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Beauty Fades: An Experimental Study of Federal Court Design Patent Aesthetics

Dr. Andrew W. Torrance

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BEAUTY FADES: AN EXPERIMENTAL STUDY OF FEDERAL COURT DESIGN PATENT AESTHETICS

Dr. Andrew W. Torrance

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“Wisdom is the abstract of the past, but beauty is the promise of the future.”

– Oliver Wendell Holmes

I. ABSTRACT

Courts are rarely asked to judge beauty. Such a subjective practice would normally be anathema to the ideal of objective legal standards. However, one area of federal law has a long tradition of explicitly requiring courts to make aesthetic decisions: the law of design.\(^1\) New designs may be protected as design patents, but only if they are “ornamental” in nature.\(^2\) As the U.S. Supreme Court has noted, “a design must present an aesthetically pleasing appearance.”\(^3\) This study uses empirical and experimental approaches to test the hypothesis that courts tend to favor more attractive patented designs over less attractive ones. It relies upon a data set that includes all design patent decisions from 1982 until 2010 in which a court made a final determination of validity or infringement, with every design patent at issue therein classified as valid or invalid and infringed or not infringed. In a controlled experiment, human subjects rated the attractiveness of all designs at issue in all of these court decisions. The results show that, although the average attractiveness of patented designs has been stable over the past three decades, the average attractiveness of those designs found invalid has risen markedly. Where courts once appeared to impose a penalty on unattractive designs, they now seem not to discriminate between attractive and unattractive designs in terms of validity. This shift in empirical court outcomes matches a doctrinal shift away from aesthetic considerations by the Court of Appeals for the Federal Circuit, as a result of which the “‘ornamental’ requirement of the design statute means that the design must not be governed solely by function.”\(^4\) Thus, both legal doctrine and empirical data reflect a decline in the importance of aesthetic considerations in design patent decisions by federal courts over the last three decades.

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1 Designs may be afforded legal protection by design patent, copyright, or trademark.
II. INTRODUCTION

Courts are rarely asked to judge beauty. Such a subjective practice would normally be anathema to the ideal of objective legal standards. However, one area of federal law has a long tradition of explicitly requiring courts to make aesthetic decisions: the law of design. Examination of design patent law offers unique insight into how aesthetic considerations have been, and are currently, employed by courts to make legal decisions.

In the United States, patent law offers protection for inventions originating within diverse fields of endeavor. Utility patents are available to anyone who invents "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof..." In addition to their eligibility for utility patent protection, a botanical inventor may obtain a "plant patent" for "any distinct and new [sexually reproducing] variety of plant, including cultivated spores, mutants, hybrids, and newly found seedlings, other than a tuber propagated plant or a plant found in an uncultivated state..." Design patents represent yet a third category of patent rights, these given to inventors of "any new, original and ornamental design for an article of manufacture..." In general, one may often obtain multiple forms of intellectual property protection at once to cover a single invention. The three forms of patent are not mutually exclusive. In fact, it is possible for the same invention to be covered simultaneously by claims of utility, plant, and design patents, or any combination thereof.

Since they were first legally enshrined in 1842, more than 630,000 design patents have issued in the United States. The very first design patent was issued to George Bruce in 1842 to protect a new "Type" font. Later design patents issued to protect such iconic designs as the Statue of Liberty and the Coca-Cola bottle. Towards the end of the 2000s, design patents have enjoyed a resurgence in popularity, with applications to the United States Patent and Trademark Office increasing markedly.

