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Sari Kuuva

Content-Based Approach to Experiencing Visual Art

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UNIVERSITY OF JYVÄSKYLÄ

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ABSTRACT

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In this dissertation experiencing visual art is studied in a reference frame of content-based approach, both theoretically and empirically. Content-based approach investigates human thinking in different contexts. It focuses on information contents in mental representations and on those cognitive processes through which our mental representations are constructed. It is assumed that our mental representations of artworks include both perceivable and non-perceivable content elements, which can be either cognitive or emotional. Because experiencing visual art has typically been approached through the concept of perception, higher cognitive processes, such as apperception, restructuring, reflection and construction have received less attention. It is possible to understand these modes of thinking as sub-processes of picture interpretation, and through these concepts the problematics of mental contents can be analysed. In this thesis picture interpretation is understood as one subtype of human problem solving activities, and art historians are defined as experts in picture interpretation. Mental contents of art historians and lay spectators are investigated through seven experiments. Experiments 1-4 clarify the roles of perceivable and non-perceivable mental contents in experiencing visual art, and Experiments 5-7 focus on emotional experiences of spectators. Empirical data is studied by means of qualitative and quantitative analysis. Experiments show that non-perceivable content elements play essential role in mental representations of all spectators, and they also show some significant differences between cognitive and emotional experiences of art experts and novices. Thus, results received suggest that the concept of perception cannot exhaustively explain our experiences of visual art. Therefore it is essential to sharpen our theoretical language concerning the problematics of experiencing visual art. Through the concepts of apperception, restructuring, reflection and construction, we might come to a better understanding of spectators' mental processes during picture interpretation.

Keywords: experiencing visual art, content-based approach, mental representation, perception, apperception, restructuring, reflection, construction, problem solving, interpretation, emotions, expertise of art historians

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This dissertation has its roots in my master's thesis of art history (2002) in which I studied the symbolism of Pasi Tammi's paintings. These paintings, as well as discussions of them with the artist and many other people aroused my curiosity towards the problematics of experiencing visual art on a more general level.

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Jyväskylä, May 2007
Sari Kuuva

Mutta inhimillinen havaitseminen on paradoksaalista. Kuvittelemme katsovamme itsemme ulkopuolelle, mutta maailma, jonka havaitsemme, aika jota elämme, on myös oman minämme luomus.

But human perception is paradoxical. We imagine that we can see outside ourselves, but the world we perceive, the time we live, is also a creation of our own self.

(Leena Krohn, 2003, 3 sokeaa miestä ja 1 näkevä. Nähdystä ja näkymättömästä, sanotusta ja sanomattomasta.)

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1 PROBLEM OF EXPERIENCING VISUAL ART

Visuality is all around us. Every day we watch television and use products, such as clothes, vessels, furniture, mobile phones and computers, which all have visual properties like colour and form. In many cases these objects also carry some symbolic meanings. Sometimes we consciously pay attention to visual properties and symbolic meanings of these objects, but some other times we only use them, without considering their outer appearance or their hidden messages. Although there is plenty of evidence that visual information interacts powerfully with our emotions, we do not have a very clear understanding of those mental processes which make our visual experiences possible.

When compared with other visual phenomena, artworks are very eagerly studied, for example, by art historians, philosophers of art and researchers of aesthetics. Conversely, the investigation of everyday products has not been so analytic and systematic. From this perspective, it might be reasonable to investigate visual experiences in the context of art, because in this case we could maximally benefit from earlier research literature. For example, we can start our investigation by studying some published interpretations of artworks. This way we might reach a better understanding of those aspects which are essential from the viewpoint of experiencing visual art and which might also explain our visual experiences on a more general level. In the following citations two persons interpret Jan Vermeer's painting *Woman with a Pearl Necklace* (Figure 1):

> Adorning herself with pearls, a girl turns toward a mirror as the light pouring in through the window envelops and transforms her. Within this apparently casual monument of coquetry Vermeer has concealed a deeper connotation of vanity – *vanitas* – the emptiness and brevity of the world of temporal things. (Koningsberger, 1967/1973, p. 128.)

> So what's happening in this room? The woman trying on her necklace is young, pretty, and beautifully dressed, but she is not preening in front of her reflection. Nothing about her expression or posture suggests vanity. [...] The mirror suggests Narcissus only to make it clear that he has no place here. The woman's gaze doesn't convey desire, but the end of desire: fulfillment. [...] When I was sitting on the bench in front of the painting, a word popped into my head. I didn't search it. It just came. *Annunciation*. (Hustvedt, 2005, pp. 15-18.)

When we compare these interpretations, it almost seems that Koningsberger and Hustvedt are writing about two different pictures. However, we know that they are watching the same painting, although they are studying it from two totally different angles. While Koningsberger sees the painting as a depiction of vanity, which on a more general level refers to a thought that all living things are temporal and will disappear, Hustvedt sees the painting as a depiction of Annunciation, and later she compares Vermeer's painting with other pictures, which depict the moment when the angel appears to Mary. In my thesis I will use these two interpretations of Vermeer's painting repeatedly as examples when discussing different aspects of experiencing visual art.

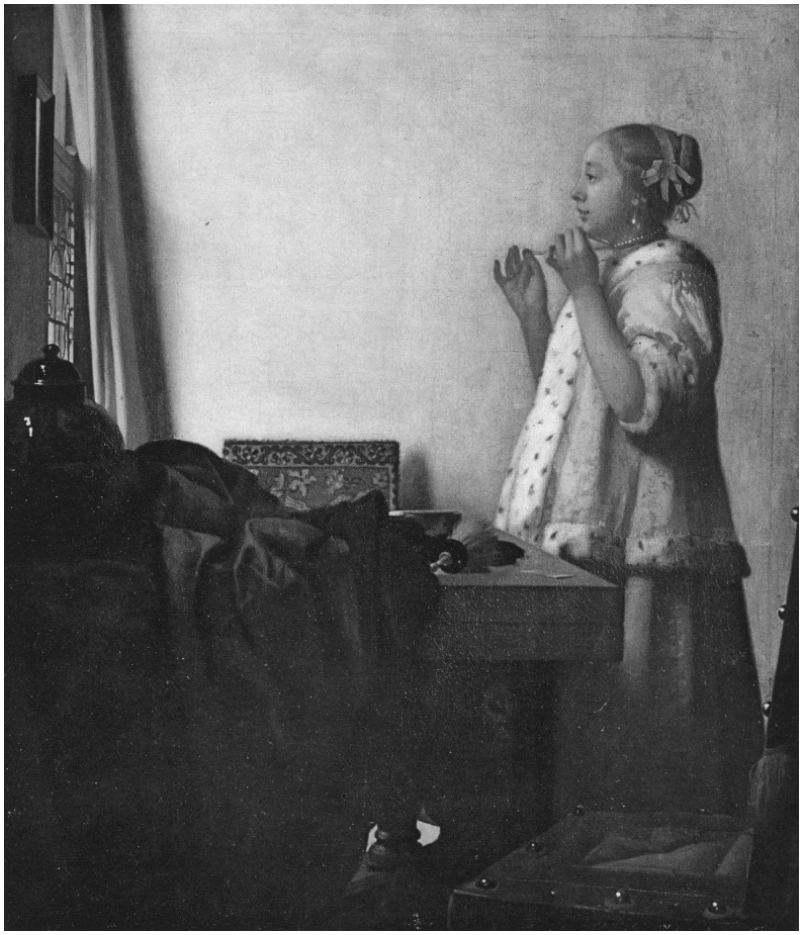

FIGURE 1 Jan Vermeer, *Woman with a Pearl Necklace*, (ca. 1662-65).

In order to acquire a better understanding of this difference between interpretations we shall take a short excursion to ways the problematics of experiencing visual art have earlier been approached. In my research the concept of visual art mainly refers to two-dimensional pictures, such as paintings and drawings, made by artists. Experiencing visual art is a research problem shared by art historians, art educators, researchers of culture and aesthetics, psychologists, and even by neuroscientists. In this thesis I will use the term visual arts research when I refer to those aspects of research which are

shared by all these fields. Because of its cross-disciplinary nature, experiencing visual art is also a challenging subject matter for cognitive scientific research. In the following chapter we will discuss about the ways in which experiencing visual art has earlier been studied by different fields of visual arts research. After that we consider how the problem of conflicting interpretations could be reached. In the end of this chapter I will introduce the main features of content-based approach through which the problematics of experiencing visual art are studied in this thesis.

1.1 Approaches to experiencing visual art

Art history, art education and cultural studies

Although art history studies visual art objects, the questions concerning the problematics of experiencing have traditionally played quite a marginal role in this field. As Claire Farago and Robert Zwijnenberg have put it:

> Everybody "knows" that what we call a work of art is a work of art because it provokes a special subjective experience that we usually call an aesthetic experience... It is not at all common practise, however, to acknowledge the formative role of this personal experience in art historical methodology and the analysis of works of art... [M]ost scholars today deny or refuse to recognize that their engaged, embodied responses constitute an intrinsic and necessary part of scholarly investigation. (Farago, & Zwijnenberg, 2003, p. xi.)

In art history the questions attached to experiencing have traditionally been understood as questions which are too personal or subjective. However, the absence of experiencing in the writings of art historians does not mean that these writers have no aesthetic or other kinds of art experiences. Intuitively, it seems evident, that these experiences somehow influence their ways of writing and even their choices between research subjects. However, until the recent years the discussion of experiencing and researchers' own emotions has not been that popular, or even allowed, in the language of art history. The anthology edited by Farago and Zwijnenberg (2003) is one of the first attempts to strengthen the status of experiencing in art historical research. Besides subjectivity, the other reason for the absence of experiencing in art historical language may be that the problems attached to experiencing have been understood as tasks of psychologists and researchers of aesthetics.

Although research questions concerning mentality of spectators have not played a very crucial role in art history, there are, nevertheless, important individual theoreticians, among them Rudolf Arnheim and E. H. Gombrich, who have studied the relationship between art and psychology. In his *Art and Visual Perception* Arnheim (1954/1974) very systematically clarifies the relationship between perception and balance, shape, form, growth, space, light,

colour, movement, dynamics, and expression. However, while focusing so powerfully on perception and functions of the eye, Arnheimian approach has not crucially extended our understanding of higher cognitive processes, guided by the brain, in visual information processing. While the Arnheimian approach to visual perception heavily leans on Gestalt psychology, Gombrich (1960) in his *Art and Illusion* has used the concepts of psychology in order to explain, for example, the evolution of art. Recently, the questions attached to evolution of art have been eagerly studied, for example by Robert Solso (2003) and Gregory Currie (2004). Although evolutionary approach sometimes touches the questions attached to experiencing, its main tendency has been to explain why artists within a given culture-historical period have created certain kind of art.

Reception aesthetics, which studies the aesthetic responses of readers of literature and spectators of films and other works of art, has not received a very strong position as a part of art history, although there are some individual researchers, such as Wolfgang Kemp (1983, 1985), who have investigated the reception of visual artworks. In Kempian application of reception aesthetics, third person view is not obligatory, but the investigator is allowed to observe her or his own experiences while interpreting the works of art. From a viewpoint of modern psychology this approach is slightly problematic. Psychoanalysis (e.g., Freud, 1900/1982), for example, has received criticism on the basis of its introspective methodology. Modern psychology assumes that people cannot reliably enough analyse their own mental processes. If we think this situation in a context of art interpretation the reason is clear. For example, if a person is interpreting some picture and aims simultaneously to analyse her or his mental processes, the process of interpretation is disturbed. And if that person aims to analyse these mental processes afterwards, when the process of interpretation is finished, the immediate experience is already lost.

In art education the experiences of spectators have sometimes been studied from the viewpoint of developmental psychology. Michael J. Parsons (1987), for example, has suggested that understanding of art advances in five stages. The first stage is characterised by favouritism, the second stage by evaluations of beauty and ugliness, the third by expressiveness, the fourth by style and forms, and the fifth by autonomic attitude. The study of Parsons clearly shows that there are essential differences between more and less experienced spectators of art. Naturally, art educational research has greatly focused on children's experiences of art. Marjatta Saarnivaara (1993), among many others, has studied the ways children approach and interpret art. Another main steam in art education is the research focusing on art made by children. One classical example of these investigations is *Painting and Personality* by Rose H. Alschuler and La Berta W. Hattwick (1947/1969). In addition, in the field of cultural studies there are investigations in which art experiences have been analysed from a viewpoint of autobiographical research (e.g., Saresma, 2002).

Philosophical aesthetics

In modern philosophical aesthetics, originating from the writings of Immanuel Kant (1790/1994), aesthetic experience has been one of the key concepts, and it has a crucial role, for example, in the writings of John Dewey (1934/1980), Mikel Dufrenne (1953/1973), and Monroe C. Beardsley (1958). However, during the late twentieth century, in the sphere of analytical aesthetics, the concept of experience has widely fallen into oblivion. The main reason for this has been the language-orientation of analytical aesthetics. When the definition of art has been the most important problem in analytical aesthetics, the questions attached to experiencing have appeared to be too subjective, internal and undefined. From this perspective the attitudes of analytical aestheticians towards the problematics of experiencing have been quite similar to the attitudes of art historians.

However, in some cases, definitions of art have been linked with questions concerning aesthetic experience. Beardsley, for example, states, that "an artwork is something produced with intention of giving it the capacity to satisfy the aesthetic interest" (Beardsley, 1983, p. 21). In addition to Beardsley, there are many theoreticians within analytical aesthetics, who have analysed the properties of aesthetic concepts. Frank Sibley (1959), for example, has studied the relationship between aesthetic concepts and non-aesthetic qualities of art objects. While non-aesthetic qualities of the objects can be received by all persons with normal eyes and intelligence, aesthetic concepts can be properly used only by persons with an "exercise of taste". Although definitions presented by Sibley have received plenty of criticism (e.g., Broiles, 1964; Goldman, 1990), they still clarify some important aspects in our experiences of visual art, which will be later discussed.

Usually researchers of aesthetics speak of aesthetic experience – not of art experience or experiencing art. In many cases aesthetic experience has been understood as a direct response to artwork, and typically the interpretations of artworks are excluded from the sphere of this concept. However, there are writers in the sphere of philosophical aesthetics who have acknowledged the role of a beholder's cognitive processes in a context of aesthetic experience (e.g., Dufrenne, 1953/1973). More recently, Noël Carroll (2001, 2006) has suggested that direct aesthetic response is only one dimension in art experience. According to him, art experience is comprised of a plurality of activities of which having aesthetic experience of some sort is one, while engaging in "interpretive play" is another (Carroll, 2001). Besides Carroll, there are important theoreticians in a field of philosophical aesthetics, such as Arthur Danto (1981), who have studied the questions attached to art interpretation.

In my research the concept of experiencing visual art is understood to be similar to Carroll's (2001) definition of art experience in a sense that experiencing visual art can include levels of aesthetic experience, but also the process of picture interpretation is an essential part of this concept. It is important to notice that the English term experiencing can refer to two German terms – either to *Erlebnis* or *Erfahrung*. The scope of Erfahrung is wider than the

scope of Erlebnis. Erlebnis mainly refers to those powerful experiences that are received through contemplation of some work of art, and in this sense it is closely related with discussions concerning aesthetic experience. Erfahrung refers to the whole process of experiencing, and in this sense it can also cover those aspects of experiencing which are emphasised in the sphere of Erlebnis, but it can also cover the processes of interpretation.

In my thesis the concept of experiencing is more closely related to Erfahrung than Erlebnis. Many themes typically discussed in a context of aesthetic experience, such as the question of disinterested pleasure, and problematics of taste and appreciation, stay outside the scope of this research. Here, I prefer to use the concept of experiencing to concept of experience, because I want to emphasise the active and constructive nature of experiencing in the context of visual art. In addition, it is essential to notice that the term experience is ambivalent in that it can also be used to express that somebody is experienced in something, for example, that some art historian is an experienced interpreter of pictures. By preferring the use of experiencing to experience I aim to avoid these traps. Despite the clarifications presented above I sometimes use expressions, such as "our experience of visual art", somehow synonymously with the concept of experiencing visual art in order to avoid repetition, but in these cases the context defines the exact meaning of these terms.

In his texts Carroll (2001, 2006) has presented criticism towards many earlier approaches to aesthetic experience and argued that more attention should be paid to contents of aesthetic experience. In his article "Four concepts of aesthetic experience" Carroll (2001) presents deflationary approach to aesthetic experience. Later Carroll has used the concept of content-oriented approach while speaking of deflationary approach (e.g., Carroll, 2006). The main argument in Carroll's content-oriented approach is that all aesthetic experiences take objects and they also have contents. Thus, Carroll suggests that the states of aesthetic experience might be definable, at least partly, in terms of their contents, i.e., in terms of the kinds of objects toward which the experiences are directed. Although Carroll is not very explicit about what comes to research practises within the content-oriented approach, he seems to suggest that the form of the artwork and its aesthetic and expressive properties comprise the content of aesthetic experience. In other words, if we aim to study aesthetic experience we should analyse how the work of art is prefocused in order to arouse aesthetic experiences for the spectators. Although the approach presented by Carroll is very interesting, what comes to his thesis that experiences should be studied by focusing on their contents, it seems that mental part of our experience cannot be fully explained through the analysis of artwork. Actually, Carrollian approach is quite similar to traditional research practices of art historians or researchers of literature or music.

Content-based approach to experiencing visual art, which will be presented in this thesis shares some features with the content-oriented approach of Carroll (2001, 2006), but there are also some essential differences between these two approaches, which are later discussed. In philosophical

aesthetics the definitions of aesthetic experience are mainly speculative. However, besides philosophical aesthetics there are also fields of empirical aesthetics and neuro-aesthetics, which have their own goals and research methods.

Empirical aesthetics

The international Association of Empirical Aesthetics (IAEA) was founded in 1965 as a union of psychologists who investigate aesthetic experience and aesthetic behaviours by using scientific methods. One of the leading figures in IAEA was Daniel Berlyne, who constructed the basis of empirical study of art in his publications *Aesthetics and Psychobiology* (1971) and *Studies in the New Experimental Aesthetics* (1974).

While creating a basis of new empirical aesthetics, Berlyne (1974) makes a sharp differentiation between his own approach and traditional, speculative aesthetics. According to him, both art history (*Kunstwissenschaft*) and philosophical aesthetics belong to the sphere of speculative aesthetics, whose method is mainly hermeneutic and interpretive and whose "ultimate criterion of validity is whether they leave the reader with a feeling of conviction" (Berlyne, 1974, p. 2). Although it is important to understand the difference between speculative and empirical disciplines, it is also essential to notice that these distinctions are not always as clear as Berlyne would like us to believe. For example, it is totally possible to use empirical methodology as a part of art historical research, despite the fact that it is not a very common practice within this discipline.

Empirical aesthetics, depicted by Berlyne (1974), is a behavioural science, which studies its objects by using the methods and objects peculiar to empirical science, i.e., derives its conclusions from controlled observation and uses statistical analysis of data. One branch of empirical aesthetics is psychobiological aesthetics, and experimental aesthetics, correspondingly, is one essential part of psychobiological aesthetics. The most crucial feature in experimental aesthetics is that it studies aesthetic problems experimentally, i.e., through situations in which experimenter systematically manipulates causal factors so that their effects on some aspect of behaviour can be ascertained.

According to Berlyne (1974), experimental aesthetics studies both non-verbal behaviour and verbally expressed responses, and strives to establish links between aesthetic and psychobiological phenomena. In addition, by following outlines shaped by Berlyne, experimental aesthetics should concentrate on motivational questions and collative properties of stimulus patterns, such as variations along familiar-novel, simple-complex, expected-surprising, ambiguous-clear, and stable-variable dimensions. Theoretical orientation of empirical aesthetics bases on information-theoretical terms. The work of art is understood as an assemblage of elements each of which can transmit information from four distinct sources (semantic, expressive, cultural and syntactic information). Artwork is regarded as a collection of symbols in accordance with the conception of signs and symbols developed by the semiotic

movement. And finally, a work of art is regarded as a stimulus pattern whose collative properties, and possibly other properties as well, give it a positive intrinsic hedonic value.

