

THEORY AND MODELS FOR CREATING ENGAGING AND IMMERSIVE ECOMMERCE WEBSITES

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ABSTRACT

The purpose of this paper is to describe theory and research from several disciplines, not generally understood by web developers, which the author believes are applicable to creating engaging and immersive ecommerce environments. These disciplines include aesthetic experience (AE), Flow, landscape assessment, and a proposed aesthetic framework. The link between these different areas is aesthetics, specifically aesthetic experience. Developing ecommerce sites based on models related to aesthetics can provide an organized means of designing engaging and immersive sites which are more likely to lead to positive user experience. IT personnel commonly understand the psychological aspects of human-computer interaction (HCI). Similarly, the toolbox of every web designer and Internet system architect should include knowledge of the concepts related to engaging and immersive environments.

Keywords

Aesthetic experience, Flow, cognitive aesthetics

1. INTRODUCTION

E-businesses that do not provide an experience will not thrive [11]. The traditional means of enticing a purchase in bricks-and-mortar commerce, such as atmosphere, placement of goods, and lighting, do not transfer to online commerce. It is interaction and participation that are the emotional hooks for engagement and immersion in an ecommerce site. As Laurel [28] suggests, we need to think of users as actors in a play and not mere observers. We need to find the theater of online buying.

Ideas about how to do this are beginning to be explored. Two concepts suggested in trade magazines are increased service (e.g., Amazon's reviews and ability to listen to music clips) and establishing community (e.g. providing a forum to discuss related issues) [11,32,12]. Because of these added values on an ecommerce site there is likely to be repeat and longer visits. An emotional connection is made which contributes to customer loyalty.

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A special section in Communications of the ACM dealt with persuasive technologies, including consumer seduction. Khaslavsky and Shedroff [27] suggested looking outside of traditional software development channels and learning from successful sources such as movie making, games and architectural design for ideas related to seductive design. As with all new areas of study, the authors readily admit that their ideas are theoretical and hard evidence is needed to further the concept. We may not be too far from some hard evidence that can be applied and tested on creating engaging and immersive environments or online theater.

The ideas proposed here for creating such environments are taken from AE. It is important to understand that in this context the term aesthetics is used more broadly than the usual notion of *visual beauty* or *theory of the beautiful* [33]. The narrow meaning of aesthetics is generally embodied in purely visual aspects, often related to the principles of design (balance, emphasis, harmony, proportion, rhythm and unity). Professionals in the fine arts, graphic design, industrial design and the built environment use the principles of design to create aesthetically pleasing compositions. These principles have been known and used throughout history [20,30]. Our need for order is biologically based [1,14,16,10] and the principles of design can be explained in terms of visual perception¹ [1,19].

Pleasing visuals are important because they create first impressions which result in a desire to explore further. Many websites fail to do this and consequently are often cluttered and difficult to understand. For such sites, visual improvements should be made before considering more subtle issues.

The ideas explored in this paper are based on aesthetics in an extended sense which encompasses more than sensory experience and includes the concepts that allow mathematicians to speak of a *beautiful* equation, or engineers of an *elegant* design solution. This extended concept of aesthetics includes perceptual, cognitive and affective components that provide a model for creating engaging and immersive environments. This augmented description of aesthetics is the basis of *cognitive aesthetics*, a term coined by the author to describe the investigation or study of natural and pleasing (or aesthetic) computer-based environments.

¹ Although note that these principles also have non-visual interpretations [22].

The remainder of this paper describes theory and models from different disciplines that are relevant to AE. The application of these principles to ecommerce may stimulate users and ultimately result in purchase. The topics include AE from philosophic literature and Flow from Csikszentmihalyi [14-17] and colleagues, which supports aesthetic literature. In addition, two models based on aesthetic preferences will be described. The models include an aesthetic framework developed from interviews with master designers of engaging and immersive educational and game environments, and the Preference Matrix Model [24]. Several examples will illustrate how ideas from these theories and models can be applied to web design.

2. AESTHETIC EXPERIENCE

2.1 Background

The concept of AE and the characteristics that make up such an experience come from centuries of in-depth philosophic discussion. Empirical research in the sixties (most notably by Berlyne) and more recently by Csikszentmihalyi and Robinson [15] seems to support the philosophic literature.

