

How Do Experts Design  
Compelling Experiences:  
A Qualitative Identification  
Of Key Dimensions

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## **Declaration**

This dissertation is submitted to the University of Bath in accordance with the requirements of the degree of Master of Science in Human Communication and Computing in the Department of Computer Science. No portion of the work in this thesis has been submitted in support of an application for any other degree or qualification of this or any other university or institution of learning. Except where specifically acknowledged, it is the work of the author.

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## **Abstract**

For the past five years, with the introduction of increased bandwidth and multi media technologies, designers have attempted to understand how we might design the user experience. The growing interest in designing the user experience mirrors an industry trend that shows that companies that consider dimensions beyond usability are met with greater success in the marketplace. Within the emerging field of experience design there has emerged a clear emphasis on the design of products and services that provide compelling experiences. Most technological experiences-including digital and, especially, online experiences-have paled in comparison to real-world experiences and they have been relatively unsuccessful as a result. The current literature on experience design is limited; therefore we seem to be in no better position to understand human experience or how to design for it. What seems to be missing is a clear idea about what experience is; what its components or elements are; and, perhaps more importantly, whether it can even be designed or scripted. This paper describes the findings of an interview study that was conducted with five design practitioners and artists who design compelling experiences. A theoretical framework was used to guide the analysis of the data. The findings illustrate a number of key components of experience design, and demonstrate that practitioners use a combination of tacit knowledge and defined processes in their professional roles. Designing effective experiences also requires many different types of professionals with a broad range of knowledge.

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## What is Experience Design?

For the past five years, with the introduction of increased bandwidth and multi media technologies, designers have attempted to understand how we might design the user experience. During this time, a new discipline of design has emerged called experience design, which places the emphasis on the design of products and services that generate compelling experiences for their users (Shedroff, 2001). While some designers would argue that experience design is only a field for digital media, others view it in broader terms to encompass more traditional and diverse disciplines such as theatre, architecture, story telling, theme park design, to name a few (Shedroff, 2001).

The growing interest in designing the user experience mirrors an industry trend that shows that companies that consider dimensions beyond usability are met with greater success in the marketplace. One of the reasons for this is that people are becoming more sensitive to dimensions of products that go beyond traditional aspects of usability; therefore there has been a growing need to understand and create emotional and interactive resonances between people and products. The ACM (Association for Computing Machinery) - Interactions Design Award criteria, published in 1996, was one of the first articles to articulate to the HCI community an explicit position on the possibility of designing experiences ([www.acm.org](http://www.acm.org)). More recently, Pine & Gilmore (1999) argued that the world is transitioning from a service economy to an experience economy:

*“Sophisticated technology and advanced communications have blurred the line between entertainment and reality, causing consumers to raise their expectations. Farsighted businesses recognise this shift and understand that what consumers want now is a rich, memorable experience as well as hard goods and services.” (1999)*

However, we seem to be in no better position to understand human experience or how to design for it. The interactions criteria, while providing some direction to the design community, were preliminary; Pine & Gilmore also don't offer any new insights into how to design for this new economy.

Even though there is great interest in the subject, there has been very little research conducted to answer some of the underlying questions. Initial efforts have been made, however by one designer of online experiences, Nathan Shedroff, to develop a definition of experience design. Shedroff has worked in a variety of different media and wrote the first book on the subject of Experience Design (Shedroff, 2001). Shedroff defines experience design in terms of the intersection of disciplines, such as: information design, interaction design and sensorial design, as well as other related methodologies. Within each of these disciplines Shedroff discusses some of the components of design practice, which will be described in the theoretical framework section.

What seems to be missing is a clear idea about what experience is; what its components or elements are; and, perhaps more importantly, whether it even can be designed or scripted. Since experience design is still in its infancy compared with more established traditional disciplines, designers are in need of systematic ways to talk about experience and to understand how to design to support it.

Based on these questions, the aim of this study was to interview five design practitioners and artists and ask them to talk about how they design experiences. The data was then analysed for concepts, themes and ideas that were to do with the processes of designing experiences. It was expected that the data would be extensive and far-reaching, therefore it was decided that a theoretical framework would be used to

guide the analysis of the data – Shedroff’s definition of experience design was chosen as the basis for the framework as it was more comprehensive than others.

The following section is an overview of the framework based on Shedroff’s definition of Experience Design:

## **Theoretical Framework**

Shedroff defines Experience Design in terms of Information Design, Interaction Design and Sensorial Design. Although these are disciplines in their own right, Shedroff maintains that the design components of each of these disciplines are used in the design of experiences. The framework consists of the following components of the design process:

### *Information Design*

Data (Raw material, research, gathering and processing); Organization of Information; Navigation; Consistency; Usability; Context (Global/local and personal context); Goals and messages; Levels of Knowledge.

### *Interaction Design*

Storytelling/narrative techniques; Authenticity; Immersion; Participation; Community building; Control & feedback (how much feedback the participants are given during the experience and how much control they have of the experience itself); Productivity & creativity (Participants make, do or share something themselves, by being creative); Communicative experiences (opportunities to meet and/or talk to others); Adaptive experiences (adaptive technologies or media that adapts itself to the behaviour of the user).

### *Sensorial Design*

Visual Media (media that stimulate the visual senses, such as photography, graphic design, sculpture) ; Auditory Media (media that stimulates the auditory senses, such as music, and sound); Tactile Media (media that stimulates the sense of touch, such as texture, materials); Olfactory Media (media that stimulates the senses of smell and taste, such as perfume or food); Time-based media (media that use time & motion such as video, film and animation).

The following section gives a detailed summary of each component of the framework:

## **Information Design**

Information Design is the transformation of data into valuable and meaningful information. There are various processes that are involved in information design, both in the organization and presentation of information.:

### **Data**

Shedroff describes data as being the product of discovery, research, gathering, and creation. It is the raw material we find or create that we use to build our communications. Shedroff states that data isn't valuable or useful as communication because it isn't a complete message. For this reason Shedroff states that the first process involved in the transformation of data into information is to explore its organization.

### **Organization and presentation of information**

The way that data is organized and presented can have a dramatic effect on the way it is perceived and understood. For communications to be successful Shedroff argues that care should be taken in the organization of data and presentation of

information so that understanding and insight can be achieved by the user. He also emphasizes the importance of providing context and building meaning so audiences aren't left to do it for themselves.

The process of structuring data into information has been discussed by numerous authors. Richard Wurman coined the original term *Information Architecture* during 1977 to describe this process. He brought important concepts from the architectural realm to the information realm and has made many insights possible (Wurman, 1996).

### **Navigation**

We are mostly familiar with non-linear navigation through our use of hypermedia like the Web, but this is not the first example of such navigation. There are many common experiences like driving or walking, where we have choices of how and where to proceed next. Shedroff advises interaction designers to offer the audience, if possible, several ways to navigate an experience – with the use of digital media this can be relatively easy to do.

### **Context**

Shedroff discusses the importance of providing context in Information Design in order to build meaning and describes three types of context:

1. Global context (societal or cultural)
2. Local context (shared among increasingly smaller groups and more idiosyncratic)
3. Personal Context (easily understood only to ourselves without explanation).

Shedroff believes that any valuable educational or learning experience cannot exist without building these processes into its models. The perspective of the activity or

content in an experience can affect how it is understood, interacted with and related to. Stories, films and theater draw the audience in at different levels based on the perspective from which it is viewed. Activities like story telling allow the user or audience to interact with the information in a way that helps build personal context and integrate the information into previous understandings. Shedroff argues that it is important to design experiences so that people can find meaning in them. Meaning is often built by objects and experiences that allow us to make connections to our own lives and the distinction of a memorable experience is that it transforms the participant or makes them feel something emotionally. As everyone's personal lives are so varied, this can sometimes be a difficult task for the designer.

### **Usability**

Usability (or a concern for "ease of use") is often the starting point for innovative design. By knowing who the user is and perceiving a solution through their eyes instead of our own it is possible to create more satisfying experiences. Usability is many factors. 'Learnability' (the ease with which people can understand the experience/interface/service and begin using it), and 'functionality' (how easy it is to use the experience once it is learned) are the two basic elements of usability according to Shedroff.

### **Consistency**

When taking a theme and creating a new experience, for example the rain forest and making a restaurant experience around it, the designer faces the challenge of keeping some form of consistency in style and tone. When translating the existing form using a variety of media Shedroff warns of the risk of the new experience reflecting poorly on the original one. Another aspect of design where consistency is important is in

branding. Branding is built successfully when different experiences, often in different media feel consistent and connected. Shedroff states that the importance lies in the cognitive level of consistency- that the experiences *feel* similar and related even if the details are different.

### **Goals and Messages**

Shedroff states that in order for information to be communicated effectively it is necessary to define the goals of the experience and the messages to be communicated as early on in the development process as possible. Every decision, no matter how simple or mundane, should support the defined goals and messages through all stages of the design process. This ensures that inappropriate data, techniques, technology, or styles are not used. For every decision, the solution should be one that best meets the goals and messages defined at the beginning of the project.