Berlyne is quite sceptical where it comes to co-operation between speculative and empirical aesthetics:

> Although scientific and non-scientific approaches to the same subject can often fruitfully brought into contact with one another, their methods and their objectives are so different that any attempt to combine the two will, it is safe enough to say, redound to the disadvantage of both. (Berlyne 1971, p. 4.)

It really seems that co-operation between art history, philosophical and empirical aesthetics has been quite minimal. Although empirical aestheticians sometimes refer to writings of art theoreticians, such as Beardsley and Danto, references to investigations of empirical aestheticians are quite seldom found from the writings of art history or philosophical aesthetics.

The most important publications of experimental aesthetics have been *Empirical Studies of the Art* and *Visual Arts Research*. Great part of the investigations of empirical aesthetics has been focused on cognitive and emotional evaluation of artworks. Usually in these studies there are two groups of participants, one of novices and another of experts (either artists or art historians), whose responses to artworks are compared. During the recent decades researchers of empirical aesthetics, such as Gerald J. Cupchik, Andrew S. Winston, and Paul Locher, among many others, have studied the themes like "interpretive styles and judgements of quality" (Cupchik, & Gebotys, 1988), "judgements of similarity and difference between paintings" (Cupchik, Winston, & Herz, 1992), "evaluation of high art and popular art by naïve and experienced viewers" (Winston, & Cupchik, 1992), and "the role of formal art training on perception and aesthetic judgements of art compositions" (Nodine, Locher, & Krupinski, 1993). Other issues in these studies have been, for example, perception of colours (e.g., Katz, 1999), depth cue orientation (e.g., Miller, 1997, 1998, 1999, 2004) and compositional themes, such as a golden section, balance, and symmetry (e.g., Konecni, 2004; Locher, 2003; Washburn, & Humphrey, 2001). In Finland the experimental study of experiencing visual art has been limited to few publications: Vappu Lepistö (1985, 1989), Maaria Linko (1992) and Eeva-Maija Viljo (1980).

As Crozier and Chapman (1984) have argued, the direct study of responses to works of art has tended to result in a series of isolated investigations which has not been sufficient to develop theory or even to build up a coherent knowledge base. It still seems that empirical aesthetics focuses on experimental testing of very specific hypotheses more eagerly than on constructing coherent theoretical frame for phenomena they are investigating.

One reason for the lack of co-operation between empirical and speculative disciplines is probably their different attitude toward individual variations. For art historians individual features of works of art usually play very essential role, while empirical aestheticians tend to abstract their stimulus material so

much that even the names of artists and their artworks, which are used in experimental situations, are not mentioned in their reports of experiments. From this perspective Carroll's (2006) notions of content-oriented approach are essential. On the other hand, from the standpoint of empirical aesthetics the interpretations by art historians probably pay too much attention to individual differences between artworks, in such a way that abstract relations between more general categories of artworks tend to become obscure. Despite these difficulties it would be important to consider how empirical and speculative approaches to art could be brought into contact with each other in such a way that the results received could benefit both disciplines.

Neuro-aesthetics

Besides empirical aesthetics another special field of aesthetics is neuro-aesthetics introduced by Semir Zeki (1999a, 1999b). Neuro-aesthetics, neurology of aesthetics, or cognitive neuroscience of art, as Solso (2000) calls it, aims to understand the biological basis of aesthetic experience. It studies the activation of different brain areas with the help of neuro-imaging techniques, such as Positron Emission Topography (PET) and functional Magnetic Resonance Imaging (fMRI), which measure the changes in regional cerebral blood flow (rCBF). According to Zeki (1999a, 1999b), all visual art is expressed through the brain and must therefore obey the laws of the brain. Thus, he states that no theory of aesthetics is likely to be complete unless it is based on an understanding of the workings of the brain. However, the approach presented by Zeki has received criticism, for example, on a basis that it ignores the subtleties supplied by humanistic art scholarship (McIver Lopes, 2002).

In neurology vision is understood as an active process in which the brain discards, selects, and, by comparing the selected information to its stored record, generates the visual image in the brain (Zeki, 1999a). According to neurologists, there are several visual systems acting in parallel, the activity in each leading to both seeing and understanding a particular attribute of a visual scene (e.g., Logothetis, 2006; Mason, & Kandel, 1991; Zeki, 1999a). The major visual pathway from retina to the brain is called the optic pathway. Firstly, images from the retina at the back of each eye are channelled to a pair of small structures deep in the brain called the lateral geniculate nuclei (LGN), and from the LGN, visual information moves to the primary visual cortex, also known as area V1, which is situated at the back of the brain. In addition, as Zeki (1999a) has stated, there are many other visual areas surrounding the primary visual cortex. Many of these areas are specialised to process different aspects of visual scene, such as colour, form and motion. V1 parcels out different signals to the different visual areas in the cortex surrounding it. Visual brain, thus, is a collection of many different areas, of which V1 is the most prominent.

According to Zeki (1999a), experiments have shown, for example, that colour is perceived before form which, in turn, is perceived before motion. This suggests that perceptual systems themselves are functionally specialised and that there is a temporal hierarchy in vision. However, if we think this situation,

for example, from the perspective of art interpretation, it seems that the lead time of colour over motion is so minimal (only about 60-80 milliseconds) that we can hardly assume that it plays a very essential role in our interpretations of artworks, such as paintings.

The essential part of neuro-aesthetics introduced by Zeki (1999a, 1999b) focuses on the study of lesions in different areas of the brain and their effects on visual information processing. A patient blinded by a total lesion in V1 is usually totally blind. An achromatopsic patient has become blind to colours following a lesion in the colour centre of visual brain (area V4), and an akinetopsic patient has lost the capacity to see objects when in motion following a lesion to the visual motion centre (area V5). A prosopagnosic patient is incapable of recognising faces after a lesion in the part of the cortex specialised for facial perception, and agnostic patient can still see, but cannot normally understand what he or she has seen. In addition to Zeki, also V. S. Ramachandran (2004) has studied the functions of lesions on visual perception. Although the neurology of patients with different kinds of lesions is quite a marginal phenomenon from the viewpoint of experiencing visual art, it can still shed light to the functions of normal brain.

According to Zeki (1999a) there are many interesting differences in activation of brain areas between abstract and representational artworks where it comes to colours, motion, and form. All abstract works activate parts of the visual brain that are more restricted than those activated by narrative and representational art. However, as Zeki argues, there are still a lot of questions, which remain open in the light of present-day neuro-aesthetics: why some of us prefer certain artistic schools to others, the emotive power of the works of art, their power to disturb and arouse, and the role of cultural and historical knowledge in appreciating and interpreting works of art. From the viewpoint of neuro-aesthetics it is easier to study the effects of modern works of art, with their emphasis on simplification, than narrative and representational artworks of earlier art schools.

As Pertti Saariluoma (1999) has stated, it seems that neural argumentation is central and widely influential in a context of investigation which focuses on perception and memory processes, but it has notoriously little to say about thinking. From a viewpoint of experiencing visual art this notion is important, because it feels quite natural to assume that picture interpretation is closely linked with thinking, although this aspect is quite seldom emphasised in the context of visual arts research, which tends to explain our visual experiences mainly through the concept of perception.

1.2 Problem of conflicting interpretations

The previous overview on different approaches to experiencing visual art was necessary, because there have been very few discussions between these fields of

research. In addition, the examples taken from different fields of visual arts research are aimed to demonstrate the great variety of possible approaches to the problematics of experiencing visual art. Although experiencing is an essential background concept within all of these different schools or disciplines, it is evident that there is no agreement on the exact meaning of this concept, or its conceptual attributes. In many cases it seems that this concept of is a kind of conceptual postulate. Postulates are basic assumptions which are neither proven nor confirmed, but are, however, actively used (e.g., Saariluoma 1997). Postulates are used both in empirical work and in theoretical argumentation, but no real reflective attention is paid to them. The main reason for this is that they are felt to be so evident that no proof or supporting argumentation is needed to justify them and their use. Postulates, thus, lie on the borderline between intuition and scientific knowledge.

In general, there seems to be no disagreement that perception is a precondition for experiencing visual art, but the role of higher cognitive processes, which guide our interpretations, is usually very obscure. In many cases theoreticians seem to suggest, often implicitly, that there is only perception and understanding, which is sometimes called apprehension or comprehension, and nothing besides them. Is it the visual quality of pictures which leads us to overestimate the role of perception in visual information processing? However, from this perspective our experiences of visual art seem quite non-intellectual. In the history of philosophy it has been typical to make distinctions between sense perceptions and thinking, or between understanding and reason (e.g., Kant, 1781/1974; Schopenhauer, 1844/1986). While human abilities to perceive and to understand are shared with other animals, our reason and our ability to think through abstract concepts have traditionally been seen as features which separate human beings from lower animals. From this perspective, it feels quite natural to assume that picture interpretation is also a task of reason, not merely a task of understanding, because interpreters, such as Koningsberger and Hustvedt, tend to use very abstract concepts in their interpretations, as we have noticed above: while Koningsberger sees the pictorial situation in Vermeer's painting as a depiction of vanitas, Hustvedt sees it as a depiction of Annunciation.

And how do the disciplines of neuro-aesthetics, empirical aesthetics and philosophical aesthetics explain the problem of two conflicting interpretations? As Zeki (1999a) has admitted, neuro-aesthetics is still quite helpless what comes to brain activation in a context of traditional, representational, and narrative paintings. It can only affirm that, when one watches traditional paintings, wider parts of the brain are activated than when she or he is watching abstract paintings. Although our interaction with the painting undoubtedly causes activation in our brain, this activation is not what we experience. Rather, we experience the lightness of the painting or its peaceful atmosphere, which builds up between different visual elements within the picture. However, for contemporary neuro-aestheticians it is impossible to explain these aspects of experience.

Empirical aesthetics, it seems, has not paid much attention to individual differences between spectators in picture interpretation. Because empirical aesthetics so powerfully concentrates on statistical analysis and measurable differences of responses between larger groups of spectators, it has not really increased our understanding of conceptual processes during picture interpretation. If a researcher within a tradition of empirical aesthetics would ask Koningsberger and Hustvedt to evaluate how pleasant and how complex the painting of Vermeer is, it might be possible that these two spectators would evaluate the pleasantness and complexity similarly, for example, by saying that the pleasantness of the painting is maximal and its complexity is average. And it does not really matter if the responses of these two spectators were different. The main point here is that through these rough evaluations of paintings we cannot reach the conceptual difference between two conflicting interpretations. This does not mean that the investigations of empirical aesthetics are useless, because it is also important to study the art experiences on a more abstracted level, but it means that if we want to reach a deeper understanding of experiencing visual art we must pay closer attention to the spectators' contents of thoughts.

From this point of view the content-oriented approach presented by Carroll (2001, 2006) seems vital. Carroll points out that the contents of our art experiences should be in focus of the research. This is an important step, because it opens new perspectives for the study of experiencing visual art. Carroll's central idea of content-oriented research can be traced back to Newell and Simon (1972) and Alan Allport (1980b), who paid attention to the fact that cognitive psychology has missed the phenomenon of mental contents. While Newell and Simon approached the problematics of contents through simulation models, Allport called attention to modular subsystems of human mind and to the way mental contents are encoded (e.g., Saariluoma, & Nevala, 2006). Later, the modular approach suggested by Allport, has been further developed, for example, by Jerry Fodor and Zenon Pylyshyn (e.g., Fodor, & Pylyshyn, 1981; Pylyshyn, 2003).

However, mental contents have proven to be very elusive research objects (Fodor, 1990). It has been difficult to exactly define what is investigated when mental contents are analysed, and that is also an evident problem in Carroll's (2001, 2006) approach. Although Carroll carefully discusses the problematics of cognitive and emotional aspects of experiencing art, he cannot reach individual differences between those people who are studying the same work of art. And the situation is quite similar in the context of philosophical aesthetics in general: the problematics of mental contents have not received enough attention. Although individual differences between artworks as well as culture-historical contexts of them have received plenty of attention both in art history and contemporary philosophical aesthetics, these disciplines have tended to underestimate the role of mental contents of individual spectators. If we only pay attention to the form of artwork and its aesthetic and expressive properties, as Carroll suggests, we cannot reach the difference between mental contents of two spectators, who interpret some painting differently. However, it is really

the contents of experiencing, which researchers should be interested in. Thus, the goal and direction of content-oriented approach must be specified.

1.3 Mental contents of experiencing

When we think of the two conflicting interpretations of Vermeer's painting presented above by Koningsberger and Hustvedt we can assume that there are some differences between their mental representations. Even though they probably perceive the painting of Vermeer somehow similarly, their mental representations of the painting are different.

Although representational theory of mind has its roots in the writings of Aristotle, the concept of representation did not appear in psychological language until the "cognitive revolution", in the 1950s. After that, representation has been one of the key concepts in modern psychology and cognitive science. However, there is still a lack of serious attempts to study the experiences of art from this viewpoint. Apart from Mark Rollins (1999, 2001, 2003, 2004) and Currie (e.g., 2004) there are not many theoreticians who have studied the experiencing of art in a reference frame of representational theory of mind. The basic assumption of the representational theory is that the immediate objects of thinking are internal, not external. In order to understand representational approach it is important to differentiate between various sub-types of representations (e.g., Billman, 1998; Paivio, 1986; Wilkes, 1997).

When studying the experiencing of visual art, the most crucial differentiation should be made between physical and mental, or external and internal representations. Physical artwork, such as painting, is an example of external representation (cf. e.g., Paivio, 1986). It exists even when there is nobody to see it. However, while watching the painting the spectator constructs a mental representation of it, but this representation is not identical with a concrete work of art. We are not able to grasp the painting directly, but only through our mental representation of it. Mental representations are constructed on the ground of the visual stimulus offered by artworks, but also the previous conceptual knowledge of spectator is essential part of these representations (cf. e.g., Saariluoma, 2002). Mental representations, thus, are not mere copies of original paintings, as they are coloured with our personal knowledge. It is important to notice that mental representations are active states of human mind. If the spectator does not have any mental representation of the artwork, he or she cannot have any experience of it either.

When we aim to understand the problematics of experiencing visual art, we must analyse the contents of mental representations of spectators by paying close attention to the concepts the spectators are using and analyse the relationship between these concepts and visual properties of the artworks they are looking at. And this is the point which is not very explicitly argued by Carroll (2001, 2006).

However, there is also the content-based approach developed by Pertti Saariluoma (Saariluoma, 1990, 1995, 1997, 2001, 2002, 2003a; Saariluoma, & Nevala, 2006), which pays more attention to mentality of experiencing people than does the content-oriented approach of Carroll (2006). Content-based approach aims to explain human behaviour in terms of information contents of mental representations and processes that are needed in constructing these representations. When a person is thinking, her or his cognitive resources are always filled with some kind of conceptual material. In different situations the contents of our thoughts are different, and these contents can also interact with our emotions. Research focusing on information contents of mental representations should be able to explain why mental representations have a definite set of content elements linked into a whole, and why some other equally possible set of elements is inappropriate and not included into this representation (Saariluoma, 1995).

In the light of our Vermeer-example content-based approach seems to make sense. People looking at the paintings obviously have two kinds of information contents in their minds. These are perceivable information, which is represented on retina, and non-perceivable information, which do not have any retinal representation (Saariluoma, 2002). The latter kind of information explains the differences between interpretations. In order to have a deeper understanding of this phenomenon it is, however, essential to pay closer attention to psychological processes of spectators.

From the viewpoint of content-based approach it is important to make a difference between mental representations and processes which operate on these representations. While mental representation refers to information available to use, process refers to dynamic use of information (e.g., Billman, 1998; Paivio, 1986). In the context of content-based approach the most crucial processes are apperception, restructuring, reflection and construction (Saariluoma, Nevala, & Karvinen, 2006). Apperception creates our immediate mental representations, restructuring means the shift from one mental representation to another, reflection controls the comparison and selection between alternative mental representations, and construction integrates wider groups of sub-representations into a coherent whole. From the standpoint of experiencing visual art it is possible to see apperception, restructuring, reflection and construction as sub-processes of art interpretation. However, it is essential to notice that these modes of thinking need not be successive.

One important difference between Saariluoma's content-based approach (e.g., Saariluoma, 1990, 1995, 1997, 2001, 2002, 2003a; Saariluoma, & Nevala, 2006) and Carroll's (2006) content-oriented approach is that the former follows the principles of modern psychology and uses objective methodology. Instead of relying on introspective experiences content-based approach adopts a third-person perspective to human processes of thinking and studies these processes experimentally. Content-based approach also differs from content-oriented approach suggested by Newell and Simon (1972) and Allport (1980b). While content-oriented research has aimed to model mental contents, content-based approach aims to explain human behaviour on the basis of information contents

of mental representations (Saariluoma, & Nevala, 2006). Thus, in content-based research information content of mental representations forms the explanatory ground for investigation.

In addition to content-oriented approach, content-based approach also crucially differs from capacity-based approach to human mentality (Saariluoma, 1995). Capacity-based approach is typically used in a context of attention and memory research (e.g., Atkinson, & Shiffrin, 1968; Baddeley, & Hitch, 1974; Broadbent, 1958; Miller, 1956; Norman, 1969). It studies the limits of the human information processing system. However, as Saariluoma (1995, 1997) has stated, capacity cannot make any difference between the contents of thoughts. For example, if we again think of the two interpretations of Vermeer's painting, presented by Koningsberger and Hustvedt, we cannot explain the difference between them on the basis of Koningsberger's and Hustvedt's capacities for attention or memory. Rather, in order to understand the difference between their interpretations we must analyse the contents of their thoughts.

Content-based approach on human thinking has been developed on the basis of foundational analysis, also presented by Saariluoma (1997). Foundational analysis is an activity which aims to clarify the conceptual and theoretical foundations of specific disciplines. According to Saariluoma, the ultimate goal of foundational analysis is to improve the quality of argumentation by eliminating false beliefs, conceptual confusions, illusory assumptions and presumptions in the structure of knowledge. Foundational analysis, thus, means investigations into the explicit and tacit assumptions that are inbuilt in the argumentation of the research tradition. In this work conceptual analysis is important. In his *Chess Players' Thinking* Saariluoma explains the importance of conceptual analysis as follows:

> Scientific concepts are building blocks of our theories. Concepts are the entities which distinguish intuitive knowledge from scientific knowledge and which organize scientific experience. They define what is essential and what is inessential in a particular context and provide the propositional knowledge with content. The concepts refer to something and enable people to separate their references out from all other available objects or actions, thus forming the very basis of human thinking. Concepts give the thoughts their contents, and by using spoken or written language people transmit these thoughts to each other.
>
> Scientific concepts mostly are much more precise than everyday concepts, but this does not mean that they are free from intuitive elements. Their borders are not always effectively sharpened, and their references may be ambiguous. This is why constant consideration should be devoted to the structure and content of concepts in any science. The basis of any analysis of this kind should always be the structure of the concepts themselves. (Saariluoma, 1995, pp. 8-9.)

In content-based approach conceptual analysis and empirical investigation are closely linked. Conceptual analysis can help us to design experiments, and through experimental work we can test the explanatory power of our concepts. During the recent years, content-based approach has been applied to research

questions concerning architecture, design, chess playing, and engineering thinking, among others (e.g., Saariluoma, 1990, 1995, 1997, 2001, 2002, 2003a; Saariluoma, & Maarttola, 2003a, 2003b; Nevala, 2005).

Because content-based approach is developed for the investigation of human thinking it matches well with the study of expertise, which is an important field of research within cognitive science. It is generally assumed that the highest levels of human performance in different domains of expertise can be attained after ten years of extended amounts of deliberate practice activities daily (e.g., Ericsson, & Lehmann, 1996). While the term expert refers to a person who is skilful and well-informed in some special field, the term expertise refers to the characteristics, skills, and knowledge that distinguish experts from novices and less experienced people (Ericsson, 2006). The study of expertise aims to clarify the features of expertise in a sphere of different domains and task types (Ericsson, & Smith, 1991).

