QUARTERLY OF THE INDUSTRIAL DESIGNERS SOCIETY OF AMERICA **SPRING 2010**

INNOVATION

Design Research

CULTURAL CONTEXT ■ COMMENTARY ■
CONSUMER ELECTRONICS

Wolf Appliance

industrial design

ergonomic design

graphic user interface

models prototypes

tel: 847.724.8840

chicago

santa barbara

cesaroni.com

CESARONI DESIGN®

product design consultants

IDSA

PATRON

© February 2010 Cesaroni Design Associates, Inc.

THE WIDEST CHOICE OF IDENTIFICATION PRODUCTS

LaFrance CORPORATION

LaFrance Offers:

Expert Assistance & Support

Our Nameplates Add:

Stronger Brand Recognition

Enhanced Consumer Appeal

Greater Perceived Product Value

Increased Product Sales

LaFrance Corporation

Specializing In Nameplates, Jewels, Gems, Icons, Ingots, Medallions, Badges, Logos, Emblems...

One Lafrance Way, Concordville PA 19331-5002 USA

Phone: 610.361.4300 | Fax: 610.361.4301

With Facilities Located In Concordville, PA - Philadelphia, PA
Sarasota, FL - Federalsburg, MD - Shenzhen, CHINA

www.lafrancecorp.com

QUARTERLY OF THE INDUSTRIAL DESIGNERS SOCIETY OF AMERICA **SPRING 2010**

INNOVATION®

"The power you take is equal to the power you make."

Scorpion Outdoor Radio designed by Whipsaw for Eton Corp.; www.whipsawinc.com
See page 54 for more consumer electronics showcase submissions.

IDSA

Publisher
Larry H. Hoffer
Industrial Designers Society of America (IDSA)
45195 Business Ct., 250
Dulles, VA 20166
P: 703.707.6000
F: 703.787.8501
innovation@idsa.org
www.innovationjournal.org

Executive Editor
Alistair Hamilton, IDSA
Principal, DesignPost
arh@designpost.com

Advisory Council
Gregg Davis, IDSA
Mark Dziersk, FIDSA

Managing Editor & Designer
Karen Berube
K.Designs
3511 Broadrun Dr.
Fairfax, VA 22033
P: 703.860.4411
k.designs@cox.net

Contributing Editor
Jennifer Evans Yankopolus

Advertising
Beth Harrington
IDSA
45195 Business Ct., 250
Dulles, VA 20166
P: 703.707.6000 x104
F: 703.787.8501
bethh@idsa.org
advertising@idsa.org

Advertisers' Index

c2 Cesaroni Design
c3 Design Concepts
5 Lextant
63 IDSA Awards
1 La France Corp.
8 Prototype Solutions
c4 SolidThinking

The quarterly publication of the Industrial Designers Society of America (IDSA), *Innovation* provides in-depth coverage of design issues and long-term trends while communicating the value of design to business and society at large.

DESIGN RESEARCH

22 **Users Take the Lead: *Beyond Ethnography***
by Marty Gage, IDSA, Guest Editor

24 **Beyond Observation: *Leveraging User Expertise Through Participatory Design*** by Mariah Levitt and Scott Richards

29 **Turning Data Into Insight: *Seeing the Future Through Insight Translation*** by Chris Rockwell, IDSA and Spencer Murrell, IDSA

35 **ModeMapping: *Bridging the Communication Gap Between Researchers & Designers*** by Ron Pierce

40 **Testing: *A Formative Component of Design Thinking***
by Sudhir Bhatia

44 **A Pattern Perspective: *Making the Qualitative Quantitative***
by Laura Seargeant Richardson and Erin M. Sanders

50 **The Magic of Mining the Gaps: *Unearthing Opportunities and Creating Designs That Connect*** by Barbara Mackintosh

Q&A
28 Procter & Gamble
33 Sony
34 GE Healthcare
39 Diebold
49 Hewlett-Packard

FEATURES

14 **Auto Visions: *2009 LA Auto Show*** by Joan Gregor

16 **Strategically Lean: *Getting the Most Out of Your IP Budget in Today's Economy*** by Marshall J. Brown, Affiliate IDSA