Aesthetic experience occurs when a person is sagaciously engaged and immersed in an activity. It is perceived as an experience that is sensuous and singularly unique. It is different from any other kind of experience because of a combination of characteristics [4,7]. The characteristics combine to create an environment where (a) outside distractions do not interfere; (b) the person actively participates in learning about the environment, and the relationship between themselves and the environment for the (c) simple pleasure, curiosity, joy and interest of a (d) coherent and culminating experience that is personally rewarding.

Listed below are Beardsley's [4-7] characteristics of AE. His list is often considered the compilation of philosophical discussion [15]

- *Unity/Wholeness* comes from the feeling of a high level of integration and coherence of all components related to the experience [7]. The idea of unity or wholeness of AE permeates aesthetic literature.
- *Focused Attention or Object Directedness* is intense absorption in an activity where our attention is "undivided" [7, p. 289].
- *Active Discovery* is (a) "the excitement of meeting a cognitive challenge" [7, p. 292]; and "insight into connections and organizations—the elation that comes from the apparent opening up of intelligibility" [7, p. 292].
- *Affect* is the spice that flavors experience and keeps us coming back for more. "Emotion carries the experience forward, binding parts and moments together" [26, p. 72].
- *Intrinsic Gratification or Felt Freedom* is "both a continuing enjoyment that is felt as part of the development of the experience, and a final satisfaction or fulfillment that may linger after the experience has ended" [6, p. 10]. Intrinsic gratification does not need external rewards: The focus is on the process, rather than the ultimate arrival.

These aesthetic characteristics seem to have a high degree of face validity for the design of engaging and immersive applications. The idea of engaging and immersive environments

is certainly not new, but research into their creation and use is receiving a high degree of attention recently from diverse fields [28,18,36,29,2]. Laurel [28] writes: "Think of a computer, not as a tool, but as a medium" (p. 126). This medium can be used to create engaging and immersive experiences that she compares to theater productions where the users are not merely observers, but actors in the play.

2.2 Examples

As an example of how Beardsley's characteristics might be applied to a website, consider active discovery. An example of active discovery is the virtual model service offered by landsend.com. Users shopping for clothing create a model similar to their own body proportions and then dress the model in the clothing of the company. (Figure 1).

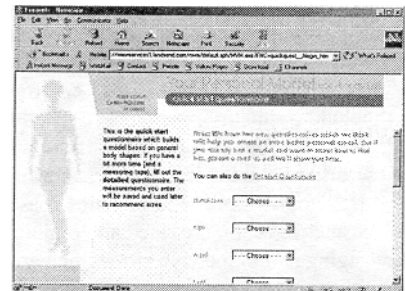


Figure 1: Active Discovery

Active discovery (a) helps focus attention, (b) encourages emotional involvement and (c) is more likely to lead to an experience that is intrinsically gratifying².

3. FLOW

3.1 Background

Csikszentmihalyi has been studying what he calls *states of optimal experience* [17], or Flow³, for over thirty years. He was interested in finding out why people participated in *autoletic* activities. Autoletic activities involve "formal and extensive energy output on the part of the actor, yet provided few if any conventional rewards" [13, p. 10]. These activities represent a discreet episode with a beginning and an end. They are also characterized by clear goals, immediate feedback, a need for concentration and a close match between skill and challenge level.

Flow theory is supported by a large research base involving activities as diverse as chess playing, mountain climbing and surgery. Additionally, Flow has been studied by psychologists, sociologists, businesspeople and anthropologists and is a well-entrenched idea in the minds of many people [17].

The connection between Flow and AE comes from a research study by Csikszentmihalyi and Robinson [15]. The purpose of the study was to determine the features and dynamics of AE and create a model, based on expert knowledge of museum curators, that could be used to enhance the art experience for non-experts.

² See [32] for the similar concept of intrinsic motivation and web design

³ This is a "native category used by the informants themselves to describe the experience." (Csikszentmihalyi [13, p. 36]).

