



Understanding Aesthetic Preference: Approaches Toward Improved Product Development

Janet Hethorn
University of Delaware
jhethorn@udel.edu

ABSTRACT

Every garment has a visual presence and every garment provides physical qualities in relationship with the body. In the design process, both functional and aesthetic attributes contribute to the overall success of the complete apparel system for the consumer. New developments in technology and materials have generated interesting applications toward this goal through functional design research. Research on aesthetic preference – consumer visual response and desire- is also taking advantage of these opportunities. This paper highlights the possibilities and the roadblocks present in exploring aesthetic issues, in combination with other factors in the design process. Several examples are provided of design research on aesthetic preference and new possibilities are suggested that take advantage of emerging technology directions.

Keywords: aesthetic preference, visual style, appearance, design process

Introduction

At the core of any design concept for a garment, series of garments, or appearance style is a relationship between aesthetics and function. The designer's intent may be focused on one or the other at any given time, however both qualities are present in the finished product. At even the most basic level, every garment has a visual presence and every garment provides physical qualities, regardless of intent.

The functional elements in a design concept for a garment are determined by careful analysis of the situation in which the garment will be worn, along with the physical requirements of the body, whether it is to stay warm, move more easily, enhance systems, etc. Technical designers often form teams with researchers to focus

J
T
A
T
M

on creating the best solutions. The attention to aesthetics in the design process, however, is often left to the designer's artistic sense alone. Visual training in the application of design elements and principles along with a personal artistic vision are relied on when aesthetic design decisions are made. To assist the designer, the merchandiser provides information based on data describing what has sold well in the recent past. Many also rely on trend services for direction.

Often functional and aesthetic dimensions are given separate focus, yet consumers are increasingly demanding attention to both. Gone are the days when high-tech skiwear is only available in blue, red or grey. And even the most stunning gown must fit perfectly and move fluidly as with the wearer's breath. Today's design

challenge is to meet both the visual and performance demands in any garment, addressing the overall needs and desires of the consumer.

Due to advances in technologies and materials, new opportunities have emerged to explore ways of improving functional design. Body scanning technology has changed the direction of fit and sizing, with the ability to describe the complexities of bodies in ways not possible before. This is providing hope for major improvements that will revolutionize the apparel industry. Now, 3D body scans are being used for fit analysis (Ashdown, Loker, Schoenfelder, & Lyman-Clarke, 2004) and for shape analysis (Simmons, Istook & Devarajan, 2004). Improvements in materials and testing processes are changing the selection of components for performance design, creating exciting new options. The potential for wearing technology is just beginning to be brought to consumer awareness. Due to these new developments and recognized need, there is now an increased emphasis on functional design.

Yet, aesthetics often remain a mystery. The ways that people respond to visual information and the process of forming preferences are difficult to understand, let alone track. Aesthetic preference is most often identified after the fact, as the consumer provides reactions through purchase decisions. The development of aesthetic design decisions tends to be perceived as somewhat ethereal, relying on intuition and artistic sense in contrast to functional design decisions that are more grounded in research about bodies and materials. The emerging significance of aesthetics in every day life, however, is creating a challenge to find ways to implement new developments in technology, relationships with function and materials, and most importantly, new understandings regarding perception and complexity of image formation. As new technologies are moving advancements in functional design, opportunities also exist to create and develop applications in exploration of

aesthetic preference of individuals and groups.

In this paper, I will discuss the need for new ways of exploring aesthetic preference, along with the roadblocks and opportunities that exist. I will also share specific examples from various design studies. These will highlight different methods as ways to uncover and implement aesthetic value and meaning, including interviews, observation, and documentation using both traditional and advanced image technology.