19 **Resourceful Beauty: *Cross-Cultural Design Inspiration***
by Tony T. Kawanari, IDSA

IN EVERY ISSUE

4 **From the Executive Editor** by Alistair Hamilton, IDSA
6 **Letters**
7 **Commentary** by Tom Devlin, IDSA
9 **A Look Back** by Carroll Gantz, FIDSA
13 **Book Review** by Mark Dziersk, FIDSA
54 **Open Call: Consumer Electronics**
64 **This Is a Design Challenge** by Budd Steinhilber, FIDSA

IDSA PATRONS

Altitude, Boston
Black & Decker, Towson, MD
Cesaroni Design Associates Inc., Glenview, IL
Continuum, Boston; Milan; Seoul, South Korea
Crown, New Bremen, OH
Dell Computer Corp., Round Rock, TX
Design Concepts, Madison, WI
Design Science, Philadelphia
Eastman Chemical Co., Kingsport, TN
Hewlett-Packard, Palo Alto, CA; Houston, TX; Cupertino, CA; Boise, ID; Vancouver, WA; San Diego, CA
IDEO, Palo Alto, CA; San Francisco; Chicago; Boston; London
IDI/Innovation & Development Inc., Edgewater, NJ
Jerome Caruso Design Inc., Lake Forest, IL
Lunar Design Inc., San Francisco; Palo Alto, CA
Metaphase Design Group, St. Louis, MO
Microsoft Corp., Redmond, WA
Nokia Design, London; Helsinki; Calabasas, CA; Beijing
Procter & Gamble, Cincinnati, OH
Smart Design, New York, San Francisco, Barcelona
Teague, Seattle, WA
Tupperware Corp., Orlando, FL, and worldwide
Whirlpool Corp., Benton Harbor, MI
ZIBA Design, Inc., Portland, OR; San Francisco

Bold companies are Charter Patrons.

For more information about becoming a Patron and supporting IDSA's communication and education outreach, please contact Beth Harrington at 703.707.6000 x104.

Cover photo: © Peter Essick / Aurora Photos. See page 7.

Innovation is the quarterly journal of the Industrial Designers Society of America (IDSA), the professional organization serving the needs of US industrial designers. Reproduction in whole or in part—in any form—without the written permission of the publisher is prohibited.

The opinions expressed in the bylined articles are those of the writers and not necessarily those of IDSA. IDSA reserves the right to decline any advertisement that is contrary to the mission, goals and guiding principles of the Society. The appearance of an ad does not constitute an endorsement by IDSA. All design and photo credits are listed as provided by the submitter. *Innovation* is printed on recycled paper with soy-based inks. The use of IDSA and FIDSA after a name is a registered collective membership mark.

Innovation (ISSN No. 0731-2334 and USPS No. 0016-067) is published quarterly by the Industrial Designers Society of America (IDSA)/*Innovation*, 45195 Business Ct., Suite 250, Dulles, VA 20166. Periodical postage at Sterling, VA 20164 and at additional mailing offices. POSTMASTER: Send address changes to IDSA/*Innovation*, 45195 Business Ct., Suite 250, Dulles, VA 20166, USA.

©2010 Industrial Designers Society of America. Vol. 29, No. 1, 20010; Library of Congress Catalog No. 82-640971; ISSN No. 0731-2334; USPS 0016-067.

Annual Subscriptions

	General	Student
Within the US	$60	$40
Canada & Mexico	$75	$50
International	$110	$65

Single Copies (Fall/Yearbook)

Within the US	$25	$20
Canada & Mexico	$25	$20
International	$35	$35

Single Copies (Spring, Summer, Winter)

