Brown's skill in argumentation. The lawyers, quite appropriately, presented arguments based on the issues that copyright law regards as relevant to deciding legal disputes.

What then explains the strong shift toward thinking copyright protection should be weaker? The authors believe that the CHI audience was not so much persuaded to one legal position or the other, but awakened to the nature of the legal debate and its implications for how they worked and for the field in which they worked. The comment of one survey respondent expresses well the authors' interpretation of the outcome of the legal debate: "The arguments and session made me very nervous because the arguments against strong protection were so compelling based on my knowledge of the field, but they may not be anywhere near as obvious to non-practitioners — and the courts are generally non-practitioners."

The respondents felt strongly enough about the predicted harm to their industry that 63 percent of those who expressed an opinion wanted SIGCHI to take an official position on the legal issues based on the results of this survey. Many who responded "no" to this question said they did so because they thought the entire SIGCHI membership should be polled before SIGCHI took an official position.

Comparing the CHI Survey Results to Law Scholars' Report

In part because of some novel legal questions presented by the software copyright lawsuits, a group of 10 intellectual property scholars met last February at Arizona State University to try to reach consensus on the proper application of copyright law to the protection of computer programs. Among the questions they addressed was whether copyright protection was appropriate for the look and feel of computer program user interfaces. The conferees agreed it was not, saying that use of terms like look and feel "obscures rather than assists in the application of copyright principles to software interfaces." [1]

The conferees recognized that software user interfaces may be highly functional, and to the extent they are, that copyright protection is not available for them, nor for functionally optimal expressions of them. In addition, the conferees recognized that user interface design may be constrained by technological considerations that may limit the range of viable "expressions," which would restrict the scope of copyright protection available to them.

The conferees found in traditional principles of copyright law an affirmation of the right to study and take unprotected elements from copyrighted programs and reimplement them in other products. [1] While accepting that intellectual property protection for computer programs should balance the needs of innovators and competitors so as to promote the health of industries such as that for software, the conferees regarded their aim to be a limited one of articulating how traditional copyright principles might be applied to computer programs, not to offer their judgment about whether the larger goal of intellectual property law can best be served by use of copyright law to protect computer programs.

The conferees, while in agreeing with the user interface survey respondents that individual commands or even sets of commands should not be protected by copyright, were not able to reach consensus on whether a less than functionally optimal arrangement of commands (or icons) in a user interface would be protectable by copyright.

Some conferees, like many in the CHI survey population, thought the benefits that would flow to users from standardization of such things as command names and command groupings in software user interfaces, as well as functional reasons that might exist for grouping certain kinds of commands together, made it generally inappropriate, for copyright protection to attach to arrangements of commands. Other conferees thought that in view of the protection copyright law had traditionally afforded to compilations, the organization of a set of commands from one program, if original, might be protected by copyright from exact duplication in a competing program.

The conferees were also in agreement with those in the user interface field about some issues related to the protection of icons--that "adoption of a functional general purpose metaphor might limit the range of copyrightable expression" and when "the choice of icons is logically based upon the choice of an overarching metaphor (such as a desktop) or the icon itself has no fanciful characteristics, application of traditional principles would preclude copyright protection for the particular representation of the icon." However the conferees also thought that traditional principles of copyright law might provide protection for some more fanciful pictorial representation of icons. The CHI survey respondents, however, did not support copyright protection for icons, perhaps because they perceive user interface icons as not really having a fanciful character.

The CHI survey data suggests that the user interface field has developed because people in the field come to conferences such as CHI to share their new user interface design ideas with others. When attendees see good design ideas and the research that stands behind them, they feel they can incorporate these designs into new products of their own, blending the ideas they have received from others with the ideas they have developed with themselves.

And they do not consider themselves thieves, plagiarists, or copyright infringers when they do so. Rather they consider themselves scientists and engineers who are innovating on top of others' ideas in the kind of evolutionary fashion which has exemplified development in this field.

This evolutionary development seems to have brought about a considerable amount of innovation, improved designs which have made computers and software more accessible and usable by those with minimal or no technical training, and competition about performance, enhanced features, and price. If each software firm had to develop a different style of user interface to comply with copyright law, there is concern that copyright might impede how those in the user interface field do their work, might harm the health of the industry, and might make more difficult the achievement of the goal of making computers usable by ordinary people.

Conclusion

It is often stated, but nonetheless true, that a fundamental purpose of the intellectual property laws is to provide protection for innovations in order to give incentives for

people to be creative, thereby promoting progress in various fields of endeavor. From this, it follows that where legal protection of some kinds of innovations is not needed to promote innovation in a field, no protective legislation is needed. Thus, it must surely be the case that where intellectual property protection would have a detrimental effect on innovation in a field, it should be withheld, especially in an era where the law does not as yet dictate the protection being sought.

In the case of user interfaces, the CHI survey clearly demonstrates that a significant segment of the leading designers and researchers in the user interface field are overwhelmingly opposed to strong copyright protection for user interfaces and regard such protection as very likely to be harmful to the field, rather than helpful to it. These are the very people whom the copyright law is supposed to be encouraging to be creative. Given that copyright law has, as yet, not formed a firm position about protection of various aspects of user interfaces discussed in this column - and can be construed to support either side in the legal debate, judges in the current round of copyright look and feel cases should be receptive to considering the effect strong protection would have on the industry.

That the views of the technical community are largely consistent with views expressed by legal scholars [1] as to the application of copyright law to computer programs suggests that judges in look and feel cases could find an adequate basis in copyright doctrine to do what the user interface field thinks would be in the field's best interest.

Acknowledgments

The authors wish to thank Gary Perlman and Jonathan Grudin for reviewing a draft of the survey; Jonathan Grudin for his help in production of the survey; Jack Brown and Thomas Hemnes for their excellent legal presentations at the CHI legal debate; John Leggett and his army of student volunteers who distributed and collected the surveys at the CHI debate; Connie McFarland and Andrea Lynn for data entry and preliminary analysis; Dan Sewell for statistical advice; Bill Curtis for encouraging the idea of the legal debate and CHI and the survey; and Mark Hall, editor-in-chief of the *Jurimetrics Journal*, for this editorial assistance with the article in [4], on which this article is based.

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