In this thesis the problematics of experiencing visual art are analysed in a reference frame of content-based approach, both through theoretical discussion and empirical experiments. Traditionally, in the field of visual arts research there has been a strong tendency to draw a parallel between perception and experiencing, in such a way that the concept of perception seems to cover the whole range of experiencing visual art. This tendency, in its most powerful form, is explicitly present in the writings of Arnheim (1954/1974, 1970). Although the writings of Arnheim are today not as actively read as during the past decades, his statements, however, actively linger in the discourse of visual arts research. The reason for this is clear: after Arnheim there has been no other theoretician who has discussed the relationship between art and psychology as widely as Arnheim, and whose writings were widely taken into account in the sphere of visual arts research. Because Arnheim so powerfully emphasised the functions of the eye, the other cognitive processes received less attention. This tendency is also present in the more recent writings of Solso (1994, 2003). I suppose that the dominance of the concept of perception has prevented the researchers from paying enough attention to the problematics of mental contents in the context of experiencing visual art.

However, in this dissertation I will study whether the concept of experiencing might have some other conceptual attributes besides perception, which could clarify our theoretical discussion of experiencing visual art and help us to understand the problematics of mental contents. I suggest that content-based approach could help us to receive a deeper understanding of experiencing visual art by offering some theoretical concepts and guidelines through which the investigation of experiencing visual art could be more coherently organised.

Although the approach presented in this thesis could also be referred to, for example, as the cognitive-affective approach to experiencing visual art, I prefer the name content-based approach, because the word content literally refers to the most crucial target of my study, i.e., to the contents of mental representations of those who are watching and interpreting the works of art (cf. Saariluoma, & Nevala, 2006). I assume that mental representations can include

both cognitive and emotional content elements. On the other hand, terms such as cognitive-affective approach, are so widely and indefinitely used in different contexts and by different theoreticians, that they are extremely open to many kinds of misunderstandings.

When the problematics of experiencing visual art are studied in the context of content-based approach, the concepts of perception, apperception, restructuring, reflection and construction are understood as conceptual attributes of wider concept of experiencing. By defining what these concepts mean in a context of visual art, I aim to sharpen the concept of experiencing. Besides experiencing, also the concept of interpretation is discussed in this thesis. However, the scope of interpretation is narrower than the scope of experiencing in such a way that experiencing also covers the mental processes of those persons who only observe the pictures without attempting to construct conscious interpretations of them. Thus, it is possible to experience pictures without interpreting them, but it is not possible to interpret pictures without experiencing them. Although the persons who only occasionally visit museums watch the pictures and create mental representations of these pictures through apperception, they do not necessarily interpret these pictures in a way art historians may do.

In this thesis picture interpretation is studied from the viewpoint of art historical expertise. We can suppose that during their education art historians have learned a great number of domain-specific concepts which essentially guide their interpretations of artworks. When the problematics of picture interpretation is analysed in a context of expertise research, it is possible to compare it with other kinds of human problem solving activities. However, it is essential to notice that when picture interpretation is studied in a reference frame of expertise research it is approached from a different perspective than it is typically done in the sphere of philosophical aesthetics and humanist art research, in which, for example the writings of Martin Heidegger (1927/1979) and Hans-Georg Gadamer (1960) have played an important role. I do not deny that the viewpoints of hermeneutics may have a crucial role in art interpretation, but I aim to approach the problematics of interpretation from a different angle, through the concepts of restructuring, reflection and construction, which are often used in studies of human thinking.

On a more general level this research aims to open some new ways to study the relationship between visual art and mental processes of spectators. In this work it is essential to discuss the problematics of experiencing in a way that allows comparisons to be made between experiencing visual art and other spheres of human experiencing. It is, however, important to notice that I am not denying the difference between artworks and other visual phenomena around us, I am merely aiming to study those levels of experiencing visual art which are reachable through the concepts of contemporary cognitive science. In this sense I aim to show that there is a field of shared interests between cognitive science and visual arts research. By studying these questions we might receive results which could maximally benefit these both fields.

1.4 Structure of the thesis

This thesis includes both theoretical and empirical part. The main theoretical arguments are presented in Chapters 2-6, and in Chapters 7-8 some of these arguments are studied in the light of empirical data collected through seven experiments.

Because art historians are assumed to be experts in picture interpretation, general features of their expertise are discussed in Chapter 2, and also some theoretical guidelines for picture interpretation are briefly presented. However, it is essential to notice that in a context of my research art historical expertise is quite narrowly approached. Picture interpretation is not the only task of art historians. Besides pictures art historians investigate architecture and other visual phenomena, and typically art historians study these phenomena as a part of their wider culture-historical context. In addition, expertise of art historians includes many kinds of theoretical and practical skills, such as writing and teaching, attribution of artworks, use of archives, and organising exhibitions, among many others.

Chapter 3 studies the relationship between artwork and mental representations. Although memory is not a key concept of this thesis, it is essentially linked with other cognitive and emotional processes, which guide our picture interpretation. Thus, the main functions of different subcategories of memory are shortly presented in the beginning of the second chapter. After that the concepts of perception and attention are discussed. However, I will suggest that in order to understand the problematics of mental contents it is also essential to study the functions of apperception in our experiences of visual art. Because perception and attention are stimulus-bound processes they do not have enough explanatory power over our experiences of visual art, in which our earlier experiences as well as our ability to imagine also play a crucial role.

In Chapter 4 representation elements are more closely studied. Firstly, a short excursion to signs and symbolic meanings of artworks is made, and after that the functions of concepts in mental representations are discussed. Special attention is paid to differentiation between perceivable and non-perceivable content elements in mental representations. In the end of the fourth chapter one published art historical interpretation is more closely analysed from the viewpoint of previous distinctions between representation elements. The main thesis in this chapter is that while interpreting one aims to construct senseful relationships between visual details within the paintings, and usually uses a wide range of non-perceivable concepts in this task.

Chapter 5 studies picture interpretation as one subtype of human problem solving activities, and comparisons between different problem solving tasks are made. Although apperception through which we construct mental representations of artworks is an essential concept from the viewpoint of experiencing visual art, it cannot explain the shift from one mental representation to another when we are, for example, studying the picture and

when we suddenly discern in it some feature which is not coherent with our earlier interpretation of the picture. For this reason picture interpretation is also studied through the concepts of restructuring, reflection and construction.

In the Chapter 6, the roles of emotions in our experiences of visual art are discussed. In the field of art history one of the most popular approaches to our emotional experiences of art has been the theory of Einfühlung (also feeling-into, or theory of empathy). In this thesis the theory of Einfühlung will be compared with appraisal theories of emotions. In aesthetics it has been typical to approach the problematics of emotions by using terms such as pleasure and displeasure. However, there are also different ways to categorise emotions experienced in the context of visual art, and these distinctions will be studied in the end of the sixth chapter.

The empirical part of the thesis is presented in Chapters 7 and 8. Chapter 7 includes the reports of experiments through which some theoretical assumptions presented in the previous chapters are tested. Experiments 1-4 aim to clarify the roles of perceivable and non-perceivable mental contents in experiencing visual art, and Experiments 5-7 focus on emotional experiences of spectators. In Chapter 8 the process of picture interpretation is further studied through qualitative case-study of experimental data, collected in the context of previous experiments. Finally, Chapter 9 summarises the key features of content-based approach to experiencing visual art and presents some outlines for future research.

2 ART HISTORICAL EXPERTISE IN PICTURE INTERPRETATION

In order to deal with the problematics of conflicting interpretations it is essential to study the nature of art historical expertise in picture interpretation. In this chapter art historical expertise is discussed through definitions of art history presented by different researchers of this field and by introducing those theoretical frames of interpretation which are typically used in art historical picture interpretation.

As Michelene Chi (2006) has recently suggested, it is possible to differentiate between two approaches to the study of expertise. While the investigation of absolute expertise studies the performance of truly exceptional people within some domain, the investigation of relative expertise aims to clarify differences between experts and novices. The latter approach is called relative, because the expertise studied need not be exceptional in the same sense as in the investigation of absolute expertise. For example, it is possible that a group of experts consists of students of some specific domain, while a control group of novices consists of people who have no education in this domain. Within the study of relative expertise the main goal is to understand how the less skilled persons can become more skilled in some domain. Thus, the study of relative expertise is essentially linked with education. If we study picture interpretation as a skill, we can probably utilise this information in art education.

Danto (1981) has stated that to interpret a work is to offer a theory as to what the work is about, or what its subject is. According to him, it is analytical to the concept of an artwork that there has to be an interpretation, and each interpretation constitutes a new work of art. From this perspective the limits of interpretation are the limits of our knowledge.

However, in picture interpretation there is one interesting feature when compared with many other cognitive tasks. Necessarily we do not need education in art history in order to interpret pictures. Anybody of us can present picture interpretations, whether we are skilled art historians or not. Of course, we can also interpret, for example, symptoms of diseases and make

more or less imaginative diagnoses, but if we are not medical doctors our interpretations will not be taken so seriously. In a context of picture interpretation the situation is slightly different. On some level we are all able to understand pictures. The specialists of different disciplines can interpret artworks in a conceptual reference frame of their own disciplines. For example, psychologists can study the expressions of mental illness in paintings, and sociologists can investigate the depiction conventions of social relationships, and so on.

As Kalevi Nevala (2005) has pointed out in his research of engineering thinking, all domains have different conceptual systems which guide the flow of thoughts. In order to understand how the processes of thinking proceed and reach their goals it is, thus, important to search for the content-based logic of these domains. If we think picture interpretations presented by art historians and compare them with those presented by other spectators, can we find some differences? Donald Preziosi in his *Rethinking Art History* has defined the practices of art history as follows:

> One could say that the business of art history is the history of art, by which is customarily understood the developmental progress[ion] of the visual arts: different articulations over time, space, biography, and ethnography. The business of the art historian has traditionally been to plot and to chart such transformations and articulations against the broader social and cultural changes accruing diachronically in different places. [...] There is a deep sense in which, for the art historian, art has always been historical event or phenomenon, a sign of its times, an index of historical, social, cultural, or individual growth, identity, change, or transformation. (Preziosi, 1989, pp. 11-12.)

Although there are various ways of practising art history, and one is allowed to study the artworks from different perspectives, for example, in a context of semiotics, sociology of art, psychology of art, philosophy of art, aesthetics, or cultural studies, the historical standpoint is usually somehow present in a study of art historians. According to Otto Pächt (1986/1999), art historians aim to place an artwork within a genealogical sequence, and instead of looking it in isolation, they try to understand it as a link in a historical chain. Pächt understands art historical process of seeing as a process of growing differentiation. First we are able to detect the general stylistic features of the painting, and only after that we are able to focus on individualistic features, which are essential, for example, in the works of an individual school or artist. As Heinrich Dilly (1988) has stated, the practice of art history greatly bases on searching the visual analogies between different objects of art. Through these analogies it is also possible to reach important differences between individual artworks.

It is also possible to consider what kinds of roles tacit knowing, discussed by Michael Polanyi (1967), plays in art historical expertise. Polanyi's main thesis in the context of tacit knowing is that "we can know more than we can tell" (Polanyi 1967, p. 4). While Polanyi's concept focal awareness refers to our explicit knowledge, subsidiary knowledge refers to those implicit aspects which are not directly attended to, but which anyway contribute to the apparent

reality of the object on which the attention is focused (Polanyi 1969/1985). According to a famous example of Polanyi (1967) we can recognise a person's face among millions of faces, but we cannot explicitly tell how this is possible. Polanyi states that in the act of tacit knowing we attend from something to something else – from proximal to distal. For example, when we are watching the face of some person, we attend from the features to the face, and for this reason we may be unable to specify the features. Although Polanyi uses terminology that is partly different from that of Gestalt psychologists, it is easy to see some similarities in his distinction between proximal and distal terms and the distinction between the parts and the whole typically discussed in the context of Gestalt psychology (e.g., Arnheim, 1954/1974).

When we think of Polanyi's definitions of tacit knowledge in the context of visual art, it is not difficult to find somehow similar examples. For example, it is highly possible that we are able to recognise Vermeer's painting *Woman with a Pearl Necklace* among thousands of other paintings once we have seen it, despite the fact that we are not necessarily able to explicitly describe the features of the woman's face. It is also evident that the notions concerning the styles have something to do with tacit knowledge. In the context of styles it is possible to understand the perceivable properties of paintings as proximal terms and the notions of styles as distal ones. For art historians it may be easier to state that some painting belongs to the class of the seventeenth century Dutch art than to explicitly explicate why he or she assumes so. However, we can also ask whether it is possible to explain, for example, the notions of styles, solely through somewhat passive process of recognition.

Michael Ann Holly (2003) has argued that art historians work with objects, which are both lost and found, or both present and past, at the same time. Thus, the typical art historical enterprise is characterised by a compulsion to recover a certain something long since forgotten or lost, such as seeking to situate provenance, identify individual intentions, relocate physical settings, decipher underdrawings, and set the works of art into their cultural and ideological contexts. Pächt (1986/1999) has compared the looking of past art with reading a text written in foreign language. First, we have to learn the vocabulary, grammar and syntax of the language. In the language of visual art this means the knowledge of the conventions, forms and habits of artistic representation, which were earlier taken for granted but which are no longer familiar to us. As examples of these conventions Pächt mentions significant gestures of pictorial figures and details of their costumes. He also emphasises the importance of a careful analysis of the formal structure of the artwork.

The basic education of art historians includes going through thousands and thousands of artworks and reproductions of them. This means that all art historians have at least some kind of basic knowledge of evolution of historical styles. However, because the scope of art history is wide, the deeper expertise of individual art historians usually covers only few historical periods, such as Baroque and the Renaissance. Thus, the expertise of art historians is always somehow individual, although there is also a shared knowledge base between different art historians, which consists of more general knowledge of art and

theories of it. As Ericsson (2006) has argued, there are domains in which the experts do not always display superior performance on domain-related tasks when compared with novices. In addition, there are domains where the experts disagree and make inconsistent recommendations. When we think art historical expertise from this perspective it seems evident that art historians with a different kind of educational background can make picture interpretations, which are even contradictory, as were the interpretations by Koningsberger and Hustvedt of Vermeer's painting, discussed above.

If we compare the education of art historians, for example, with the education of engineers, there are remarkable differences. In his dissertation of engineering thinking Nevala (2005) has constructed a list of scientific and technological knowledge of engineer designers. This list includes the following items: analytical geometry, differential and integral calculus, numerical methods, vector and matrix calculus, complex analysis, Fourier analysis and Laplace transformation, optimisation, probability and statistics, mechanics, vibration mechanics, stress analysis, FEM, material sciences, composite technologies, tribology, nuclear physics, quantum physics, chemistry, measuring techniques, production systems, machining techniques, forming techniques, welding, casting technologies, plastics technologies, tool technologies, fine mechanics, hydraulics, pneumatics, electronics, electrics, bearings, sealing, fittings and tolerances, drawing techniques, and CAD/CAM/CAE (Nevala 2005, p. 13).

In a context of art history thinking it is not possible to construct this kind of list, because the education of art historians does not include items of knowledge that are as specific as those in the education of engineers. Although "the canon of great art", i.e., the collection of artworks which function as exemplars of some historical styles or important turns within the history of art, is known by all art historians, every art historian individually develops her or his own conceptual and methodological knowledge base. Despite this there are some more general styles of picture interpretation.

In the field of art history the iconology of Erwin Panofsky (1939/1972) has received a strong position as a model of interpretation. Panofskian interpretation proceeds in three stages. The first stage is pre-iconographical description, which bases on practical experience and on our familiarity with objects and events. In this phase the controlling principle of interpretation is the history of style, i.e., the insight into the manner in which objects and events are expressed by forms. The second stage is iconographical analysis, which bases on our knowledge of literary sources and on our familiarity with specific themes and concepts. The controlling principle in this phase is the history of types, i.e., the insight into the manner which specific themes or concepts are expressed by objects and events. And finally, the third stage is iconographical interpretation, which bases on synthetic intuition, on our familiarity with the essential tendencies of the human mind, conditioned by personal psychology and *Weltanschauung*. In this phase, the controlling principle of interpretation is the history of cultural symptoms or symbols in general, i.e., the insight into the manner in which essential tendencies of the human mind are expressed by

specific themes and concepts. Thus, in Panofskian iconology the process of interpretation begins from the analysis of individual picture or some subject shared with a wider group of artworks, but the main goal of interpretation is to bind the phenomenon analysed to the ideological atmosphere of its own time.

Iconology shares many crucial features with art historical hermeneutics (e.g., Bätschmann, 2003). Both iconology and art historical hermeneutics aim to construct a comprehensive interpretation of artwork and see it as a part of its culture-historical context. From this point of view psychoanalytic interpretation tradition, for example, is quite different from iconology or hermeneutics, because it focuses on significant details within the pictures, by following Freudian or Lacanian theories, and constructs the interpretation through these details (e.g., Levine, 1998). In many cases iconology, as a study of culture-historical meanings of pictures, is contrasted with formalism (e.g., Bell, 1914; Fry, 1923; Greenberg, 1961), which studies the formal features of artworks and meanings connected to forms. However, it is essential to notice that it is not always easy to make differentiation between formal features of artworks and their culture-historical meanings. Style, for example, is a concept which lies somewhere between them. Style consists of forms, but it also carries culture-historical meanings.

Structuralism aims to reveal the structure of artwork, usually by searching the binary oppositions the work includes and showing how they are organised. Post-structuralism, then, as a counter-movement to structuralism, aims to go deeper than its predecessor by deconstructing our oppositional ways of thinking and revealing endless chains of signification (e.g., Derrida, 1978/1987; see also, Minor, 1994). Within post-structuralism there has been a tendency towards alternative ways of reading the pictorial meanings. During the last decades many classical works of art have been reread, for example, from the viewpoint of gender theories, narratology, and social history of art. A classical example of feminist art history is Linda Nochlin's (1988) *Women, Art, and Power and Other Essays*. Mieke Bal (1991), in turn, has reinterpreted the paintings of Rembrandt through narratology, psychoanalysis, and theories of the gaze and voyeurism, and Svetlana Alpers (1988) has studied the production of Rembrandt by paying a close attention to his studio practises and his relationships to art market. Usually these new approaches carry the common label of the New Art History (e.g., Rees, & Borzello, 1986).

What is of importance here is not the details of different traditions of interpretation, but the point that there is no general model of interpretation used by all art historians. Although the interpretation frames presented above are familiar to most art historians, they may utilise them more or less freely, and it is also possible to combine different frames of interpretation in a context of individual picture. However, art historians normally aim to contextualise the works of art some way – either by studying them as a part of their culture-historical frame of reference or by studying them through some theoretical frame of reference, which usually has its own presuppositions. Therefore, art historical observations, as all kind of observations, are theory-laden (cf., Hanson, 1971).

James Elkins (1999) has compared picture interpretation with puzzle solving activities. According to him, the pleasure in completing a picture puzzle is to see every piece in its proper place, and to see how they form a single continuous unity. However, it is essential to notice that in many cases art historical interpretations aim to explain only particular aspects of artworks and not to offer a complete explanation of all their details and relationships between them.

What, then, defines the correctness of art historical interpretation, or is it even possible to speak about it? According to Pächt (1986/1999), the rigorous approach of art historian differs from the formulation and enunciation of purely private opinions in that it implies an absolute obligation to verify hypotheses once stated. In a case of art history, the endeavour to see individual work in a historical perspective, as a link in an evolutionary chain, is an effort to free the object from its isolation, and thus to eliminate the open-endedness that lays it wide open to subjective interpretation. Thus, by following Pächt, the correct reading of artwork is the one that allows art historians to make convincing connections with earlier, later and even with contemporaneous works of art.

