

Sustaining the Competitive Edge of Design Innovations:

Strategies for Protecting the Fruits of Design Thinking in Postmodern Organizations

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Introduction

Firms face a growing imperative to sustain the competitive edge conferred by their design innovations. It is true that being first to market with an innovative design can build market share and grow profit margins. But this competitive edge can erode quickly as followers recognize a business opportunity and enter the market. The time-to-market for imitations has diminished in our global economy in which competitors use advanced manufacturing technologies and increased agility to introduce competing products rapidly. Yet the full commercial value of a design innovation is left unrealized if it can be copied without recourse.

The growing threat posed by competitors and unscrupulous copyists requires design innovators to employ thoughtful strategies for sustaining design's competitive edge. First-to-market product offerings must be parlayed into robust commercial assets. Responsible firms aspire to do so by developing products that are superior to existing products, that do not infringe the rights of others, and that will enjoy a long-lasting competitive advantage. But just how is this best accomplished? And how can firms ensure that this result is a natural byproduct of their design processes?

The team-oriented structures of postmodern organizations provide unique opportunities for transforming design innovations into commercial assets. These structures enable design managers to consider intellectual property (IP) rights, including both IP risks and opportunities,

as a component of their design processes. But while IP is widely recognized as critical to profitable design, many firms struggle to integrate IP into their design efforts.

The author proposes an approach for accomplishing this objective. The first step toward sustaining design's competitive edge is availing design managers to the latest design protection strategies. The second step is the thoughtful integration of those strategies into the design team and the design process.

Results-Oriented Design Protection Strategies

Design managers must have access to the best strategies for protecting design innovations. IP protections in the form of patents, trademarks, trade dress, and trade secrets are available for innovative designs, and design managers should understand that IP strategies need to be tailored to the long-term business objectives of their firms.

Seeing Protected Designs as Commercial Assets

Design innovations take many forms. They include creative product and packaging designs, functional features of products and processes, graphics, source-identifying symbols, artistic and literary works, and valuable commercial secrets. Various mechanisms for protecting these innovations are provided by law, making IP rights available for design innovations that advance aesthetics, performance, manufacturability, and brand identity.

Design managers and their firms increasingly recognize IP protection as an important asset. A protected design is as much an asset as capital equipment. In fact, the value of a firm's *physical* assets – like buildings and machinery – is often exceeded by the value of its *intangible* assets –

like inventions, brands, designs and other forms of IP. Caroline Davidson created Nike's "swoosh" design in 1971 for a mere \$35, but that iconic symbol has since become a prime asset of Nike. And a simple hourglass-shaped bottle designed by the Root Glass Company in 1916 became and remains an immensely valuable design asset of Coca-Cola.

By recognizing design protection as a valuable commercial asset, firms can pursue *design ownership* – the enviable state of being both armed to prevent others from using an innovative design and free to use that design without infringing the rights of others. Like a real estate deed that provides both the freedom to occupy a particular piece of land and the right to exclude others from it, *design ownership* represents a valuable asset in the form of an exclusive design domain.

Strategies for Protecting Form and Function

Whether form follows function or function follows form, virtually all products embody features that perform a function and features that provide a pleasing form.¹ The wild success of Apple's iPod[®] stems not only from the way it works but also how it looks. Whether its style outweighs its performance in the eyes of consumers or vice versa, the combination unquestionably drives consumer purchase decisions.

While designers and engineers work together to blend form and function, the legal modes available for protecting design innovations erect a barrier between them. A product can enjoy utility patent² or trade secret protection for its functional features. The aesthetic elements of the

¹ We are repeatedly reminded of this blend of form and function in product promotions. Cadillac advertises its Escalade model as "*The Fusion of Design & Technology.*" David Yurman calls his designer watches "*A Fusion of Art and Science.*" To Acura, its TL model is "*Form, Breathing Down the Neck of Function.*" Even the toilets of Toto Ltd. are advertised as "*Performing Art.*"

² Functional features can be protected for a limited period of time by obtaining a utility patent. In exchange for teaching the public about an innovation in the utility patent, and to encourage such

same product can enjoy separate protection through design patents,³ copyright and potentially long-lasting trademark and trade dress protections. With a thoughtful strategy, the dual protection of these functional and aesthetic features can help a product achieve iconic status.⁴

A Case Study Approach for Illustrating Design Protection Strategies

Case studies provide an effective vehicle for illustrating the key attributes that differentiate innovative designs from competing products and the strategies that have been successfully used to protect those attributes. The following executive case study summaries introduce cases that have proven to be successful in academic and corporate settings.

innovation, a limited yet powerful monopoly is granted to the innovator. That monopoly empowers the innovator to exclude others from using the innovation for a limited time.