Within the US	$17	$12
Canada & Mexico	$17	$12
International	$28	$22

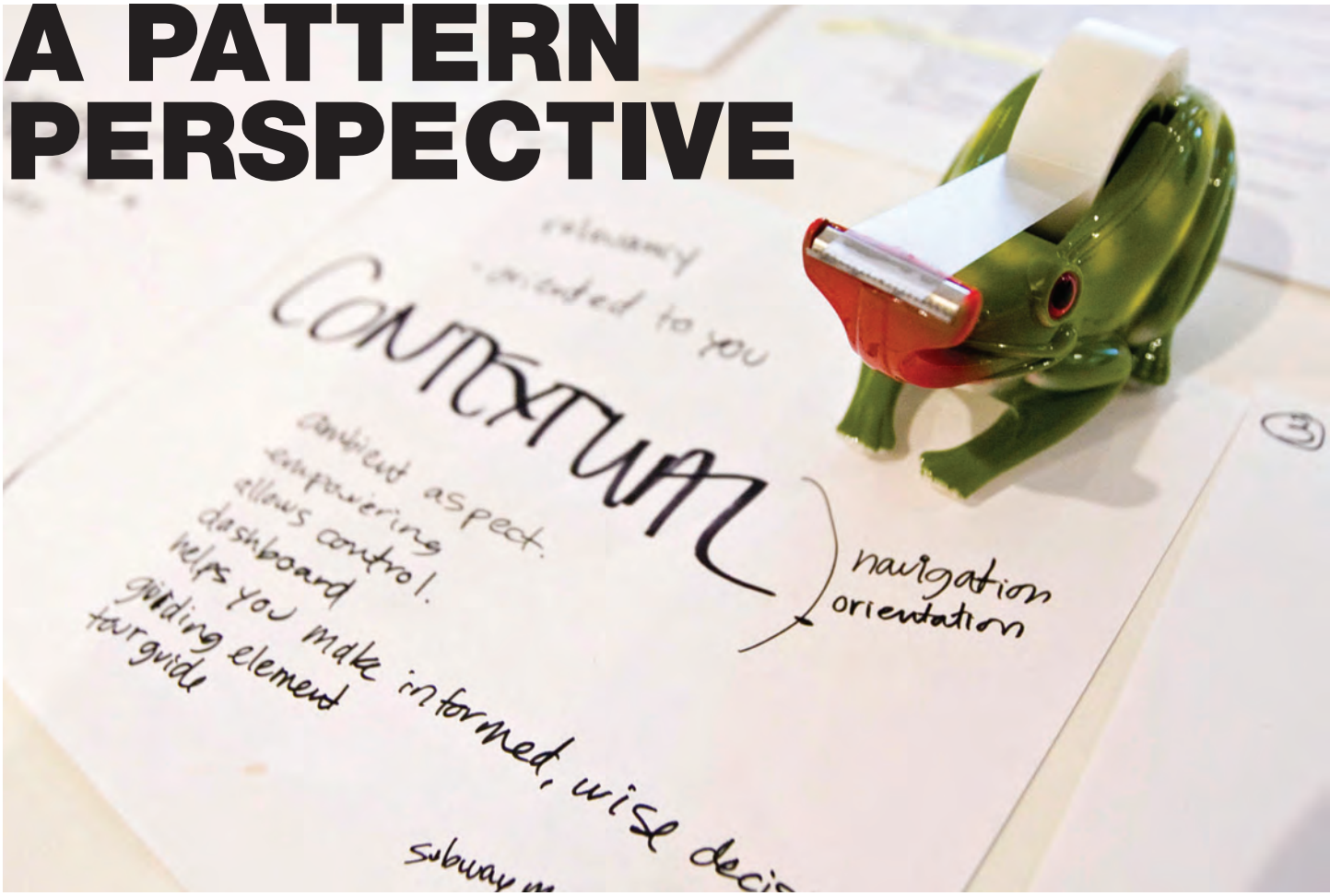
For subscriptions, call 703.707.6000.
Back issues and bulk orders available upon request.

By Laura Seargeant Richardson and Erin M. Sanders
laura.richardson@frogdesign.com ■ erin.sanders@frogdesign.com

Laura Seargeant Richardson, a principal designer for frog design and former director of design research at M3 Design, specializes in the emotional, participatory and future design of products and environments. ■ Erin Sanders, a senior designer for frog design Shanghai, has worked on service design innovations, consumer electronics and software development interactive systems as well as global design research for industrial, healthcare and digital design projects.

Making the Qualitative Quantitative

A PATTERN PERSPECTIVE



"The conclusion of design flows naturally from the data;
we should not shrink from it; we should embrace it and build on it."