They found that Flow and AE are “essentially the same state of mind” (p. 8). Mountain climbing and art appreciation may be different, but the researchers believe that the “structural elements of the consciousness that account for the rewarding nature of the experience are the same in both cases” (p. 9). That is, if the participants are (a) deeply involved in the activity; and (b) their skill level and the challenge of the activity are well

matched; and (c) the activity is the reward, then they are likely to undergo the kind of experience labeled aesthetic or Flow [15]. Table 1 shows the comparison between the characteristics of AE and Flow. As Csikszentmihalyi and Robinson point out, the lists do not correspond exactly, however both lists seem to contain the same conditions even though neither was aware of the other’s work [15].

Beardsley (1982) CRITERIA FOR AESTHETIC EXPERIENCE	Csikszentmihalyi & Robinson (1990) CRITERIA FOR FLOW EXPERIENCE
OBJECT FOCUS: Attention fixed on intentional field	MERGING OF ACTION AND AWARENESS Attention centered on activity
FELT FREEDOM*: Release from concerns about past and future	LIMITATION OF STIMULUS FIELD: No awareness of past and future
DETACHED AFFECT**: Objects of interest set at a distance emotionally	LOSS OF EGO: Loss of self-consciousness and transcendence of ego
ACTIVE DISCOVERY: Active exercise of powers to meet environmental challenges	CONTROL OF ACTIONS: Skills adequate to overcome challenges
WHOLENESS: A sense of personal integration and self-expansion	CLEAR GOALS, CLEAR FEEDBACK
INTRINSIC GRATIFICATION***	AUTOLETTIC NATURE Does not need external rewards, intrinsically satisfying

*This characteristic is closely related to intrinsic gratification, which Beardsley used in 1970. Beardsley (1982) writes that felt freedom “has the air of being freely chosen.”

**Detached affect is part of the broader characteristic of affect. Beardsley used affect in 1970 and detached affect in 1982.

***The term intrinsic gratification was specifically listed as a characteristic in his 1970 list

Table 1: Comparison of Criteria Defining the Aesthetic Experience and the Flow Experience

As Csikszentmihalyi and Robinson [15] suggest, AE and Flow are “in reality indistinguishable from one another” (p. 9).

3.2 Examples

Flow theory suggests that an activity is most gratifying when it presents a challenge and the challenge level is consistent with current skill level and when clear goals and feedback are present. An example of a site that includes these conditions along with AE characteristics is furniture.com (Figure 2). In addition to viewing static pictures of furniture the site allows customers to create a floor plan of a virtual room. Expert advice is available to aid users in the design process.



Figure 2: Challenge

The Flow experience could be enhanced when technological advances allow by providing real time design assistance and feedback on choices.

What seems to stand out clearly from the readings on AE and Flow is the importance of complementary and necessary affective and cognitive components. The initial affective perceptual hook

induces a desire for exploration or active discovery. These affective and cognitive components are similar to the information processing model put forth by Orians and Heerwagen [31] and the concepts from the Preference Matrix Model [24].

4. HABITAT SELECTION

4.1 Background

Our aesthetic choices may have been influenced by how our ancestors chose their living environments. Of particular interest here is the topic known as habitat selection from landscape assessment which is a discipline of environmental psychology [8]. This is the idea that our aesthetic preferences have evolved and are influenced by the evolutionary development of certain perceptual and cognitive skills related to exploring and choosing outdoor environments which were essential to human survival [31]. From this perspective, AE may be “governed by a coherent and sophisticated set of organizing principles” [3, p. 553] similar to Beardsley’s [7] aesthetic characteristics.

Habitat selection is a decision making process described by Orians and Heerwagen [31] as an information processing model containing three stages. Stage one is an immediate, rapid response to the overall environment that influences further behaviors. The response is made based on the individual and their past experiences and is made unconsciously. This stage would be likened to sensory register (perceptual inferences rather than thoughtful determination) because the need for immediate action may be required in relation to safety. Stage two, that of information gathering, is entered because a positive response was sustained in stage one. In this stage, the environment is explored and assessed in terms of resource potential. We are a curious

species and enjoy exploration. How would we have survived otherwise? Stage three of habitat selection concerns the commitment to stay (or not stay) in the environment after the initial exploration. This decision depends on what the environment affords for survival activities.