³ Non-functional features are embodied in the three-dimensional contours and shapes that define the ornamental appearance of a product or its packaging. As an analog to utility patents, design patents protect innovative ornamental features. And like utility patents, design patents confer a limited yet powerful monopoly that allows innovators to exclude others from adopting their designs for a set duration.

⁴ Non-functional features also include those elements that visually link a product to its source in the minds of consumers. This of course is brand identity. Such non-functional features may thus serve as trademarks, to the same extent as names and logos, or as protectable trade dress. With respect to a product's shape in particular, trademark and trade dress protections are available for any non-functional element that has acquired a "secondary meaning" in that its greatest significance is to identify the source of the product, as opposed to the product itself, in the minds of consumers—just as an hourglass bottle shape calls to mind a product's source (Coca-Cola), not merely the product itself (a soft drink). Unlike utility and design patents, however, trademarks and trade dress can last as long as they continue to identify a product's source.

- Protecting Form - Eames[®] Lounge Chair

This case study uses Herman Miller's successful registration and enforcement of trade dress rights to illustrate the long-term value of trade dress protection.

The iconic Eames Lounge Chair exemplifies furniture design innovation.⁵ It is linked in the minds of furniture buyers with its maker, Herman Miller. Trade dress protection for the Eames design protects the commercial advantage enjoyed by Herman Miller and also protects consumers from purchasing knock-off products.

After being challenged by knock-offs of the Eames Lounge Chair over the years, Herman Miller successfully sued furniture-seller Palazzetti Imports and Exports, Inc. Herman Miller cited nine aspects of the lounge chair and ottoman in support of trade dress protection:

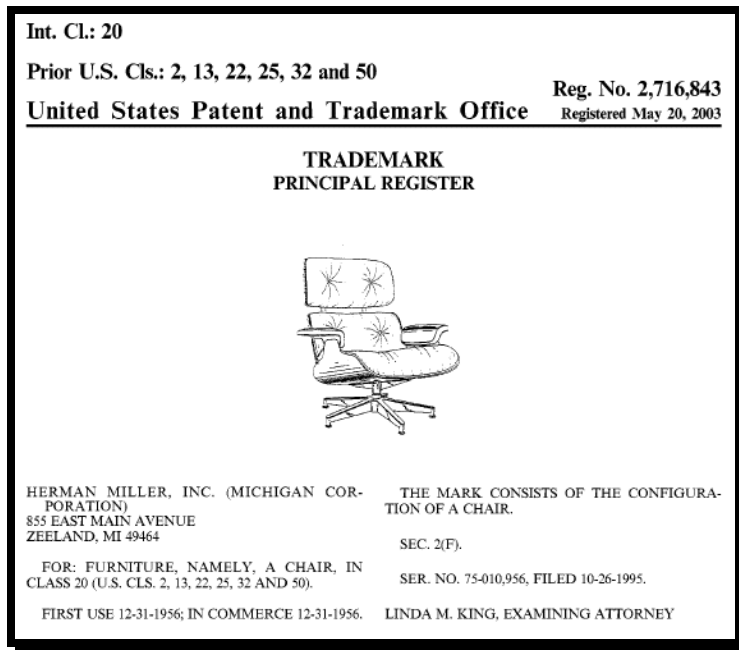
- (1) Smooth curved, molded shells; the lounge chair having three shells, the ottoman, one.
- (2) The molded shells being exposed from below the ottoman and from the back, sides, and underside of the chair.
- (3) The edges of each molded shell being exposed from the front of the lounge chair and ottoman.
- (4) Each of the molded shells being shaped like a flattened "U."
- (5) Each molded shell with cushioned upholstery.
- (6) Each molded shell having "buttons" that create permanent creases in the upholstery.
- (7) The back of the lounge chair consisting of two molded shells, connected in the rear by two exposed bars, each bar being angled to tilt the upper molded shell slightly forward of the lower molded shell.