### **Levels of Knowledge**

With every experience, we acquire knowledge, which is the understanding gained through experiences – good or bad. Shedroff states that knowledge is communicated by building compelling interactions with others or with tools so that the patterns and meanings in their information can be learned by others. There are many types of experiences that confer different types of knowledge. Some knowledge is personal, having meaning unique to one person’s experiences, thoughts or points of view. Effective communication therefore should take into account the audience’s existing level of knowledge.

## **Interaction Design**

Interaction design as a discipline borrows theory and technique from traditional design, psychology, and technical disciplines. It is a synthesis, however—more than a

sum of its parts, with its own unique methods and practices. The main purpose of Interaction Design in digital media is to define the behaviour of artifacts, environments, and systems (i.e., products). In broader terms Shedroff defines Interaction Design as “the art of effectively creating interesting and compelling experiences for others” (Shedroff, 1999). An interesting point that Shedroff raises is that many of the prominent new media interaction designers seem to have backgrounds in some type of performance, whether it is dance, theater, singing, storytelling, or improvisation.

Some researchers (Tosa et al, 1998; Panayi, 1999; Laurel et al 1991; Sato et al, 1999) in the field of Human Computer Interaction are using interactive techniques from disciplines such as the performing arts as new ways of designing human computer activity. Brenda Laurel (1991), an interface designer who has an academic background in theatre argues that experiences, which strive to be interesting, engaging, entertaining, or informing must be designed to act, react and interact on some level with an audience. Jennifer Fleming (1998), also an interface designer discusses interaction design in terms of building successful navigation into web sites:

“Rather than designing sidebars and menus, you're designing spaces and interactions. In short, you're crafting the user experience. . . . In the graphical environment of the Web, interface design has to do with constructing visual meaning. The happy marriage of architecture and interface -- of logical structure and visual meaning -- creates a cohesive user experience”. (Fleming, 1998)

Jeff Hawkins, the inventor of the Palm Pilot, was said to have carried a small block of wood around in his shirt pocket as a prototype of the personal digital assistant his company was developing. As various everyday situations arose he would take out the block of wood and imagine how he would use the device. This method of acting out the

use of a new product enabled Hawkins to frame and focus his wants and needs, which informed the design of the Palm Pilot. Similar playacting techniques and props have been used in focus groups where live actors are used to promote an engaging and interactive experience. Participants can see how roles are affected by new products and vice versa (Sato, 1999).

The following section gives a breakdown of the components of Interaction Design:

### **Story telling and Narrative**

The example of interactivity Shedroff returns to repeatedly is storytelling: “A good storyteller -- capturing the audience, engaging the listeners -- is creating an interactive experience” (2001). Storytelling, is still one of the most powerful experiences because it organizes information that allows us, usually to draw personal meaning and create knowledge. Many stories are successful when they can evolve to fit the circumstance and take into account the reaction of the audience - successful comedians and stage actors do this frequently. Stories can be used not just as entertainment but also as a way to make difficult concepts, information or instructions more accessible.

While the vast majority of narratives follow a similar linear progression, many of the most engaging stories play with this structure in novel ways. Brenda Laurel (1991) informs us that all narratives require action even when there are no characters. Action, she states is what holds our attention and creates meaning.

### **Authenticity**

Shedroff describes authenticity as being one of the defining characteristics of identity. People tend to discount other people if they aren't perceived to be 'real' or

'genuine' - the same goes for companies and organizations. Identity is seen as being critical to successful communities and critical to our own self-expression. The creation of a personal website, for example, is one of the ways that technology supports this kind of personal expression of identity. Turkle (1995) gives a different perspective and argues that a virtual experience such as chatting in cyberspace or participating in an online role-playing game subverts traditional notions of identity, because of the temptation for people to reinvent their self-identity or have multiple characters.

### **Immersion**

For an experience to be immersive it needs to stimulate our major senses (usually vision and hearing). Films do this regularly without using any unfamiliar technology. When the story is interesting and the sound and visions capturing, we fall into the experience with rapt attention. Immersion is as much a result of the narrative's ability to capture and hold our attention, as it is the visuals, audio or other sensory displays that divert our attention toward the experience. Theatre has always experimented with ways to immerse the audience, tending to create cognitively cohesive experiences and to experiment with non-digital ways to immerse people. The mixture of elements like live actors, sets, recorded and live music, lighting and rehearsal are some of the ways that a sense of immersion is achieved.

### **Community**

All communities whether online or not take time to develop their cultures and identity. As people come and go they change considerably and the sense of community gradually develops and comes into its own. Shedroff states that members must feel some sense of ownership of the community, otherwise they will not participate or care about the community. It is this sense of ownership however that Shedroff believes is the most

difficult thing for organizations to come to grips with, as it often requires that they have less control over the community. Successful communities more often than not also have strong leaders who guide the community, offer help and set examples when needed (Don, A 2001). Many online communities appeal to a broad range of people's interests. Members express themselves and interact via text, voice or web cam, in a variety of ways (ie chat rooms, discussion lists, MUD's etc)

### **Participation**

For Shedroff participation is the key to many successful experiences – or at least those that have been designed to facilitate audience participation. He claims that participation makes experiences more meaningful because it taps into our desires to be creative and to communicate. It could be argued that during 'passive' experiences such as watching a play or visiting an art gallery, where there is no active participation with the audience, there is still an interaction between the mind and the art object or the imagination. Shedroff argues against this view however by saying that these activities don't exhibit the kinds of choice, control, productivity, or creativity of experiences like the act of painting, conversing, or producing a television programme. The difference that defines the interactive experience is that it includes the amount of control the audience has over the tools, pace, or content- the amount of choice this control offers- and the ability for the participant to be productive or to create.

Csikszentmihalyi (1990) supports this view by showing that activities which do provide control, feedback, choice and adaptivity, improve the experience for the user and very often induce a state of *flow* or *optimal experience*. Csikszentmihalyi's theory of *flow* has since been used in numerous studies over the last 25 years to investigate why people enjoy activities such as rock climbing, painting, work activities and motorcycling.

## **Control and Feedback**

Typically, experiences with high interactivity offer high levels of feedback and, at least, some control. Examples of these kinds of experiences are games in which the gameplay depends directly on the player's involvement and choices, unlike television in which the experience continues whether anyone is viewing or not. Comparing the amount of control in real-world experiences gives the interaction designer a good starting point for designing other kinds of experiences. Shedroff claims that people expect to have some degree of control over their experiences. It might be control over the rate of interaction, the sequence of steps, the type of action or how much feedback they desire. An experience that tells us something about itself tends to feel more interactive than ones that don't. Whether the feedback is a simple explanation of why you are waiting for the next action or a detailed account of your progress so far most people expect experiences to acknowledge their actions in some way. This kind of interaction is important in the design of educational software or learning devices. Generally people expect to interact with systems in the same way that they do with people (Nass & Reeves, 1998).

## **Productive and Creative Experiences**

Creative experiences allow a user, creator, or participant to make, or do something productive. Being creative and producing something are typically interesting, entertaining, and fulfilling activities. Creation tools are important components for creating meaningful, compelling, and useful experiences. Creative products and experiences require that others participate by creating or manipulating instead of merely watching and consuming. One example is a creative programming language designed for children called PLAYGROUND. It has been developed to allow children to create

simulations of complex dynamic systems such as ecosystems and cities and works successfully as a productive and creative experience (Laurel et al 1991).

### **Communicative Experiences**

People have an inherent need to express themselves. Experiences that allow people to communicate with each other or simply to be heard tend to be rewarding, satisfying ones. Like productive and creative experiences, opportunities to meet others, talk with them, and share their personal stories and opinions, are always viewed as valuable and interesting. Communication can be conducted in many ways and through different mediums such as text, gesture, or speech. Because these experiences involve two or more people, they also inherently involve high levels of control, feedback, and adaptivity. The telephone is an excellent example of a communicative experience, as are chat rooms, discussion boards and socializing at a party. Some of these experiences are so valuable and enjoyable for some people, that they have become virtually indispensable.

### **Adaptive Experiences**

Experiences that seem to adapt to our interests and behaviours (whether real or simulated) can feel more sophisticated and personal to the user. Customization is one form of adaptivity that allows people to overtly choose options to tailor an experience to their needs and desires. Customization is easier to develop than personalization since the options are always finite and controllable. Personalization requires a more sophisticated level of interaction and planning, as choices and options cannot always be anticipated. Shedroff states that it is important for designers to understand which attributes will make an experience more successful and valuable to users and balance these with those that are possible within the constraints of the system. A good example

of adaptive technology is found in games, which become more difficult as the player becomes more proficient. Other possibilities include simulation environments that are designed to be configurable by humans as a medium for learning and other kinds of work (Laurel, 1991). The best experts and most proficient communicators are always adapting their interactions on-the-fly to suit the reactions they perceive in their audiences from body language, statements, answers to questions, and so forth. Because we are accustomed to this kind of behaviour from people, it is natural to expect systems to respond in this way. Like user behaviour, experiences can be modified through an awareness of their users and their environments. In particular, experiences that modify themselves based on behaviour seem more sophisticated. Shedroff argues that although awareness isn't necessary for experiences to be successful it can be a vital component of sophisticated and more personal experiences.