If we now think the interpretations presented by Koningsberger and Hustvedt on the basis of Vermeer's painting, we can consider whether their expertise is somehow different. Interpretation presented by Koningsberger is published about thirty years earlier than the one presented by Hustvedt. Before the 1980's art historical writing heavily leaned on iconology, which aimed to study artworks as a part of their culture-historical reference frame. It is easy to notice that the interpretation presented by Koningsberger is more conventional than the one presented by Hustvedt. Vermeer's paintings of young women surrounded by everyday objects are commonly understood as depictions of vanity, and sometimes these interpretations also include some moralistic tones, such as the word “coquetry” in Koningberg's interpretation. Vanitas, as a theme of painting was very typical in the seventeenth century Dutch art, and from this viewpoint the interpretation of Koningsberger seems to be correct.

However, as the interpretation Hustvedt suggests, it is also possible to conceptualise the painting differently. In Hustvedt's interpretation the woman is not adorning herself with pearls in the world of transitoriness. Conversely, the woman pays no attention to herself or her pearls, but has faced Annunciation. The interpretation presented by Hustvedt is an unconventional one, because the paintings of Vermeer have not traditionally been studied from this viewpoint. The comparison between Koningsberger's and Hustvedt's interpretations shows a shift from one interpretation tradition to another. Within the New Art History it is allowed to interpret the paintings quite freely without paying so much attention to their culture-historical background. Hustvedt, as interpretator, belongs to this later generation of art writers, who aim to reveal new possibilities of interpretation rather than to find further evidence to canonised interpretations. In addition, Koningsberger is a man and Hustvedt is a woman. It might be that Annunciation as a theme is more significant for women than for men. Of course, it is also important to notice that both Koningsberger and Hustvedt naturally have their personal reasons to

present the kind of interpretations they do. They observe the painting through their personal values and see the woman in Vermeer's picture as they want to see her.

When art historical expertise is studied from the perspectives mentioned above it seems to consist both of general culture-historical knowledge and more specific knowledge concerning art. Although art historians have knowledge of general features of different artistic periods, they also have knowledge of individual works of art, which can be understood as exemplars of some styles or subject matters, for example. In addition, art historical expertise includes art theoretical knowledge, such as frames for interpretation. However, when compared with more formal task, such as logical inference, art historical picture interpretation as a task is ill-defined on a basis that there are no general rules for interpretation which are followed by all art historians. For this reason it is quite typical that art historians with different theoretical background construct picture interpretations, which can be contradictory to each other, as are the interpretations presented by Koningsberger and Hustvedt. In addition, it is impossible to totally eliminate the influences of personal experiences and values of beholders in picture interpretations. We can ask if it is even necessary, because it is possible to understand the great variety of different interpretations as enrichment to art history, not as its weakness, providing that we are aware of those subjective aspects picture interpretations necessarily include. In order to reach a better understanding of these differences between interpretations, we shall take an excursion to those psychological processes which contribute to our experiences of visual art.

3 ARTWORK MENTALLY REPRESENTED

Content-based approach to experiencing visual art aims to analyse the mental representations of people viewing and interpreting artworks. In this work it is also essential to study those cognitive processes through which our mental representations are constructed. We will start our excursion to these processes by studying the functions of memory, and after that we will discuss the concepts of perception and attention. However, to make sense of the problematics of mental representations it is also necessary to study the functions of those imaginative processes which are assumed to play a very crucial role in our experiences of visual art. In the end of this chapter I will discuss the functions of imagination and its relationship to the concept of apperception, which assimilates perceptual information with non-perceivable knowledge. Because mental representations are constructed through apperception, apperception is one of the key concepts of content-based approach.

3.1 Functions of memory

When we study problematics of experiencing visual art, it is essential to understand the main functions of memory system, because memory, of course, is a necessary component of thinking. Human memory is both a precondition of thinking and the platform for the representation of thoughts (Saariluoma, 1995). Although content-based approach pays more attention to content-specific sub-processes of thinking, such as apperception, restructuring, reflection and construction, than to functions of memory, these processes are, however, essentially linked with memory system.

Human memory has traditionally been divided into sub-systems (e.g., Atkinson, & Shiffrin, 1968; Atkinson et al., 1987; Saariluoma, 1995). There are a great number of different sub-categories of memory suggested by memory investigators. Most typically differentiations are made between short-term

memories, working memory and long-term memory. When a spectator is watching the painting the visual information it includes arrives first to her iconic memory (also short-term visual memory), which stores a limited amount of information for a limited amount of time. If the spectator closes her eyes, she can still recall some aspects of her visual impression.

However, the function of short-term memory is not so crucial from the viewpoint of experiencing visual art than are the functions of working memory and long-term memory, which are responsible for manipulation and storing the information (e.g., Atkinson, & Shiffrin, 1968; Saariluoma, 1995). Working memory is the main store for active, task-relevant information. It stores information manipulated during a particular task. For example, when we make comparisons between different pictures our working memory is active. And when we aim to encode the crucial features of a certain picture and transfer them into our long-term memory storage for later retrieval, we are also using our working memory. As the capacity of short-term memory, also the capacity of working memory is limited. Experiments of Miller (1956) have shown that the span of normal human memory is about seven (plus minus two) units. However, with the help of chunking, i.e., through pre-learned memory units, we can evade the "bottleneck" of our working memory. It is already known that the experts have larger stores of pre-learned chunks in their long-term memory than the novices, and the experts can easily recall task-specific information coded in chunks in problem solving situations (e.g., Saariluoma, 1995).

In human long-term memory there are no limitations of capacity, although forgetting may prevent us from retrieving knowledge from long-term memory (e.g., Atkinson, & Shiffrin, 1968; Saariluoma, 1995). Long-term memory has been typically divided up into propositional (or declarative) and procedural (or operational) memory (e.g., Tulving, 1972, 1983). While procedural memory stores the knowledge attached to skills, such as the use of objects or movements of the body, propositional memory refers to knowledge, and it has two subcategories: episodic and semantic memory. According to Tulving (1983), while episodic memory refers to memory for personal, specific events in time, semantic memory refers to general knowledge about the external world, which is independent of person's identity and past.

From the viewpoint of experiencing visual art the distinction between episodic and semantic memory is important. When we are watching and interpreting pictures, we associate with them both general knowledge and our personal experiences. For example, when we are studying the painting of Vermeer, we can see it both in a light of our personal memories, or in a light of our culture-historical knowledge. It is naturally possible that these two types of memories somehow fuse into a whole. However, because art historians have more exemplars of artworks in their memory when compared with novices, they probably have more points of comparison for the works of art they see than the novices. From this perspective it is easy for the experts to use art-specific general knowledge as a part of their interpretation, while the novices have to lean more on personal memories in their interpretations, and the

novices can, of course, utilise general knowledge of some other domain than art in their picture interpretations.

Recognition and recall are typical examples of themes in memory research (e.g., Saariluoma, 1995). These both phenomena play essential role in our experiences of visual art. Experiments have shown that the human capacity to store and recognise visual information is almost unlimited. There are experiments, where thousands of pictures have been shown to participants, and they have been able to recognise about 90 per cent of them (e.g., Standing, 1973). However, other investigations have suggested that if the differences between presented pictures are very small, recognition mainly bases on guessing (e.g., Mandler, & Parker, 1976). Although artists and art historians may have a large amount of memory traces of artworks they have seen, it seems intuitively clear that they cannot remember all these individual works in detail. They may be able to recognise the paintings they have seen, but cannot necessarily recall all the details of these artworks.

For example, Salvador Dali's painting *Burning Giraff*e (Figure 2) is familiar for many people, and they can recognise it when the picture is shown to them. But if these people were asked to verbally describe the painting, or to draw it, it is probable that they would not be able to exactly recall all its visual elements. Of course, there could be great differences in recall between spectators, because this certain picture might be more familiar for some spectators than for the others. However, recall, as a task, is cognitively more difficult than recognition. In recall tests participants must recall all essential elements of the stimulus, but in recognising test they can concentrate on some informative and discriminative elements (e.g., Saariluoma, 1995).

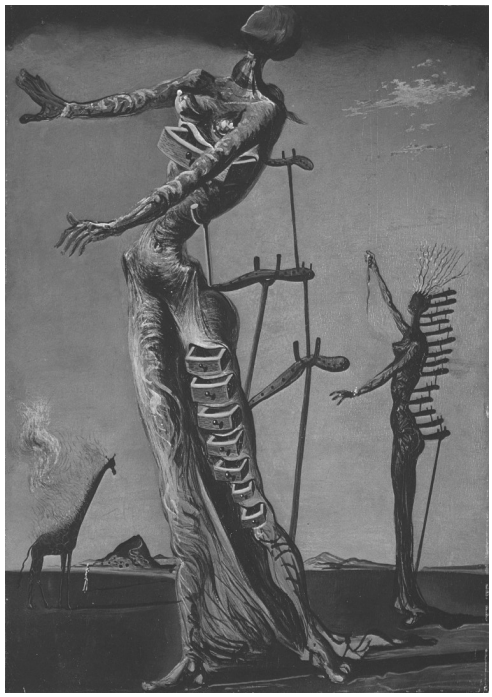

FIGURE 2 Salvador Dali, *Burning Giraffe*, (1936/37).

From a viewpoint of memory also terms, such as schema, prototype and category, are essential (e.g., Solso, 2003). Schema is part of one's mental framework for representing knowledge. Schemes provide a context in which our experiences are structured and understood by representing the general structure of an object, scene, idea, or relationship between concepts. In a context of art experience we may have schemes such as Dutch art, vanitas theme, or Annunciation theme through which, for example, the painting of Vermeer is studied. When we watch Vermeer's painting and some of these schemes are activated, we may also recall other works of art which share some crucial elements with Vermeer's painting.

Prototypes, then, are general level abstractions of stimuli against which other patterns are judged (e.g., Rosch, 1977). Experiments have shown that people are prone to recall easily the most prototypical members of categories. And if they have to decide whether some example belongs to a certain conceptual category, their reaction times are shorter if the given example is a typical member of this category. For example, if an art historian is asked to recall some example of the Renaissance paintings he or she probably recalls an example which has maximally visual attributes typically shared by the paintings of the Renaissance. For example, if an art historian is asked to recall some example of the Renaissance paintings, he or she probably recalls an example which has maximally visual attributes typically shared by the paintings of the Renaissance, and/or which has typically been used as an example of this style. And if the art historian has to decide whether the given picture belongs to the sphere of some artistic style, the decision takes more time if the picture is an atypical example of this style.

When expertise in picture interpretation is studied from the perspective of memory it seems evident that schemes, prototypes and categories probably play a very essential role in picture interpretations of art historians. During their education art historians have learned to examine the pictures, for example through the concepts of styles, which can be understood as abstract conceptual structures stored in long-term memory. However, schemes, prototypes and categories are only abstract knowledge structures in human mind. In order to understand their functions in a context of experiencing visual art attention should be paid to information contents of these knowledge structures.

In the reference frame of content-based approach to experiencing visual art the functions of memory are naturally very important. When we are watching some painting, our working memory is active. Through working memory the visual information of paintings interacts with knowledge stored in our long-term memory. Thus, we can assume that the contents of our working memory form the active and conscious part of our mental representations. However, as Saariluoma (1995) has argued, contemporary memory research, which strongly relies on capacity, cannot explain the content-based aspects in human thinking. The main problem is that the same memory capacity can be filled with an infinite number of contents.

For example, we cannot explain the problem of two conflicting interpretations, presented above by Koningsberger and Hustvedt, by means of

capacity alone. We have no reason to think that their capacities of memory would be somehow different, but it is evident that the contents of their thoughts are different. Although memory is both a precondition of thinking and the platform for the representation of thoughts, it is impossible to explain our experiences of visual art through the functions of memory alone. For this reason, we have to study more carefully the whole process of human information processing, in which perception is starting point.

3.2 Perception and attention

As we have seen in the introduction, there is a solid tradition of analysing how people experience paintings and other works of art. However, these analyses have mainly been based on the psychology of vision (e.g., Arnheim, 1954/1974, 1970; v. Fieandt, 1966; Katz, 1999; Konecni, 2004; Locher, 2003; Miller, 1997, 1998, 1999, 2004; Solso, 1994, 2003; Washburn, & Humphrey, 2001). It is very natural to assume that our visual art experiences can be explained in terms and laws of perception. Thousands of people watch every day works of art in museums, and it is evident that to a certain degree their experience is constructed on the ground of visual stimulus information emanating from paintings. However, it also seems evident that we can only perceive some aspects of paintings. We can see forms and colours, apparent depth and suggested movements, but for example, the notions attached to styles and ideological aspects behind them, which may powerfully interact with our emotions, are not perceivable purely.

In visual arts research the concept of perception is quite typically used without further definitions of its meaning. In these cases the concept of perception functions as a conceptual postulate. We only use it although we are not able to argue that its contents would be correct. Clear distinctions between perception and other cognitive processes are quite seldom made. One of the most powerful definitions of perception originates from the writings of Arnheim. In his *Visual Thinking* Arnheim defines perception as follows:

> My contention is that the cognitive operations called thinking are not the privilege of mental processes above and beyond perception but essential ingredients of perception itself. I am referring to such operations as active exploration, selection, grasping of essentials, simplification, abstraction, analysis and synthesis, completion, correction, comparison, problem solving, as well as combining, separating, putting in context. These operations are not the prerogative of any one mental function; they are the manner in which the minds of both man and animal treat cognitive material at any level. There is no basic difference in this respect between what happens when a person looks at the world directly and when he sits with his eyes closed and "thinks". (Arnheim, 1970, p. 13.)

In his definition Arnheim (1970) states that there is no difference between perception and thinking. According to him, mental operations such as analysis

and synthesis, and even problem solving are tasks of perception. It is easy to notice that Arnheim's definition is not very clear, but rather confusing. If perception would be so general a term as Arnheim suggests, it would have no explanatory value.

Of course, it is essential to notice that the Arnheimian definition (1970) is constructed in the reference frames of Gestalt psychology and modern art, which both partly explain the dominance of the concept of perception. In Gestalt psychology perception was one of the key terms, and in modern art it was typical to emphasise the functions of the eye as well. However, it is as important to notice that that the psychology of visual art has not been widely up-dated after the Arnheimian days, and for this reason his definitions still linger in the discourse of visual arts research, were they consciously taken into account or not. Probably the Arnheimian juxtaposition between perception and thinking has caused much confusion in later research which has focused on experiencing visual art. Although Arnheim draws a parallel between perception and thinking, his ground concept of perception, however, connotes more powerfully to functions of the eye than those of the brain. Thus, the functions of the eye have greatly dominated the discussion concerning experiencing visual art, while the problematics of thinking have received less attention. Despite the fact that the criticism towards the conception of ”innocent eye” has also received attention in visual arts research, the questions concerning the mental contents of spectators have not seriously been taken into account.

Arnheimian definition of perception also has much in common with “ecological approach” presented by James Gibson (1950, 1979). Gibsonian approach to visual perception is often called the theory of direct seeing, because it allows any role for mediating mental representations beyond perception. His theory of vision has been criticised mainly just on the basis that it underestimates the role of mental representations in visual information processing (e.g., Bruce, Green, & Georgeson, 2003; Fodor, & Pylyshyn, 1981; Marr, 1982). There are, however, other theories, which accept the existence of representations as a part of our visual experiences.

One of the most famous representational approaches to vision is a theory of early vision presented by David Marr (1982). According to Marr, vision proceeds from a two-dimensional visual array on the retina to a three-dimensional description of the world as output. Early vision has three stages. The first stage is primal sketch, which includes the representation of properties of the two-dimensional image, such as intensity changes and two-dimensional geometry. The second stage is 2,5-D-sketch, which contains the representation of properties of the visible surfaces in a viewer-centred coordinate system, such as surface orientation, distance from the viewer, discontinuities in these qualities, surface resistance, and coarse description of the prevailing illumination. And finally, the third stage includes an object-centred representation of the three-dimensional structure and of the organisation of the viewed shape, together with some description of its surface properties. Although theory of Marr is widely acknowledged, it has not so much

explanatory value from the viewpoint of experiencing visual art in which early visual processing is only the starting point.

In the footsteps of Allport (1980b), Fodor and Pylyshyn (1981) have argued that cognitive processes are organised in a modular way, which means that visual information processing, for example, is not any single faculty, but it includes separate phases. Pylyshyn (2003) has later developed a detailed theory of modularity of visual perception. He makes a distinction between autonomous early vision studied, for example, by Marr (1982), and general cognitive processes that operate on representation constructed by early vision. The basic difference between these phases is that later cognitive processes are accessible to conscious awareness (see also, Bruce, Green, & Georgeson, 2003). Although modular approaches to human cognition have also received plenty of criticism on the basis of their oversimplifying view on visual information processing (e.g., Velichkovsky, 2005), they can still help us to understand some features in visual information processing, which remain unclear in the Arnheimian (1970) definition of perception. Modular approaches can focus our attention to those cognitive processes, which are accessible to conscious awareness and which have not been discussed very exhaustively in the context of visual art research.

Perceptual processes are often investigated with the help of eye-tracking experiments. These experiments show us to which elements within the pictures the attention of spectators is directed. Eye-tracking experiments have shown, for example, that in specialised fields that depend on visual skills, such as radiology and art, experts are more efficient in their eye movements than non-experts. As Solso (1994) puts it, "many of the same cognitive/perceptual ingredients seem to be brought into play when a radiologist searches for a lung tumour as when an art critic looks at a painting" (Solso, 1994, p. 145).

Alfred Yarbus (1965/1967) is a pioneer of eye movement studies in the field of visual art. In his experiments Yarbus has shown, for example, that when examining complex objects, such as visual artworks, the human eye fixates mainly on certain elements of these objects. According to him, the elements attracting attention contain information which allows the meaning of the picture to be obtained. For example, the participants in his experiments tended to pay special attention to human faces, and especially to their eyes and lips. Yarbus states that these elements in pictures can tell the observer the mood of a person, her or his attitude towards the observer, the steps he or she may take next moment, and so on. Sometimes the participants also tended to focus their attention on elements that are unusual, unfamiliar, or incomprehensible.

In addition to these findings, Yarbus (1965/1967) has also shown that the eye movements of different observers are not similar when studying the same picture, that the instructions given to participants affect their eye movements, and that the observation of pictures is cyclic. The cyclic quality of observation means that when the eye movements are recorded for several minutes during perception of an object, the record obtained shows that when changing its points of fixation, the observer's eye repeatedly returns to the same elements of the picture. Thus, the observer does not spend her or his time in examining the

secondary elements of the picture, but re-examines the most important elements of it. According to Yarbus, these results suggest that eye movements reflect the human thought processes in such a way that an observer's thought may be followed, to some extent, from records of eye movements.

Later, researchers of eye movements have confirmed many results obtained by Yarbus (1965/1967), and they have also brought some new aspects to eye movement studies in the context of visual art, by paying more attention to qualitative properties of artworks used as stimulus material and by comparing the eye movements of art-trained and art-untrained viewers. In a study of François Molnar (1981) two groups of fine art students were watching artworks and were prepared to answer questions regarding either the meanings or aesthetic qualities of artworks. In this study the aesthetic group held their fixations longer than the semantic group, but the scanpaths of both groups were quite similar. Molnar also compared the eye movements with stylistic aspects of pictures. His examples were from artworks of different periods. Molnar's results suggest that more complex pictures (e.g., baroque paintings) produce shorter eye fixations than less complex forms (e.g., classical paintings). (See also, Solso 1994.)

When Nodine, Locher, and Krupinski (1993) studied the eye fixations of art-trained and untrained viewers while they were examining pairs of paintings with different composition, balance, and symmetry, they received interesting results. The works of Seurat, Mondrian, and Gauguin were shown to subjects both in their normal, balanced form and in their distorted, unbalanced form. While trained participants spent more time in diversive exploration than in specific exploration when viewing the altered pictures, the untrained spectators did it the other way round. Another finding was that the art-trained subjects tended to concentrate on thematic patterns among compositional elements while the untrained participants concentrated on representational and semantic use of content elements. In another study Locher and Nodine (1987) measured the lengths of fixations for initial viewing of an artwork and for subsequent viewing of it. The results indicated that when viewing continues after initial viewing, there is a significant increase in the number of longer fixations, which suggests that the subjects start to gather more detailed information than in the phase of initial viewing. (See also, Solso, 1994.)