⁵ The Eames Lounge Chair was introduced in 1956 on the set of NBC Studios' TV Home Show, when Arlene Francis interviewed Charles and Ray Eames about their new approach to furniture design.

(8) The angled bars spaced from the shells.

(9) Upholstered armrests that extend downwardly into the chair and that connect the two molded back shells to the molded seat shell.⁶

Herman Miller was also awarded U.S. Trademark Registration No. 2,716,843 for the three-dimensional design of the Eames Lounge Chair.⁷



Herman Miller recently introduced a “Get Real” awareness and education campaign. It alerts consumers to the ethical and economic implications of buying design knock-offs rather than supporting original designs and their designers. This impressive campaign for authenticity reinforces the value of the Eames design as well as the designs of other innovative products.

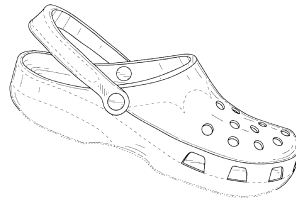
⁶ Herman Miller, Inc. v. Palazzetti Imports and Exports, 270 F.3d 298, 308 (6th Cir.2001).

⁷ Herman Miller also owns U.S. Trademark Registration No. 1,187,673 for the mark EAMES for furniture for home, office and commercial use.

- Protecting Function - Crocs™ Footwear

This case study uses Crocs Inc.’s success in securing and enforcing patent rights to illustrate the value of patent protection for functional attributes of innovative designs.

Functional features of Crocs Footwear are protected by utility patents,⁸ and the croslite® material from which Crocs Footwear is made is protected by trade secrets.⁹



| Year | Sales | Revenue |
|------|------------|----------|
| 2003 | 76K pairs | \$1.2M |
| 2004 | 649K pairs | \$13.5M |
| 2005 | 6M pairs | \$108.6M |
| 2006 | 22M pairs | \$354.7M |
| 2007 | 67M pairs | \$847.4M |

Soon after the introduction of Crocs Footwear in 2003, Crocs, Inc. recognized the value of patents,¹⁰ trade secrets,¹¹ and other IP¹² to the success of its products. Like other design innovations, Crocs Footwear is plagued by knock-offs. But Crocs, Inc. appears to take a proactive stand, including a significant number of enforcement actions.¹³

⁸ See, e.g., U.S. Patent No. 6,993,858 for Breathable Footwear Pieces; U.S. Patent No. 7,146,751 for Footwear Pieces; and U.S. Patent No. 7,320,188 for Running Sandal. Aesthetic and source-identifying features of Crocs Footwear are protected separately by design patents. See, e.g., U.S. Design Patent Nos. D517,788, D517,789, D517,790, and D525,419.

⁹ The formulation of the proprietary closed-cell resin material is said to be protected by confidentiality agreements with croslite processors and by confidentiality agreements with employees who have access to the formula.

¹⁰ “We expect to continue to pursue patent protection on our inventions that are significant to our business.” 2005 Annual Report, Crocs, Inc.

¹¹ “We consider the formulation of croslite used to produce our products to be a valuable trade secret. [W]e continue to protect the formula.” 2005 Annual Report, Crocs, Inc.

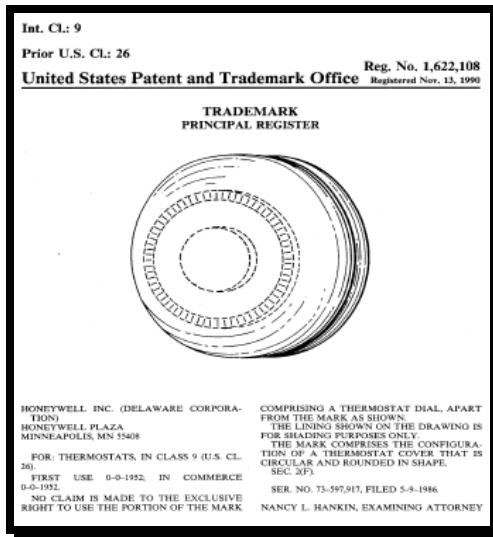
¹² “We rely on a combination of trademark, copyright, trade secret, trade dress and patent protection to establish, protect and enforce our intellectual property rights....” 2005 Annual Report, Crocs, Inc.

¹³ “We actively combat counterfeiting through monitoring of the global marketplace.” 2005 Annual Report, Crocs, Inc.