### **Sensorial Design**

Virtually everything we know about our environment has entered our minds through our senses. Without these senses our experiences would be incredibly limited. Sensorial design is simply an all-encompassing category over those disciplines involved with the creation and presentation of media. After writing, visual design techniques are usually the first to be recognized and employed. Disciplines that communicate through other senses however are just as important. Sound design and musical and vocal performance are useful in the appropriate circumstances. In fact, sometimes they are the only appropriate media for communicating particular types of messages. Tactile and olfactory senses are rarely employed especially in electronic experiences, due to technological constraints, but can be just as valid and can add enriching detail to an experience. To learn each discipline takes time and skill. Therefore it is crucial Shedroff

argues to learn at least an overview of the important issues and techniques of each discipline so they can be employed appropriately when presenting ideas and communicating messages.

### **Visual Senses**

While visual design has traditionally been concerned with appearance it can communicate more than mere beauty. In graphic and illustrative design, styles are used that convey cultural cues to communicate the goals and messages to the intended audience. A successful design is one, which is consistent and clear in its communication, is attractive and one that is focused on the needs of the audience (Shedroff, 2001). The use of symbols in visual design is a convenient way of communicating information into a smaller form. What makes symbols powerful is their ability to transmit meaning under difficult circumstances – especially across linguistic and language barriers. Cultural differences, however make symbol, icon and logo design a risky business as they rely on much more shared context than other forms of communication.

### **Auditory Senses**

Hearing is one of the most sophisticated senses we have. Sound comes in a variety of forms such as voice, music, or sound effects. It one of the most primary ways we receive data and information about our environment. The Audium which takes place in San Francisco is an experimental audio event which is configured to surround the audience with speakers. The performance takes place in total darkness and the 50-person audience is surrounded by 169 speakers, which are controlled using analogue technology. Different sonic environments are juxtaposed to create transformations of the audio space ([www.audium.org](http://www.audium.org)).

## **Tactile Senses**

The sense of touch is much more widely used in experiences because it is easier to address as many experiences require us to touch something, particularly in the case of interactive experiences. Research into haptic technologies has been in development for decades, yet there are few commercial examples that have been successful. Because touch is one of our most important intimate sensations, it can create some controversy or feelings of discomfort when used as part of an electronic experience.

However, some companies have developed software that gives the user a sense of tactility via a force-feedback mouse or joystick. Avid gamers use these devices to respond to the textures and situations being encountered. There may also be possibilities for this kind of technology in 3D modelling and medical simulations.

## **Olfactory Senses**

Our reaction to smells are more instinctive than any other sense, as smells act upon a primal part of our brain over which we have little control. The sense of smell however is one of the most poorly understood and often ignored senses- yet it can be one of the most memorable and powerful. People often speak of memories triggered by a smell long forgotten. Shopping centre planners are very much aware of the power of different smells that can entice customers to come inside. All smells fall into a few basic categories (ie minty, floral, musky, acrid, foul, resinous, ethereal etc). This is why perfume manufacturers have had so much success in concocting perfumes, because natural substances are no longer required and can be made on a molecular level in laboratories (Ackerman, 1990). Most computer manufacturers however, are still trying to perfect the use of sound and vision and have not shown much interest in creating olfactory devices.

In real-world experiences taste plays an important role at social gatherings, celebrations, parties, restaurants and wine-tasting evenings. There are no artificial devices yet that recreates taste, but there are many websites that use taste as a theme – for example sites about food, cooking and restaurants.

### **Time & Motion**

Time and motion are the underpinnings of video, animation and film. Though we're familiar with time and movement, we are usually unfamiliar with the design details used to craft an experience using video or animation. Although people most usually think of time-based media as being film the medium of performance is considered to be a time-based media. Although media such as film and video has become a very domestic experience for the majority of people, when used skillfully it can be a very effective tool for the design of compelling experiences.

## **Methodology**

The purpose of this study was to explore whether design practitioners and artists use defined processes such as the processes defined by Shedroff. Through a series of interviews the study was aimed at eliciting the knowledge of how experts design and construct compelling experiences. Shedroff's definition of experience design was used as a framework to guide the analysis of the data.

### **Participants**

Five people were interviewed for this study. Three were male and two were female. The interviewees were chosen because they are expert practitioners in their own fields and are skilled in a variety of disciplines such as - the performing arts, sculpture, music, filmmaking, education, poetry, writing, horticulture, radio drama, acting, sound editing for television and designing. Four of the five interviewees worked within an organisation and one interviewee worked as a freelance artist. Each of the interviewees were involved in designing a range of different experiences for the public such as live poetry performance, designing exhibits, educational experiences, organising film festivals, programmes for television etc.

Some background information is provided about each of the organisations, as well as a brief description of each interviewee and their role within the organisation.

### The Eden Project

The Eden project has been described as 'The living theatre of plants and people'. It was conceived by a team led by Tim Smit, who had previously been responsible for the famed 'Lost Gardens of Heligan'. Since opening in March 2001, The Eden Project has become one of Britain's most popular attractions, inviting more than double its projected visitor numbers - two million. Eden's mission is '*to promote the*

*understanding and responsible management of the vital relationship between plants, people and resources, leading towards a sustainable future for all.*' The site contains thousands of important and beautiful plants from the planet's temperate zone, the humid tropics and the warm temperate regions of the world, which are housed in giant conservatories, known as biomes, and total the size of 35 football pitches. Unlike Britain's previous biggest tourist attractions, Alton Towers and Madame Tussaud's, the Eden Project has succeeded without the lure of thrilling rides or celebrity cachet. Rather than seducing visitors with meaningless interactive exhibits the team at Eden took the unique approach of commissioning local artists to create many of the exhibits. The artists work closely with the science, horticulture and landscape teams so that the exhibits are integrated as much as possible into the site.

Sue Hill, who was the first interviewee in this study is the Arts Director at Eden and is responsible for, with a team of other people, devising the exhibits on site. Prior to working at Eden, Sue was involved in theatre for 12 years, and has worked as an actor, sculptor and designer. During the interview Sue talks mainly about her role as Arts Director at Eden and of her understanding of how people learn, how they experience things and about some of the aims of the Eden Project.

Sue Minter, also from The Eden Project was the second interviewee in this study. Sue's technical title is 'head of living collections' which means she is responsible for all the plant exhibits. Prior to working at the Eden Project, Sue was in charge of the Chelsea Physic Garden in London, and before that she was at Kew Gardens. One indication of the popularity of the Eden Project is that it currently receives double the number of visitors of Kew Gardens (Sue Minter, 2002). Although Sue's primary function at Eden is the horticulture of plants, she expresses a deep interest in the

educational experiences of plants and how people relate to plants; it was this aspect of her work that was discussed in the interview ([www.edenproject.com](http://www.edenproject.com)).

### The Watershed

Watershed is Britain's first Media Centre, which began 20 years ago. In the year April 2001 to March 2002 Watershed attracted nearly half a million visitors. Watershed's mission is:

*'To provide opportunities for all to experience, enjoy and learn about contemporary moving image media. It does this through: extending audience choice and cultural diversity beyond the mainstream; providing opportunities for learning, understanding, debate and development of practice; and making itself accessible, socially inclusive and well used by the widest range of people.'*

The Independent Cinema programme runs a wide range of mainly independent films from all over the world and has a reputation as one of the best art house cinemas in the country. New skills and content are being developed by working in partnership with the full spectrum of creative activity including artists, schools, FE, HE, community groups and media companies. The Education and Training programme is the leading regional centre for learning about moving image culture and for training in media production - digital and photographic. At the heart of Watershed is its Café/Bar, a lively meeting place overlooking the harbour. Head of exhibitions, Mark Cosgrove of the Watershed was interviewed for this study. Mark has been involved with the Watershed since 1994 and prior to that has worked for several years at the Plymouth Arts Centre and the Cornerhouse in Manchester ([www.watershed.co.uk](http://www.watershed.co.uk)).

### BBC Bristol

BBC Bristol creates a range of popular television and radio programmes including BBC Points West, Wildlife on One, Antiques Roadshow, Vets in Practice and The Natural World. The Natural History Unit in particular is regarded as a centre of innovation, creating new filming techniques such as extraordinary time-lapses in The Private life of Plants. It also has a great history of children's programmes starting with Animal Magic and now led by The Really Wild Show.