Consumer driven aesthetics

“The pursuit of design is not about the way things appear, but rather about the way things give meaning and relevance to the human experience.” (Nelson, 2003)

At this moment in time, there is a surge of interest in understanding perception and the senses. Several new books emphasize the importance of visual knowledge and design as a holistic process (Caplan, 2005 and Nelson, 2003). Style consciousness and attention to sensory experiences are merged with consumer decisions. “The twenty-first century has become the age of aesthetics, and whether we realize it or not, this influence has taken over the marketplace...” (Postrel, 2003). The apparel industry is waking up to the need for a new way of thinking about aesthetics. A recent article in the *Wall Street Journal* (Agins, 2004) states that “Today, the industry’s authority has been shattered as consumers take their cues from a proliferating new array of influences”, recognizing that consumers no longer respond to the trends as dictated by the industry. Agins goes on to explain, “Market research, once a crucial way to predict what will sell, has become less reliable as styles zig and zag unpredictably”. Yet, there is a sense of bewilderment as to how to approach things differently.

The importance of understanding aesthetic preference--seeing, visual literacy, the value of aesthetics and style--has never been greater. In order to address this, there is

a need for new methods. The age-old questions have still not been answered. How do we know what people want, what their style desires are? What creates value in their lives? We still wonder about the dynamics of fashion change. What is needed are fresh ways to approach the questions.

Roadblocks to understanding aesthetic preference

The complexity of visual response -- Discovering aesthetic preference would be rather simple if people were able to describe the visual world, their reaction to various visual stimuli and then how that reaction influences their decisions regarding what they prefer in their appearance. Actually, here begins the problem: visual response is complex and dynamic. Perception occurs mostly on subconscious levels and our communication regarding aesthetic matters is cryptic at best. People have a difficult time articulating visual information. Visual literacy is not wide spread. Bringing aesthetic understanding to the forefront is challenging. This does not mean that people are not sophisticated in their visual experience. They are. It just is not easily understood or explained.

Understanding visuals in context -- Further complicating any study of visual phenomenon is that meaning is contextual. Aesthetic research is too often done in separation from the context that people actually see in. For example, subjects taking part in a study may be asked to react to an actual garment "sweater" or to a photo of a "face" or "hairstyle" without any other visual context provided. It may be easier to take a visual component out of its context in an attempt to "operationalize" that component, but it actually then becomes less informative or meaningful in the process of this kind of reductive approach.

Grasping the value of consumer input -- Another roadblock is one that apparel companies bring on themselves, yet, so ingrained, it is not easy to remove. There is a notion that design is solely the intuitive

and creative responsibility of the designer and what she or he thinks is beautiful. The assumption is that trend services can provide direction to blend with the designer's creative vision, and, thus, the consumer will like the result. Years ago when I was doing observations and aesthetic analysis of what people wore while skiing at resorts in Colorado, I offered to share my results with a major skiwear company. Their response was, "No, we don't need anything like that, we send our designers to Europe." Recently, a reality television show on Bravo, Project Runway (2005) aired an episode where the challenge to the designers was to work with clients to meet their desires and dreams for a wedding dress. The designer who was eliminated was told that she did not stay true to her own design sense, that she paid too much attention to the client's needs. Both examples highlight the attitude that assumes the designer has the only valued voice. This view is so established within apparel companies that it hinders the openness necessary to find and integrate the wealth of information on consumer perception that drives consumer choice. It is not an 'either' / 'or' situation, designer vs. consumer. The designer's role is actually more important now than ever. At the same time, the input from the knowledge of consumer preference and desire adds a critical tool to be used in the design process. Clearly there is more to be learned about the importance of consumer aesthetic preference and how to work with it.

Including "insider" perspective -- An additional challenge is to find ways to gain understanding of the consumer's aesthetic perspective from their point of view, not simply the observer's take on things. Visual information is incomplete without understanding the context that it came from and the meaning that it generates. In order to gain access to this information, it is necessary to search for methods of discovering "insider" perspective. To be the "outsider" taking information from observations without understanding the aesthetic value and meaning attached can lead to incorrect interpretations and an incomplete picture -- one that is merely

J
T
A
T
M

surface oriented. A clear understanding of aesthetic preference includes the “insider” knowledge as well. This means that research methods need to involve respectful and open conversations with consumers.