Thus, on the basis of these experiments we can notice that there are many things which affect our eye movements when we watch the paintings: instruction for the task, quality of stimulus material, our level of expertise, and time available for the task. There are also examples in which the relationship between the titles of artworks and eye movements is studied. The study of Franklin, Becklen and Doyle (1993) suggested that the titles do not have a significant effect on our eye movements, although the titles effect on our verbal descriptions of the pictures. Same pictures under different titles were differently described. However, it is essential to notice that Franklin, Becklen and Doyle investigated the eye movements of participants by instructing them to use flashlight pointer to show where they were looking while studying

reproductions of paintings. The result received might be slightly different if eye movement camera were used.

There are also other experiments, which have shown that the titles of artworks influence our aesthetic experiences. According to Millis (2001), titles increase our aesthetic experiences when they suggest an alternative explanation to what can be readily inferred from the explicit artwork. And, in contrast, when titles merely describe the explicit scene, perceived understanding is increased but the corresponding aesthetic experiences are not. The study of Leder, Carbon, and Ripsas (2006) revealed that abstract paintings received higher ratings of understanding when accompanied by elaborative titles, although descriptive titles did not improve evaluations. But when the presentation time was restricted to one second, descriptive titles improved the understanding of abstract paintings more than elaborative titles. According to researchers, these findings address the possible time needed to allow different ways of aesthetic processing.

As Solso (1994) suggests, the driving force behind eye movements is the brain, which within its tangled network of neurons has constructed a schema, or a hypothesis about the picture and its contents. And when this schema is activated, the search begins. It is easy to notice that experiments presented above tell us more about attentional processes than purely perceptual phenomena. One of the most famous definitions of attention derives from the writings of William James (1890/1983). According to him, all people know what attention is: it implies withdrawal from some things in order to deal effectively with others. However, as Allport (1980a), for example, has pointed out, the concept of attention has been used in different ways by different investigators. To summarise, attention is a cognitive process which directs perception. As perception, also attention is a stimulus-bound process. It separates meaningful figures from background's perceptual noise. When people aim to find solutions to problems, they concentrate on certain aspects of problem situations and ignore some others. Thus, attention enables spectators to perceive the stimulus in a differentiated manner, and divides the stimulus environment into preferred and non-preferred parts. For example, if spectators are asked to study some elements within the pictures, such as colours, it is probable that they pay less attention to some other elements within the pictures, such as form, illusion of depth, or suggestions of movement. Normally, the basic capacity of attention is one unit, unless a task is highly automatised, which means that we can perform some task without paying conscious attention to it. (See also, Saariluoma, 1995.)

Usually, when we are looking at a picture, we can perceive it just one way at a time, not in two or three different ways. Ambiguous figures, such Necker's cube or duck-rabbit figure of Jastrow, provide good examples of this phenomenon. Although there are people, who state that they can see duck and rabbit simultaneously, as a some kind of hybrid, normally only one of these possibilities is seen at a time. The reason for this phenomenon is that our cognitive resources do not allow us to build two simultaneous and contradictory mental representations (Saariluoma, 1995). There are many artists, such as M. C. Escher and René Magritte, who have demonstrated these

and other paradoxical aspects in human perception by using psychology in their art.

Solso (2003) differentiates between nativistic and directed perception of art. According to him, nativistic perception (also known as bottom-up processing) deals with the way the eye and brain work in matched synchrony. In this process electromagnetic energy is transformed into neuro-chemical codes. Nativistic perception consists of inborn ways of seeing, in which visual stimuli, including art, are initially organised and perceived. According to Solso, the shapes, colours, patterns, and organisation of forms are sensed similarly by every normal human being. Thus, the phase of nativistic perception is "hard-wired" in the sensory cognitive system and is largely independent of conscious control, and from this perspective there are similarities between Solso's definition of nativistic perception and Marr's (1982) definition of early vision. Directed perception (also called top-down processing) refers to perception based on one's personal history and knowledge. According to Solso, in directed perception we focus on parts of a painting that are interesting, or about which we have past knowledge, and in this phase our past experiences and expectations largely influence what we perceive and how we interpret what we see. However, it is important to notice that many experiments have shown that these bottom-up and top-down processes, depicted by Solso, tend to interact in visual information processing, and in many cases it is difficult to make clear separation between them (e.g., Enns, & Di Lollo, 2000; Velichkovsky, 2005).

When Solso's notions of perception are studied from the perspective of expertise it seems evident that it is quite complicated to differentiate between art experts and novices merely on the basis of nativistic perception depicted by Solso. In the sphere of nativistic perception there should be no difference between art experts and novices, but when the difference between these groups is studied from the viewpoint of directed perception the situation is different, because this kind of perception bases on one's personal history and knowledge. However, we can ask if it makes sense to use the concept of perception in a context of these both types of visual information processing. The perceptualist assumption (e.g., Arnheim, 1954/1974, 1970; Solso, 1994, 2003) bases on the idea that our visual art experiences can be analysed, discussed and explained by means of the concepts of perceptual psychology. In everyday terms, it says that experiencing art means perceiving the objects of art. According to Solso (2003), art is "seen" in the nativistic sense, and "understood" in the directed sense. However, there is something uneasy in this conception, which can be seen in that he tends to use quotation marks around the words "see" or "understand" (e.g., Solso, 1994, p. 1; Solso, 2003, p. 3).

Although the problems presented here may seem to be merely terminological, unspecific use of the concept of perception has powerfully influenced the ways the experiencing visual art has been studied. In other words, the assumption that the concept of perception alone might have sufficient power of explanation over our visual art experience prevents us from seriously studying the functions of those higher cognitive processes of thinking which play as essential role in experiencing visual art as do the lower

perceptual ones. Probably just the dominance of perception over other cognitive processes has prevented researchers to properly understand the problematics of mental contents. Thus, the concept of perception is too narrow when we aim to explain the problematics of experiencing visual art solely through it. However, it is at least as problematic to state that there is no difference between perception and thinking, as Arnheim (1970) does, because in this case the concept of perception totally loses its power of explanation. When somebody says that he or she perceives something we cannot know if this person really sees something, because it is also possible that the person only imagines something. In this sense the concept of perception is too wide. However, we can avoid this problem by speaking of perception only when we refer to a reflection of an object in the beholder's retina and by using some other terms when referring to higher processes of thinking. Differentiation between perception and higher cognitive processes is important when we aim to find new ways to approach the problematics of experiencing visual art.

The problems concerning the concept of perception seem to be very evident in a context of two conflicting interpretations presented above by Koningsberger and Hustvedt. Although Koningsberger and Hustvedt probably both had a relatively similar retinal perception of the painting, their interpretations are totally different. Thus, while it is not possible to explain this difference through retinal perception, might it be possible to explain this difference through the concept of attention? Could it be so that Koningsberger pays more attention to the necklace of a woman, while Hustvedt pays more attention to her posture and gestures? That might be one explanation for the difference between the interpretations, but we should also keep in mind that both perception and attention are stimulus-bound processes. Although attention may direct gaze and select information, it cannot define whether the information selected is relevant (Saariluoma, 1995). For example, through eye movement studies we can receive information of the elements towards which the attention of the spectators is directed, but we cannot know why they are interested just in these elements, or what kind of attitude they, in general, have towards the elements depicted.

Thus, although it is possible that Hustvedt and Koningsberger have paid attention to different elements within Vermeer's painting, the reason why they have done so cannot be explained through attention alone. It is possible to pay attention to some visual properties of the picture, but it makes no sense to say that somebody is paying attention to vanitas or Annunciation, because vanitas and Annunciation have no unambiguous visual correspondents within the paintings. It is more reasonable to assume that vanitas and Annunciation are concepts, schemes or categories, which direct our attention and help us to pick relevant information from the picture. In order to understand the relationship between stimulus-bound processes and higher cognitive processes we shall study more carefully the concept of imagination and its relationship to the phenomenon of seeing-as.

3.3 Imagination and seeing-as

Perception, as well as attention, is a stimulus-bound process. This means that to perceive something the stimulus must be physically present on beholder's retina. The difference between retinal perception and higher cognitive processes is easily demonstrated through an experiment. If people are looking at a painting, we assume that they can see it. We can ask them to close their eyes, and after that we can ask them to tell whether they still see the painting. The answer should be negative, because they no longer have an active physical connection with the painting and therefore they cannot see it. However, they can imagine what it looks like, and tell us something about its style or the quality strokes of brush on a canvas. Breaking perceptual contact to artwork does not mean that one could not have experiences of it. This thought experiment illustrates that relying solely on perceptualist scientific languages leads us to contradictions.

When we aim to reach a more detailed understanding of experiencing visual art it is essential to make a short excursion to discussion of imagination. Because Mary Warnock (1976) and Nigel Thomas (1999a, 1999b, 2003), for example, have widely presented the history and etymology of the concept of imagination, only some main points will be discussed here.

It is important to keep in mind that imagination is actually quite a difficult concept, firstly, because it carries very different meanings in writings of different theoreticians. Secondly, there have been difficulties in translations of this term (e.g., Llewelyn, 2000). For example, both the translation of the Aristotelian concept of *Phantasia* and Kantian concept of *Einbildungskraft* is usually imagination. And when one compares Wittgenstein's (1953/2001) *Philosophical Investigations* with his *Philosophische Untersuchungen* one notices that the words imagination and imagine are translations of terms, such as *Vorstellung*, *vorstellen*, *denken*. The third problem is the relationship between the English terms imagination, imagine and imagery, which is always not clear, although it is usually possible to understand these relations in such a way that imagination is a faculty or an ability, which makes the act of imagining possible, and this act of imagining produces imagery. However, there is no agreement on whether the products of imagination are always images or not. The fourth problem is that the imagination often tends to overlap with our other cognitive processes and faculties such as perception, memory and thinking. And the fifth problem, in a context of scientific use, is that the concept of imagination carries very strong connotations of falsehood and untruth.

Typically the roots of imagination have been searched from the writers of antiquity. In his writings called *De Memoria* (*On memory and Reminiscence,* transl. by J. I. Beare) and *De Anima* (*On the Soul,* transl. by J. A. Smith) Aristotle has studied the questions concerning imagination. As Thomas (1999b) has argued, Aristotle made a differentiation between perception and imagination (*phantasia*), which is responsible for producing and recalling imagery

(*phantasmata)*. However, Aristotelian conception of imagination is closely bound up with postulation of *sensus communis*. Sensus communis is the part of the psyche responsible for the binding of the deliverances of the individual sense organs into a coherent and intelligible representation, and for apprehending "common sensibles", i.e., those aspects of the world that can be known in more than one sense mode without being the characteristic proper object of any of them. As Thomas (1999b) suggests, it is plausible to interpret Aristotelian imagination and sensus communis as different aspects or modes of a single faculty, depending on whether it is regarded as receptive or productive, or on whether it is operating in the presence or the absence of whatever is being mentally represented. In both cases images are generated, but when they are caused by an object directly before us, it is natural to refer them as percepts and understand the process as perception, and when the source is memory of things observed earlier, it is a question of imagination. Thus, sensus communis has tighter bounds with perception than imagination. Although the concept of sensus communis was used, for example, by René Descartes in his *Treatise on Man*, the concept widely disappeared from philosophical discussion after the 17th century. In his aesthetics Kant (1790/1994) presents some notions of sensus communis in a context of his analysis of beauty, but his concept of sensus communis is not equivalent with those presented earlier.

Before Romanticism the concept of imagination played an essential role in epistemology, for example, in the philosophy of Kant (1781/1974). Although there are many similarities in definitions of imagination between Kant and David Hume (1739-40/1960), imagination plays a more crucial role in the philosophy of Kant than in the writings of Hume (e.g., Warnock, 1976). For Kant, imagination is "a blind but indispensable function of the soul, without which we should have no cognition whatever, but of the working of which we are seldom even conscious" (1781/1952, p. 41). Kantian imagination functions as a mediator between senses and understanding. It makes a synthesis between our manifold sense perceptions and transforms this information into schemes. Thus, if imagination is understood in the Kantian way, it is not possible to make sense of our perceptions without the power of imagination.

However, it is important to notice that Kant (1781/1974, 1790/1994) differentiated between productive and reproductive imagination. While the latter carries strong connotations with memory, the former is an act that is more constructive. According to Kant, productive imagination "is a powerful agent for creating, as it were, a second nature out of the material supplied to it by actual nature" (1790/1952, p. 528). While reproductive imagination completes the fragmentary data of the senses with the help of schemes, productive imagination makes it possible to combine our experience into a single connected whole. When we, for example, perceive some object, the backside of which is hidden from us, we can register its three-dimensionality. In this case our reproductive imagination, i.e., our memory of past observations, can help us to imagine some missing points of the view, but because we have not seen all the views of every object, we also need productive imagery (cf. Church, 2000).

During Romanticism the discussion of imagination widely shifted to the sphere of artistic discourse, and imagination was tightly bound with artistic creativity. In addition, there are theoreticians, such as Dewey (1934/1980), who have discussed the role of imagination in a context of aesthetic experiences. Although there are crucial differences between Dewey and Kant what comes to their definitions concerning experience (e.g., Määttänen, 2000), it seems that their conception of imagination is somehow similar, in a sense that also Dewey seems to think that all conscious experience has imaginative quality:

> Esthetic experience is imaginative. This fact, in connection with a false idea of the nature of imagination, has obscured the larger fact that all *conscious* experience has of necessity some degree of imaginative quality. For while the roots of every experience are found in the interaction of a live creature with its environment, that experience becomes conscious, a matter of perception, only when meanings enter it that are derived from prior experiences. Imagination is the only gateway through which these meanings can find their way into a present interaction; or rather [...] the conscious adjustment of the new and the old *is* imagination. (Dewey, 1934/1980, p. 272.)

While earlier writers, such as Kant, understood imagination as a single faculty or power of the mind, many modern theoreticians, such as Gilbert Ryle (1949/1961), have emphasised that there is no any single faculty we can call imagination. Rather, there is a variety of activities, which are imaginative, such as pretending, acting and fancying.

Some modern writers, such as Roger Scruton (1974), have made distinctions between memory imagery and imagination imagery. While memory imagery is linked with something which has earlier been experienced, imagination imagery makes it possible to construct an image of something that has never been given in experience. This distinction has much in common with Kant's (1781/1974, 1790/1994) differentiation between reproductive and productive imagination. Imagination, in the Kantian sense, naturally plays a very essential role in our experiences of visual art. With the help of imagination we can fill the missing parts of the picture. For example, it is possible for us to see the objects depicted in paintings only from a given perspective, but we can imagine those features not shown for us. In addition, while watching the works of art we often face objects, events, and situations of which we have no earlier experience. For example, in paintings, there may be various imaginary creatures, which we have never seen. If we face a new kind of monster in artwork, our imagination can organise our perception with the help of previous schemes, which are constructed on the basis of our earlier perceptions of different kind of monsters.

When imagination is understood as an ability, which produces schemes on the basis of our sense perceptions and organises our perceptions through these schemes, there seems to be a connection between imagination and phenomenon of *seeing-as* (*sehen-als*), defined by Ludwig Wittgenstein (1953/2001). In his writings Wittgenstein (1953/2001, 1980) shows a number of ambiguities in the ways we use the concept of perception. He demonstrates the difference between seeing and seeing something as something through various

examples. One example of Wittgenstein is a simple line illustration, which can be seen as a glass cube, as an inverted open box, as a wire frame of that solid shape, or as three boards forming a solid angle, depending on the textual context in which this illustration is presented. According to Wittgenstein (1953/2001), we see the figure as we interpret it. So, it is different to see something and to see something as something. Picture itself and our bare perception of it stays unchangeable while our conceptual interpretations do change. The phenomenon of seeing-as refers to the point that some meaning is given to our perceptions.

Wittgenstein's differentiation between seeing and seeing-as is easy to understand. For example, if a person hears a poem in an unknown language, he or she hears everything but does not understand a word. If a person is a native speaker, he or she understands all the words, but does not necessarily understand the multidimensional metaphors in the poem. A specialist of literature may comprehend all of the hidden meanings of the text and its intertextual connections, for example. Three persons can hear the same voices but their experiences differ when it comes to mental contents. In a context of visual art the process is slightly different, because there is no level of natural language, but it is evident that expertise also directs our visual experiences. For example, the concepts of vanitas and Annunciation used by Koningsberger and Hustvedt in a context of Vermeer's painting are examples of this phenomenon. It is different to see the painting as a depiction of vanitas or Annunciation from seeing it as a depiction of an ordinary situation in one's every-day life.

Despite the fact that Wittgenstein sometimes takes examples from the field of art, he does not systematically explain, what seeing-as means in the context of art. There are, however, many theoreticians, such as Virgil Aldrich (1963), Roger Scruton (1974), Nelson Goodman (1976), Richard Wollheim (1980, 1987), Jennifer Church (2000), mentioning just few, who have discussed the problematics of seeing-as and related phenomena in the context of art. Although all these theoreticians have emphasised the significance of differentiation between seeing and seeing-as in the context of experiencing art, the further explication of these terms is insufficient. Typically theoreticians mention this difference and give some examples of different ways of seeing the same thing, but they do not explain how this phenomenon is objectively reachable, or how it relates to prevalent theories of visual information processing.

Both Kantian imagination and Wittgensteinian seeing-as implicitly suggest that our observations are theory-laden. In this sense they are close relatives of each other. However, there are also important differences between imagination and seeing-as. One essential difference is that Kantian imagination is mainly involuntary act, while Wittgensteinian seeing-as can be either voluntary or involuntary. In any case, it is possible to understand the phenomenon seeing-as as one function of imagination. Many theoreticians, such as Scruton (1974), Church (2000) and Thomas (1999a) have studied the relationship between these concepts.

Thomas (1999a, 1999b) has paid attention to the fact that the concept of imagination is very seldom used in a language of contemporary cognitive science. According to him, there are three main reasons for the absence of that concept in the scientific discourse of the twentieth century. The first reason was a reaction against the excesses of Romantic rhetoric, the second reason was the linguistic turn in philosophy, and the third reason was the Behaviourist turn in psychology. Nowadays imagination is usually understood as a faculty responsible for imagery production. However, as Thomas (1999a) has argued, prevalent theories of imagery explain only narrowly those functions which have traditionally been understood as properties of imagination. Thus, he has suggested that in order to reach a deeper understanding of imagination we should investigate our capacity of seeing-as, and he draws a parallel between imagination and phenomenon of seeing-as:

> To put things crudely, "imagination", in one important sense at least, just *is* our name for the faculty of *seeing as*, and its metaphorical extensions cover a similar range. It is not an identical range, or course: We do not normally apply *"see as"* to cases of pure imagery, where there is no obvious admixture of current reality, neither would we use "imagine" when we want to imply that we are seeing things as they truly are. However, there are significant cases between these extremes where either expression is appropriate. Just as saying the child sees the doll as smiling is equivalent to saying that she imagines a smile on its face, so we regard the facts that van Gogh induces us to see nature as infused with dynamism, or Kafka makes us see ordinary life as absurd and terrifying, as being effects upon our imaginations. (Thomas, 1999a, pp. 235-236.)

Although imagination and phenomenon of seeing-as are close relatives, in many contexts it is, however, essential to differentiate between them. Vermeer's painting *Girl with a Pearl Earring* (Figure 3) has greatly fascinated its spectators. Even scientists, such as Zeki, have praised the ambiguity of girl's face:

> The expression on her face is at once inviting and resentful, erotically charged and demanding but also distant, somewhat sad and yet joyful, anticipating a move and yet resistant, submissive and yet dominant. Who she is, what she wants, are questions that will remain forever unsolved... (Zeki 1999a, p. 181.)