6 Id. § 161.
7 Id. § 171.
8 J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc., 534 U.S. 124, 144 (2001) ("[T]his [that is, the Supreme] Court has allowed dual protection in other intellectual property cases.").
10 U.S. Patent No. D1 (issued on Nov. 9, 1842).
13 STEVEN L. OBERHOLTZER, THE BASIC PRINCIPLES OF INTELLECTUAL PROPERTY LAW 6 (2d ed. 2009).
Not unsurprisingly, many courts have interpreted U.S. design patent law to require an element of artistry. Although no such requirement was explicitly present in the original design patent statute, the Patent Act of August 29, 1842,\textsuperscript{14} judicial interpretations of the ornamentality requirement often appeared to necessitate that designs possess features that were aesthetically pleasing to the human eye. In practice, patents claiming less aesthetically pleasing designs seemed to fare more poorly in court than did those claiming more beautiful designs.

Roughly coincident with the creation of the Court of Appeals for the Federal Circuit (CAFC) in 1982, design patent law doctrine appeared to change direction, with a substantial deemphasizing of aesthetic considerations in deciding the validity of designs claimed in patents. With the prominent exception of some dicta to the contrary in a United States Supreme Court case, \textit{Bonito Boats, Inc. v. Thunder Craft Boats, Inc.}, 489 U.S. 141 (1989), the importance of aesthetics appeared to diminish steadily. This shift was decisively heralded a decade later, in \textit{Seiko Epson Corp. v. Nu-Kote International}, where the CAFC stated “the ‘ornamental’ requirement of the design statute means that the design must not be governed solely by function...”\textsuperscript{15}

This study attempts to test the hypothesis that aesthetic considerations in design patent law have, indeed, diminished over the last thirty years. All design patent decisions from 1982 until 2010 in which a court made a final determination of validity or infringement were identified, and each design patent therein scored for validity and infringement. Then, in a controlled experiment, human subjects were asked to score the attractiveness of all the patented designs at issue in these cases. The experimental results indicate that, at the beginning of the time period considered, patents claiming the least attractive designs were most likely to be found invalid, those claiming designs of intermediate attractiveness fared better in terms of validity, but were found to have been infringed relatively less often, and patents claiming the most attractive designs were most likely to be found both valid and infringed. However, the results also indicate that, while the attractiveness of patented designs found valid, whether infringed or not, has changed little, the average attractiveness of patented designs found invalid has risen markedly over time. In fact, in contradistinction to the situation early in the time period surveyed, the attractiveness of a design claimed in a patent has now become a poor predictor of judicial outcome. Design beauty appears to have ceased to be a useful predictor of judicial outcome in design patent litigation.


\textsuperscript{15} Seiko Epson Corp. v. Nu-Kote Int'l, Inc., 190 F.3d 1360, 1368 (Fed. Cir. 1999).
III. AESTHETICS AND THE ORNAMENTALITY REQUIREMENT

In its earliest statutory formulation, U.S. design patent law lacked an overt requirement of aesthetic attractiveness. The Patent Act of August 29, 1842\textsuperscript{16} failed to explicitly require any quantum of aesthetic appeal in a design patent. Neither did the most influential U.S. Supreme Court case to interpret design patent law, \textit{Gorham Company v. White},\textsuperscript{17} create or discuss such a requirement. Instead, the \textit{Gorham} decision focused on design novelty and economic worth: "The law manifestly contemplates that giving certain new and original appearances to a manufactured article may enhance its salable value.

Some later interpretations of design patent law did begin to require that designs possess pleasing visual characteristics. The Court of Customs and Patent Appeals (CCPA) noted in \textit{In re O'Hruby}, that the purpose of protected designs was "for enjoyment by the beholder, which is the ultimate purpose of all ornamental design."\textsuperscript{19} The Second Circuit Court of Appeals was more explicit in mandating that "[a design must] be the product of aesthetic skill and artistic conception," \textit{Blisscraft of Hollywood v. United Plastics Co.}\textsuperscript{20} In its most recent consideration of the design patents, \textit{Bonito Boats, Inc. v. Thunder Craft Boats, Inc.}, the U.S. Supreme Court forcefully asserted that, to be patentable, designs must be visually attractive.\textsuperscript{21} As the court explained, "[t]o qualify for protection, a design must present an aesthetically pleasing appearance that is not dictated by function alone, and must satisfy the other criteria of patentability."\textsuperscript{22} The legal requirement that a design patent be "ornamental" was generally interpreted to necessitate artistry or an aesthetically pleasing effect.