Discovering Aesthetic Preference

Conducting market research on consumer response to products is a way to gain insight into aesthetic preference. Tracking this response, however, addresses only part of the question. As soon as a consumer purchases a garment, it can be tracked. As soon as they wear it, it becomes part of history. The fashion cycle is one way to look at the movement of a style. Six phases describe this movement: introduction, rise, acceleration, mass acceptance, decline, and obsolescence (Stone, 2004). Market research, and an understanding of the fashion cycle, are tools for prediction, but both are still after-the-fact findings based on past performance. They report on a style or garment once it is already in existence, once a consumer has already purchased it. Of course, this information is helpful in deciding how much more of the same to produce, and possible directions a particular style may move in, but the real question is: How can we know what people want before they know they want it? In other words, before it has become a product to track.

Visual preference is formed in part by observations in the world on a daily basis. Consumers are constantly creating visual references and changing preferences. What is noticed next may or may not change the favorite image of the moment. For example, a person may see someone walking down the street wearing bright colors mixed with unusual patterns. This may influence their own notion of style, yet, the ‘take away’ may be personally more subtle. Perhaps they might opt for increasing the level of brights in their wardrobe but will stay with more traditional patterns. To learn the cutting edge movement of visual preference, it may be helpful to look at the process of seeing, to capture and describe references being viewed and to analyze them in

relationship with already accepted aesthetic preferences, articulated both visually and verbally. By going beyond individual items of apparel, focusing on style in a broader context -- the visual world in which the style is viewed in and emerges from --these opportunities will begin to be realized.



Figure 1. Cues from garment combinations worn in context.

Methods of discovery

What follows here is a ‘sampler’ of methods that lead to improved understanding of aesthetic preference. References are made to particular studies with a focus on the processes and challenges involved when conducting design research to inform the product development process. It is critical to keep the broader context in mind the whole time. Although the intention is to discover heightened aesthetic understanding, this is found through keeping the context salient. Therefore, within this context, other design goals should also be addressed. The relationship between aesthetics and function as well as the connection between the consumer and the situation of use are paramount in all of the methods discussed. In addition to this broader context, the methods and studies are introduced as examples of ways to overcome the roadblocks identified earlier.

Interviews

A tried and true way to obtain direct input from the consumer is to conduct interviews. They will tell you what you ask for and more. The key is to ask the right questions and to follow-up with further questions in order to flesh out an idea. It is important to remember the limitation that the consumer brings to the table when it comes to visuals. Often, they can see in their mind what they cannot articulate verbally. Interview methods that are implemented to gain aesthetic knowledge should be designed to go beyond simple and immediate responses. The inclusion of visual material for subjects to respond to is extremely helpful.

Individual

One-on-one interviews can be short or long in length, but the most informative are those that include open-ended questions. I usually start out with the question: "What do you like about what you are wearing today?" This way, there is something tangible to focus on; it is quick to determine the level of visual language that the subject is capable of and the rest of the interview can be guided as needed. Generally, follow-up questions will be necessary. If the response is: "It's comfortable," then I might ask: "What about it makes it comfortable?" Depending on the answer, the next question can be guided to get at more specific visual information: "Is there anything about the color that adds to the feeling of comfort?" The response might be: "Yes, I am always more comfortable in black." From there, the conversation might be guided to the connection between color, surface design, and body image. It is important for the interviewer to be open to discovering what is important to the subject and to ask questions that uncover this.

Another question I ask is: "What do you dislike about what you are wearing today?" I have found that people have an easier time responding with specifics to this

question, than the first one. When describing appearance style, people often find it easier to describe what they don't like than to explain what they do. They may define their appearance style and identity best by describing what they are "not." (Freitas, Kaiser, Chandler, Hall, Kim, & Hammidi, 1997).