- Protecting Form *and* Function - Honeywell® Thermostat

This case study uses Honeywell’s success in securing patent and registered trade dress rights to illustrate strategies for protecting both functional and ornamental attributes of innovative designs.

Honeywell’s iconic thermostat, designed by Henry Dreyfuss in the 1950s, is found in many of our homes and offices. In 1990, the U.S. Patent and Trademark Office awarded Honeywell a federal trademark registration¹⁴ despite having been previously awarded a design patent for the thermostat’s cover and two utility patents for its inner workings.



In doing so, the Trademark Office considered these facts:

- (1) Honeywell literature emphasized the decorative quality of the thermostat’s cover—nowhere did it tout the rounded design as a utilitarian advantage.
- (2) Honeywell’s utility patents did not propose any utilitarian value of the rounded cover.
- (3) Alternative designs were available to competitors, and Honeywell’s cover design was neither simpler nor cheaper to manufacture.
- (4) Honeywell’s cover design had acquired distinctiveness (brand identity).

¹⁴ Trademark Registration No. 1,622,108 for the design of “a thermostat cover that is circular and rounded in shape.”

Case studies based on the foregoing summaries provide an effective tool for illustrating the strategies that can be used to protect the form and function of innovative designs. Used by design educators, they prepare students to recognize IP issues in their careers as designers and design managers. These case studies are also effectively used by design managers to inform their design teams of strategies for protecting the fruits of their design efforts.

Integrating IP Protection Strategies Into Design Efforts

Design thinking as applied to the process of design innovation has evolved organically to integrate business considerations into the design process. This design-business partnership is essential to the development of strategic plans for securing long-term competitive advantages based on design innovations. The team-oriented structures of postmodern organizations provide unique opportunities for such planning and enable the execution of results-oriented design protection strategies.

It is therefore vital for design managers to seize the unique opportunities offered by postmodern organizations for integrating IP strategies into their design efforts. At least two significant initiatives are warranted. First is infusing IP criteria into design efforts. Second is the timed completion of IP actions at strategic junctures throughout design processes.

Infusing IP Criteria Into Design Efforts

The trick to integrating IP criteria into design efforts is just that—integration. And the best way to begin is by establishing multidisciplinary design teams, integrating an IP presence into those teams, and defining IP deliverables for the design team.

Every design process defines a social system in which design and development work is carried out,¹⁵ and best practices call for design processes that utilize multidisciplinary design teams. Specifically, the social system adopted by many postmodern organizations includes teams formed of individuals from key disciplines that collaborate throughout the design effort. These teams typically include representatives from the design, engineering and marketing disciplines.¹⁶ Such design teams have been adopted widely in industry, and almost 80 percent of the best performing business units use them.¹⁷ These teams have replaced prior over-the-wall approaches in which, for example, engineers passed product mechanisms over the wall to designers to add an aesthetic skin. The vertical structures that had previously separated disciplines into distinct silos have given way to horizontal, multidisciplinary team structures in which the criteria of each discipline are interwoven.

The pervasive use of multidisciplinary design teams is also reflected in new academic programs, like the Integrated Product Development (IPD) program of Lehigh University, which are structured to prepare students to succeed in team environments.¹⁸ Lehigh's IPD program forms teams of engineering, business, and design students that collaborate for up to a year to design, manufacture, and market new products for sponsoring companies. These programs prepare students for collaborative design work in a team environment.

¹⁵ Krishnan, V., K.T. Ulrich. *Product Development Decisions: A Review of the Literature*. Management Science, Vol. 47, No. 1, January 2001, pp. 1-21, at p. 11.

¹⁶ Cagan, J., C.M. Vogel. *Creating Breakthrough Products: Innovation from Product Planning to Program Approval*, 2002, at p. 138.

¹⁷ Cooper, R.G. *New Products--What Separates the Winners from the Losers and What Drives Success*. Chapter One, PDMA Handbook of New Product Development, Second Edition, 2005, pp. 3-28, at pp. 16-17.

¹⁸ Watkins, T.A., J.B. Ochs, B.W. Boothe, H. Beam. *Learning Across Functional Silos: Lehigh University's Integrated Product Development Program*. Education Innovation in Economics and Business, Orlando, Florida, December 4-7, 1996, at pp. 4 and 8.