If there is any validity to the habitat selection-as-aesthetics connection, it is reasonable to ask how the habitat selection stages relate to aesthetic responses. The Kaplans' [25] have studied *landscape aesthetics* for over two decades [24,25]. They identified preferential factors that are dependent on the criteria for selecting appropriate habitat that address this question. From their findings⁴ they developed the Preference Matrix Model (see Table 2) for predicting choices of aesthetically pleasing landscapes. Thus the practical, mundane aspects of shelter and wayfinding may be related to the realm of aesthetic appreciation. The Preference Matrix Model could potentially include computer environments [25].

Kaplan and Kaplan were questioning the popular *optimal complexity* theory based on the work of Berlyne [10] and other researchers. The Kaplans [25] found that subjects made quick preferential decisions based on functional attributes, rather than on the optimal level of complexity and order.

	UNDERSTANDING	EXPLORATION
Immediate	Coherence Organization – Ease in which the environment can be read or understood	Complexity Richness – Variety of objects [rather than the number of objects]
Inferred	Legibility Wayfinding – Ease of understanding orientation	Mystery ⁵ Sustained interest – Potential for more information

Table 2: Kaplan & Kaplan Preference Matrix Model
Excerpted from Kaplan [25]

In order to determine the functionality of a potential environment, it must be understandable or coherent to the observer. Coherence implies legibility. Additionally, an environment must be complex; it must have a rich and varied source of food and shelter. An environment must also have an element of mystery; “a promise of further information” [24, p. 56] which creates interest for exploration. The characteristics of an environment that determine coherence and legibility are important for safety. The characteristics that constitute complexity and mystery are important for subsistence. Understanding and exploring an environment, as well as the time

⁴ A common procedure for many of the studies conducted by Kaplan and Kaplan [24] was the use of two forms of Category Identifying Methodology (CIM), or ICLUST, “a hierarchical cluster analysis procedure,” and SSA-III, a “nonmetric factor analytic procedure” with a threshold loading value of .40 (p. 213).

⁵ Mystery is different than Berlyne’s *surprisedness* [25]. To be surprised is to encounter something unexpected, while mystery is to anticipate an answer or explore something unknown.

it takes to make inferences, are major aesthetic considerations [25].

Connections can be made between the Kaplans’ environmental preferences model and the characteristics of AE. For example, immediate engagement was found to be important in both environmental preferences [24] and AE [7,16,9]. Active discovery might be thought of in evolutionary terms as well. In order for us to survive as a species we need(ed) to be open and responsive to exploration and information gathering, particularly as it relates to our own circumstances [24,15,7]. Beardsley [7] similarly describes active discovery in terms of the enjoyment of exploration and discovery. Kaplans’ [24] concept of mystery provides “a promise of further information” (p. 56) through exploration of the environment. Like active discovery, mystery provides challenge through implying what may come next and by providing opportunity for filling-in of information. Both concepts relate to an unfolding process that stimulates curiosity and interest. Inferences about the unseen environment might be an example of what Beardsley [7] calls a cognitive challenge.

The aesthetic characteristic of intrinsic gratification might also be thought of from an environmental perspective. Kaplan [25] hypothesized that early Homo Sapiens acquired knowledge during times of leisure. This is in contrast to drive reduction theory [25]. He speculated that, “When drives are satisfied, when nothing else is going on would be precisely the time when the individual could be obtaining information about the environment for use at a later time” (p. 584). The leisure information gathering, though *speculative* was not targeted for a particular result, though it was potentially useful. This is similar to intrinsic gratification because the experience is not geared toward an extrinsic goal but rather is intrinsically rewarding in and of itself, even though the experience may ultimately have useful consequences.

Unity also seems to relate to environmental preferences. An orderly environment is easier to understand and therefore may be more inviting to explore [24]. Beardsley [7] similarly associates unity or wholeness with coherence of parts into an organized whole for ease of understanding.

These exploratory connections between AE and the Preference Matrix Model are not meant to be exhaustive. They simply provide some indication of the connection between the philosophy of AE and a model of aesthetic preference based on habitat selection.

4.2 Examples

To apply the Preference Matrix Model to a website the screen design and interface layout would be designed to be, obviously, both immediately coherent and legible. For example, the function or purpose of the site would be easy to determine and navigation would be intuitive.