Responses to either of these questions can generate style terms that tend to be subjective such as "casual," "trendy," "preppy," etc. The challenge is to find the aesthetic descriptors that support the subjective expressions. One way to do this is to have several magazine or catalog images for the subject to sort through and respond to. They could select their favorite and then describe "why." If images are sorted by likes and dislikes, it is rather straightforward to analyze the piles by visual definitions later, in support of describing aesthetic preference. The researcher can put the words in where the consumer may not have had them. For example, in composing a "like" pile, the person may be aware of their preference for items that appear "active" but the visual language that backs this up is not familiar to them. Yet by analyzing the images, the researcher might identify visual descriptors such as "viewed in parts first, hard edged lines, asymmetric shapes, and intense hues", which together may generate "active" for the viewer.

Focus group

The dynamic is quite different when several people are meeting together for a group interview. In order to take advantage of this interactive process when gathering aesthetic preferences it is very useful to have actual garments as well as photographs or images from magazines available. I often request that focus group participants bring with them two garments from their wardrobe, one that is their favorite and one that is their least favorite. Once they begin telling stories about each scenario, others in the group join in the discussion and the information becomes quite rich with aesthetic descriptions. The interviewer should pay close attention to guiding the

J
T
A
T
M

discussion in order to bring out comparisons and clarifications.

The images or photographs can be used differently with a group than when working with one-on-one interviews. They may be shown individually for group response, or depending on the size of the group, smaller groups of two to three people may be formed and then each group can work with a set of images, describing what they think and prefer, followed by presentations to the larger group. In this way, shared aesthetic responses can be articulated with the use of visual support. Encouraging group members to also refer to what they and each other are wearing is another source of visual information, as seen in figure 2.

The following images show results from a focus group discussion on basketball

uniforms for women over the age of fifty. The woman on the left pointed out a functional problem with the neckline of her t-shirt. Her neck had moved forward and down as she aged and the neckline of her t-shirt was now restrictive. In addition to the functional issue that the subject identified, a restrictive neckline also highlights the aesthetic disadvantages of looser skin and incorrect positioning, relative to the forward neck, of the opening. I found various necklines among the images that were prepared for the group and we all discussed the options in both functional and aesthetic contexts. Then the woman in the center demonstrated her 'ideal' solution as she mimicked the neckline from a photo. The photo on the right shows the resulting neckline on the uniform that was designed in response to the needs identified.



Figure 2. Neckline design meeting aesthetic and functional preference

Observing in the context of use

Aesthetic preferences can be identified by documenting appearance style during movement and action, again within the context of use. In addition to the focus group interviews, design information for the basketball uniform project was gained through direct observations during practice and games. Video and still images were taken and then later analyzed for visual descriptors as well as functional qualities. The data in this form can be structured within a visual database, retrievable by various media search software. Then, as images are sorted and preferences identified,

T further clarification through interviews can be obtained.

M

A second example of observations within a context is in a study of ski apparel that I conducted. Skiers were individually photographed and interviewed at ski resorts. In addition, skiers were videotaped as they exited the ski lifts at the top of runs on the mountain. A thorough process of coding individual appearance styles was then completed later with this visual information. The important advantage of this approach is that the entire appearance is included in the observation and analysis, just as the wearer has assembled it. It clearly represents aesthetic preference for that moment for that

consumer, and the total look in the context is influencing what other skiers see and subsequently how their future images and preferences are shaped. Aesthetic preference is a dynamic process of

formation. Observations in context, although challenging, are more true to the aesthetic experience than static analysis out of context.



Figure 3. Skiers observed in context

Managing and analyzing visual style information

Image databases help to manage large numbers of photographs. But, in searching for aesthetic preference, databases can also be useful design research tools. The electronic environment allows for more fluid sorting and comparing, opening new opportunities for designers. The ways of working with images have grown rapidly with increased technology options. Gone are the days when slides were sorted manually and shared individually. Now with digital images, software, and browser environments, the advantages for managing, sharing and analyzing images have created new possibilities. Managing images begins with taking the photograph, downloading, editing, recording data, and depending on the software, image coding. I will point out two opportunities that image database technology allows for in research on aesthetic preference.