Martyn Harries, the fifth person to be interviewed in this study, is a dubbing mixer on the production team at BBC Bristol. Before being interviewed Martyn Harries was observed along with other members of the production team mixing the sound track of "Wild New World" a natural history programme due to be broadcast later this month. Martyn has been nominated for several awards such as BAFTA and RTS awards and in 1999 was part of the sound team that won a BAFTA award for the David Attenborough series 'Life of Birds' ([www.bbc.co.uk/bristol](http://www.bbc.co.uk/bristol)).

### Public Poet

Ralph Hoyte describes himself as a public poet and spatial word artist. He is interested in the use of voice and text in public contexts, often using live performance, in both urban and rural environments.

Based in Bristol, his residencies include HTV's T-Factory regional arts magazine programme, 6 months with English Heritage at Tintagel Castle as part of Year of the Artist, and Bristol Legible City, when he wrote a 600m long poem, which ran through Bristol City Centre. He is currently the poet in residence for Bristol's 2008 European Capital of Culture bid. He also works part time for a community development organization. (<http://www.agrebooks.co.uk/hoyte.html>)

## **Apparatus**

All of the interviews were tape recorded and then later transcribed verbatim into text. This resulted in a collection of data totalling nearly 38,000 words from all of the interviews. The interview data was then hand coded into categories by concept, theme or idea using an analytical framework as a guide. (Please refer to the section on data analysis for more details about this procedure.)

## **Interview Schedule**

Although there are many types of interviews it was decided that for the purposes of this study it would be necessary to use an approach known as a guided in-depth interview (Berry, S 1999). In order to elicit the tacit knowledge of experts this method of interviewing allowed enough freedom to explore, probe and ask questions relevant to the subject of designing experiences. The questions asked during the interviews were open-ended to allow the interviewee to answer in his or her own words. The interviews lasted approximately one hour each. All of the interviewees were asked a set of open ended questions for the first half of the interview and then this was followed with more probing questions when necessary. Examples of the open-ended questions:

1. Could you please tell us who you are, what you do here and how long you have been involved?
2. Have you got any ideas about the sort of numbers of people that have been through here over time?
3. Could you try to think of a particular project or exhibition that stands out in your mind as successful and walk us through how that came about and what happened?

Examples of the specific questions:

1. Who made the choice as to where it physically was? Was that part of the original brief?
2. How do you make your work accessible to people who aren't familiar with poetry?
3. It would be interesting to talk about the role it plays at the Watershed in terms of networking?
4. Have you got much feedback?
5. How have you gone about that process of translating what you learnt there into what you've done here?

### **Data Analysis**

The purpose of the data analysis was to identify the key dimensions of experience design from the qualitative data collected in the interviews. A theoretical framework was used to guide the analysis.

The interview data was analysed for any components outlined in the framework and coded accordingly. After this the frequencies of the codes for each interview were counted. The results of the frequencies were then aggregated into frequency tables for each of the sections of the framework: Information Design, Interaction Design and Sensorial Design (see Tables 1,2 and 3 in Appendix I).

There were however, many components of the design process that could not be fitted into the framework. The next stage of the analysis therefore, involved categorizing these components by marking the relevant quotes with a phrase or description. For example, if the interviewee used a phrase such as "public education" then this would be marked and coded with the phrase 'education'. All the concepts outside of the framework were then counted for the frequencies of occurrence. The

components that occurred frequently in more than one interview were aggregated in Table 4 (see Appendix II).

## Results

The frequencies of comments found for Shedroff's framework are given in Tables 1, 2, and 3 which can be seen in full in Appendix I. The frequencies of comments that are outside of the framework are given in Table 4, see Appendix II. For this section the results have been broken down into separate categories and relevant quotes are given for each. The interviewees are listed with the following abbreviations: Sue Hill (SH), Sue Minter (SM), Mark Cosgrove (MC), Martyn Harries (MH), Ralph Hoyte (RH).

### Information Design

For all of the categories outlined in the framework on Information Design there were a total of 165 comments made by the interviewees (see Table 1, Appendix I). The majority of comments (147 comments in total) were made about the categories of data (raw material, research, gathering and processing), organization of information, context and goals and messages. The categories of navigation, consistency and usability commented on more infrequently (16 comments in total).

A break down of the results for each of the categories is presented below with one or two quotes as examples of the types of comments made:

#### *Data*

	SH	SM	MC	MH	RH
Data (Raw material, research, gathering and processing)	6	11	5	10	7

Table 1.1 Information Design

As expected all of the interviewees mentioned data research and gathering as a necessary process:

*“I’ve just always read, anything and everything. Electronic journals, women’s magazines, comics, newsletters”. Ralph Hoyte – Public Poet*

*“There are huge amounts of research in the data-bank here but it is not easily digestible so we basically condense that down to 10 or 12 pages of A4 which has got the juice of the story line in it. We give that to the artist and then the artist makes a response to it in whatever way they like”. Sue Hill- Eden Project*

### **Organisation of information**

	SH	SM	MC	MH	RH
Organization of Information	11	8	5	10	9

Table 1.2 Information Design

Again, with the category of organisation of information there was an even distribution of comments made by all the interviewees. Sue Minter of the Eden Project gave some interesting examples of different ways this can be done:

*“we laid out a garden called the pharmaceutical garden, which was laid out in all these different therapeutic areas so that you had all the plants used in cardiology, anaesthesia, dermatology or whatever...”. Sue Minter- Eden Project*

### **Navigation**

	SH	SM	MC	MH	RH
Navigation	2	1	0	0	2

Table 1.3 Information Design

The category of navigation was mentioned briefly by three of the interviewees.

Ralph Hoyte and Sue Hill made some interesting comments about non-linear and linear navigation:

*“We wanted the visitors to be active, navigating the site in their own way, making their own discoveries, joining things up”. Sue Hill – Eden Project*

*“Bristol Legible City’ project for example...involved putting a poem on a strip that ran all the way through the city centre”. Ralph Hoyte –Public Poet*

**Consistency**

	SH	SM	MC	MH	RH
Consistency	0	0	0	3	0

Table 1.4 Information Design

The only interviewee to talk about the concept of consistency was Martyn Harries from the BBC. He spoke in reference about its importance when mixing sound for television:

*“continuity all the way through is fairly important because I’m making decisions now that will effect the way I mix the final mix. I’m always thinking of what I’m going to do on the final (mix), so one mixer will take a project through from start to finish preferably. “ Martyn Harries -BBC*

**Usability**

	SH	SM	MC	MH	RH
Usability	1	0	0	0	0

Table 1.5 Information Design

Only one comment was made about usability- an interesting observation made by one of the interviewees about an exhibit she saw in London :

*“when we were walking around looking at other exhibits....there were a lot of interactive exhibits that were actually deeply dysfunctional. The classic one being in the London Aquarium where you had to match up buttons with images on a big acrylic panel....what you saw was kids going bam bam bam – hitting the buttons and not actually doing it as it was intended.” Sue Hill –Eden Project*

**Context**

	SH	SM	MC	MH	RH
Context (local/global or personal context)	7	19	4	8	5

Table 1.6 Information Design

Most of the comments given by the interviewees were on the use of context in designing experiences. The quote below is an example of using the historical context of a location or site in a poetry reading:

*“when I worked in residence for English Heritage.... I composed different poems to different sites round the Island ....and then take[ing] groups of visitors round the island and I would declaim the poem for that particular site but I’d also mix in things about the archaeology and the history of the site”. Ralph Hoyte –Public Poet*

### ***Personal Context***

	SH	SM	MC	MH	RH
Personal Context (unique to personal thoughts, points of view)	3	<b>11</b>	2	0	2

Table 1.7 Information Design

Four of the interviewees talked about the importance of using personal context in developing meaning for participants of experiences. The following quotes illustrate the importance of using personal context to give meaning to experiences:

*“We are hoping to develop a plants and health exhibit here and the more we talk about it and brainstorm about it, the more I realise how many, many threads and strands there are with people’s lives.....the one thing that I did learn from Chelsea (Physic garden) is the importance of the personal...the direct.. the product and the experience and the link with the plant.” Sue Minter- Eden Project*

*“..a word like ‘neighbours’ ...it’s not just 10 letters, when I say neighbours, there’s all sorts of associations that people come up with and that is so important to me.” Ralph Hoyte – Public Poet*

### ***Goal and messages***

	SH	SM	MC	MH	RH
Goals and messages	4	9	<b>4</b>	3	2

Table 1.8 Information Design

All of the interviewees commented on the goals and messages of some of the experiences they had designed. The following quote is an example of how the overall goals of an organisation effects the type of experiences it offers to the public:

*“what we’re trying to do culturally... is to show the breadth of moving image work- we should be beyond the mainstream... It’s about offering a moving image programme of activity, which is not catered for within the commercial set up - so that’s the philosophy that underpins the cinema. And then, with the digital it was about seeing what was the creative work that was out there that could be showable, and how would it be showable”. Mark Cosgrove – The Watershed*

### **Knowledge**

	SH	SM	MC	MH	RH
Knowledge	0	4	1	0	2

Table 1.9 Information Design

Three of the interviewees commented on the process involved in designing experiences to cater for different levels of knowledge and ability. The final example for this section illustrates some of the challenges that the designer is faced with in doing this:

*“you can never cater accommodate everybody’s needs from a 5 year olds to a technical researcher or a professor of botany or whatever. And so, the challenge really is to get things out at different levels, and I think that that will develop as we develop. And we will get more used to being able to provide information. One of the interesting things is that there’s this concept of having a filofax, and the information can be given away in dispensers .....build your own guidebook ...around your own interests, so in a sense it’s self driven.” Sue Minter – Eden Project*

### **Interaction Design**

For all of the categories outlined in the framework on Interaction Design there were a total of 71 comments made by the interviewees (see Table 2, Appendix I). Most of the comments (47 comments in total) were made about the categories of story creating and telling/narrative, authenticity, participation and communicative experiences. The categories of immersion, productivity & creative experiences and adaptive experiences were commented on less frequently (22 comments in total).