Notwithstanding these Supreme Court dicta, courts below appear to have begun to abandon any aesthetic requirement since around the 1980s. Just prior to the creation of the Court of Appeals for the Federal Circuit (CAFC), the Eighth Circuit Court of Appeals reduced the requirement of aesthetics to a de minimus level, distinguishing concerns of industrial design from those of esoteric artistry.\textsuperscript{23} The court explained that:

design patents are concerned with the industrial arts, not the fine arts. The statute [in 35 U.S.C. § 171] refers to "any . . . ornamental

\begin{itemize}
  \item \textsuperscript{17} 81 U.S. 511 (1871).
  \item \textsuperscript{18} Id. at 525.
  \item \textsuperscript{19} \textit{In re O'Hruby}, 373 F.2d 997, 1001 (CCPA 1967).
  \item \textsuperscript{20} \textit{Blisscraft of Hollywood v. United Plastics Co.}, 294 F.2d 694, 696 (2d Cir. 1961).
  \item \textsuperscript{21} Id.
  \item \textsuperscript{22} \textit{Bonito Boats, Inc. v. Thunder Craft Boats, Inc.}, 489 U.S. 141, 148 (1989).
  \item \textsuperscript{23} \textit{Contico Int'l, Inc. v. Rubbermaid Commercial Prods., Inc.}, 665 F.2d 820 (8th Cir. 1981).
\end{itemize}
design for an article of manufacture.” 35 U.S.C. § 171. Perhaps it is too much to expect that a trash-can dolly be beautiful. It is enough for present purposes that it is not ugly, especially when compared to prior designs.24

This contrasts sharply with the opinion in Blisscraft, where the Second Circuit found the design of a beverage pitcher invalid for lack of artistry:

Plaintiff's pitcher has no particularly aesthetic appeal in line, form, color, or otherwise. It contained no dominant artistic motif either in detail or in its overall conception. Its lid, body, handle, and base retain merely their individual characteristics when used in conjunction with each other without producing any combined artistic effect. The reaction which the pitcher inspires is simply that of the usual, useful and not unattractive piece of kitchenware.25

In Seiko Epson v. Nu-Kote International, the CAFC crystallized the trend away from aesthetic considerations in design patent validity: “the ‘ornamental’ requirement of the design statute means that the design must not be governed solely by function...”26 So well accepted has the non-artistic interpretation of the law become that law firms now generally counsel their clients that aesthetic considerations hold little relevance for design patents. To illustrate how well accepted this principle is, consider the following statement about design patent law in The Basic Principles of Intellectual Property Law (Second Edition), a primer of intellectual property law freely distributed to potential clients by the venerable law firm, Brinks Hofer Gilson & Lione: “There is no requirement that the design be artistic or pleasing to the eye.”27 The trend away from aesthetic interpretations of the ornamentality requirement has brought U.S. design patent law closer to that in other jurisdictions, of which the European Union (EU) and Canada may serve as representative illustrations.

In the EU, one may register a design for protection under Council Regulations (EC) No 6/200228 and (EC) No 40/94,29 which were most recently

24 Id. at 825.
26 Seiko Epson Corp. v. Nu-Kote Int'l, Inc., 190 F.3d 1360, 1368 (Fed. Cir. 1999).
27 STEVEN L. OBERHOLTZER, THE BASIC PRINCIPLES OF INTELLECTUAL PROPERTY LAW 7 (2d ed. 2009).
amended by Council Regulation No 1891/2006 of 18 December 2006.\textsuperscript{30} Instead of design patents per se, the Community Design Regulations allow inventors to register their designs with the Office for Harmonization in the Internal Market (Trade Marks and Designs).\textsuperscript{31} These designs are formally referred to as registered Community designs (RCDs). Among the legal requirements of obtaining an RCD, the Community Design Regulations explicitly address the issue of aesthetics. Article 14 of the Directive on the legal protection of designs stipulates that “it is understood that this does not entail that a design must have an aesthetic quality.”\textsuperscript{32} This requirement is echoed in both the basic Community Design Regulation\textsuperscript{33} and the Community Design Implementing Regulation.\textsuperscript{34}