Less obvious implications are the elements of complexity and mystery, which entice further examination of the site. Grouping elements controls complexity. For example, Figures 3 and 4 (below) illustrate controlled and uncontrolled complexity, respectively.

Figure 3 is well grouped and legible. Figure 4 has some controlled grouping, however, there is little to distinguish differences and therefore no place for the eye to rest.

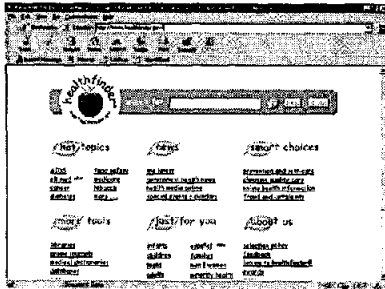


Figure 3: Complexity - Controlled



Figure 4: Complexity - Uncontrolled

Mystery entices desire for further investigation and is an important aspect of websites. Note that mystery is dependent on the context.

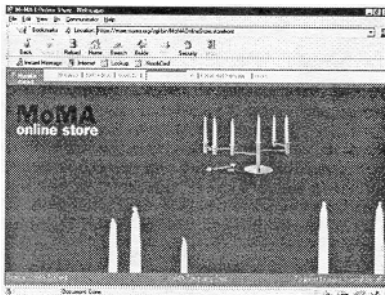


Figure 5: Mystery

For example, Figure 5 invites further exploration within a relaxed shopping environment because of the interesting graphic. A

similar screen treatment would not be appropriate in a business to business site.

It is the appropriate level of complexity and mystery that will keep the user engaged, but it is immediate positive perceptual judgment of an environment that will entice the user toward exploration and active discovery.

5. AN AESTHETIC FRAMEWORK

5.1 Background

There is evidence that some software and multimedia developers intuitively understand concepts related to AE. The author completed a qualitative study [23] to determine if this might be the case. Professional developers of some popular educational and game software were interviewed and a framework was created based on the findings. Results indicated that the developers interviewed for the study do employ the structure and content of an aesthetic framework that is consistent with aesthetic literature.

The participants were leaders in the industry, or *elites* [21] who have designed recognized and/or award winning educational or game environments. They included (a) Susan Schilling the general manager of Lucas Learning; (b) Will Wright cofounder of Maxis and creator of SimCity and (c) Michael Bremer, a senior writer; (d) Mark Schroder owner and (e) Peter Grundy, artist of Digital Creators; (f) David Stone director of Jones Digital Century and producer of national telecourses and PBS series; (g) Nancy Marsch the designer of the nationally known Accounting Game; and (h) Joe Lamos the manager of multimedia based training at University Corporation for Atmospheric Research (UCAR) who produced the COMET[®] series for weather forecasting.

Table 3 presents the framework. Major headings (e.g., UNITY) are the characteristics from AE which relate to ideas expressed by the developers. For each characteristic specific TECHNIQUES are listed along with JUSTIFICATION for their uses based on AE.

UNITY: The coherence and completeness of objects or ideas. Unity is the wholeness of an experience.				
TECHNIQUES				
Context	Story	Metaphor	Mini Gestalt	Media
-Provides richness and depth to content by creating an experience.	-Sets a scene that creates empathetic connection.	-Assembles all parts into a whole.	-Provides complete content for the particular context.	-Engages all of the senses with high-quality media, particularly sound. -All pieces of the environment must be harmonious - they must all fit the theme.