A break down of the results for each of the categories is presented below with one or two quotes as examples of the types of comments made:

***Story-creating and telling/narrative***

	SH	SM	MC	MH	RH
Story-creating and telling/narrative	4	2	0	2	6

Table 2. 1 Interaction Design

Four of the interviewees referred to the use of story telling or narrative techniques in the design of experiences. The first quote given by a poet is an example of the use of narrative techniques in live performance poetry. The second quote is an example of how the team at the Eden Project use storytellers to create experiences in the affective domain:

*“I like using rhythms, I like using stupid jokes and puns as well. ... I like setting up an audience so they think it’s serious and then you demolish the whole edifice with one word or the other way round...an effective technique. “ Ralph Hoyte- Public Poet*

*“ The story tellers proved their appeal very early in 2001, growing quickly from three to five, shortly to become a twelve-strong Performance Team. Their brief is to work in the affective domain, provoking the emotions and imagination of the visitors.” Sue Hill –Eden Project*

***Authenticity***

	SH	SM	MC	MH	RH
Authenticity	2	4	0	5	0

Table 2.2 Interaction Design

Three of the interviewees commented on the importance of authenticity when designing experiences. The following example given by Sue Hill illustrates an interesting point about authenticity:

*“.... authenticity is something that we recall people respond to very powerfully. Whether it is – ‘ this is somebody’s actual signature on a painting ’ – ‘he actually painted this’ or ‘ this is the room Anne Frank hid in’, authenticity is a very powerful thing. It is very hard for us to do that here in some ways because we are a totally*

*contrived landscape. But you find authenticity in different ways. So the fact that people can see an ACTUAL cocoa pod growing out of the trunk of the tree is such an extraordinary thing. And the smell of South Africa that you get when you go into the Finn Boss area is of an authentic experience. “ Sue Hill – Eden Project*

### ***Immersion***

	SH	SM	MC	MH	RH
Immersion	0	2	0	3	0

Table 2.3 Interaction Design

Although only two of the interviewees commented on the concept of immersion the following quotes present two ways that sensory media can be used to create an immersive experience:

*“... I think the way it’s been done is really by immersing people in the experience, the smells and the sounds, and the scents, and the touching of plants that gives them a feeling of being in that environment. And what has helped us in a way has been how rapidly the humid tropics biome has grown, is it that it inevitably would be...all those very fast growing plants. And so people do get an immediate sense of going somewhere extraordinary....And isn’t it interesting the way people come and they go into the humid tropics biome and they seem to relate to it very powerfully, and sometimes I don’t know where that experience comes from - because how many people have actually been in a rain forest?.... “ Sue Minter – Eden Project*

*“...it helps in natural history to wrap the atmosphere around you, you feel more part of everything happening. The whole reason that we’re here is to pull you into the picture, to get you close into that picture and it’s up to me to make sure that nothing happens on the soundtrack to push you out of that picture....Surround sound helps a little bit, but over use of panning and over use of things whooshing around your head could easily push you out of this picture because it’s not a flashy action movie it’s a Natural History (programme)...” Martyn Harries - BBC*

### ***Participation***

	SH	SM	MC	MH	RH
Participation	1	1	10	0	0

Table 2.4 Interaction Design

One of the interviewees, Mark Cosgrove of the Watershed, talked frequently about audience and visitor participation. The Watershed offers a number of workshops and

opportunities for people to develop their creative skills and it is this form of participation that Mark refers to mainly:

*“Abigail’s come up with an interesting idea- she wants to do a film school during the festival so we can drive people through the whole process. People would pay a fair bit of money but they would get an intensive treatment, it would be for about 10 people say....” Mark Cosgrove – The Watershed*

In the next quote Sue Hill talks about the nature of participation and illustrates the point that people are still participating by their very engagement with an experience even if they may not be directly affecting the experience itself:

*“The active interactive thing is very interesting because I think people can be active without touching things. You can be actively engaged in looking, understanding, trying to make sense of something without having to push a button or wind a handle. .” Sue Hill – Eden Project*

### ***Community building***

None of the interviewees made any references to the building of community in the experiences they had designed.

### ***Control and Feedback***

	SH	SM	MC	MH	RH
Control & Feedback (how much control the participants have over their experience and how much feedback exists)	0	4	5	0	0

Table 2. 5 Interaction Design

Only two of the interviewees talked about incorporating any sense of control or feedback into the experiences they had designed. Mark Cosgrove talked at length about one of the experiences that the Watershed helped to develop with a group of digital artists. Mark Cosgrove explains the experience below:

*“ they’ve developed a ...what’s called the Jungulator, it’s a method (piece of software) of mixing sound and image live on the web....you can mix sound and you can mix image, and I could do that from here, and if it was projected in a club in New York, I would be the DJ sitting here doing it”.* Mark Cosgrove – The Watershed

***Productive & Creative Experiences***

	SH	SM	MC	MH	RH
Productive & Creative Experiences (Participants make, do or share something themselves, being creative or producing)	0	0	5	0	0

Table 2.6 Interaction Design

Mark Cosgrove of the Watershed was the only interviewee to comment on the category of designing productive & creative experiences:

*“The Clerks bursary that we do was a digital bursary that we’ve been doing for 3 years and we’ve learnt a lot about how that could work in terms of creative people developing digital practice. ...One of the conclusions we came to with that, was the emphasis was always the end product and what we wanted to explore was the process.” Mark Cosgrove – The Watershed*

***Communicative Experiences***

	SH	SM	MC	MH	RH
Communicative Experiences (opportunities to meet and/or talk to others)	1	5	5	0	0

Table 2. 7 Interaction Design

Three of the interviewees commented about designing experiences that facilitate communicative experiences. Examples of the different types of experiences are given below:

*“...my experience from Chelsea of doing text and doing trails around the garden was that nobody would do them because they wanted a living guide...as long as you offer people - people will always go for people. People like to listen, and they like to have that human communication...”*

*Sue Minter –Eden Project*

*“the bar is almost if not as important as any other element. It’s a place where people can relax, network, socialise – but I think certainly the creative business is about networking....there isn’t a formal structure into it”.* Mark Cosgrove –Watershed

*Adaptive Experiences*

	SH	SM	MC	MH	RH
Adaptive Experiences (adaptive technologies that change the experience based on the behaviour of the participant)	0	0	2	0	1

Table 2.8 Interaction Design

Only three comments were made on the theme of adaptive experiences. As three of the interviewees are not involved in designing experiences using technology this results does not seem surprising. This is perhaps one of the advantages that using technology in designing experiences can offer. One example of this is given below:

*“During the festivals (film festivals) this place worked fantastically, just a whole load of people around – practitioners, business people etc and just having stuff on in the background that was on the large screen projected - and some people would click on it and things would change ...you just felt that the space was working”.* Mark Cosgrove - Watershed

**Sensorial Design**

For all of the categories outlined in the framework on Sensorial Design there were a total of 256 comments made by the interviewees (see Table 3, Appendix I). The majority of the comments (236 in total) were about the use of visual media, auditory media and time-based media. The categories of tactile media and olfactory media were commented on least frequently (20 in total).