Like the EU, Canada has a registration system for industrial designs. The Industrial Design Act fails even to mention aesthetic concerns. Rather, Section 2 defines “design” or “industrial design” as “features of shape, configuration, pattern or ornament and any combination of those features that, in a finished article, appeal to and are judged solely by the eye.”\textsuperscript{35} Here, “ornament” is merely one of several factors that, either alone or in “any combination,” may qualify a design for protection as a registered industrial design. Whatever aesthetic implications there may be to the word “ornament” in the Industrial Design Act, a design need not be ornamental to receive legal protection.

In neither the EU nor Canada are aesthetic considerations a threshold requirement for design protection. The design registration statutes of these two jurisdictions are clear on their faces in this regard. Rather than inherently subjective inquiries surrounding aesthetics, these statutes focus the analysis of design protection eligibility on other aspects of the design. In the EU, the primary legal thresholds require a design to be visible during normal use of the product in which the design resides,\textsuperscript{36} to possess novelty and individual character,\textsuperscript{37} and not to be dictated entirely by product function.\textsuperscript{38} Similarly, the

\textsuperscript{31} Office for Harmonization in the Internal Market (OHIM) (Trade Marks and Designs) (located at Avenida de Europa, 4, E-03008 Alicante, Spain).
\textsuperscript{35} Canada Industrial Design Act, R.S.C. 1985, c. I-9, sec. 2.
\textsuperscript{37} Id. arts. 12, 13.
\textsuperscript{38} Id. art. 14.
Canadian statute requires an industrial design not to have been in use at the time of application for registration,\(^\text{39}\) not to be confoundingly similar to existing design registrations,\(^\text{40}\) and not to be "dictated solely by a utilitarian function of the article."\(^\text{41}\)

Both in the United States and in many other countries, aesthetic considerations currently appear to play little role in deciding the validity of claimed designs. However, despite apparent doctrinal clarity, little empirical evidence exists to demonstrate whether or not courts follow patent law doctrine de-emphasizing aesthetic considerations. This study attempts to fill that gap by offering just such empirical evidence.

IV. EXPERIMENTAL METHODS

A. EXPERIMENTAL DESIGN

An exhaustive review was made of every published design patent opinion in the time period from 1982 until 2011. From this comprehensive set, a subset was constructed that included all opinions in which a final determination was made regarding the issues of validity or infringement of a patented design. This subset consisted of 83 separate decisions and 120 design patents, with some decisions evaluating multiple design patents. In addition to federal district courts (48) and CAFC decisions (32), the data subset includes one decision from the Sixth Circuit Court of Appeals\(^\text{42}\) and two from United States Court of Federal Claims.\(^\text{43}\) In the time period surveyed, there were no United States Supreme Court cases focusing on design patents.\(^\text{44}\)

Each of the 120 patented designs from the 83 design patent decisions were copied from their corresponding patents, as issued by the USPTO, and these designs were placed on Microsoft PowerPoint slides, with each slide reproducing a single page from a patent. A slide consisting solely of an Arabic


\(^{40}\) Id. sec. 6(1).

\(^{41}\) Id. sec. 5.1(a).

\(^{42}\) On rare occasions, a federal court of appeals other than the CAFC may hear a patent appeal, providing that the patent issue is ancillary to another dominating issue that is the appropriate purview of the appeals court.

