Understanding and Deconstructing Pleasure: A Hierarchical Approach

Jane Holt
Infolab 21
Lancaster University
Lancaster, UK, LA1 4WA
holtj1@comp.lancs.ac.uk

Simon Lock
Infolab 21
Lancaster University
Lancaster, UK, LA1 4WA
lock@comp.lancs.ac.uk

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Abstract
Evaluating 'pleasurability' of interactive systems is a complex and challenging affair. In order to help with this, a 'pleasure hierarchy' has been devised, as part of the MARPLE evaluation methodology. This hierarchy aims to engender a greater understanding of pleasure; its construction and role within the User Experience and HCI communities alike. This hierarchy has also been used to generate a set of criteria, for use by evaluation investigators as a means of assessing pleasure of interactive systems. This paper discusses the evolution of the Pleasure Hierarchy, from initial concept through to a working evaluation tool.

Keywords
Pleasure, User Experience, Interactive, Evaluation

ACM Classification Keywords
H1.2 User/Machine Systems; H5. Information Interfaces and Presentation.

Introduction
Pleasure can be defined as 'the condition of consciousness or sensation induced by the enjoyment or anticipation of what is felt or viewed as good or desirable; enjoyment, delight, gratification: the opposite of pain' [4]. It is a positive emotional state experienced when needs or desires are fulfilled, either from external or internal stimuli. The pursuit of pleasure can take many forms such as playing sport,

watching a film, visiting an art gallery, meeting friends or going on holiday. It can also be seen in hedonistic terms as the pursuit of instant gratification, which is very often taken to extreme limits, for example, high-adrenaline activities such as bungee jumping.

Nevertheless, it is worth bearing in mind that pleasure varies from one person to another: what one person finds pleasurable another may not and so on, though it could be argued that there certain pleasurable activities which are enjoyed by all, such as quenching thirst by drinking a glass of water. These 'need pleasures' [7], are differentiated from 'pleasures of appreciation' [7] in that the former ease a level of discomfort whereas the latter appear to be based upon individual interpretation. And the issue of individual interpretation is problematic, certainly in regard to evaluation, in that it is open to accusations of subjectivity and bias. This issue is discussed in greater detail in the next section.

Conversely, the opposite of pleasure is 'displeasure' or pain, and it is important to be aware of the negative aspects associated with this such as anxiety, boredom and frustration, which can arise if an experience is less than pleasurable. From our perspective, this means looking into the causes of these and then finding ways to eliminate them in order to ensure a pleasurable experience.

In regard to pleasure and user interaction, there has been a growing interest in the field of User Experience, of which pleasure is an aspect. User experience is concerned with the overall 'quality of the process', which includes the role of emotions and their impact upon user interaction [1]. This means that users expect more from interactive systems and products than functionality and usability [5, 8]; they now want products which engender a pleasurable interaction as well.

Pleasure and Interactive Systems

Traditionally, the focus of systems development has been upon ensuring they are easy to use, effective and efficient [10]. This is still an important goal; however, users are now interested in the emotional aspects of products [5, 6]; how they can stamp their very personality onto them. Therefore, a system or device is not just task orientated; it is a signifier of the user's identity, interests, lifestyle and values.

With user interaction, there is the problem of evaluating user experience due to the subjectivity of experience and involvement of unpredictable emotional states. Methods and guidelines are required in order to address this, with the aim of obtaining reliable and valid data which can be used to help inform future design of interactive systems.

Frameworks are currently being developed which discuss the issue of evaluation of this and other aspects of user experience but to date, no single, unified approach exists which can reliably perform this task [2]. Plus major amounts of research are being undertaken into areas such as fun, aesthetics and engagement whereas pleasure appears to have received lesser attention. However, this situation has started to change in that pleasure is now being considered alongside these other aspects, as an important factor in determining user liking and enjoyment of interactive systems.

Our response to these issues is the development of an evaluation methodology called MARPLE (Multi-lateral Assessment and Review of Pleasure Laden Experiences) [3]. A major part of the MARPLE approach is a pleasure hierarchy in which we attempt to decompose the complex concept of 'Pleasure' into a variety of different types and classifications. Based on this hierarchy, we have developed a set of assessment criteria that can be used in the evaluation of interactive user experiences. Such evaluation focuses on the structured analysis of interview transcripts, video footage and system logs in order to compile evidence to support or refute the different sources of pleasure indicated by our criteria.