In his description Zeki (1999a) indirectly crystallises the difference between seeing-as and imagination. We can see the girl as inviting, resentful, erotically charged, demanding, distant, sad, joyful, moving or resistant, but we cannot see what she has done before, what she will do the next day, or if she wants to go out of the room or stay there. We can, of course, imagine these things. And actually there is at least one fictive novel (Tracy Chevalier: *Girl with a Pearl Earring*, 1999), which tells an imaginary story of the life of this girl. It seems that in a context of visual art the phenomenon of seeing-as is slightly more bound to the visual surface of painting than imagination. While seeing-as means that we can see some thing within the pictures as something, imagination allows us to fill the pictures with things, which literally are not there. Whereas literal narratives leave more room to our visual imagination than pictures, the latter, conversely, may invite us to imagine narratives.

FIGURE 3 Jan Vermeer, *Girl with a Pearl Earring*, (ca. 1665-1666).

Currie (2004) has differentiated between content-imagining and imagining in adverbial sense. In the case of content-imagining we can, for example imagine flying, or that Napoleon won at Waterloo. Imagining in adverbial sense means that something is done more or less imaginatively. When we think of picture interpretations, can we ask if they are made more or less imaginatively? If we, for example, compare Koningsberger's and Hustvedt's interpretations of Vermeer's painting, is it possible to say that one of them is more imaginative than the other? While Koningsberger bases his interpretation to the fact that the woman has a pearl necklace and that there is a mirror on the wall, Hustvedt speaks of Annunciation, which implicitly refers to a presence of an angel. From this perspective it seems that Hustvedt gives more room for imagination than Koningsberger. Although the interpretation presented by Hustvedt is more imaginative than that of Koningsberger, it is not totally irrational.

Scruton (1974) has stated that in imagination one is engaging in speculation and is not typically aiming at a definite assertion as to how things are. According to Scruton, the one who imagines is trying to produce an account of something, and is, therefore not only aiming to go beyond what is already given, but also trying to relate her or his thoughts to their subject-matter. In a case of art historical interpretation the use of totally "free imagination" is not a very common practice. Of course, art historians have to

use imagination at some level when they aim to solve pictorial puzzles but usually they try to relate their thoughts to their subject-matter, not to imagine any chimerical forms. In the light of our earlier definitions it seems that in art historical interpretation the phenomenon of seeing-as plays a more important role than the use of "free imagination".

From the viewpoint of experiencing visual art, the concept of imagination and the phenomenon of seeing-as are naturally very important. They help us to understand the difficulties of the view that our experiences of visual art could be explained through perception. Although the phenomenon of seeing-as and the concept of imagination are close relatives, it seems that the concept of imagination has a wider scope than the phenomenon of seeing-as. Although imagination can function quite mechanically and automatically, as the Kantian definition of reproductive imagination suggests, productive imagination may in some cases be more constructive than the phenomenon of seeing-as. From this perspective it seems that seeing-as is one subtype of wider concept of imagination. However, as already mentioned, imagination is quite a difficult concept in theoretical language, because there have been difficulties in translations of this term, because it overlaps with many other concepts, and because it carries such strong connotations with falsehood and untruth.

Thus, is it possible to study the imaginative aspects of our experiences of visual art in a reference frame of some other concept? In Kantian epistemology (1781/1974) the concept of imagination is closely bound with his concept of apperception. In the next chapter we will study some definitions of apperception in order to find out if imaginary aspects of our experiences could be studied through this concept.

3.4 Apperception

The concept of apperception was introduced by G. W. Leibniz in 1704, and later it was used in various contexts by different authors, such as Kant and Edmund Husserl. Although apperception was an important concept in the pre-behaviouristic period, it was not rehabilitated until the recent decades. The main reason for this has been the assumed vagueness of the concept (e.g., James, 1890/1983). However, during the last decades apperception has proved to be a useful theoretical concept for aiming to understand the functions of mental representations (e.g., Saariluoma 1990, 1995, 1997, 2002).

In his *New Essays on the Human Understanding* Leibniz states that:

> [T]here is at every moment an infinity of perceptions within us, but without apperception and without reflextion ; that is to say, changes in the soul itself of which we are not conscious [s'apercevoir], because the impressions are either too small and too numerous or too closely combined [trop unites], so that each is not distinctive enough by itself, but

> nevertheless in combination with others each has its effect and makes itself felt, at least confusedly, in the whole (Leibniz, 1704/1965, p. 370).

In some translations of Leibniz's essays the word *s'apercevoir* has translated into awareness, but the usual English equivalent for this word is apperception. In his essays Leibniz clearly differentiates between perception and apperception by linking the concept of apperception with consciousness. In this sense, apperception means conscious perception of something. To apperceive something means that one have to pay attention to something, and in order to pay attention to something also our memory has to be active. Through his distinction between perception and apperception Leibniz aims to show that we also have unconscious perceptions, which he calls *petites perceptions*. In his essays Leibniz illustrates the functions of petites perceptions, for example, through an illustration of the sound of the sea:

> In the order to hear this sound as we do, we must hear the parts of which the whole sound is made up, that is to say the sounds which come from each wave, although each of these little sounds makes itself known only in the confused combination of all the sounds taken together, that is to say, in the moaning of the sea, and no one of the sounds would be observed if the wave makes it were alone. For we must be affected a little by the motion of this wave, and we must have some perception of each of these sounds, however little they may be; otherwise we should not have the perception of a hundred thousand waves, for a hundred thousand nothings cannot make something. (Leibniz, 1704/1965, pp. 371-372.)

Although we can apperceive the sound of the sea, we are not so conscious of the noises of individual waves, and the same is true in the context of visual information processing. Probably we are not conscious of individual colour spots in some Impressionistic painting, but we, however, apperceive the landscape which is constructed through these colour spots. It is essential to notice that in this sense our apperception of something also includes some subconscious elements. There are some similarities between Leibniz's definitions of perception and apperception and Polanyi's (1967, 1969/1985) discussion of tacit knowledge, especially in Polanyi's distinction between subsidiary and focal awareness.

As already mentioned, Kantian (1781/1974) apperception (*apperzeption*) is closely bound with the concept of imagination. However, Kantian imagination is merely a blind sub-process of apperception, which is defined as the highest principle in human cognition. According to Kant, the synthesis of various representations presumes self-consciousness. We cannot represent anything as conjoined in the object, without having previously conjoined it ourselves. The words “I think” must accompany all our representations. Kantian apperception, thus, is an act of mind, which gives a synthetic unity to our experiences. It makes a synthesis between our different representations and binds a variety of perceivable stimuli with the categories of our understanding, such as space and time. From the viewpoint of mental contents the key issue in Kantian concept of

apperception is that through apperception our earlier experiences are assimilated with our perceptions.

Church (2000) has studied Kantian imagination from the perspective of the binding problem, i.e., the problem of explaining how we bind together the disparate contents of our experience and transform them into unified consciousness of a single world. Within binding problems it is typical to differentiate between three levels: 1) how our experiences of different properties get bound together into the experience of a single object, 2) how our experiences of different objects get bound together into the experience of the single world, and 3) how our different experiences get bound together into the experiences of a single subject. While Kantian imagination carries the binding process in the first and second level, the third level is a task of apperception.

The Kantian definition of apperception helps us to understand that art experience is always much wider than the pure visual stimulus that accompanies it. When we are watching some individual painting our experiences of other works of art may synthesise with our experience of this individual picture. For example, if we again think of the painting of Vermeer, it can remind us of other works of art in which the themes of vanitas and Annunciation play essential role. In addition, it can remind us of some real-life situations we have experienced.

Husserl has also brought out many clarifications attached to apperception. As Kant, also Husserl (1936) understands apperception as an ability which provides continuity to our experiences. For Husserl (1900-01/1970), apperception is not in opposition to perception; he thinks that every perception provides apperception (see also, De Boer, 1966/1978). According to him apperception is an immediate act of understanding. The primal experience of physical stimulus is a basis for apperception. The original stimulus presents itself in the new experience of the same object. The reverse side of this phenomenon is that the thing, which once has been apperceived, never becomes an object of pure perception attaining actual presence. For Husserl, analogising apperception (1931/1982) is a process which unites separate perceptions. One type of analogising apperception is pairing. In the most primitive case of pairing two data are given, and after that they are always constituted as a pair. And if there are more than two such data, the phenomenon of plurality becomes constituted. If we think of the Husserl's definition of analogising apperception in the context of art historical education, for example, it helps us to understand how our perceptions of individual artworks transform into abstract units, such as notions of styles.

When we study the definitions of apperception presented by Leibniz, Kant and Husserl it seems evident that imaginative aspects in our experiences of visual art can be studied in a reference frame of this concept. In a light of these definitions apperception clearly is a process which organises our perceptions by providing them with sense-making elements. From this perspective it is possible to understand seeing-as and imagination as sub-processes of apperception. When compared with the concept of imagination, apperception has not been used so widely in everyday-language, and it is free from false

connotations and serious problems of translation. In addition, earlier theories of apperception provide a firm background for the study of apperceptive processes in the context of experiencing visual art.

More recently, Saariluoma (1995, 2002) has combined the concept of apperception with the contemporary representational theory of mind. According to Saariluoma, mental representations are constructed through apperception. Apperception is a process which assimilates perceptual information and conceptual knowledge into self-consistent mental representations. It, thus, integrates perceivable content elements with non-perceivable ones. In this sense, apperception determines which elements of the stimulus information and conceptual memory can and should be assimilated into one single mental representation, and it can also synthesise different types of representational contents, such as visual and conceptual, into these representations. Apperception, thus, provides mental representations with their senseful structure.

Apperception is a crucial concept from the viewpoint of content-based approach, because it clarifies our understanding of mental representations. Through the concept of apperception it is possible to reach the difference between mental contents of people with different kind of life experiences. It is difficult to explain this difference without the concept of apperception, and probably just for this reason the problematics of mental contents has received only minimal attention, for example, in the context of visual arts research. From this perspective, apperception functions as a key to our personal experiences, both cognitive and emotional ones. Mental representations, constructed through apperception, form the basis of experiencing visual art. Mental representations are combinations of perceivable properties of objects towards which our attention is directed and mental contents that we associate with these objects on a basis of our previous experiences.

However, we should not think that all aspects of our mental representations would be consciously experienced. Much of the contents that apperception assimilates to mental representations are subconscious. Of course, in the long run, we also should be able to study the subconscious contents of mental representations in order to fully understand the nature of human experience of visual art. When we aim to study the conscious part of apperceptive processes in a context of experiencing visual art our attention should be directed to the representation elements and interaction between these elements. In the next chapter representation elements are firstly studied from the viewpoint of artworks, and after that the content elements of mental representations are discussed.

4 REPRESENTATION ELEMENTS

It is possible to understand paintings as sign combinations which can carry many kinds of symbolical meanings. In the beginning of this chapter the functions of visual signs are studied by paying attention to ways in which visual elements of paintings can function as signs. However, it is important to notice that visual elements in paintings can function as signs only if somebody sees them as signs. During the process of picture interpretation visual signs transform into concepts through which we can share our experiences with other people. Therefore, also the functions of concepts are discussed, and differentiation is made between perceivable and non-perceivable concepts. While the use of perceivable concepts can be explained through perception, the use of non-perceivable concepts is closely linked with the functions of apperception. Through non-perceivable concepts interpreters aim to construct senseful relationships between visual elements which can be seen in paintings.

4.1 Signs and symbolic meanings of artworks

Although content-based approach mainly focuses on contents of mental representations, from the viewpoint of experiencing visual art it is also essential to study interaction between artworks and mental representations of them. Paintings are physical, external, and picture-like representations, which vary on dimensions of their concreteness-abstractness (cf. e.g., Paivio, 1986). However, it is essential to notice that the distinction between representational and abstract paintings is not fixed, but rather sliding. If we, for example, think of some expressionist painting, such as *the Scream* by Edvard Munch (Figure 4), it seems to be partly representational and partly abstracted. There are both recognisable figures and abstracted forms in this painting.

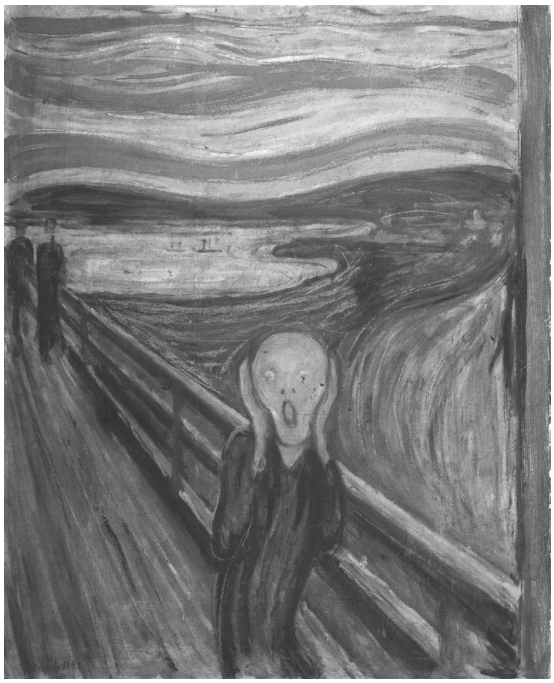

FIGURE 4 Edvard Munch, *The Scream*, (1893).

All paintings, whether representational, abstract or something between them, contain visual elements, signs, which may carry some symbolic meanings. For example, in representational paintings there are depictions of human and animal figures, landscape elements and other visual objects, and in abstract paintings there are colours and forms. Although the elements mentioned are perceptual, in many cases these signs function as symbols of some more general meaning. If we, again, compare the interpretations of Vermeer's picture, presented by Koningsberger and Hustvedt, it seems that for both the posture and gestures of woman function as a sign. Koningsberger sees them as signs of coquetry and Hustvedt as signs of divine Annunciation. This difference is conceptual. Although signs in paintings are visual, they can be conceptually understood. From the viewpoint of content-based approach this means that signs are not only perceived, but also apperceived.

During the process of interpretation any element in a painting may appear to be symbolic in such a way that it seems to convey some hidden meanings besides its explicit meaning. For example, it is usually possible to understand the people depicted in paintings as exemplars of people in general, or representatives of some specific group of people. The woman in the painting of Vermeer is not only a portrait of some individual person, but it is also possible to see her as a symbol of women in general, women of the seventeenth century, or women of a certain social class and so on.

Visual signs usually seem to carry conventional, culturally shared meanings. The understanding of symbolic meanings usually requires cultural and historical knowledge. For example, Carelian symbolism in Akseli Gallen-Kallela's painting *The Mother of Lemminkäinen* (Figure 5), is quite familiar for

most Finnish people, but if the painting is shown to some people who do not know anything about Finnish cultural history, many aspects of the painting will not be understood. Probably this imaginative spectator understands that a female figure in the painting is mourning over the death of a man who lies on a ground. However, this spectator will not understand all the functions of the swan of Tuonela in the picture, because he or she does not know the whole story of Lemminkäinen, depicted in Kalevala. In addition, he or she cannot know the symbolic meanings given to swan in Finnish art and culture in general, and especially in the turn of the nineteenth and twentieth century.

FIGURE 5 Akseli Gallen-Kallela, *The Mother of Lemminkäinen*, (1897).

From this perspective the symbolic meanings associated with signs is one of the key issues in content-based study of experiencing visual art. Although visual elements within the pictures are quite similarly perceived by all spectators, the meanings given to these signs vary between different interpretators, greatly depending on their personal knowledge of history and culture. Every spectator studies these signs in the light of her or his own conceptual reference frame. The way we conceptualise visual signs essentially have an effect on our experiences of visual art.

Visual elements within the paintings can function as signs in many different ways. We can study the functions of signs in paintings more carefully,

for example, through the writings of Charles Sanders Peirce (1931-1935), who has made many important contributions to categorisation of signs. However, it is essential to notice that in the Peircean theory the existence of signs presupposes a sign-using mind (interpretant), which constructs the connection between sign and object. Although there are sign types which have a more direct relationship between their objects than the other types of signs, understanding of each type of sign provides interpretation.

Peirce's (1931-1935) best known categorisation of signs creates a division between icons, indices and symbols. An icon is a sign which correlates with its object, because some qualities of the sign are similar to the characteristics of the object. The most typical example of an icon is a photograph or a portrait of a person, as these pictures share many features with the original face. Similarity between an icon and an object can be based on the fact that icon partakes of or shares the same qualities with its object. When the icon represents its object by means of similarity, an index represents its object by means of continuity. One famous example of index is the footprint in the sand found by Robinson Crusoe. For him the footprint functioned as an index of some creature. In the context of symbol there is no similarity or contiguity between the sign and the object. Examples of symbols are the words, such as "dog" and "man". The symbol is a sign only when it is used and understood as such. Thus, the symbol is different from the icon, which possesses its significance even though its object had no existence, but similar to the index, which would lose its significance if its objects were removed. However, according to Peirce, the symbol must include iconic and indexical elements at some level. (See also, Peirce, 1992; Liszka, 1996; Sebeok, 1994.)

It is important to notice, that Peirce (1931-1935) does not suppose that signs are purely iconic, indexical or symbolic, but rather compounds of them. If we, for example, think about the flag of Finland, it seems to function iconically when it is taken to refer to snow with its white colour and to sky or water with its blue colour. It may also work indexically when it tells us about the direction of the wind. In addition, the figure of cross is a conventional symbol, although from the perspective of Crucifixion, the figure of cross also functions iconically. And finally, the flag of Finland also functions symbolically in a sense that the use of it bases on cultural conventions.

If we then think of paintings, it seems obvious, that traditional, representational paintings are mainly iconic, because the figures and objects depicted in them remind us of some objects in real-world. In addition, in representational paintings there can be some indexical levels as well. For example, the postures and gestures of human figures can indexically refer to some objects or actions not explicitly shown in the pictures. Finally, representational paintings may also contain signs, the meanings of which have to be learned before it is possible to understand their functions in artworks. A typical example of this kind of sign is the blindfolded personification of Justice with a pair of scales (e.g., Tresidder, 2004). Although the figure of Justice is iconic, it is at the same time symbolic, because the meaning of this sign is conventional.

In the case of abstract art the situation is as complicated as it is in the context of representational paintings. If there are, for example, bare forms and colours in some abstract work of art, they do not necessarily refer iconically to any known object. Thus, the signs in abstract painting mainly function as symbols, although there can be iconic and indexical levels as well. Colours in abstract paintings can iconically refer to some real-world objects, and, for example, in abstract, expressive paintings, the strokes of brush may also be indexical by telling us something of the direction and speed of the brush during the artistic creation process. Thus, many works of art, whether representational or abstract, mix iconic, indexical and symbolic types of signs. In addition, in contemporary paintings it is quite typical that artists set representational elements, such as human or animal figures, on an abstract, expressive background.

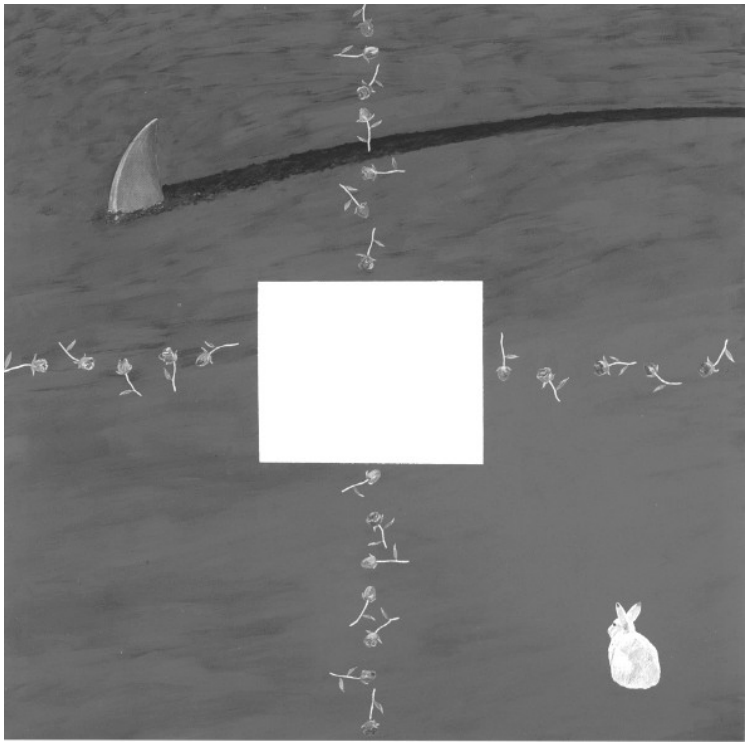

FIGURE 6 Risto Suomi, *The Cross of Destiny*, (1988).