\(^{43}\) The U.S. Court of Federal Claims holds jurisdiction over patent cases in which the federal government is the proper defendant. For example, cases in which the federal government has invoked its sovereign immunity to appropriate patent rights from their owner are the proper jurisdiction of the Court of Federal Claims.

numeral was placed before each full set of images from a single design patent, with the images from a single design patent placed in the order in which they occur in their corresponding patent. The full set of slides consisted of 447 individual slides, including 120 slides holding Arabic numerals. The slides did not display any information identifying either patent numbers or descriptions of patented objects.

Permission to conduct human subject research was obtained from the University of Kansas during the summer of 2011. Human subjects were chosen from among law students attending summer classes at the University of Kansas upon the basis of an advertisement that offered participants $30 compensation and a free lunch of pizza and soda. All students who volunteered to be experimental subjects, and who attended the experimental session, were accepted to participate.

B. EXPERIMENTAL PROCEDURE

All human subjects were gathered simultaneously into a medium-sized lecture hall at the University of Kansas School of Law. They were asked to sit at a desk located between 5 and 8 meters from, and with a clear unobstructed line of sight to, a large projector screen. The following statement was read to the assembled group of subjects:

The School of Law at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You should be aware that even if you agree to participate, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.

Your name will not be associated in any publication or presentation with the information collected about you or with the research findings from this study. Your participation in this experiment will not be shared unless required by law or you give written permission. The data gathered in this experiment will be published, though your particular ratings of design patents will be anonymous.

There are anticipated to be no risks associated with this experiment.
You will be asked to sit in a lecture hall at the University of Kansas School of Law. You will then be asked to watch a series of slides (depicting an issued design patent), and then rate the attractiveness of the design (from 0, for very unattractive, to 10 for very attractive). You will be asked to record your ratings of design attractiveness on a piece of paper that lists simply the slide number (e.g., Slide #10) and the attractiveness of the design depicted on that slide (e.g., 4). The ratings will be anonymous, with no personal information about you recorded in such a way as to link you to your particular design ratings. The rating session is anticipated to take approximately one hour in total, and you will be compensated $30 for your time. After the slide show has finished, you will be asked to return your rating sheet to me. The experiment will then be completed.

There was no attrition among those students assembled in the lecture hall; all of them fully participated in the entire experiment.

Under moderately darkened conditions, all of the slides depicting patented designs were projected onto a screen at the front of the lecture hall. Each slide was displayed for three seconds, and then the slideshow was paused on the next number slide for ten seconds to allow all human subjects to rate and record the judged attractiveness of the design just viewed. This procedure was continued until all patented designs had been viewed, and their ratings recorded. The entire experiment took approximately forty minutes to complete.

Data sheets were then collected from all human subjects. Data was then entered manually onto an electronic spreadsheet, and then double-checked for accuracy.

C. DATA ANALYSIS

The mean and standard deviation of the attractiveness ratings of each object was calculated. Assigning attractiveness ratings to the x-axis and year of judicial decision to the y-axis, linear regression analyses were carried out for (1) all decisions, (2) decisions in which the design patent was found invalid, (3) decisions in which the design patent was found valid or not invalid, but not infringed, and (4) decisions in which the design patent was found both valid and infringed. In addition, each of linear regression analyses (1) to (4) were calculated for (1) decisions of combined courts, (2) decisions of district courts only, and (3) decisions of the CAFC only.

45 Microsoft Excel was used to calculate statistics and carry out regression analyses.
V. EXPERIMENTAL RESULTS

A. GENERAL PATTERNS

TABLE 1 shows the means and standard deviations of the measured attractiveness of patented designs for (1) all decisions, (2) decisions in which the design patent was found invalid, (3) decisions in which the design patent was found valid or not invalid, but not infringed, and (4) decisions in which the design patent was found both valid and infringed. These results are presented for all courts combined and separately for district courts and the CAFC.