The pleasure hierarchy is the main area of focus for this paper. Although an integral part of the MARPLE approach, the hierarchy can be used independently in order to decompose and understand the pleasureability of interactive systems. Therefore, the rest of this paper is structured as follows: an initial discussion about the evolution of the hierarchy that includes its influences, its development over a period of time and overall 'context of use'. Then a look at the utility of the hierarchy, what value it brings to both academia and industry, and where it can best be utilised. The latter point is illustrated with the aim of a real-world case study.

Pleasure Hierarchy

Foundation - 'The Four Pleasures'

In order to develop a hierarchy with which we can dissect and understand pleasurable interaction, we must begin with a solid and comprehensive first-level decomposition of the complex construct that is 'Pleasure'. For this we turn to work undertaken by Patrick Jordan, in which he proposes a framework to help understand the pleasure users' gain from products [5]. This framework entitled 'The Four Pleasures', is taken from earlier work by Canadian anthropologist Dr Lionel Tiger [12] and distinguishes between the following four types: Socio-pleasure, Ideo-pleasure, Physio-pleasure and Psycho-pleasure.

What Jordan is keen to emphasise is that the 'Four Pleasures' are not a concrete theory of pleasure; rather they are meant to be used as a means of understanding how pleasure can be structured when looking at user interaction with interactive systems [5]. This categorisation involves understanding users; their motivations, likes and dislikes, relationships, emotions, moods and lifestyles. For example, socio-pleasure deals with the sociable aspects of interaction, of cooperation, sharing and community based activities. Ideo-pleasure on the other hand is concerned with user attitudes, aspirations, and high-level conceptual desires. Physio-pleasure deals with the sensual and tactile aspects of products, such as their feel and scent. Finally, Psycho-pleasure deals with the cognitive and emotional aspects of product usage [13].

They have also been referred to by other researchers and practitioners, such as the Cambridge Usability Group, Cambridge, UK, and have been applied to other aspects of user experience such as fun, e.g. Wiberg [13].

The work of Jordan has received much attention and appears to have been widely accepted by the research community. As a result of this, the four pleasures provide us with a very solid foundation for our pleasure

hierarchy. Figure 1 illustrates the state of this hierarchy, which will form the basis of our work.

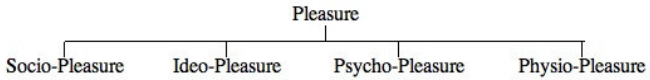

figure 1. Pleasure Hierarchy: Jordan's Foundation.

Extension – Typology of Cognitive Pleasures
Although providing an excellent basis for analysis, Jordan's four pleasures are still too abstract and high level to be employed in the dissection of user experience. We must decompose these four concepts into lower-level, more specific attributes. For this purpose, we can make use of the 'typology of cognitive pleasures' as advocated by Kathy Sierra (co-founder of the 'Creating Passionate Users' blog) [11].

This typology was originally designed for the games market, but Sierra has amended these so that they are applicable to other forms of interaction. The different sources of pleasure identified by Sierra in her typology include discovery, challenge, narrative, self-expression, social framework, cognitive arousal, thrill, sensation, triumph, flow, accomplishment, fantasy and learning.

When attempting to integrate these into our basic pleasure hierarchy, we had to perform some adaptations to ensure a 'good fit'. For example, some aspects of pleasure, such as 'thrill', did not fit neatly into one of the four high level pleasures. In such situations, we split the concept from Sierra across Jordan's four pleasures.

In the case of 'thrill' we generated 'physical arousal' (under Physio-pleasure) and 'cognitive arousal' (under Psycho-pleasure). Similarly, 'learning' was split into 'individual self-worth', 'progression and achievement' and 'curiosity fulfilment'. Also 'discovery' was split into 'progression and achievement' and 'curiosity fulfilment'. In this way, the integration of the two approaches actually generated new, more refined classifications than those provided by the single existing approaches.

In other cases we combined pleasures together to form more coherent classifications. For example, 'triumph' was combined with 'accomplishment' and integrated into our new 'progression and achievement' classification.