First, the ability to combine interview data with image data can be a useful

approach in searching for visual meaning. In the skiwear study I conducted, both kinds of data were collected for each subject. By building an image database, and including the interview responses, I was able to search for information that I would not have been able to find otherwise. As discussed earlier, people have a difficult time articulating visual information. For example, in the interviews, skiers were asked what they liked about what they were wearing that day. Many responded, "It's comfortable." Then I would ask, "What about it is comfortable?" A typical response to this was, "I don't know, it just is". But by using an image database, I was able to get much more information. For example, figure 4 shows a search that brought up all of the images in which the subject used the word "comfort" or "comfortable" to describe what they liked about what they were wearing. Once the items were sorted in that way, I could analyze the resulting images, attached to the text, to see if there were visual and functional factors among the images that might support the concept of "comfort."

J
T
A
T
M



Figure 4. Screen shot from QBIC

A second and powerful form of visual analysis of images in a database is the ability to search by image context in addition to text. The example in figure 4 shows images embedded in DB2 Query by Image Content (QBIC). This is a sophisticated search process that does not require text to find images. The search is based on qualities of the image such as color, location, and texture (Holt, Hethorn, Petkovic, Niblack, Tung, & Treat, 1995). There is potential for breakthrough aesthetic research with applications such as this. To be able to search hundreds and thousands of images and locate specific image properties in addition to viewing images with meanings common to particular consumer groups, will allow for new ways of understanding aesthetic perception. It is possible, through these approaches, to find visual qualities of new influences that can then be used in product development, addressing visual desire. Visual patterns over time may be uncovered that have not emerged when only relying on selective viewing and text searches. Image search by image content also addresses the roadblocks highlighted

earlier. To follow-up on the “comfort” example, the images were taken in the context of use, the analysis was conducted on garments and bodies in combination as a contextual visual presentation, the “insider” perspective was gained, and the complexities of image response are eased with the addition of image content, as opposed to text reliant, search capability.

Web browsers deliver visual information to consumers in various ways and for various purposes. They can also be formats for gathering data on aesthetic perception and preference. Many scholars are using the web as a tool for data collection and for analyzing responses from consumers. The possibility for consumer input can go beyond the usual response to a text survey. People can post images that can later be analyzed collectively, and with the application of image content searches. Focus groups can be organized and conducted with the assistance of video conferencing. We have just begun to develop the methods that truly take advantage of new technology formats.

Another approach to analyzing images is to provide extensive description for comparison across images in a set. The example in figure 5 is from a study of street style. Two different people were asked to describe what they saw in the photograph. A person with no formal visual language training provided the description under the photo. A research assistant who has studied

the aesthetics of clothing wrote the more detailed description to the right of the photo. This expanded description allows for better comparison as well as provides information that can be used in the design process. A notable anomaly is that neither of the respondents mentioned the figure in the left in the photograph. There is much to be learned about perception and why some things are noticed and others are not.



Figure 5. Visual descriptions

Description:

Plaid “50s” jacket, pea-coat.
 Long length, long-sleeve jacket
 Jeans
 Red scarf cap
 Black satchel bag
 Shiny scarf under hair

Layout Structuring
 3/4 length jacket—fitted upper body, flared from waist, waist belt -semi thick fabric, contours to body slightly, flare →flowing

pants—bootcut jeans
 -lighter weight denim, fitted→bootcut/flared at hemline

hat—fitted ski cap
 -knit, medium weight

messenger bag—over the shoulder notebook sized bag with flap

Surface Structuring
 Jacket—woven, red *wool* plaid. Squared motif across upper body, diagonal motif from waist down and above yoke, somewhat *heavy*, bright-intense colors

Pants—flat, solid color. Light weight, movement with body

Hat—bright, vivid red color, warm

Jacket is the initial element within the ensemble the catches attention and draws the eye up because the color coordinates with the hat

Elements of Visual Definition

Line—plaid lines throughout jacket, straight of grain and bias. Diagonal line across back from black strap.