<table>
<thead>
<tr>
<th>JUDICIAL RESULT</th>
<th>COURT TYPE</th>
<th>All Mean</th>
<th>All SD</th>
<th>District Mean</th>
<th>District SD</th>
<th>CAFC Mean</th>
<th>CAFC SD</th>
<th>Comparison T-Test (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>All</td>
<td>4.82</td>
<td>0.89</td>
<td>5.13</td>
<td>0.91</td>
<td>4.69</td>
<td>0.89</td>
<td>0.28</td>
</tr>
<tr>
<td>INVALID</td>
<td>District</td>
<td>5.04</td>
<td>0.94</td>
<td>5.13</td>
<td>0.83</td>
<td>4.60</td>
<td>1.04</td>
<td>0.23</td>
</tr>
<tr>
<td>VALID BUT NOT INFRINGED</td>
<td>CAFC</td>
<td>4.68</td>
<td>0.94</td>
<td>4.51</td>
<td>0.91</td>
<td>4.97</td>
<td>0.69</td>
<td>0.18</td>
</tr>
<tr>
<td>VALID AND INFRINGED</td>
<td>CAFC</td>
<td>4.85</td>
<td>0.74</td>
<td>4.89</td>
<td>0.56</td>
<td>4.74</td>
<td>0.49</td>
<td>0.58</td>
</tr>
</tbody>
</table>

Based on the results of 2-tailed unpaired Student t-tests, there exist no statistically significant differences at the \( p = 0.01 \), \( p = 0.5 \), or \( p = 0.10 \) levels in the measured attractiveness of patented designs between federal district courts and the CAFC. This holds true for both for all judicial decisions, regardless of result, and for decisions in which the design patent was found invalid, decisions in which the design patent was found valid or not invalid, but not infringed, or decisions in which the design patent was found both valid and infringed.

TABLE 2 shows the frequency with which district courts and the CAFC that come to a final determination find design patents invalid, valid but not infringed, and both valid and infringed.

<table>
<thead>
<tr>
<th>JUDICIAL RESULT</th>
<th>COURT TYPE</th>
<th>District Court</th>
<th>CAFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>INVALID</td>
<td>District</td>
<td>31.3%</td>
<td>17.6%</td>
</tr>
<tr>
<td>VALID BUT NOT INFRINGED</td>
<td>CAFC</td>
<td>25.3%</td>
<td>35.3%</td>
</tr>
<tr>
<td>VALID AND INFRINGED</td>
<td>CAFC</td>
<td>32.5%</td>
<td>29.4%</td>
</tr>
</tbody>
</table>

District courts have been approximately twice as likely as the CAFC to find a design patent invalid. The CAFC has found design patents valid but not...
infringed at a considerably higher frequency (35.3% of decided cases) than have district courts (25.3% of decided cases). However, both district courts and the CAFC have held design patents valid and infringed at approximately the same frequency.

FIGURE 1 is a scatterplot graph that depicts the mean attractiveness of all design patents according to the year in which a court ruled on their validity or infringement. FIGURE 1 also shows the results of a linear regression of these data. The regression analysis shows very little change ($y = 0.0132x - 21.511, R^2 = 0.0146$) in the attractiveness of patented designs from 1982 to 2010.

![Figure 1. Attractiveness of All Design Patents](image)

FIGURE 2 is a scatterplot graph that depicts the mean attractiveness of all design patents found invalid by a court by year of court ruling. FIGURE 2 also shows the results of a linear regression of these data. The regression analysis shows a substantial rise ($y = 0.0495x - 93.82, R^2 = 0.2183$) in the attractiveness of patented designs found invalid from 1982 to 2010.
FIGURE 3 is a scatterplot graph that depicts the mean attractiveness of all design patents found valid but not infringed by a court by year of court ruling. FIGURE 3 also shows the results of a linear regression of these data. The regression analysis shows little change ($y = -0.0242x + 53.057, R^2 = 0.0321$) in the attractiveness of patented designs found valid but not infringed from 1982 to 2010.