When we, for example, study Risto Suomi's painting called *The Cross of Destiny* (Figure 6) from the viewpoint of Peirce's (1931-1935) sign definitions it becomes apparent that there are different kinds of sign combinations. A white hare in a corner of Suomi's picture is an icon, because it reminds us of the real hare. Also the roses belong to the category of icons despite the fact that their colour is blue, which is quite untypical or even unnatural colour for roses. Usually blue, as a colour of sky or heaven, carries symbolic meanings attached to contemplation and eternity. So it seems that blue colour combined with roses brings some conventional meanings to them, and thus the roses also function symbolically in Peirce's sense. Also white colour combined with the form of square functions

this way. White colour can iconically refer to some objects or qualities, such as snow or purity, but when it is united to the shape of square, it does not clearly refer to any object in the real-world. However, in the context of hare white colour also functions indexically, because it tells something about the natural environment the hare lives in. Together with four lines of roses the white square forms a cross, which is conventional symbol in Christian culture, and can be iconic too. Unlike blue in the roses and white in the square, red colour in the picture may function also iconically, because it is usually associated with blood. The red colour can also function indexically or symbolically in the sense of Peirce. It can be indexical if it is understood, for example as blood which is a consequence of some accident or violence, or it can be symbolic when it carries general meanings conventionally associated with redness, such as passion. And finally, the fin of a shark clearly functions indexically, because it suggests that there is something under the water, and also a wake behind the fin is indexical, as it shows that the shark has moved.

Previous examples aimed to show that visual elements within paintings can function as signs in many different ways. It is also important to notice that the meanings of these signs are context-dependent in such a way that other elements around a given visual element may contribute to meanings associated with this individual sign (e.g., Beardsley, 1958; Dickie, 1971/1979). For example, if the figure of a hare is contrasted with the figure of a shark, as in the context of Suomi's painting, it probably receives quite different meanings than in a case when it is, for example, contrasted with some other animal that is less dangerous.

When the functions of visual signs in artworks are studied from the viewpoint of expertise it seems evident that it is easier for art historians than for novices to give conceptual interpretations to these elements, because art historians have wider culture-historical knowledge of meanings typically associated with given symbolic elements in artworks. However, it is essential to notice that between individual experts and novices there can be great differences in their skills of interpreting the symbolic meanings of artworks. For example, there are art historians who avoid all discussion of symbolic meanings, because they assume that it is a task that is too subjective for art historians, and conversely there are novices who can intuitively present very bright notions of symbolic meanings of artworks.

Although signs are visual in artworks they turn conceptual during our process of picture interpretation. It is important to notice that the understanding of visual signs provides interpretation. Through interpretation the spectator constructs mental representation of the artwork he or she is watching. Thus, in order to understand the problematics of experiencing visual art we have to pay attention not only to those visual signs the paintings include, as Carroll (2001, 2006) suggests, but also to those information contents the spectators associate with them while they are studying the paintings. This means that we have to study more carefully what kind of information contents mental representations include.

4.2 Concepts and attributes in mental representations

It is important to notice that there is no agreement on the format of mental representations. During the last decades the so called "imagery debate" has occupied many researchers. The main issue in this debate has been the discussion about whether mental imagery is an essential concept in psychology which tries to explain human information processing or not. The opponents of this concept, such as Pylyshyn, do not deny the existence of mental images, but they assume that it is possible to treat these images with the help of propositional code. Conversely, the advocates of imagery, like Stephen Kosslyn, have claimed on the basis of their experimental research (rotation, scanning, zooming) that we should not abandon the concept of mental image. (See, Laarni, Kalakoski, & Saariluoma, 2001; Wraga, & Kosslyn, 2003.)

Alan Paivio (1979, 1986) has approached the problematics of mental representations through the dual coding theory. According to him, human cognition is unique in that it has become specialised in dealing simultaneously and co-operatively with language and with non-verbal objects, events, and behaviours. While the imagery system deals with the information concerning concrete objects, events, and behaviours, the verbal system deals with linguistic information. Together these systems allow us to pick up, store, organise, retrieve, and manipulate stimulus information. According to Paivio these two systems can be active either separately or in parallel. They are assumed to be structurally and functionally distinct, but at the same time they are functionally interconnected so that activity in one system can initiate activity in the other. Words can evoke imagery and concrete objects, events or behaviours can evoke verbal descriptions.

Paivio's (1979, 1986) dual coding theory is closely related with working memory model presented by Alan Baddeley and Graham Hitch (1974). According to Baddeley and Hitch, the three main components in working memory are central executive, phonological loop and visuo-spatial sketch-pad. The central executive acts as supervisory system by controlling the flow of information from and to its slave-systems, i.e., between the phonological loop and the visuo-spatial sketch-pad. These both slave-systems are short-term memory storages. While the phonological loop deals with verbal information, the visuo-spatial sketch-pad deals with non-verbal information.

Although the presence of images in spectators' mental representations may appear attractive in the context of experiencing visual art we choose here the propositional approach to mental representations. The reason is clear. Although many spectators of art tend to claim that in the early phase of picture interpretation they are not conceptualising their experiences of visual art, it is however, necessary to conceptualise this experience before we can share it with other people. Thus, in this context concepts are understood as basic elements of our mental representations. Usually concepts are defined as tools which help us to deal with infinite number of stimulus patterns in different contexts offered

by the external world. According to Russel and Lemay (2000) concepts are mental processes that transform the raw data of experience into manageable units by grouping them into categories and ordering them along their dimensions. Thus, concepts serve our cognitive economy and are involved in perception, memory, thinking, solving problems, and in any other psychological process.

According to Saariluoma (1995, 2002), concepts have both an internal attribute structure and an external structure of interconceptual relations, and both the attributes and the interconceptual relations can be expressed by a propositional form. While the attributes are themselves concepts, which refer to necessary or accidental properties of a concept, the interconceptual relations define the relations between independent concepts. It is also possible to understand concepts as nodes in large propositional networks. However, the internal attributes and the interconceptual relations form the contents of concepts. It is also important to notice that concepts are dynamic units, which means that their contents are in a state of constant change. Concepts change both historically and through individual development – the concepts of children are different from those of adults and the concepts of experts are different from those of novices (Saariluoma, 2002).

Quite recently, in her *Travelling Concepts in the Humanities* Mieke Bal (2002) has discussed the flexible nature of concepts from the viewpoint of humanities. According to her, concepts travel "between disciplines, between individual scholars, between historical periods, and between geographically dispersed academic communities" (Bal, 2002, p. 24). And between these "trips" the meaning, reach, and operational value of concepts often crucially vary.

From the viewpoint of content-based approach, the main function of concepts is in that they serve as elements in mental representations. Mental representations are typically studied with the help of protocol analysis introduced by Ericsson and Simon (1984/1996). Protocol analysis is normally used in situations in which participants are performing some cognitive task, and while performing the task participants are asked to think aloud. The method of protocol analysis is in harmony with contemporary cognitive linguistics, which assumes that language is not such an autonomous cognitive faculty as has been thought in the sphere of generative grammarians (Croft, & Cruse, 2004). Emphasising the notion of construal cognitive linguistics suggests that linguistic expressions are closely related with particular ways of perceiving given scenes or situations (Lee, 2001). Although the protocol analysis has received criticism, for example, on the basis that during the task there may occur many processes which the participants are unable or unwilling to report (e.g., Beyerlein, Beyerlein, & Markely, 1991), it is still the best possible way to investigate the mental contents of people.

It is also possible to study mental representations through interviews, but in interviews the questions presented to participants may direct the flow of their thoughts more powerfully than instructions presented in the beginning of protocol analysis. In addition, in the case of picture interpretation, we can also analyse the published interpretations of art historians and, thus, investigate the

language of art history. In analysis of written documents it is, however, essential to keep in mind that these published interpretations do not necessarily reveal immediate experiences or processes of thinking; they only present us the end product received through these processes. Nevertheless, with the help of this kind of data it is possible to analyse conceptual structures of these written representations. As Ian Hodder (2000) has stated, the analysis of documents requires contextualised interpretation. When we, for example, study interpretation presented by some art historian decades ago, it is essential to investigate this written document in the context of general practices of art history writing within this period.

Constructive approach on concepts presupposes that concepts have two stages in mind: potential and actual. As Saariluoma (2002) has argued, in our long-term memory we have a very large set of concepts with large sets of associated attributes, and this potential mass of concepts is a basis of all representation construction. The total content of the concept is the sum of all those attributes which can be associated with a certain concept. However, it is important to notice, that when a concept is incorporated into some representation, all of its attributes cannot be relevant, because in many cases concepts have attributes which are contradictory. For example, it is possible that a car is either totally black or totally white, but if we watch a pictorial representation of some individual car, it cannot be at the same time totally white and totally black. Usually, for example, in propositions, we use quite a narrow set of conceptual attributes. According to Saariluoma, the active set of attributes which is relevant in some representational context can be called the use of concept. Concepts are the elements out of which we construct our propositions, and their content can thus be seen as the contribution they make to the representations in which they participate.

As Saariluoma (2002) has suggested, we can use "Cartesian inference" when we aim to study the contents of concepts. Saariluoma draws his notions of Cartesian inference from a well-known argument presented by René Descartes - "I think, therefore I am." In this case Descartes infers the notion existence from the notion of thinking. Thus, a thinking thing has the attribute of existence. According to Saariluoma Cartesian inference follows a simple schema: if concept C has attributes A1, ... An, then any or all of the attributes A1, ..., An, can be inferred from concept C.

We can study these statements through an example. A concept of hare, for example, has many conceptual attributes. Hares are mammals, they have four legs and long ears, and they can be either brown or white. Hares, as prey animals are threatened by some predators, they typically live in forests, they can run fast, and so on. It is possible to infer all these attributes from the concept of hare. All attributes which can be associated with the concept of hare form the total meaning of that concept. However, when we think of some representation of individual hare, all the attributes mentioned cannot be equally relevant. It is not possible that some individual hare is both totally white and totally brown. When we study the painting of Risto Suomi, we see that a hare depicted in it is almost white. In addition its whiteness, the hare of Suomi has

some other visual attributes, such as its sitting position and its location in the lower right corner of the painting. However, on the basis of Suomi's painting we cannot see that the hare is mammal or that hares can run fast. Although we cannot perceive these attributes while watching the painting of Suomi, our earlier conceptual knowledge of the hares effects on the ways we apperceive the hare as a sign in Suomi's painting. Thus, signs in visual artworks function both visually and conceptually. They have some visual attributes, but we also associate conceptual knowledge with them.

However, the meaning of visual signs partly constructs in interaction with other visual elements around them. In Suomi's picture there is a fin of a shark and a wane behind it, which suggests movement from right to left from the spectator's viewpoint. In addition, there is white square, blue roses and red background. But how do the meanings of these elements relate? In nature it is quite untypical that hares and sharks share the same environment. In addition, it seems that the hare is sitting on the same red surface under which the shark is swimming. There are, thus, some surrealistic, dreamlike features in this painting. White colour is shared with the hare and a square in the middle, while blue colour is shared with the shark and roses, which, together with the square, form a figure of a cross. While hare, shark and roses belong to the sphere of nature, square and cross are cultural forms. Although the painting of Suomi is quite reduced as visual representation, the visual elements it includes provide various possibilities for interpretation. It is possible to think that this painting depicts a situation where some beast is threatening its victim. When the hare is seen as victim and the shark as beast, it is also possible to think that the painting depicts the struggle between good and evil, and through this interpretation we can associate many kinds of religious themes with this painting.

However, the main point in here is that when we construct a mental representation of some work of art the visual signs it includes transform into concepts, which can have both visual and conceptual attributes. For example, in our mental representation of Suomi's painting there are concepts, such as hare, shark, square, roses, cross, and redness, which all have some perceivable and non-perceivable attributes. In addition, there are relationships between these concepts and their attributes. For example, the perceivable attribute of whiteness is shared with the hare and the square, the non-perceivable attribute of “being an animal” with hare and shark, and so on. Through this kind of analysis of conceptual contents it is possible to study the meanings of visual signs in a context of given pictures.

4.3 Perceivable and non-perceivable content elements

When we study the mental representations of those people who are interpreting works of art it is essential to differentiate between perceivable and non-perceivable contents of these representations (cf. Saariluoma, 2002). Non-

perceivable concepts have no physically perceivable equivalents in pictures. Examples of such notions might be, the 17th century, principles of an art academy, or future. No-one can, even in principle, see them. Somewhat more complicated examples of non-perceivable concepts are, for example, the style concepts, such as, the Renaissance or Impressionism. These types of concepts have numerous perceivable equivalents in the works of art, but it is still one thing to see Michelangelo's painting and another to experience the whole of the Renaissance with all of its conceptual attributes. We cannot perceive the Renaissance in the same sense as we perceive red colour or round line in a painting.

However, it is also essential to differentiate between the abstract notion of "redness" and some concrete tone of red, which can be seen in some individual paintings. The abstract notion of "redness" can include a huge number of different tones of red, but red colour in some painting can only have some certain tones. Of course, it is possible to perceive this tone differently, for example, in situations, where the lightning conditions differ, but the main point here is that colours in paintings are perceivable, while the abstract notions of "redness", "blueness", and "whiteness", for example, are non-perceivable kinds. And the same is true, when it comes to notions of styles. Signs of the Renaissance, such as the use of aerial perspective, chiaroscuro or sfumato, can be seen in individual paintings, but the abstract concept of the Renaissance is non-perceivable in such a way that it cannot be seen entirely in one individual work of art (cf. e.g., Myers (ed.), 1969).

Notions of styles are typical examples of non-perceivable concepts art historians tend to use. Usually the concept of style has been understood as a repetition of techniques or some external features of artwork, such as compositions. The main idea behind the concept of style is that one work of art cannot establish a style, but there must be a larger group of artworks, which share some common features. Originally the concept of style was used while speaking of the personal artistic characteristics of individual artists. It is still possible to refer to "the style of Leonardo", or "the style of Kandinsky" among others. However, nowadays it is also possible to use the concept of style while speaking about shared features between individual artists of the same artistic group, school or even while speaking about individual artists of the same period. (See, e.g., Lang, 1998; Myers (ed.), 1969.)

Thus, from the viewpoint of our mental representations of art, the style concepts are quite problematic, because styles are partly visible and partly invisible. Nobody can perceive, for example, Impressionism directly but only through visual signs in paintings. Every style concept has a set of attributes. However, all of these attributes need not be simultaneously present in an individual work of art. During the process of art historical education one learns to discern critical features of certain styles. The concept of Impressionism, for example, includes attributes, such as skilful use of lights and shadows, use of certain colour scales, compositions which seem occasional, and subjects like urban and rural landscapes, or depiction of leisure activities of middle-class (cf. e.g., Myers (ed.), 1969).

Besides style there are many kinds of non-perceivable concepts art experts tend to use. In his classical article "Aesthetic Concepts" Sibley (1959) has studied the relationship between aesthetic concepts and non-aesthetic qualities of art objects. While non-aesthetic qualities of the objects, such as colours and lines, can be received by all persons with normal eyes and intelligence, aesthetic concepts can be correctly used only by persons with an "exercise of taste". Some examples of aesthetic concepts mentioned by Sibley are balance, dynamics, sensitive, powerful, and sentimental. Although there is a close relationship between these aesthetic concepts and perceivable properties of artworks, the use of aesthetic concepts presupposes expertise in art. One cannot perceive these aesthetic properties as directly as the presence of colours and lines, but only through abstract representation. In this sense, all aesthetic concepts mentioned by Sibley are non-perceivable concepts.

It is also essential to notice that in his *Art and Visual Perception* Arnheim (1954/1974) studies the relationship between art and perception, for example, through the concepts of balance and dynamics. In his writings, the experiences of balance and dynamics are explained through the concept of perception, as are the experiences of shapes, forms, and colours. Arnheim, thus, makes no clear differentiation between aesthetic concepts and non-aesthetic qualities of art objects. If he would make a separation similar to that of Sibley (1959), it might be more difficult for him to study the relationship between art and beholder solely through the concept of perception, without making any clear divisions between different sub-categories of perceiving.

In addition to Sibley (1959) there are some other researchers who have discussed the quality of concepts we use while speaking of art. Michael Baxandall (1985) has presented a differentiation between three kinds of words through which we tend to describe the pictures. These are effect words, comparison words, and cause words. The effect words refer to the effects of the picture on the beholder. Examples of effect words are poignant, enchanting and surprising. By comparison words Baxandall refers to words such as resonance of colours. And finally, cause words tell us of those inferences which we have made about the action or process that might have led to the picture being as it is. Examples of cause words are assured handling, frugal palette and excited blots and scribbles. Through his discussion about effect words, comparison words, and cause words Baxandall aims to show that while describing the pictures many of the thoughts we want to explain are indirect in the sense that they are not pointed at directly in the picture. According to him, we have to use concepts of these indirect or peripheral kinds, because if we confine ourselves to terms that refer directly or centrally to the physical object, such as large, flat, and pigments on a panel, we would find it hard to locate the sort of interest the picture really has for us. Although Baxandall does not explicitly speak about perceivable and non-perceivable concepts that we use in our descriptions of art, it is possible to see his categories of effect words, comparison words and cause words as sub-categories of non-perceivable content elements.

More recently, in his article "The Invisible Content of Visual Art" Rollins (2001) has presented some notions of invisible quality of artistic meaning.

According to him, artistic meaning is invisible firstly, because it depends on interpretation, and secondly, because it derives from those diverse strategies that perceivers use to allow them to economise on mental representations. Although the notions presented by Rollins are very interesting, he still leaves it open, what the invisible content of visual art means explicitly, and what are those strategies the spectators use. However, we can assume that the invisible content of visual art somehow relates with our notions of non-perceivable concepts, which function as content elements in mental representations of the spectators.

While depicting the paintings interpretators often quite rapidly shift between perceivable concepts and non-perceivable ones. If we study the interpretations presented above by Koningsberger and Hustvedt we notice that they both first depict the picture of Vermeer and use expressions such as "a girl turns toward a mirror" and "the woman [is] trying on her necklace". These both expressions aim to crystallise the pictorial situation and they only include concepts which have a direct perceivable equivalent in the painting. However, when we further read these interpretations we face many concepts, such as "vanitas", "emptiness", "brevity", "Narcissus", and "Annunciation", which have no explicit perceivable equivalents in Vermeer's painting. From the perspective of content-based approach it is important to differentiate between perceivable and non-perceivable concepts, because this distinction is comparable with division between perception and apperception. Apperception integrates into our mental representations non-perceivable contents, which base on our earlier conceptual knowledge (Saariluoma, 2002).

Although the differentiation between perceivable and non-perceivable mental contents seems to be essential from the viewpoint of contradicting interpretations, this distinction is very seldom made in the studies of empirical aesthetics. In a study by Beyerlein, Beyerlein and Markley (1991), differentiation was made between explicit and implicit propositions presented by the spectators who were searching similarities and differences between paintings. According to these researchers, a proposition was considered explicit when it was completely based on observable cues in stimulus situation, or when it was an interpretation of explicit cues based on general world knowledge. Conversely, a proposition was considered to be implicit when it consisted of information not directly perceived or interpretable from the stimulus situation. As an example of explicit propositions was the report of the presence of a "dog" in van Eyck's painting *The marriage of Giovanni Arnolfini and Giovanna Cenami* (Figure 7). And as an example of implicit proposition was the report that a particular work belongs to a category of "abstract expressionism".