—Michael Behe

As designers should we seek to be inspired or informed by research? Before we answer that question, we need to step back and consider a commonly held assumption that design is not a democracy. Future innovation does not come from the people for whom we design. Instead, it comes from design rock stars, industry veterans and visionaries through a deep-seated knowledge, a propensity for creative thinking and designerly knowing, a la inspiration. This belief—that inspiration is the basis for design ideas—has led some businesses and designers to use ethnography as a tool to merely inspire. However, another way to consider ethnographic research in the design process is to use it as a creative foundation built on structure, rigor and information analysis. When used this way, what emerges is a creative framework and a foundation for design—what we commonly refer to as the *pattern perspective*.

On Inspiration

Inspiration is a natural and necessary part of the design process. Inspiration is what fuels us and certainly informs us along with the practice of our craft, our innate intuition and our quest to constantly improve the world or products around us.

As designers we are more observant than most to that world. Our gift is a honed ability to see something in almost anything—the careless flick of cigarette ash, the casual conversation overheard or a person's behavior in a public bathroom. Meaningful moments like these have been captured by Jane Fulton Suri, IDSA in her book *Thoughtless Acts?* Inspiration, inherently, is an internal reflection process, built from the designer's constructs. What Suri may see and consider with one image, another designer would see in a very different manner, and they would each create entirely unique responses to what they see as designers.

The limitation of inspiration is that our internal ideation is not from co-creation, a shared understanding or an external process. It is an individual pursuit. And while there is beauty in the singular, there is meaning in the multiple—multiple perspectives (usually your team), multiple inputs (usually a variety of research methods), multiple people (stakeholders, subject matter experts and consumers) and multiple dimensions (because the problems we solve aren't always simple and are part of larger systems and processes).

Thus, we would argue that **inspiration is not always enough for the challenges we face today.** Inspiration may help us see the opportunity but doesn't always provide the best solution. And ultimately the qualitative nature of ethnography remains simply that, qualitative.

Scott Slater

A design synthesis, creating insight combinations through themes and patterns.

The Patterns Around Us

As humans, we live in a world of patterns—sound, scent, touch, taste and certainly visual. As a profession, we have made patterns the gestalt of design. *A Pattern Language* by Christopher Alexander or *Principles of Pattern Design* by Richard Proctor grace most shelves, depending on your discipline. Patterns help us wrangle complexity, provide structure to data and soothe our need for symmetry. But more than any other affordance, patterns provide meaning—particularly, meaning in the complexity of gathered data.

At frog design, patterns are a part of our DNA. The way we interpret and synthesize data—whether it's from strategic investigation, secondary research, workshop ideation or co-creation in participatory design—always comes back to patterns. This pattern perspective has even been formalized in both our proprietary and nonproprietary methods. We might also look at patterns multidimensionally through the combination of stakeholders, a product's life cycle and the lens through which we focus—such as behavior, emotion and organization. But what pattern analysis can we create from participatory design and co-creation with only a handful of people or from more traditional ethnography where we historically have gathered singular moments of inspiration? How many participants are enough for data-driven research analysis?

Several years ago, an article on P&G described the moment the company changed its approach to research. Rather than focus groups and statistics, the company's newest product innovation was diving deep and immersive with as few as three to four people. One innovation lead even quipped that he'd learn more by going deep with one person than he ever could by going broad with many. And in the aggressive timelines we are all seeing today, sometimes you don't have the luxury of quantitative studies. Thus, the answer is to set up our immersion so that we see patterns across only a few participants.

Patterning Tools

From the future of electric vehicles to more responsive medical identification, from group game play to products for the Asian market, we have had to craft design research protocols and synthesize the collected data into usable patterns with as few as four participants and sometimes as many as 20. The commonality across the research has been the purposeful planning and composition of the probing or creationary artifacts as well as the researcher's focus lens.