FIGURE 4 is a scatterplot graph that depicts the mean attractiveness of all design patents found both valid and infringed by a court by year of court ruling. FIGURE 4 also shows the results of a linear regression of these data. The regression analysis shows little change ($y = 0.016x - 27.056, R^2 = 0.025$) in the attractiveness of patented designs found valid but not infringed from 1982 to 2010.
B. DISTRICT COURTS

FIGURE 5 is a scatterplot graph that depicts the mean attractiveness of all design patents whose validity or infringement was finally decided in a federal district court according to the year in which a district court ruled on their validity or infringement. FIGURE 5 also shows the results of a linear regression of these data. The regression analysis shows little change \( y = 0.0164x - 27.889, R^2 = 0.0246 \) in the attractiveness of patented designs whose validity or infringement was finally decided in a federal district court from 1982 to 2010.

FIGURE 6 is a scatterplot graph that depicts the mean attractiveness of all design patents finally found invalid in a federal district court by year of court district court decision. FIGURE 6 also shows the results of a linear regression of these data. The regression analysis shows a substantial rise...
(y = 0.0442x - 83.227, \( R^2 = 0.213 \)) in the attractiveness of patented designs finally found invalid in a federal district court from 1982 to 2010.

**FIGURE 6. ATTRACTIVENESS OF DESIGN PATENTS FOUND INVALID IN DISTRICT COURT**

![Graph showing the attractiveness of design patents found invalid in district court from 1980 to 2015.](image)

**FIGURE 7. ATTRACTIVENESS OF DESIGN PATENTS FOUND VALID BUT NOT INFRINGED IN DISTRICT COURT**

(y = -0.0312x + 66.931, \( R^2 = 0.0505 \)) in the attractiveness of patented designs finally found valid but not infringed in a federal district court from 1982 to 2010.

**FIGURE 8. ATTRACTIVENESS OF DESIGN PATENTS FOUND BOTH VALID AND INFRINGED IN DISTRICT COURT**

(y = -0.0312x + 66.931, \( R^2 = 0.0505 \)) in the attractiveness of patented designs finally found both valid and infringed in a federal district court from 1980 to 2015.
results of a linear regression of these data. The regression analysis shows a small rise \( y = 0.0328x - 60.345, \ R^2 = 0.0901 \) in the attractiveness of patented designs finally found both valid and infringed in a federal district court from 1982 to 2010.

C. COURT OF APPEALS FOR THE FEDERAL CIRCUIT

FIGURE 9 is a scatterplot graph that depicts the mean attractiveness of all design patents whose validity or infringement was finally decided in the CAFC according to the year in which the CAFC ruled on their validity or infringement. FIGURE 9 also shows the results of a linear regression of these data. The regression analysis shows little change \( y = -0.0083x + 21.181, \ R^2 = 0.0042 \) in the attractiveness of patented designs whose validity or infringement was finally decided in the CAFC from 1982 to 2010.
FIGURE 10 is a scatterplot graph that depicts the mean attractiveness of all design patents finally found invalid in the CAFC by year of court district court decision. FIGURE 10 also shows the results of a linear regression of these data. The regression analysis shows a substantial rise ($y = 0.0968x - 188.48, R^2 = 0.2363$) in the attractiveness of patented designs finally found invalid the CAFC from 1982 to 2010.

FIGURE 11 is a scatterplot graph that depicts the mean attractiveness of all design patents finally found valid but not infringed in the CAFC by year of court district court decision. FIGURE 11 also shows the results of a linear regression of these data. The regression analysis shows little change ($y = 0.0328x - 60.418, R^2 = 0.0476$) in the attractiveness of patented designs finally found valid but not infringed in the CAFC from 1982 to 2010.
VI. DISCUSSION OF RESULTS

A. OVERALL STABILITY IN ATTRACTIVENESS

For most of the categories of outcome and types of courts considered there was little change in the measured attractiveness of patented designs from 1982 to 2010. These results apply to patented designs found to be (1) valid but not infringed and (2) both valid and infringed, and pertain to results from both federal district courts and the CAFC.