JUSTIFICATION				
-Helps create cognitive continuity and memorable experiences.	-Personalizes the content.	-Links information for recall.	-Provides a holistic and realistic portion of content.	-Provides a visceral, holistic environment. -The harmony and fittedness of the theme is the essence of unity.
FOCUSED ATTENTION OR OBJECT DIRECTEDNESS: Elements that bring about focus or a desire to proceed with an activity.				
TECHNIQUES				
Familiarity	Props	Overview		Media
-Go from the known to the unknown.	-Use props and interactive processes.	-Provide users with the big picture.		-Provide interactive processes. Use eye-catching graphics and high-quality audio.
JUSTIFICATION				
-Users pay more attention to what they know and understand	-Props help users become and remain actively involved.	-An overview provides the users with a focus on which to concentrate.		-Interactivity helps keep users motivated. -Color and sound direct the user's attention.
ACTIVE DISCOVERY: The process of actively seeking answers or resolutions to cognitive challenges.				
TECHNIQUES				
Problem-solving	Play	Replay	Fill-in-the-blanks	Media
-Provide contextually accurate, meaningful and purposeful guided activities.	-Provide an environment that allows users to explore and experiment.	-Provide users with many alternatives and options to pursue. -Allow them to try different things. -If they fail, provide useful feedback.	-Allow users the opportunity to make connections and inferences.	-When appropriate, use animation to portray concepts.
JUSTIFICATION				
-Solving problems is a natural way to learn.	-Play is a natural and active means of learning.	-Once a user has succeeded at a task they become bored and move on. -Providing feedback helps users to understand where they went wrong, which provides them with information on how to be successful.	-This helps users to feel active and involved. -It helps them to feel 'smart.'	-Animation can often graphically depict a procedure or concept better than words or still images.
AFFECT: An emotional investment that helps create a personal link to an experience or activity.				
TECHNIQUES				
Shared Experience	First Person	Intrigue		Media
-Provide a means for users to interact with others.	-Set up the environment so that users have some control over or are part of the environment.	-Let the plot thicken, the story unfold, the picture evolve.		-Use contextually accurate media for continuity and accuracy. -Use enticing graphics.
JUSTIFICATION				
-We, as a species, are a "small group animal" and feel a need to communicate.	-The user has more of an emotional investment when the outcome is dependent on their input.	-Surprise and mystery entices users to stay tuned-in and to remain motivated.		-Users notice inappropriate media use. It breaks concentration and involvement. -Enticing graphics create a desire to explore.

INTRINSIC GRATIFICATION: A feeling of pleasure, reward and satisfaction from an activity.				
TECHNIQUES				
Personal Motivation	Ownership-Investment	Satisfaction		
-Users often come to the environment with personal motivation. -Include innovative techniques to sustain motivation.	-Give guided control to the user. -Provide users with meaningful activities and opportunities.	-Provide a means for the user to be successful.		
JUSTIFICATION				
-A user's initial desire to interact with an environment is important for motivation. -Some newness, such as challenges, is refreshing	-Guidance helps users understand the environment and the content. -Users want their actions to have value.	Success feels good and helps motivate users to continue.		

Table 3: Prescriptive Aesthetic Framework Based on Data and Aesthetic Literature

The following presents an elaboration of the table entries.

Unity: The importance of unity lies in providing a holistic environment for the user in which to experience emotion, object directedness, active discovery and intrinsic gratification. A unified environment helps users understand its content and relationships.

- **Context:** Context supplies information, particularly in regard to surroundings and anticipation. Context induces behavioral constraint and influences the way we behave [8]. It helps give depth, richness and a link to empathy, which helps establish a unified environment.
- **Story:** Stories were the most frequently described method for creating unity. Stories have a beginning, middle and end which provides a feeling of closure and completeness for the user. Additionally, stories are a means of connecting events both in telling and in remembering.
- **Metaphor:** The purpose of metaphor is to weave parts into a whole. The use of metaphor is a means to create an overarching structure to interconnect parts. Like a story, metaphor provides a means to create coherence for the user
- **Mini Gestalt, or How Long is a String:** Whatever the means of providing unity, determining the actual content is obviously very important. Therefore, a module, lesson or program of any length must be cohesive and have closure for the user.
- **Media Use for Purposes of Unity:** The context and content must be integrated for a holistic experience and must also be appropriate for the situation. A haunted house scene needs a squeaky, slowly opening door rather than a smoothly sliding glass door.

Attention or Object Directedness: Elements that bring about focus or a desire to proceed with an activity [7].

- **Familiarity:** Familiar examples help establish a comfort level, a common ground and connection and engage the mind. Familiarity takes a user from the known to the unknown.
- **Props:** Several participants talked about the use of props. Props help users remain attentive and to help them mentally make a transition from one concept to the next.