A number of types of pleasure, namely those resulting from 'self expression', 'cognitive arousal', and 'sensation' were kept intact and added directly to the hierarchy in the most relevant of the four existing branches. In some cases we refined the names in order to maximize clarity and distinction.

Some of Sierra's sources were too high level to allow us to use them to extend the hierarchy. For example, 'social framework' is a complex, high level construct that was felt to be synonymous with Jordan's Socio-pleasure. Others were too specific to the gaming domain for which the typology was initially developed. For example 'Narrative' and 'Fantasy' are not appropriate for a generic pleasure hierarchy.

Some elements were discarded as we felt that they were not appropriate for inclusion into the hierarchy. 'Flow' (i.e. engagement) for example was removed as we felt it was not a source of pleasure itself, but only

helps to ensure 'conductivity' of other pleasure sources. Similarly, 'challenge' was removed as we did not feel it was a direct source of pleasure although challenge can magnify the pleasure derived from progression and achievement.

Figure 2 below shows the state of the hierarchy after augmenting Jordan's 'Four Pleasures' with attributes from Sierra's typology.

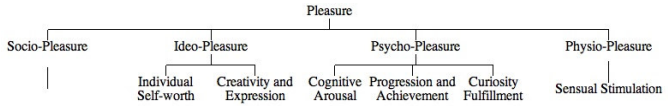

figure 2. Pleasure Hierarchy: Further deconstruction.

Balancing – Maslow's Needs
Sierra's work tends to focus on single user systems and thus does not offer us much assistance in elaborating the 'socio' branch of the hierarchy, which by its very nature involves interaction between multiple people. In order to further decompose socio-pleasure, we will refer to Maslow's well known Hierarchy of Needs [9] and in particular the social-oriented third stage, that of 'Belongingness and Love'.

Maslow identifies 'respect from others' and 'self-esteem' as key human needs. In order to take these into account in the socio branch of our pleasure hierarchy, we have introduced 'Community Self-worth'.

We can also draw directly from additional social needs identified by Maslow and include 'Love and Friendship'

Completion – Wider Experience
In addition to the considered opinions of researchers working in the area of pleasure, the authors of this paper have considerable experience in the development and deployment of pleasurable interactive systems. As a result of this, we were able to propose and integrate into the existing hierarchy additional pleasure attributes which we had experienced in the practice of our work and felt were missing from the hierarchy.

From the domain of physically interactive systems, we propose the addition of 'Physical Arousal' to the Physio-Pleasure branch of the hierarchy. From the domain of digital interactive arts, we propose the addition of 'Sensual Aesthetics' to Ideo-Pleasure, as a cultural and intellectual addition to the lower-level 'Sensual Stimulation' that already exists. Finally, we can add to the socio branch of the hierarchy with other widely acknowledged sources of social pleasure such as Altruism, in the form of 'Helping, Giving and Sharing' as well the concept of 'Cooperation and Collaboration'

With these additions, the full version of the Pleasure Hierarchy is shown in figure 3 below. These additional elements help to extend the hierarchy, making it more generic and ensuring that it is applicable to a wider range of domains.

Utilising the hierarchy

The objective of developing the above hierarchy is to aid in the dissection and analysis of interaction, in order to determine the pleasurability, or otherwise of user

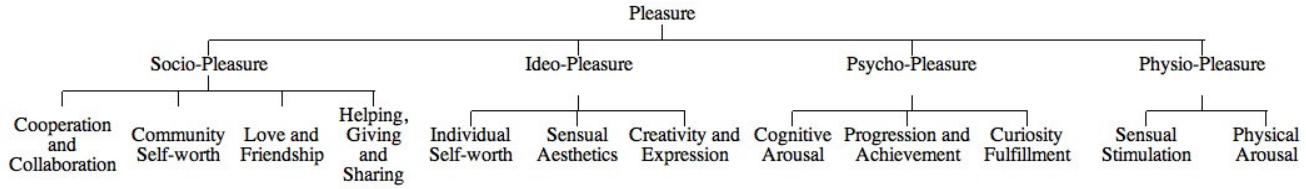

figure 3. Pleasure Hierarchy: Full version

experience. By deconstructing the complex construct of 'Pleasure' – initially into Jordan's four attributes and then further into a lower level set of identifiable pleasure attributes, we have provided ourselves with an invaluable tool for analysis.