Shape—upper body portrays somewhat fitted/tailored shape, while lower body offers free flowing appeal

Texture—hat offers a softer, knit texture—semi-thick. Wool jacket is slightly thick, but fabric allows free movement. Denim is lighter weight and smooth

Color—vivid red accents the ensemble and coordinates the various pieces throughout the hat and jacket. Other colors (blue) are somewhat more muted and solid.

The last example is from a study that highlights the integration of aesthetic preference, functional issues, fit and materials.



Figure 6. Karate gis; aesthetics, function, and fit

Currently I am investigating design issues in a very traditional uniform, the karate gi. The casual observer may think that they all look the same, however, the participants who have worn them for years are providing me with information about many nuances in aesthetics, fit, and function. Each brand uses slightly different materials, proportions and sizing are different, and each body brings unique fit and performance demands. A close look shows the karate participants each wearing their sleeve to a different length on their arm, the proportion above and below their belt on the jacket is different, and the labels identify different brands. The trained eye would know the brands of each of the four gis without looking at the labels.

In order to explore aesthetic and functional needs, I have conducted individual and focus group interviews, done observations in context, and have shot dozens of photographs for visual analysis. Through applying these various methods, I am able to gain insight into the “insider” perspective and have uncovered information that will inform design improvements – even

in a garment that must appear to remain the same.

Conclusion

As methods to discover aesthetic preference continue to be implemented, it will be important to take advantage of new advances in technology and to keep a firm grounding in the context of the aesthetic experience. Overcoming the challenges to this process requires continued understanding of the complex and dynamic nature of consumers’ visual response and creation of visual desire. Discovering aesthetic preference in today’s culture requires surmounting existing roadblocks and more, but it will most certainly be worth it. The application of methods addressed within this paper has the potential to help companies incorporate the richness and diversity of consumer driven aesthetics.

Developing meaningful products for consumers includes a design process that thoughtfully reflects on and implements the synergy between aesthetic and functional qualities. Just as intriguing new advances in methods toward understanding functional

qualities are taking the forefront, emerging also are opportunities for new approaches to discovering aesthetic preference. In combination, these efforts will benefit apparel producers as they are searching for design solutions that best meet the needs and desires of their consumers, and ultimately the consumer wins when the products they choose and use hold meaning in their lives.

REFERENCES

Agins, T., As Consumers Mix and Match, Fashion Industry Starts to Fray. *Wall Street Journal*, A1, 9/8/04.

Ashdown, S., Loker, S., Schoenfelder, K., & Lyman-Clarke, L., (2004, Summer). Using 3D Scans for Fit Analysis. *Journal of Textile and Apparel, Technology and Management*. 4(1).

Caplan, R. (2005) *By Design*, (2nd ed). New York: Fairchild Publications.

Freitas, A.J., Kaiser, S.B., Chandler, J., Hall, C. Kim, J. W. and Hammidi, T., (1997). Appearance Management as Border Construction: Least Favorite Clothing,

Group Distancing, and Identity...Not!. *Sociological Inquiry*, 63 (3) pgs 232-235.

Holt, B., Hethorn, J., Petkovic, D., Niblack, W., Tung, P.& Treat, H. (1995, August) Applications of query by image content (QBIC) at UC Davis, *Proceedings of the 2nd IASTED/ISMM Conference on Distributed Multimedia Systems and Applications* (International Conference), Stanford, California, August.

Nelson, G. (2003). *How to See*. Oakland: Design Within Reach

Simmons, K., Istook, C., & Devarajan, P. (2004, Summer) Female Figure Identification Technique (FFIT) for Apparel. *Journal of Textile and Apparel, Technology and Management*. 4(1).

Postrel, V. (2003). *The Substance of Style*. New York: HarperCollins Publishers.

Stone, E. (2004). *The Dynamics of Fashion* (2nd ed.). New York: Fairchild Publications. (2005)

http://www.bravotv.com/Project_Runway/Episode_5/The_Challenge.shtml

J
T
A
T
M