The goal of the participatory design process is to enable co-creation through the act of making the ideal or future product. Because the research team typically provides the inputs (e.g., the kit of parts) to the act of making, patterns are quickly determined. The kit of parts can take

Vincent Lam

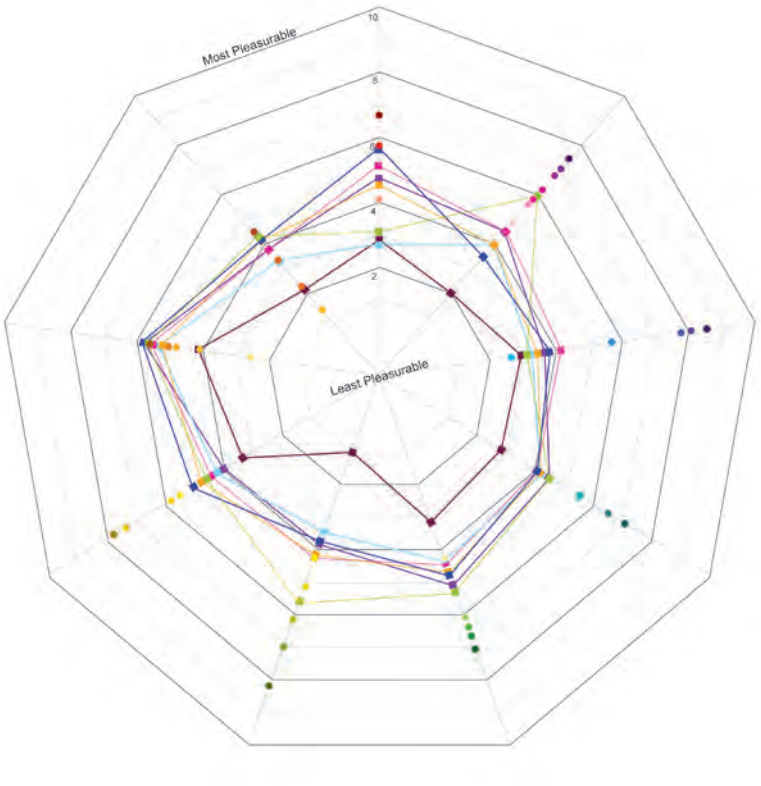
Above: The teenagers move from individual ideal to group understanding through game construct continuums.
Below: A pattern emerges: wayfinding goals are clearly discerned from common color blocks.

the form of Velcro modeling, image collaging, card sorting, process mapping or environmental touchpoints.

Two projects exemplify this type of research perfectly. The first was a concept project designed as part of a team (also including Greg Burkett and Vincent Lam) at M3 Design. The idea was simple. While participatory tools have become more contextual and sensorial, as well as larger in terms of what challenges we tackle using this methodology (e.g., Velcro modeling an entire car), the team felt that the approach to inclusion and analysis hadn't really changed. Typically, participatory design is done one-on-one, with the kit contents serving as the common factor between individuals and the individuals' ideals and stories merging through the lens of the researcher or designer. **We wondered what were we missing by not enabling the crowd to co-create together, to share a common kit rather than mirror images of separate kits.** Well, it turns out we were missing a lot.

The context we set to ground the exercise was in the form of the ideal group game experience for teenagers. To ensure their ability to move from individual mental models to a group mindset when creating the ideal game, we methodically took four teenagers through a series of co-creation activities. The first was an individual image collage, the second was a series of shared continuums around game construct (such as characters, rules and environment), and the third was a single group MAKE kit built from basic physical objects. We found that by enabling participants to co-create together, more improvised innovation developed. The teenagers fed off each others' ideas, picking up and discarding them as they worked through the challenge together.

The second example of participatory design is a recent project at frog that looked at people's wayfinding goals as they walked through an environment. After the research was conducted, each set of the participants' goals was laid out horizontally and then mapped to a color that corresponded to a specific goal. A matrix of eight participants was created this way, with the goals shared by the group visibly seen through color. Because of the proprietary nature of the research, all context has been removed. But that is the beauty in patterns: you can still clearly see the wayfinding process in the resulting color blocks, much like a Mondrian work of art.



A spider map reveals the areas of opportunity that would most pleasurably impact the design of an intra-oral product.

In probing alignment or resonance to a concept, the goal is to determine resonance in a structured way such that patterns will emerge. For example, in probing participants' emotional response to medical identification concepts, we revealed controlled aspects of the product over time and then created a heartbeat, or EKG graph to show a composite, not an average, view across eight participants.