This tool allows us to consider pleasurable experience from a wide variety of different aspects. The bottom level of hierarchy provides a comprehensive set of attributes that can be used as criteria to consider a particular interactive experience. By structuring our analysis using these carefully derived criteria we are able to ensure a comprehensive and systematic analysis of an interactive system.

When performing analysis, we must be aware that interaction is not divorced and isolated from other human thought processes and actions. It is not enough to purely consider pleasure at the time of interaction.

It is essential to consider three different phases, namely:

- Anticipation: expectation of the experience in advance.
- Participation: appreciation of the experience at the time.
- Reflection: recall of the experience after the event.

This must be done because pleasure is not only a response to immediate, direct interaction between user and system [5] but occurs at different phases in a longer-term experience – before, during and after. Therefore, we need to be careful when attempting to assess the universal pleasurability of an interactive experience.

In addition to this, we must also be aware that pleasure is subjective and any two individuals may gain completely different experiences of the same interaction. In order to gain a full appreciation of the pleasurability of an interactive experience, we need to study real users in real interaction with the system, by observation, interview, or other form of analysis.

The low-level attributes of the pleasure hierarchy can assist us in this task by providing a framework within which we can perform user studies. We can consider each attribute in turn and explore the extent to which that attribute is a source of pleasure for the particular user in question. The results for each user will no doubt be different and specific to a particular individual since they will have a totally unique set of:

i) Tastes and preferences
ii) Knowledge and past experiences
iii) Desires and expectations

These variance characteristics will all affect an individual's perception of pleasure from a given interaction.

Pleasurable interaction can be achieved by attempting to conform or pander to an individual's characteristics; providing empathy, familiarity, fulfilment and palatability. Alternatively we may try to invoke pleasure by deliberately contradicting these characteristics and pushing a user outside their comfort zone; providing novelty, surprise and opening them up to new experiences. In either case, we must be particularly careful, since misjudging a user's characteristics and providing an inappropriate experience can easily result in displeasure – for example boredom, unfamiliarity, irrelevance and disappointment.

If we can determine and predict the variance characteristics of our users, we are much more likely to build pleasurable systems. When designing such systems it is essential to document the assumptions we make about the characteristics of our intended user group. If evaluating the pleasurability of an interactive experience; when we come across an unexpected reaction from a user, it is an insightful exercise to refer back to our original assumptions and design decisions. In so doing we can unearth the potential root cause of 'displeasurable' experiences, and determine if our assumptions about the users differ from reality.

Case Study

So far, we have discussed the theoretical underpinnings and development of the hierarchy. In order to obtain a clearer understanding of its practical application, we will now illustrate its use with the following case study – Shopping on eBay.

This example interaction was chosen as it has become a popular activity for many people and one which can result in a pleasurable experience, potentially both for the buyer and seller if feel they have acquired a bargain/made a profitable sale. It is however a complex activity and the exact mechanisms by which this pleasure is attained are not immediately obvious. We will use the pleasure hierarchy to deconstruct this experience and attempt to illustrate its utility in analyzing such complex, pleasurable interactions.

Shopping on eBay

For those unfamiliar with eBay, it is an online website in which users can buy or sell various items. Items can either be bought outright or obtained via a bidding system. There is also a reputation system which is directly related to feedback provided by both sellers and buyers after a transaction. Positive feedback improves a rating and negative feedback reduces it.

Let us consider a particular scenario: a user would like to purchase an item, e.g. a camcorder. They perform a search and browse though the resulting found items. They read the description accompanying a particular item, decide that this is the make and model they want and opt to bid for it. The user places a bid and then waits to see if their bid has been successful. There is a degree of uncertainty as to whether their bid will 'win' or not. In some ways, this process is similar to gambling in that the user has to take a chance which may or may not be successful. If they are lucky, they will 'win' the item if not, someone else will.

In this scenario, our user has been successful in that their bid has 'won' the item. Payment is made using PayPal and after the transaction, the buyer posts their

feedback about the condition of the camcorder and the transaction itself on the site.