- **Overview:** An overview provides a hook. It helps focus users and gain their interest and attention.

- **Media Use and Attention/Object Directedness:** Gaining attention through interesting use of media is important. Using multimedia helps sustain attention because multi senses are engaged.

Active Discovery: Is a *cognitive rush* whereby users are challenged to make sense of a variety of potentially conflicting stimuli [15]. The participants were well aware of the importance of providing users a means to improve their skill and knowledge for progressing from novice to expert.

- **Problem-solving:** Analytic activities were frequently mentioned because learning is, as a participant said, a "purposeful activity" that is enjoyable as evidenced by games and sports we play: It has constraints and goals that involve critical thinking.
 - **Play:** The participants try and bridge the gap between learning and play, a process of active discovery. Play is open-ended and allows experimentation.
 - **Replay:** Allows the user to actively explore different options and discover the consequences of different decisions and mistakes.
 - **Fill-in-the-blanks:** Too many specifics do not give the user the opportunity to incorporate their own imagination. Filling-in-the-blanks, as one participant reported, makes users feel smart.
 - **Media Use and Active Discovery:** Animation was the media mentioned by the participants related to active discovery. Animation is a graphical means of showing relationships.
- Affect:** It is the emotional investment a user makes in order to be immersed in an environment and sustain their involvement in the environment.
- **Shared Experiences:** Provide a means to connect with others either through interaction with other people, or a character pal or sidekick.
 - **First-Person Perspective:** A personal and intimate way for the user to experience an environment. If the perspective is not

first person then it is important to create an environment where the users can empathize or identify with a character.

- **Intrigue:** There is often an element of intrigue that sustains emotional involvement. This idea is similar to the Preference Matrix Model [8, 25], where an element of mystery may cause curiosity for exploration of an environment.
- **Media Components for Affect:** In a multimedia environment, high-quality media is essential. Users expect it and it helps set the scene.

Intrinsic Gratification: The feeling of pleasure from an activity where the reward is the activity itself. It is the “continuing enjoyment and a final satisfaction or fulfillment that may linger after the experience has ended” [6, p. 10].

- **Personal Motivation:** Users must initially be self-motivated. Additionally, the designers create environments that will sustain motivation.
- **Ownership and Investment:** Comes from having users do a meaningful activity or task which builds personal meaning and provides a means for involvement
- **Satisfaction:** Accomplished by providing an activity where users have an opportunity to be successful. Information regarding success or failure is provided through feedback. It must occur soon and often because users do not want to make too many decisions before they have a feeling of satisfaction.

5.2 Examples

The following screen shots are examples of some of the concepts from the framework. Figure 6 is an example of familiarity which helps focus attention. The Hallmark logo is easily recognizable.



Figure 6: Familiarity

An example of the active discovery framework category is Play. Figure 7 is a site example that allows users to explore and experiment.

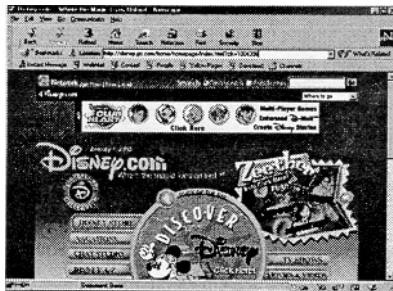


Figure: Play

As another example, shared experience is a framework technique for providing an emotional connection: Online communities are an example of this technique.

6. CONCLUSIONS

No current theory adequately addresses how to effectively create websites for the theater of online selling. Current ecommerce sites typically exhibit poor design. They are characterized by lack of coherence, legibility and order. There is direct evidence that this results in lack of sales: When IBM redesigned their site, sales increased 400% and the use of the help decreased 84% [34].

There are a number of reasons why cognitive aesthetics (CA) is an appropriate way to approach the design of ecommerce sites. CA provides a rich theoretical base that enables a systematic approach which can be applied to creating engaging and immersive ecommerce sites. It provides the emotional aspect, focused attention and unifying characteristics that are lacking in most sites. Luskin [29] points out that advancing technological capabilities require a comparable advancement in understanding the psychological effects of multi-modal stimulation.

An environment that is designed from an aesthetic perspective will have the features that inherently engage users and potential customers.

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