Once a team structure is established, it is important to integrate an IP presence. An emerging model for design processes formally integrates IP counsel into teams as a team member. This integration is vital for layering IP criteria with those set by the design, engineering and marketing disciplines. As a member of the team, IP counsel ensures that defined steps are taken to identify and then manage IP risks and to strategize and then secure comprehensive IP protection.

With an IP presence integrated into the design team, it is important to define specific IP actions. Like other members of the team, IP counsel has predefined deliverables that must be completed as a component of the design effort. These can include, for example:

- Researching the State of the Art

A critical contribution of IP counsel is the early identification of patent literature (patents and published patent applications) that helps the design team to understand the state of the art of the relevant product category.¹⁹ Just as the iPod® designers would have looked to Sony's 1979 Walkman® and related patent literature as a catalyst for ideation, design development teams benefit from studying past design solutions. In the United States, IP counsel conducts a state-of-the-art search of patent literature using the Patent Office's detailed classification system, which assigns patents to searchable classes and subclasses based on technology for utility patents and ornamental features for design patents.²⁰

Where a prolific inventor or prospective competitor is known, their patents are of particular interest to the design team. The search should also encompass a firm's own patent portfolio, which can provide an additional starting point when looking into new

¹⁹ Over seven million utility patents describe existing technical innovations, more than half a million design patents illustrate ornamental product configurations, and most pending utility patent applications are now published eighteen months after they are filed. The result is a massive collection of public patent literature describing past and current innovations.

²⁰ *Overview of the Classification System*, United States Patent and Trademark Office, December 2002 Edition, Rev. 3, June 2004.

products or expanding into new business opportunities.²¹ The results of the state-of-the-art search are synthesized by IP counsel and presented to the design team. This patent literature will help catalyze ideation and guide the team's early concept development efforts. The patent literature will also identify general areas of infringement risk.

- Screening Out Risky Design Concepts

When relevant patents are identified, it is critical to screen out risky design concepts that are in danger of infringing the rights of others. Functional features of certain design concepts may fall within the exclusive rights claimed in a utility patent, and ornamental features of design concepts may resemble a design claimed in a design patent. Proactive elimination of risky design concepts streamlines the design process. Such early filtration of design concepts moves the design team away from concepts that should not be pursued, allowing the team to focus its valuable resources on surviving design concepts.

- Identifying Specific IP Risks

In contrast to the state-of-the-art search, a targeted search of the patent literature is conducted by IP counsel to identify patents specifically relevant to the design concept that is ultimately selected by the team for development. Once the features of a selected design concept are nearly frozen, those features can be searched to identify any associated infringement risks. This search targets unexpired patents and published patent applications that claim exclusive rights to features of the design under consideration. The patent documents discovered by this search are then reviewed by IP counsel to identify those of particular relevance to the proposed design.

²¹ Schoppe, L.A., N. Pekar. *Extracting Value from Your Patent Portfolio*. Chapter Nineteen, PDMA Handbook of New Product Development, Second Edition, 2005, pp. 302-318, at p. 303.

- Designing Around IP Rights of Others

Armed with the information gained by the patent searches, IP counsel leads a “design around” effort for any aspects of a design concept at risk of infringing the patent rights of others. To do so, IP counsel evaluates the scope of protection provided by a relevant patent and helps the design team to navigate around that scope by adjusting the design concept. The design around process therefore identifies design modifications to reduce or eliminate infringement risks and does so proactively. Though this process is driven by defensive motivations in the context of risk management, it very often leads to new innovations and opportunities to protect those innovations.

- Securing Comprehensive IP Rights

IP counsel sets strategies to secure comprehensive IP rights, utilizing all available modes of IP protection.²² IP protection is sought by IP counsel not only for the preferred concept selected by the design team but also for any alternative concepts generated by the design team that may later be preferred by the firm or that may present viable alternatives for competitors. By obtaining exclusive rights to the best solutions to the design challenge, commercial advantages over competitors are broadened. IP counsel ensures that IP protections are in place, including patent protection in countries such as those where a design will be sold or made or licensed. IP counsel will also ensure that steps have been taken to secure other IP rights, including trademark, trade secret, and copyright protections, as appropriate.

²² Cohen, J.L. *Managing Design for Market Advantage: Protecting Both Form and Function of Innovative Designs*. Design Management Review, Vol. 15, No. 1, Winter, 2004, at p. 82.