Figure 4 shows a table containing all of the low-level elements from the Pleasure Hierarchy applied to the activity of shopping for a camcorder on eBay. A discussion of the meaning and interpretation of this table then follows.

	Cooperation and Collaboration	Community Self-worth	Love and Friendship	Helping, Giving and Sharing	Individual Self-worth	Sensual Aesthetics	Creativity and Expression	Cognitive Arousal	Progression and Achievement	Curiosity Fulfillment	Sensual Stimulation	Physical Arousal
Anticipation								X	X	X		
Participation		X				X		X	X	X	X	X
Reflection		X			X				X			

figure 4. Pleasure Attribute Table applied to the activity 'Shopping on eBay'.

Let us first consider the Anticipation phase of pleasure. During this phase it is likely that the user may experience cognitive arousal - thinking about the process of shopping, bidding and winning. They may also anticipate achievement and gain pleasure from anticipating a win. Additionally, they may gain pleasure from anticipated curiosity fulfilment - looking forward to the 'hunting' process that is part of any shopping experience.

If we move on to the participation phase, curiosity fulfilment occurs as the user explores what items are for sale, views costs, examines sellers' reputations. During the shopping process there is also sensual aesthetics at play, the look and feel of the browsing and shopping interface on eBay as well as the sensual stimulation and cognitive arousal of viewing items, thinking about properties of items and decision making. Progression and Achievement can occur when you find a suitable item, bid on it and succeed in being the highest bidder. This can in turn lead to actual physical arousal - the excitement of the chase! There is also the socio-pleasure of becoming a respected trader with a good reputation which can heighten the feeling of community self-worth.

Finally in the reflection phase, community self-worth again takes effect, continuing on from the participation phase. In addition purely contributing to the trading community, if an item has been won, a user can experience a feeling of achievement and a heighten sense of individual self-worth. This later effect can result from having won an item at a low price and feeling one self to be a successful bargain hunter (an eBay 'player').

Case study reflection

By using the pleasure hierarchy in the manner illustrated above with our eBay example, we are able to deconstruct an interactive experience and gain insight into what may or may not make it pleasurable. By applying the full range of low-level attributes from the

hierarchy, we help to ensure a wide ranging and comprehensive analysis.

It is important to note that the results of such analysis are static and generic. They highlight the *possible* sources of pleasure for a given interaction, not the *actually experienced* pleasures. It is essential to take into account the unique set of variance characteristics that each user exhibits, in order to determine the actual 'lived' pleasurability of an experience. For example, an individual's derived pleasure from shopping on eBay will depend on their previous experiences of shopping, familiarity with the system, the expected outcome of bidding on an item, their liking for the bidding mechanism and so on.

This is where the previously mentioned MARPLE [3] approach comes in, allowing us to investigate an individual's experiences of a pleasurable interaction and reason about them, given our knowledge of the sources of pleasure and differing characteristics of the users.

Applicability of the hierarchy

The current version of the pleasure hierarchy is in a stable, working format, which can be utilised by both academia and industry. We must however be aware that the amount of pleasure as experienced by the user may be dependent on a number of additional factors such as moods and emotions.

We must also be conservative about the ability to generalize with the hierarchy. Although intended to be a generic tool for use in a wide range of domains, we must bear in mind that it has been developed for a specific area, that of pleasurable interactive systems. This does not mean that it cannot be employed elsewhere, in fact it could be widely applicable to any number of related areas. We must however apply it flexibly, extending and adjusting the pleasure attributes within the hierarchy to suit a particular domain.

Conclusions

In this paper we have attempted to present and justify the development of a pleasure hierarchy. We have illustrated the utility of this hierarchy by applying it to the analysis of a real world interactive experience (shopping on eBay). The aim of the developed hierarchy is to reveal valuable insights into the different sources and components that contribute to the overall pleasure of an experience. Many of these sources are not immediately evident and only come to light when the pleasure hierarchy is employed in analysis. This is amply illustrated by the range and variety of pleasure sources identified for the eBay example.

The pleasure hierarchy is part of on-going work to develop a complete and versatile approach for assessing the pleasurability of interactive experiences.

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