A break down of the results for each of the categories is presented below with one or two quotes as examples of the types of comments made:

*Visual Senses*

	SH	SM	MC	MH	RH
Visual Senses (graphic design, sculpture, writing, photography)	10	9	1	0	23

Table 3. 1 Sensorial Design

Four of the interviewees made comments on the use of visual media in the design of experiences. The types of media mentioned were text (mainly poetry), sculpture, photography and architecture. The following quotes are two examples of the different ways that visual media is used by designers:

*“If you want something very specific you go to a designer. If you want a powerful creative response you go to an artist and you give them as much kind of creative leeway as you can. So it would be up to them which part of the story line might fire them up. So for instance with the Olive pathway, the mosaic pathway by Elaine M Goodwin, she really was moved by this huge history that we have had this relationship with Olives for thousands of years. “ Sue Hill – Eden Project*

*“In the case of the Bristol Legible Cities project it was 600 metres of poetry. The brief was to produce something, which would help launch the new signage in Bristol...in the end that was very successful. We used a special material called 3M’s pavement graphic which was a fairly tacky adhesive which will stick to any sort of surface on the ground but it will also come up without leaving a mark. ” Ralph Hoyte – Public Poet*

### ***Auditory Senses***

	SH	SM	MC	MH	RH
Auditory Senses (sound)	0	1	2	23	8

Table 3. 2 Sensorial Design

For the category of sound as a media most of the comments were made by Martyn Harries, the dubbing mixer for obvious reasons. Ralph Hoyte gives an interesting perspective on the use of sound in his live voice work as a public poet. Examples are given below:

*“Because I’m a live performer, a lot of the poetry is in the sound of it rather than the actual words. For example I’ve worked quite a lot with Art in Power cooperative of artists with learning difficulties, who in fact can’t read and write. I have read Japanese poetry to them in Japanese. Or more complicated poems, which don’t even mean much to me, and they love them! “ Ralph Hoyte – Public Poet*

*“If you’ve got a party scene and some body staggers into the back of the room swaying, carrying a glass, and you make a slopping sound in a glass in time with their swaying and you heighten that by bringing that sound forward in the soundtrack your eyes will go roving to find what’s matching that sound that you’re hearing .” Martyn Harries - BBC*

***Tactile Senses***

	SH	SM	MC	MH	RH
Tactile Senses (touch)	5	3	0	0	0

Table 3. 3 Sensorial Design

Only two of the interviewees commented on the use of tactile media in experience design and the sensory stimulation of touch. Both interviewees however, felt that the tactile sensation was an important aspect of the experiences they designed. An example is given below:

*“the key things for us are sensual experience – so things you can touch – hand madeness, craft, people love to see.....So for instance in the brewing exhibit we have these wonderful carved chestnut hop poles that are very touchy feely”.*

Sue Hill – Eden Project

***Olfactory Senses***

	SH	SM	MC	MH	RH
Olfactory Senses (smell and taste)	7	5	0	0	0

Table 3. 4 Sensorial Design

Again the same two interviewees from the Eden Project were the only people to comment on designing experiences to stimulate the olfactory senses, but only the stimulation of smell. They both talk in depth about the ‘stimulation and engagement of all the senses’ being important considerations when they design or commission exhibits. The following quote is an interesting example of how the stimulation of our sense of smell can be used to trigger memories to create a powerful experience:

*“Questa are formulating ways of dispensing smell – there will be Patouli, Violet and Lemon, you follow the curly pipes back and Questa do this thing that they call head space where they cycle perfume up through glass jars over flowers or scent producing leaves or whatever etc. They pump air through and then they collect all the molecules that come off and then they put that through an analyser and then they can synthesise it...you can smell at one end and work your way down and find out what it is. It’s like a*

*little experiment just playing with the idea of scent, perfume and memory. And the way it triggers your senses, the triggers are very powerful.” Sue Hill – Eden Project*

### ***Time-Based Media***

	SH	SM	MC	MH	RH
Time & Motion (video, film, live performance)	4	5	103	28	19

Table 3. 5 Sensorial Design

All five of the interviewees mentioned using time-based media of some description. The Watershed deal mainly with time-based media so it was not surprising to see many references made to this category. The kinds of media mentioned by the interviewees were film, digital video, television and live performance. The final quotes given in this section are descriptions of two types of time-based media:

*“Amanda Lorens is an artist who’s looked at a lot of film imagery of barium meals, and these beautiful images of food being taken down to the stomach and what happens. Because we tend to forget what happens between here and here, and what it’s made of, and what it does to you.” Sue Minter – Eden Project*

*“we had a gallery in here, it was a photographic gallery, and we took a decision over a period of time about shifting space away from just having things up on the wall, it felt very static and in some ways unengaging, to make it a much more flexible space. With the digital taking off, we wanted to do stuff around the moving image, there were a lot of things happening computer wise and digital wise that seemed to be a lot more exciting and flexible.” Mark Cosgrove – The Watershed*

### **Concepts outside of the framework**

The number of concepts, themes and ideas that are outside of the framework are categorised and aggregated in Table 4 (see Appendix II). The comments were sorted into 8 main components of which there are a further 6 categories. Comments that were mentioned by two or more interviewees were included in these results. The total number of comments made that were outside of the framework was 288. The majority of these comments (117 in total) are from a main category labelled design skills. A

break down of the results for each of the categories is presented below with one or two quotes as examples of the types of comments made:

### *Use of devices*

	SH	SM	MC	MH	RH
Use of devices/techniques (literary or musical)	1	0	0	4	<b>8</b>

Table 4.1 Concepts outside of the framework

Three of the interviewees spoke about the use of music or literary devices or techniques in designing experiences. An example of the devices used is given in the following example:

*“If you’re writing for a live performance people either have to recognise it the instant they hear it or you have to use devices like repetition, or emphasis or intonation to get them to pay attention to what you want them to pay attention to.” Ralph Hoyte – Public Poet*

### *Design skills*

	SH	SM	MC	MH	RH
Design skills:	<b>12</b>	3	9	<b>6</b>	2
Artistic process	<b>10</b>	1	8	3	<b>11</b>
Variety of experts	7	7	6	2	3
Ideas	6	4	4	2	<b>10</b>

Table 4.2 Concepts outside of the framework

The category of design skills encompasses any references made to the interviewee’s range of skills and expertise in art based disciplines. From analysing the data it became apparent that four of the interviewees have a broad range of artistic skills that they translate across different areas of design. Two examples are given below:

*“You’ll find that virtually all dubbing mixers are musical or play instruments or have a deep interest in music. It kind of comes naturally then because you’re trained to listen critically not just hear things, so what I’m doing when I’m listen to a sound track is dissecting it like a musician would, listening to an orchestra dissecting it into it’s component parts.” Martyn Harries- BBC*

*“Because I have worked as an actor as well as a designer I have a very direct relationship of what turns people on.... It is not remotely scientific. But I know – because I have been performing for 20 years – I know what will make people laugh, what will make people cry and what will connect with their own experience...It is intuitive. “ Sue Hill- Eden Project*

Within the main component of ‘design skills’ there are 3 categories. In the design of experiences the interviewee’s made many references to these concepts and it became apparent that they are an integral part of the design process. To illustrate these concepts quotes are given below:

**Artistic Process**

*“there has to follow up a phase of fermentation... after I put all the material in it has to ferment away until it starts bubbling and when it starts bubbling then I write it down. And I’ll draft and redraft, and re- redraft“. Ralph Hoyte – Public Poet*

*“If you want something very specific you go to a designer. If you want a powerful creative response you go to an artist and you give them as much kind of creative leeway as you can. So it would be up to them which part of the story line might fire them up”. Sue Hill –Eden Project*

**Variety of experts**

*“..we invited a lot of other people from outside. People representing the herbal industry, the pharmaceutical industry, patients, quite high-tech researchers, growers, health care professionals, all sorts of people who might have an input to make”. Sue Minter – Eden Project*

**Ideas**

*“I carry notebooks around so anything which comes into my head goes into the poem but I don’t wander round looking for inspiration, it’s such a part of my life that it’s just natural, it can be absolutely anything”. Ralph Hoyte – Public Poet*

**Aesthetic Appeal**

	SH	SM	MC	MH	RH
Aesthetic Appeal	5	6	0	0	0

Table 4.3 Concepts outside of the framework

The results above show that two of the interviewee’s made reference to the aesthetic appeal of designed experiences. This is a category, which is not included in Shedroff’s framework. An example is given below:

*“beauty...kind of an old fashioned word really – but people respond really powerfully to beauty. That drift wood horse up in the street does not have any kind of exhibit value to it – other than it is made of driftwood – but it stops people in their tracks... We get more comments about that than almost anything else – the beauty of that piece. ” Sue Hill – Eden Project*

### **Sources for ideas**

	SH	SM	MC	MH	RH
Topical issues (environment/social/cultural)	<b>10</b>	9	6	2	0
Trends	0	1	<b>8</b>	0	0
History/science	<b>4</b>	5	0	4	1

Table 4.4 Concepts outside of the framework

Three concepts that were talked about frequently were the interviewee’s sources of ideas. Typical sources that were discussed in the interview’s were topical issues such as environmental or social issues, trends such as ‘movie trends’ or the recent trend in becoming a ‘nation of gardeners’, and the use of history or science as a source of ideas.