Similarly, another project required deconstructing the pleasure dimensions in the mouth and through research determining which dimensions the product team should focus on for a product redesign. A dimension, for example, might be lip engagement (lips are the second-most sensitive part of our bodies), surface area and texture as well as visual properties. The result was a spider graph across 11 participants, which showed the dimensions that had the greatest product improvement opportunities for the industrial design team.

And finally, in the more typically unstructured behavioral ethnography the goal is to observe unobtrusively—but even then, there can be structure in the observation such that the patterns in behavior, gesture and process can be discerned. As teams we practice focusing our attention on specific components of an ethnographic encounter. Part of observing, really observing, is knowing what to look for and seeing the essence of things in an instant. So, while a videographer might unobtrusively capture the overall picture, each team member may be assigned a specific area of focus—one on behavior, one on gesture and so on. Now imagine replicating this across participants. How many patterns are missed because we must take in an overall picture rather than focus on the minutia? This method lets the team focus on both.

Aligning the Qualitative and Quantitative

Recently a frog design team based in Shanghai traveled to Thailand, Vietnam and Singapore to understand the cultural context and behavioral nuisances in designing an international product for the Southeast Asian market. Here, we utilized ethnographic methods of capture to delve into the day-to-day lives of individuals. We planted ourselves in malls, in bustling business districts, in hospitals and on every type of transportation and watched thousands of individuals use hundreds of products. Simultaneously, our ethnographic research took us into history museums, art galleries and houses of worship to understand the deeply embedded intricacies of the cultures for which we were designing.

While visiting these cities we also performed a small subset of contextual inquiries in which we ventured into people's homes and lives. We performed home and product tours, contextual interviews and participatory design exercises that helped us understand how these individuals were placing value on everything they owned as well as the images we had captured through our ethnographic inquiries. In order to disseminate the large quantity of data into something more suitable, we held translation sessions at the end of every day of research. Here we were able to leverage the ethnographic data against the individual contextual inquiries. We found patterns emerging almost immediately.

Ultimately, we were able to make the qualitative and the quantitative align. We did not survey the thousands of individuals we observed, but instead meticulously watched their behaviors in real-world contexts. We then were able to take a much smaller sample of individuals and explore deeply into their thoughts, feelings and aspirations toward the specific product we were designing for.

With one visualization you can captivate your toughest clients and persuade your internal team. Patterns, quite simply, are hard to refute. Why? Because we all crave understanding in the face of voluminous data. Is the goal of research to be inspired or informed? It all really depends on your perspective. ■

IDSA

IDSA invites all members in good standing to champion candidates for the Academy of Fellows, the Personal Recognition Award, Education Awards and the Special Award.

Deadline: April 16, 2010.

Fellowship: for members in good standing and who have earned the special respect and affection of the membership through distinguished service to the Society and to the profession as a whole.

Personal Recognition Award: recognizes designers or other individuals whose involvement in, and support of, design has made him/her a special friend of the profession and major contributor to its long-term welfare and importance.

Special Award: recognizes organizations for notable results, creative and innovative concepts and long-term benefits to the profession, its educational function and society at large.

IDSA Education Award: recognizes significant and distinguished contributions to the field of industrial design education.

IDSA Young Educator of the Year Award: recognizes the contributions of younger faculty who have made the choice to dedicate their careers primarily to the education of the next generation of designers.

www.idsa.org/awards for more information
aimeeo@idsa.org with questions

Inspired by users.

Proven by science.

Award-winning human factors design.

design concepts

www.design-concepts.com | 800.344.2623

Winner of the Human Factors and Ergonomics Society Product Design Technical Group

User-Centered Product Design Award

HF ES

solidThinking™
inspired

where ideas take shape™

solidThinking Inspired is the 3D modeling and visualization software for Windows and Mac, featuring **ConstructionTree**™, **morphogenesis**™ and **real-time rendering**, that empowers you to explore and evaluate more ideas in less time

generate forms based on biologically efficient structure and find pathways to winning designs sooner

discover how you will be inspired at **www.solidthinking.com**

solidThinking, Inc. is an **Altair** company