The only minor departure from this pattern of stability involves the attractiveness of design patents finally found both valid and infringed in a federal district court; here \( R^2 = 0.0901 \), meaning that approximately 9% of the variation in the response variable is explainable via the explanatory variable, while the remaining 91% can be explained by unknown, lurking variables or inherent variability.

These data show little evidence that the attractiveness of patented designs held valid (whether infringed or not) changed from 1982 to 2010 across most categories of outcome and types of court.
B. RISE IN ATTRACTIVENESS OF INVALID DESIGNS

The most striking pattern in the data involves patented designs finally found invalid by a court. The data indicate a marked rise in measured attractiveness of these patented designs from 1982 to 2010. This pattern is remarkably consistent whether considered across all federal courts ($y = 0.0495x - 93.82, R^2 = 0.2183$), in federal district courts ($y = 0.0442x - 83.227, R^2 = 0.213$), or in the CAFC ($y = 0.0968x - 188.48, R^2 = 0.2363$).

The results of linear regression analyses indicate that approximately 21%–24% of the variation in the response variable is explainable via the explanatory variable, while the remaining 76%–79% can be explained by unknown, lurking variables or inherent variability.

As discussed above, there appears to have been a shift in design patent doctrine away from an aesthetics requirement occurring roughly at the advent of the CAFC. This doctrinal shift is consistent with the pattern for invalid patented designs observable in the experimental data. Namely, from 1982 to 2010 courts became increasingly likely to find attractive patented designs invalid. By contrast, the data suggest that, during the early years of the time period studied, less aesthetically attractive patented designs were more likely to be found invalid while more aesthetically attractive patented designs were more likely to found valid. This trend away from aesthetics as a factor in invalidity is thus mirrored in the doctrine and the data.

C. POLICY IMPLICATIONS

If the shift away from an aesthetics requirement suggested both by the data and the doctrine has indeed occurred, it has moved design patent law towards an interpretation of ornamentality present in the design protection law that predominates outside the United States. Just as both the European Union and Canada do not require that designs be aesthetically pleasing to be valid, so too may U.S. design patent law.

There may be policy advantages to dropping the requirement for aesthetics. Chief among these is improved consistency in making decisions about design patent validity. Judgments about attractiveness are inherently subjective. This could lead, and may long have led, to apparently arbitrary judicial decisions about validity, decisions whose primary determinant is the personal aesthetic sensibility of the judge responsible for making a particular decision. Relying, instead, on a more objective test of ornamentality, such as novelty and distinctiveness, is likely to lead to improved consistency of validity determinations, not only in court and at the USPTO, but also among design
patent owners considering infringement litigation and defendants attempting to avoid such actions.

A second salutary implication for policy involves the harmonization of U.S. design patent law with standards of intellectual property law prevailing internationally. Access to a similar test of design patent (or design registration) validity across jurisdictions may afford design patent owners advantages of efficiency, since determinations of validity in one jurisdiction would be more likely to hold true in other jurisdictions.

VII. CONCLUSIONS

Throughout much of the history of United States design patent law, design patentability has depended, in part, on the design being aesthetically pleasing. This is an inherently subjective requirement. Coinciding approximately with the inception of the CAFC, design patent doctrine appeared to begin a shift away from aesthetics as a requirement for validity. The study described in this Article used an experimental approach to assess the attractiveness of all design patents whose validity or infringement was finally decided by a court during the time period from 1982 to 2010. The results of this experiment accord with a decline in the importance of aesthetic considerations by suggesting that the measured attractiveness of patented designs finally found invalid by courts has increased substantially over time. Thus, both legal doctrine and empirical and experimental data suggest that aesthetic considerations have declined in relevance to design patent validity over the last three decades.