To illustrate each of these themes examples are given below:

#### **Topical issues (environmental/social/cultural)**

*“ we might do an exhibit on women and agriculture – most of the world’s food is planted, cultivated and harvested by women. And that in itself might be a very interesting exhibit”. Sue Hill –Eden Project*

#### **Trends**

*“When we have meetings people will say ‘we’ll selling loads of lager at the moment, and they’ll say ‘why’s that’, ‘it’s because of the new Tarantino film....It is that sort of cultural thing that goes on.....You can sort of think yeah that’s going to hit that kind of audience “. Mark Cosgrove – Watershed*

#### **History/science**

*“Michael Chaikin who was working on sunflowers, he struck up a working partnership with Sarah Darwin who is the great, great, great - I don’t know how many greats – grand daughter of Charles Darwin – who is doing a study of Sunflower motility and how it moves during the day – and it was the movement of sunflowers that caught his imagination”. Sue Hill – Eden Project*

***Educational/Learning Experiences***

	SH	SM	MC	MH	RH
Educational/Learning Experiences	3	<b>12</b>	5	2	3

Table 4.5 Concepts outside of the framework

Another frequently mentioned concept that came up was education and learning. All of the interviewee's made comments on this theme. An example is given below:

*“one of the exciting things I think about Eden has been that it started off as a conception of growing all the plants of the world ....to enable people to experience them -to grow them....in a way that it was being informed by education “. Sue Minter – Eden Project*

***Extraordinary/exotic/individual***

	SH	SM	MC	MH	RH
Extraordinary/exotic/individual	<b>6</b>	8	<b>9</b>	1	1

Table 4. Concepts outside of the framework

Another interesting theme that was found in the analysis was the importance of creating experiences that offered the participant something out of the ordinary, this seemed to be the appeal of some of the experiences - for example the exotic experience of seeing a living rainforest growing in Cornwall. Another example is given in the quote below:

*“I think for certain audiences they're not interested in going to a place, which is the same in Cambridge, as it is in Nottingham. They actually like the idiosyncrasy, and the individuality”. Mark Cosgrove –Watershed*

***Design of spaces***

	SH	SM	MC	MH	RH
Design of spaces	2	2	<b>6</b>	2	0

Table 4. 6 Concepts outside of the framework

Four of the interviewee's talked about the design of spaces and environments. Mark Cosgrove explains part of this process in the following quote:

*“we had a gallery in here, it was a photography gallery, and we took a decision over a period of time about shifting space away from just having things up on the wall, it felt very static and in some ways unengaging, to make it a much more flexible space. With the digital taking off, we wanted to do stuff around the moving image.” Mark Cosgrove - Watershed*

### ***Limitations of technology***

	SH	SM	MC	MH	RH
Limitations of technology or media	3	13	2	<b>13</b>	4

Table 4. 7 Concepts outside of the framework

The interviewee’s also talked frequently about the issue of limitations that were imposed by the technology or medium they were working in or designing for.

Sometimes however, the limitation actually inspired the design. For example, Ralph Hoyte, one of the interviewee’s was recently commissioned to design a poem of only 81 characters for a sculptural piece that was being displayed in a shopping centre in Birmingham. In this case the limitation made the design process more interesting. The example below illustrates a different limitation:

*“Not everybody’s got stereo so you can’t even rely on them picking up information from that..... you always have to keep half an eye on your mono listener because they’ve got to get as much out of it as everybody else, but what I might do is put an effect in the rear speaker such as a bird or a call and know that that won’t come out in the mono.”*  
Martyn Harries – BBC

## **Summary**

The results show that all five of the design practitioners’ used many of the processes outlined by the framework (total of 492 comments).

For the first section on Information Design there were a total of 165 comments made. The practitioners mostly commented on the processes of research and gathering data; the organisation of information; context –global, local and personal context and also commented frequently on the goals and messages of the experiences (146

comments). There were significantly less comments made, however, on the processes of navigation, consistency and usability (16 comments).

A total of 71 comments were made by all of the practitioners on the processes of Interaction Design. This was significantly less than the comments made for Information Design. The majority of the comments referred to the processes of story telling and narrative techniques, authenticity, participation and communicative experiences (48 comments). The least number of comments were made about the processes of immersion, productive and creative experiences and adaptive experiences (13 comments). The process of community building was not mentioned by any of the practitioners.

The most number of comments however were made in reference to the use of media, outlined in the section of Sensorial Design. A total of 256 comments were made altogether. Practitioners mostly used time-based media (159 comments), mostly film, video and performance art. The second most commonly used media was visual media (sculpture, photography, text and poetry) – a total of 43 comments were made followed by 34 comments for the use of auditory media (sound, speech and music).

Finally, there were a significant number of themes and concepts that could not be fitted into the framework- a total of 288 comments were made on the subject of 11 themes. A number of comments (32 in total) were made in reference to the design skills of the practitioners. For example, all of the practitioners have multi-disciplinary skills and often apply these across disciplines and media. A total of 36 comments were made describing the artistic and creative process involved in the design of experiences. Another significant finding (25 comments) is that often a variety of experts would work collectively on a design, both design and non-design professionals. The process of conceptualising of ideas and referring to different sources for ideas made up for a total

of 65 of the comments. Practitioners draw very often from topical issues, such as environmental issues, social issues, cultural issues, current trends or history and science for sources of their ideas. Frequently, practitioners also commented on the limitations imposed by the technology or media they were working with and also how this influenced the designs (35 comments in total). A smaller number of comments were also made on the themes of aesthetic appeal, design of spaces and use of devices (literary or musical) – a total of 36 comments.

## **Discussion**

The findings show that the design practitioners and artists did use many of the processes of the framework, as defined by Shedroff (2001). Overall, the processes of Information Design were used more than the processes of Interaction Design. The designers were very specific about the forms of media that they would use and had an awareness of the media's strengths and weaknesses. If the designer wanted to create a sense of immersion or authenticity (see Tables 2.2, 2.3), then specific media would be used to stimulate a range of senses such as smell, sound and vision. An interesting finding was that most of the practitioners would use a combination of media in one design, and very often would experiment with new ways of using media. For example Ralph Hoyte (see Table 3.1) devised a new form of physical art using poetry which was temporarily stuck to the pavement and ran for 600m following a straight line through a city centre passing through a waterfall and over two boats on the way. Clearly imagination has a big part to play in the design process.

For some of the processes that were used less frequently such as navigation, consistency, usability and community building, one explanation for the infrequency is that these concepts are usually associated more with the design of online experiences (see Tables 1.3,1.4,1.5). The types of experiences that were designed by the

practitioners however, tended to be physical real world experiences or exhibits, and these processes would not have been an issue. One interesting finding is the extent to which storytelling and narrative techniques are used (see Table 2.1). For the designers at the Eden Project, story telling has become a very effective way of presenting and delivering information about deeper issues they are trying to address, and also as a way of interacting and connecting with participants through their emotions, in the affective domain. Researchers like Laurel (1991) and Sato (1999) have shown some of the benefits and value in adopting techniques from disciplines such as theatre, story telling and narrative.

Although many of the exhibits or experiences that the designers commented on didn't have interactive elements to them, this didn't seem to be detrimental to the design of the experience. One interviewee made an interesting observation about the nature of interactive exhibits saying "*...I think people can be active without touching things. You can be actively engaged in looking, understanding, trying to make sense of something without having to push a button or wind a handle.*" Sue Hill

There were also many processes that were not defined by the framework and are not related to Information Design, Interaction Design or Sensorial Design. It is clear that many of these processes represent what could be viewed as 'tacit' knowledge. Ralph Hoyte for example commented "*I just follow my innate sense of what it ought to be and ought to sound like*". It is the combination of defined processes and tacit knowledge that most of the practitioners used in creating the experiences. With the exception of the dubbing mixer who was interviewed, the designers seemed to have a lot of creative leeway in which to design or devise projects, even when they were being commissioned to work to a brief. It would seem that tacit knowledge of the practitioners was used more when the designers had this degree of creative freedom. The dubbing

mixer however, seemed to use more defined processes, which were related to his professional role rather than the processes in the framework, this was probably due to the technical nature of this work.

Another interesting finding from the study was the extent to which designers work collectively and collaboratively with other designers and also non-design professionals (see Table 4.2). Sometimes the collaboration involved experts in the fields of science, or medicine, in other cases it involved the local council or commissioning bodies. Working with other design professionals was often integral to the design process and for some of the practitioners this provided a ‘cross-fertilisation’ of ideas. Most of the practitioners also had multi-disciplinary skills, which they transferred and applied across different media. For example one interviewee who had worked in theatre for 12 years used her knowledge of how audiences react to performances and transferred this knowledge to other domains – also an example of tacit knowledge.

### **Implications for design**

The designers and artists who work in the physical world of themed products and environments appear to have developed a theoretical base they can call on. The reason for this may be that the process of designing tangible objects and places intended to engender experiences is labour intensive and often requires the skills of a multi-disciplined team to work collaboratively. The small sample of designers and artists interviewed for this study revealed a wealth of information about some of the processes involved in designing experiences. One of the clear themes that have emerged is the importance of teamwork, the cooperation of other design practitioners and non-design practitioners. There are real synergies in using methods of cross-disciplinary design. Comparable skills and methods tend not to be prolific among online designers.