- Assessing IP Risks

It is important for the design team to communicate any identified risks to the firm's management so that a determination can be made whether the risk is tolerable and, if not, which actions should be taken to reduce or eliminate the risk. It is also prudent for IP counsel to memorialize the reasons why a proposed design does not infringe any identified patents of particular relevance. This may require the preparation of a written legal opinion with a detailed legal analysis of the patent. Documentation of a good faith belief that the design does not infringe the IP rights of others can help shield the firm from any later accusations of bad faith and willful infringement. Such a shield is especially valuable in the event that the design is actually found to infringe patent rights in a litigation and damages are awarded for that infringement. Otherwise, increased damage awards may be levied.

As a member of a multidisciplinary design development team, and together with representatives of other disciplines such as industrial design, engineering, and marketing, IP counsel thus employs strategies to optimize IP protections and reduce infringement risks. IP considerations are thereby infused into the design effort.

Completing IP Actions At Strategic Junctures Throughout Design Processes

The integration of an IP presence into the design team facilitates the completion of IP actions, but it is important to time those actions so that they are performed at strategic junctures throughout the design process. And the best way to time these actions is by recognizing the benefits of proactive IP review, adopting a staged design development process, and setting milestones for IP review at critical stages of the design process.

It is first important to consider the benefits of proactive IP review and the risks associated with delay. Even otherwise well-implemented design efforts can fail if the review of IP risks and opportunities is delayed or bypassed. Late IP review often results in unanticipated risks, forfeited protection, and process inefficiencies.

Delayed IP review deprives the design team of the opportunity to manage the IP risks that arise from the patent, trade dress, trademark and copyright rights of others. Failure to identify those risks makes it impossible for the design team to avoid them proactively. The late identification of intolerable IP risks can put a halt to the development effort, and unanticipated infringement risks can be very difficult to explain to management.

Delay also deprives the design team of the opportunity to develop a thoughtful strategy for comprehensive IP protection. Without proactive IP review, the design team will have little chance to develop and execute a plan that utilizes all available modes of IP protection. And because steps must be taken to secure patent rights before certain events that can bar protection, delay can forfeit valuable rights.

Addressing IP-related matters only as an afterthought — perhaps on the eve of product launch — disrupts the design process. All too often, the late discovery of infringement risks results in eleventh-hour design changes and a general atmosphere of uncertainty. Therefore, once design managers and designers understand the risks and inefficiencies associated with delayed IP review, the importance of proactive and timed IP review becomes apparent.

In the realm of new product development, best practices call for the adoption of a staged design development process. New product development transforms market opportunities into

commercial products,²³ and every firm approaches this transformation differently. Nevertheless, best-performing design teams operate within staged design processes. Whether a product design effort is considered incremental (such as cost reductions or product improvements), platform (next-generation products), or breakthrough (products new to the firm or the world), design processes are generally structured in sequenced stages. The well-known Stage-Gate[®] process exemplifies a five-stage, five-gate model.²⁴ Though each design process is tailored specifically to the needs and culture of the firm using it, design processes generally involve concept generation, feasibility study, product development, and commercialization.

Though most postmodern organizations have adopted staged design development processes, and though many firms recognize the importance of proactive IP review, the challenge facing design management lies in identifying the best way to coordinate IP review within their staged design processes. This requires an identification of the specific actions that need to be taken for a proper IP review and, perhaps most importantly, the appropriate timing of those IP-related actions. Delaying IP-related actions undoubtedly introduces risks and inefficiencies, but IP-related actions can also be handled too early. For example, completing a targeted patent search well before a product design is frozen means that later-added features will not be searched and could introduce unanticipated IP risks.

IP review is ideally built into staged processes by incorporating predefined IP-related milestones into each stage, thus ensuring that appropriate actions are completed before the design process graduates to the next stage. Specific IP actions should therefore be identified along the staged

²³ Krishnan, V., K.T. Ulrich. *Product Development Decisions: A Review of the Literature*. Management Science, Vol. 47, No. 1, January 2001, pp. 1-21, at p. 1.

²⁴ Cooper, R.G. *New Products--What Separates the Winners from the Losers and What Drives Success*. Chapter One, PDMA Handbook of New Product Development, Second Edition, 2005, pp. 3-28, at p. 25.

continuum of the design process and within the typical stages of concept generation, feasibility study, product development, and commercialization.