One challenge facing the design practitioner is incorporating the knowledge provided by scientists, historians, musicians, sociologists, psychologists, storytellers, and other design disciplines into their practise. Experience design practitioners need to be aware that human experience is not confined to the computer screen. Sue Hill of the Eden Project illustrates this point with the following quote: “ *We wanted the exhibits to be social, provoking comment and conversation, not one person at a time interacting with a screen or panel.*” Shedroff warns us of the seductive nature of technology and stresses the importance of remembering that the purpose of technology is to serve people’s interests and needs.

Experience Design therefore, describes a community of practice – not a single profession, and designing effective experiences requires many different types of professionals with a broad range of skills and expertise. The professional organizations AIGA (American Institute of Graphic Arts) and SIGCHI (Special Interest Group for Computer Human Interaction) are beginning to take the approach of broadening the dialogue among designers, the aim being to encourage more collaboration and sharing of ideas from different designers and modalities. The AIGA recently showcased an example of an Experience Design case study called ‘Climb Meru : The Sharksfin Experience’ ([www.climbmeru.com](http://www.climbmeru.com)). The project is an interesting example of an enhanced multi-channel interactive experience that uses story telling and other narrative techniques. The core component of the experience was a documentary style website that spanned seven episodes offering the user multiple experience elements to self-explore. The episodes portrayed an authentic and live interactive journal of two climbers on their third bid to climb a Himalayan mountain called the Meru Sharksfin. Episodic features included titled video segments, panoramic movies of the expedition, photography and a

chronological textual narrative. Supporting elements included interactive maps, team bios of the climbers, video interviews and online discussions.

A recent project was done for the Swiss Consulate and consisted of the creation of what is known as the Swiss House (see references for URL) located in Boston. The project entailed the design and creation of physical and virtual environments. Utilizing multiple layers of technology and full wall size curtains of information projection, the Swiss House attempts to create a feeling of single spaces of interaction across multiple disparate physical locations. The project is an example of how design can combine physical and virtual technologies to create new business architectures for everyday activities.

Many of the experiences described in this study have demonstrated that human experience is not confined to the computer screen and the advance of beyond-the-desktop is inevitable. The infrastructure for embedded wireless is just beginning which creates important windows of opportunity, and drives the potential for pervasive computing. Hewlett Packard Labs in Bristol are contributing to this field by exploring how compelling experiences can be delivered via new digital technologies and particularly through pervasive mobile technology and context-aware services. With this aim in mind they have been working with designers, musicians, artists and other creative practitioners to develop and evaluate prototype experiences in and around the city of Bristol (Hull & Reid, 2002).

### **Limitations and further work**

One of the limitations in conducting this study was the lack of current empirical research and academic literature on experience design. As a result only one theory of design was used as a descriptive framework on which to base the analysis of the data. The data collected came from only five interviews, but considering the exploratory

nature of the research method a small number of participants delivered enough data for the study.

Experience design is an emerging discipline that requires further research and investigation. Two approaches in future that could be considered are:

In this paper the design practitioners interviewed were experts in a variety of artistic disciplines but equivalent types of data could be gathered from design professionals from different backgrounds such as product designers, restaurant designers, theme park ride designers, retail interior designers etc.

The evaluation of the quality of experiences in pervasive computing applications and online experiences would be another potential area of research to explore with questionnaires or surveys given to the participants.

## **Conclusion**

The findings from this small interview study corroborate Shedroff's definition of experience design, in so far as many of the processes of information design, interaction design and sensorial design were found to be practiced by the practitioners interviewed. There were also however, a significant number of components that emerged in the data that are not defined by the framework and therefore Shedroff's definition of experience design is not entirely complete. The findings indicate that practitioners use a combination of tacit knowledge and defined processes in their professional roles, rather than only defined processes or methodologies. Designing effective experiences also requires many different types of professionals with a broad range of knowledge.

## Appendix I

**Table 1. Information Design**

Interviewees	SH	SM	MC	MH	RH	Total
Data (Raw material, research, gathering and processing)	<b>6</b>	11	5	10	7	39
Organization of Information	11	<b>8</b>	5	10	9	43
Navigation	<b>2</b>	1	0	0	2	5
Consistency	0	0	0	<b>3</b>	0	3
Usability	<b>1</b>	0	0	0	0	1
Context (local/global or personal context)	7	<b>19</b>	4	8	<b>5</b>	43
Goals and messages	4	9	<b>4</b>	3	2	22
Knowledge	0	<b>4</b>	1	0	2	7
Total	31	54	19	34	27	165

**Table 2. Interaction Design**

Interviewees	SH	SM	MC	MH	RH	Total
Story-creating and telling/narrative	<b>4</b>	2	0	2	<b>6</b>	14
Authenticity	<b>2</b>	4	0	5	0	11
Immersion	0	<b>2</b>	0	<b>3</b>	0	5
Participation	<b>1</b>	1	<b>10</b>	0	0	12
Community building	0	0	0	0	0	0
Control & Feedback (how much control the participants have over their experience and how much feedback exists)	0	4	<b>5</b>	0	0	9
Productive & Creative Experiences (Participants make, do or share something themselves, being creative or producing)	0	0	<b>5</b>	0	0	5
Communicative Experiences (opportunities to meet and/or talk to others)	<b>1</b>	<b>5</b>	5	0	0	11
Adaptive Experiences (adaptive technologies that change the experience based on the behaviour of the participant)	0	0	<b>2</b>	0	1	3
Total	8	18	28	10	7	71

**Table 3. Sensorial Design**

Interviewees	SH	SM	MC	MH	RH	Total
Visual Senses (design, sculpture, writing, photography)	<b>10</b>	9	1	0	<b>23</b>	43
Auditory Senses (sound)	0	1	2	<b>23</b>	<b>8</b>	34
Tactile Senses (touch)	<b>5</b>	3	0	0	0	8
Olfactory Senses (smell and taste)	<b>7</b>	5	0	0	0	12
Time & Motion (video, film, live performance, tv, radio)	4	<b>5</b>	<b>103</b>	28	19	159
Total	26	23	106	51	50	256

## Appendix II

**Table 4. Concepts outside of the framework**

Interviewees	SH	SM	MC	MH	RH	Total
Use of devices (literary or musical)	1	0	0	4	<b>8</b>	13
Designer's skills:	<b>12</b>	3	9	<b>6</b>	2	32
Artistic process	<b>10</b>	4	8	3	<b>11</b>	36
Variety of experts	7	7	6	2	3	25
Ideas / concepts	6	2	4	2	<b>10</b>	24
Aesthetic Appeal	<b>5</b>	6	0	0	0	11
Sources for ideas:						
Topical issues (environment/social/cultural)	<b>10</b>	9	6	2	0	27
Trends	0	1	<b>8</b>	0	0	9
History/science	<b>4</b>	5	0	4	1	14
Educational/Learning Experiences	3	<b>12</b>	5	2	3	25
Extraordinary/exotic/individual	<b>6</b>	8	<b>9</b>	1	1	24
Design of spaces	2	2	<b>6</b>	2	0	12
Limitations of technology or media	3	13	2	<b>13</b>	4	35
Total	69	75	61	41	43	288

## References

- Ackerman, D (1990) A History of the Senses Chapman Publishers Ltd.
- Shedroff, N. (2001) Experience Design1 New Riders
- Pine, J. and Gilmore, J.H. (1999) The Experience Economy: Good and services are no longer enough. Harvard Business School Press
- Panayi, N., & Roy, M. (1998) BodyTek: technology enhanced interactive physical theatre for people with cognitive impairment ACM Press, New York, NY, USA
- Tosa, N., & Nakatsu, R. (1998) Interactive Poem System. ACM Multimedia 1998
- Sato, S., & Salvador, T. (1999) Methods & tools: Playacting and focus troupes: theater techniques for creating quick, intense, immersive, and engaging focus group sessions Interactions, ACM Press
- Laurel, B., Bates, J., Don, A., & Strickland, R. (1991) Interface and narrative arts: contributions from narrative, drama, and film Conference on human factors and computing systems
- Fleming, J. (1998) Web Navigation: Designing the User Experience O'Reilly Publications
- Turkle, S (1995). Life on the Screen: Identity in the Age of the Internet. New York, Touchstone.
- Csikszentmihalyi, M. (1990) Flow: The Psychology of Optimal Experience. New York: Harper and Row
- Nass, C. & Reeves, B. (1998) The Media Equation: How People Treat Computers, Television, and New Media Like Real People and Places Cambridge University Press
- Berry, S (1999) Collecting Data by In-depth interviewing <http://www.leeds.ac.uk>
- Hull, R. & Reid, J (2002) Appliance Design, Wearable Appliances, Issue 2  
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[http://archrecord.construction.com/BTS/Offices\\_02/SwissHouse/overview.asp](http://archrecord.construction.com/BTS/Offices_02/SwissHouse/overview.asp)