- Concept Generation

In this early phase, product concepts are generated and selected based on input from the design team. The state-of-the-art patent search is conducted early in this phase to expose the design team to the prior work of others, thus catalyzing ideation.²⁵ The state-of-the-art search also reveals general areas of IP-related risk early in the design process, including prospective infringement risks, future competitors, and potentially blocking patents owned by others. The state-of-the-art search can also reveal fruitful IP-related opportunities. Partners or merger targets may be identified, and the patent literature will help the design team to develop proactive strategies for acquiring IP rights from others (by license or assignment) and for identifying technologies that are already available for all to use.

- Feasibility Study

Marketing asks in the feasibility phase whether it is feasible to promote selected design concepts, and engineers and designers consider whether it is feasible to develop the concepts within performance, aesthetic, and cost constraints. Concurrently, IP counsel answers the important question whether the design concepts that were generated previously in the concept generation phase are *legally* feasible. In this phase, IP counsel helps the design team to screen out any risky concepts or to design around an identified infringement risk. These efforts are best made in this early feasibility phase to avoid late-stage product revisions. IP counsel also leads the team's efforts to protect selected design

²⁵ This is in fact a fundamental objective of the patent system, which encourages inventors to promptly and thoroughly reveal their innovations so that they can be improved upon by others.

concepts. By taking proactive steps to initiate the filing of patent applications in the feasibility stage, patent protection is sought before concepts are shown to prospective suppliers and customers. Predating such disclosures preserves patent rights. If a design concept must be disclosed, for Voice of the Customer (VoC) review or to communicate with vendors for example, IP counsel prepares Non-Disclosure Agreements for use by the design team.

- Product Development

IP counsel helped the design team to eliminate risky design concepts in the feasibility phase, and a design concept acceptable to all members of the design team has now been selected for development. Because the design is now well-defined, the targeted patent search can be conducted to identify any patent claims of specific relevance to the features of the proposed design. If an infringement risk is identified, IP counsel continues the design around process by suggesting design modifications that place the ultimate design outside the scope of the patent rights of others. This proactive identification and management of infringement risks reduces late-stage surprises.

- Commercialization

In the commercialization phase, the now completed design is readied for launch. IP counsel memorializes the assessments made in earlier phases and ensures that IP protection has been pursued. Before product launch, and preferably before any significant capital expenditures are made to ready the product for launch, structured design processes require formal legal clearance and confirmation that any risks associated with the product launch are tolerable. Before launch, IP counsel also ensures that IP protections have been initiated and are adequate to protect the design comprehensively. Because designs inevitably evolve between the time they are conceived and the time they

become frozen, it is important at this juncture to compare the final design to the IP protections that are being pursued to confirm that they are on target.

The new product development phase of the design lifecycle generally includes the foregoing stages of concept generation, feasibility study, product development, and commercialization. IP strategies should also be implemented in the phases that precede and follow the new product development phase. IP considerations are indeed important in the long-term planning phase that precedes new product development and in the active lifecycle and decline/exit phases that follow new product development. For example, after product launch IP counsel will establish procedures for monitoring the activities of competitors to police IP rights. New competitive advantages can also be sought during the active lifecycle phase in connection with design improvements and product line extensions. In the decline or exit phase at the end of the product lifecycle, IP counsel can help extract value from IP assets. Instead of allowing them to go unused, IP assets can be harvested at this final phase by licensing or selling them to other firms or by using those assets as leverage to settle disputes with other firms.

Conclusion

The full commercial value of design innovations is realized only after steps are taken to transform those valuable designs into commercial assets, and design managers are uniquely positioned to oversee this transformation. To do so effectively, design managers first recognize design innovations as potential assets and team with IP counsel to set strategies for design protection throughout the design process.

Design teams and the innovations they create benefit significantly from integrated IP review. A truly integrated process enables the design team to complete predefined IP actions and to do so at

the appropriate times, thus seizing IP opportunities and managing IP risks proactively.

Multidisciplinary design teams therefore facilitate the development of designs that not only meet the criteria of the design, engineering, and manufacturing disciplines, for example, but that also meet the standards of a robust IP review before they enter the marketplace. The team structures of postmodern organizations thus provide a unique opportunity for extending design's first-to-market competitive edge into a robust, long-lasting commercial asset.