In their study Beyerlein, Beyerlein and Markley (1991) found out that visual art experts (instructors of art studio and/or art history at the university level) used more frequently both explicit and implicit propositions than the group of novices, and that the difference between groups was greater in the context of implicit propositions. However, despite the two examples of classifications mentioned above, these investigators do not very clearly explain

what kinds of propositions the categories of explicit and implicit propositions include.

FIGURE 7 Jan van Eyck, *The Marriage of Giovanni Arnolfini and Giovanna Cenami,* (1434).

Although the results obtained by Beyerlein, Beyerlein and Markley (1991) suggest that it is both possible and important to study the conceptual processes of art spectators, more attention must be paid to definitions of concept types the spectators use during the process of interpretation. The first and the most important differentiation should be made between perceivable and non-perceivable concepts (or between explicit and implicit propositions). Perceivable kinds have ostensive correspondents in pictures while non-perceivable ones are more abstract than the perceivable ones and they have no direct reference in the painting. For example, a notion that there is a girl or a woman in a picture bases on perception, but the notions of vanitas or Annunciation are non-perceivable kinds. It is impossible to perceive vanitas or Annunciation as directly as the presence of a human figure. The use of non-perceivable concepts requires combining information received through different visual details within the pictures. In addition, the use of terms, such as vanitas or Annunciation, provides culture-historical knowledge in the sense of Panofskian iconology. It is possible to understand both of these concepts as metaphorical expressions deeply rooted in the history of Western culture, in a

sense that the use of these terms suggests that beholders see the painting of Vermeer as a part of wider tradition of pictures and narratives.

It is essential to separate between different sub-classes within perceivable and non-perceivable concepts if we aim to search more specific conceptual differences between spectators. I suggest that within perceivable concepts we could, for example, differentiate between references to: 1) recognisable figures and objects, 2) geometrical and free forms 3) colours and their values, 4) spatial dimensions of the picture, and 5) suggested actions and motions of figures. Conversely, within non-perceivable concepts we could differentiate between: 1) emotional concepts, 2) references to entities which have no visual correspondent within the picture, 3) abstract concepts and qualities, 4) references to pictorial subject, theme or meaning of the picture, 5) references to temporal dimensions of the picture, and 6) concepts of art, such as the names of artists, styles and isms, technical, compositional and art theoretical concepts.

With the help of these more specific distinctions between perceivable and non-perceivable concepts we can acquire a deeper understanding of conceptual processes underlying the experience of visual art. Of course, it is essential to notice that the distinction between concepts presented above is only one possible alternative. If it seems essential, we can sharpen these distinctions. However, the most crucial differentiation should be made between perceivable and non-perceivable mental contents. In the next chapter we study more carefully the functions of non-perceivable concepts in art historical interpretation.

4.4 Sensefulness of mental representations

One could claim that the main goal of art historical interpretation is to construct senseful relationships between visual elements within the pictures. As Saariluoma (1995) has suggested, *senseful* is technical term, which can be undesrstood as an equivalent to German term *sinnvoll* or to Finnish term *mielekäs*. By using the terms senseful, sinnvoll or mielekäs, it is, for example, possible to speak of wholes in which every part is in a sense-making way related to other parts, i.e., in such a way that the whole constructed of these parts is senseful. In contemporary English there is no correct equivalent for this term, and that is why the term senseful is adopted. It avoids many problematic connotations when compared with terms, such as "meaningful" and "significant", which are typically equipped with quotation marks when they are used in ways similar to German sinnvoll or Finnish mielekäs. However, as Saariluoma states, scientific terms in quotation marks are vague and should be abolished. In his *Chess Players' Thinking* Saariluoma has defined the principle of sensefulness as follows:

> Everyone knows that human mind is highly economic in representing reality. Human representations seldom contain more than essential elements. The organization of

> representations is also highly consistent. The elements seem to be linked to one another in a logical fashion. The presence of each element in a representation makes sense. This means that for each element in a representation, in principle there is a reason why it belongs to this particular representation. In addition, for each element that is not in the representations but which belongs to the representations of the same task environment it should be possible to say why they do not belong to a particular representation. (Saariluoma, 1995, p. 99.)

If we again, think of the interpretations presented by Koningsberger and Hustved, they both seem quite senseful, because neither of them includes controversial content elements and there is nothing totally irrational in them. However, it seems evident that these spectators have constructed the sensefulness of their interpretations in a different way, through different kinds of non-perceivable concepts.

Koningsberger studies the picture from a viewpoint of vanitas theme, which explains why he apperceives the postures and gestures of woman differently from Hustvedt, who sees the painting as a variation of the Annunciation theme. In the context of Vanitas theme the words such as "coquetry", "emptiness", and "brevity" make sense. Through these non-perceivable concepts Koningsberger aims to construct senseful relationships between visual elements of the painting. Literally there is no emptiness or brevity in a world of Vermeer's painting. There is only the woman with a pearl necklace and mirror. When this composition is seen as a depiction of coquetry it may evoke some associations with vanity. And through this notion the painting of Vermeer is linked with the wider pictorial theme called vanitas, which aims to depict the emptiness and brevity of earthly life in general. Thus, vanitas is a non-perceivable concept through which the relationship between the young lady, her necklace and the mirror is explained in a senseful way. It thus, organises the visual perception of Koningsberger, similarly to the way the concept of Annunciation organises the perceptions of Hustvedt.

In order to get a better understanding of the use of non-perceivable concepts in art historical interpretation we shall take another example discussed in the following chapters. In her article "Michelangelo's Dream" Maria Ruvoldt (2003), who is a specialist in the art of Baroque and the Renaissance, interprets the drawing called *Il Sogno* made by Michelangelo (Figure 8). The article has been published in *Art Bulletin,* which is one of the leading art history journals.

Ruvoldt's interpretation of Michelangelo's drawing is a quite typical example of through-going picture interpretations by art historians. It follows the practices of Panofskian analysis and proceeds from pre-iconographical analysis to iconographical interpretation. When one studies the interpretation presented by Ruvoldt, one notices that it follows the principles of analysis and synthesis. Firstly Ruvoldt introduces the visual elements of which the drawing of Michelangelo is constructed. After that she studies each of these elements more carefully, and finally, she makes a synthesis between the meanings of these details. In a beginning of her article Ruvoldt shortly describes the drawing of Michelangelo, as follows:

> At the center of Michelangelo's Sogno, a male nude perches precariously on an open box filled with masks. His upper torso twists to his left as he leans on a sphere for support. He turns his head in the opposite direction, looking upward and over his right shoulder to watch a winged creature descend from above. Considerably smaller in scale, the body of this heavenly visitor is silhouetted against the empty upper zone of the sheet as he floats down, head first, toward the nude. He extends his right arm to direct a trumpet at the nude's forehead, inflating his cheeks to sound the instrument. The trumpet pierces through an arc of smaller figures, many of them fragmentary, that encircle the nude. This arch of forms is rendered with a lighter touch, producing a sketchy effect that contrasts with the heavily worked body of the nude, yet the figures remain legible. Among assorted disembodied heads, we find figures that embrace and kiss while others do battle, drink, or sleep. (Ruvoldt, 2003, p. 86.)

FIGURE 8 Michelangelo Buonarroti, *The Dream*, (1533).

It is easy to notice that the citation above mainly bases on perceivable concepts, although there are expressions, such as “heavenly visitor” and “sound of the instrument”, which are not perceivable ones in a strict sense. However, after this brief description of the drawing Ruvoldt only quite shortly refers to visual elements of the picture when she is comparing them with other works of art (both Michelangelo's own works and those of other artists, such as Raphael, Dürer and Goya), or studies these elements through literal sources. However, a great part of Ruvoldt's interpretation bases on the use of non-perceivable concepts.

In her article, Ruvoldt studies the picture in the light of the biography of Michelangelo, his poems, correspondence and other documents. Central themes in Ruvoldt's interpretation are melancholia, dreams, love, desire, and creation. Although the paintings of the Renaissance have usually been studied from the perspective of melancholia, the discussion of dreams, love, desire and creation has not been that typical in the context of art history focusing on the Renaissance art. In her text Ruvoldt explains the kinds of meanings these concepts had in the literal discourse of the Renaissance. She clearly shows that earlier interpretations of Michelangelo's drawing have tended to underestimate the complexity of this artwork seeing it barely as an allegory of virtue and vice.

For example, while earlier interpretators have seen the figure of the central nude as representation of human soul, Ruvoldt pays attention to the fact that the youth leans on a large sphere, which represents the Earth. The globe as an attribute of the geometer plays an essential role in the iconography of melancholy. Ruvoldt also pays close attention to the pose of the central figure and suggests that the youth has just awakened and his body is still in motion. As Ruvoldt states, sleep is the habitual activity of a melancholic person. During the Renaissance melancholic inspiration was understood as a blend of positive gifts and dangerous temptations, and the sketched figures in the arch represent these both sides of a melancholic personality.

Ruvoldt also studies the unusual placement of the trumpet in the picture. The winged figure, the incarnation of the divine inspiration, does not blow his trumpet to youth's ear but instead towards the centre of his forehead. In the medical tradition of the Renaissance this location exactly corresponds to the location of the *imaginatio* or, according to Leonardo's formulation, the *imprensiva*, i.e., the part of the brain that receives and processes visual impressions. Thus, the drawing of Michelangelo emphases the visual experience of the artist.

In her interpretation Ruvoldt carefully studies all visual elements of the picture, sketched figures of the arch, bag held above the youth's left shoulder, and the masks that fill the box beneath the dreamer, and binds them with themes of melancholy, melancholia, dreams, love, desire, and creation. According to her interpretation the drawing of Michelangelo represents the whole process of artistic creativity, which proceeds from the dreamlike sketchy imaginations in the arch to the finished figure in the centre of the drawing. During her interpretation Ruvoldt, in an excellent manner, explains how the visual details together construct the total meaning of the art work. With the help of non-perceivable concepts she fills the gaps between visual elements in the picture in such a way that the interpretation becomes senseful. When one restudies the drawing after reading the interpretation of Ruvoldt he or she certainly apperceives it differently than earlier – as conceptualised through Ruvoldt's expert knowledge of art and ideological atmosphere of the Renaissance.

Although the differentiation between perception and apperception helps us to understand the functions of perceivable and non-perceivable contents in mental representations, the processes of perception and apperception cannot

explain the whole process of experiencing visual art. For example, it is possible that our first impression of the picture will be different from the conception received through a careful interpretation of all its visual details. During the process of interpretation we aim to construct senseful relationships between the different visual signs of the picture. While interpreting the picture we may notice some element in picture, which does not fit with our earlier interpretation. In this case we have to shift from one mental representation to another, which is a process called restructuring. The shifts between mental representations may also influence our emotional experience of the picture. In the next chapter the process of interpretation is studied from the perspective of human problem solving activities, and after that our attention will focus on emotional processes in experiencing visual art.

5 SHIFTS BETWEEN MENTAL REPRESENTATIONS

In the beginning of this chapter picture interpretation is compared with other problem solving tasks and fields of expertise, such as chess playing, medical diagnosis, writing and expertise in general history. After that we discuss about the ways experts can excel and fail in their problem solving tasks. In the end of this chapter the problematics of picture interpretation are approached through the concepts of restructuring, reflection and construction, which are often discussed in the context of problem solving studies, but which have received less attention in the context of visual art research.

5.1 Picture interpretation as a problem solving

Might it be possible to study the picture interpretation as a subtype of human problem solving activities? As mentioned earlier, Elkins (1999) has compared picture interpretation with puzzle solving activities. Although problem solving activities need not necessarily play a very important role in our experiences of visual art, art historians typically spend a lot of time in studying the pictures and interpreting their meanings. From this perspective it might be senseful to study the relationship between picture interpretation and other problem solving activities.

Research on problem solving was launched by early psychologists at Würzburg, including Oswald Külpe, Karl Bühler, Otto Selz and Adriaan de Groot, and also Gestalt psychologists were interested in problem solving activities (Dunbar, 1998). According to Dunbar (1998), cognitive scientific investigation of problem solving started in the 1960s when Herbert Simon with his colleagues began to study how human subjects solve complex problems in which there are no individual key elements that lead to solution of a problem. Another important feature in their research was that they used concurrent verbalisations obtained from the subjects to identify the mental operations, representations, and strategies that people use when solving problems. Thirdly,

these investigators built computer programs that simulate human problem solving. With the help of verbal protocols and computational modelling Newell and Simon (1972) constructed a comprehensive theory of human problem solving, which has played an important role in later studies in this field.

One of the most important tasks in the research on problem solving has traditionally been chess playing (e.g., Saariluoma, 1995). When comparing chess playing with picture interpretation there are many similarities, but also important differences. One of the most important differences between chess playing and picture interpretation is that in the latter case there is no unambiguous rating system, which would help to rank the players, i.e., art historians. Both chess playing and picture interpretation may be reasonably demanding task environments, but chess playing is a task more easily controllable than picture interpretation, because it has both clear rules and a clear target – winning the game. Of course, there is a goal also in picture interpretation: to construct an interpretation that is so good that it is not possible to replace it with a better, more comprehensive one. There is always an opponent in chess, either human or computer. In picture interpretation the opponents are other researchers of the picture who can present a better interpretation of it. But in the case of picture interpretation there can be several good interpretations, even contradictory ones, and it is not always possible to judge which one is the best. In addition, in the case of chess we are able to define all possible moves the individual player can make in a certain position. In picture interpretation the problem space is not so well-defined, but it is always possible that the spectator of artwork chooses some surprising theoretical reference frame for his interpretation. Thus, picture interpretation, as a task, is ill-defined when compared with chess playing.

Although the early work of problem solving research concentrated on problems such as puzzles and games, later this investigation has tended to focus on more complex real-world tasks taken from domains such as medicine, writing and other scientific skills (e.g., Dunbar, 1998). Besides chess playing, one of the most eagerly studied fields in the context of human problem solving activities has been medical diagnosis (e.g., Ericsson, & Lehmann, 1996). Studies on medical diagnosis have shown, for example, that medical experts have acquired higher-order concepts relating clinical information to diagnostic alternatives that replace the extensive biomedical reasoning of medical students. Typically the expert performance in medical diagnosis is found in the context of difficult cases that compel experts to reason extensively about diagnostic alternatives.

According to Norman, Eva, Brooks and Hamstra (2006) medical students spend the first half of their time in school studying aspects of the basic mechanisms of disease, and the last half in wards and clinics with patients. During their education medical students learn two kinds of knowledge: firstly, formal clinical knowledge of signs and symptoms, predicative value of tests, and preferred management of approaches, and secondly, experimental knowledge of specific cases. In the study of medical expertise it has been typical

to investigate how these various knowledge types contribute to the acquisition of expertise.

In the study of medical diagnosis both the prototype theory and the exemplary theory have played an essential role (Norman, Eva, Brooks, & Hamstra, 2006). In prototype theories it is typically assumed that category prototypes contain more features characteristic of some particular category and fewer features characteristic of other categories. Experiments have shown, for example, that prototypical diseases, such as diabetes, are mentioned more often, identified faster and viewed as more representative than less prototypical diseases. According to many researchers one critical element of expert reasoning is the problem representation. Typically the problem of medicine is organised through bipolar pairs, such as proximal vs. distal, large joint vs. small joint, recurrent vs. acute or chronic. The clinicians typically have direct access to remembered lists of features and diseases because they have spent much time in learning such lists. However, in medical diagnosis exemplar theory has also played essential role. According to this approach every learned category is accompanied by a number of examples acquired through experience, and these examples are still individually retrievable and provide support for the categorisation of new cases that are similar to at least one prior example. Typically the expertise in medical diagnosis proceeds from prototypes to ambiguous examples.

When we compare the definitions of medical expertise with art historical expertise we can easily notice that there are many similarities between these domains. Through our earlier examples we can see that also expertise of art history has something to do with higher-order concepts. If we, for example think Ruvoldt's (2003) interpretation of Michelangelo's picture, she seems to use many kinds of higher-order concepts, such as “melancholia” in her interpretation. Through this concept Ruvoldt links the drawing of Michelangelo with other works of art, which share the same theme. From this perspective the notion of “melancholia” works quite similar to some diagnosis of disease made by medical expert. Through these higher-order concepts both the medical experts and the art historians combine a wider group of phenomena under a shared label.

As medical experts, also art historians typically analyse their objects through bipolar pairs, such as abstract and representational, mimetic and expressive, linear and picturesque and so on. However, it also seems evident that when art historical expertise grows stronger, these distinctions become richer in nuances. In art historical expertise interaction between the general knowledge and the case-specific knowledge naturally plays as essential role as it does in the context of medical expertise. From this perspective both the prototype theory and the exemplar theory can explain the expertise in the domain of art history. Art historians have general knowledge of styles and meanings of conventional symbols, but they also have knowledge of the ways individual artists have used these conventional symbols, and which kind of meanings these artists have aimed to depict through them. For example, in her interpretation of Michelangelo's *Dream* Ruvoldt studies both general meanings

of visual elements within the drawing, but also how these visual elements relate with other artworks made by Michelangelo.

Both the medical doctors and the art historians study symptoms, and through these symptoms they aim to make a diagnosis of something. Where medical experts diagnose diseases, art historians might attribute works of art, i.e., they aim to define, when some work of art has been made, and who has made it. In this work, the signs in visual artworks function as symptoms of the culture-historical period the works of art are made. The study of visual signs in artwork usually leads to notions of periodical and individual styles through which it may be easier to attribute any given piece of art. In the end of nineteenth century Giovanni Morelli suggested that all artists have certain individual ground forms *(Grundformen)*, which they repeat in all their works. Morelli paid special attention to marginal details in paintings, such as the form of nails or structure of ears of human figures. He assumed that artists do not pay conscious attention to these details while they are working, and therefore they have painted these details both routinely and individually. Thus, by investigating these details it would be possible to attribute the painting. (See, Wollheim, 1973.) Naturally, in the context of most difficult cases of interpretation or attribution, the differences between art experts and novices become most significant.

Although both medical experts and art historians pay special attention to different kinds of symptoms, there are, of course important differences between these fields. When an expert of medicine makes a diagnosis, his or her hypothesis can be tested empirically. If the medicine works, the hypothesis is correct, but if it does not work, the hypothesis is false. In the case of art history there are no such simple methods for hypothesis testing. Although art historical interpretation, as a task, is more unspecific than many other task types traditionally studied in the context of problem solving research, it shares many features, for example, with playing games and making diagnosis.

In addition, it is, of course, possible to compare art historical picture interpretation with general expertise in history. Because it is possible to understand art history as one sub-field of general history, it is quite natural that there are many similarities in practices of these disciplines. According to Voss and Wiley (2006) expertise of historians is ill-structured when compared with domains, such as mathematics, formal logic, or well-controlled experimentation. The problems of history are ill-structured in a sense that they usually have more than one possible answer. It is, for example, typical that different experts approach the same issue differently, depending on the expert's theoretical background, related knowledge and other factors. As we have seen, for example in the context of picture interpretations presented by Koningsberger and Hustvedt, the problem of several possible solutions is also evident in the context of art history.

Voss and Wiley (2006) have summarised ten characteristics of history experts. The first characteristic is that historians evaluate sources by emphasising original and authentic information and use sorting criteria different from that of novices. Secondly, historians use at least three heuristics

in their analysis of sources. Corraboration is the act of comparing the documents with one another, sourcing is the act of looking first to the source of the document before reading the body of the text, and contextualisation is the act of situating a document in a concrete temporal and spatial context. Thirdly, it is typical that while analysing sources historians develop mental representations of the events and activities discussed in the text. Fourthly, although it is typical that historians show expert-expert differences in performance based on differences in areas of specialisation, they, however, show similarities in the use of domain-specific skills. Fifthly, historians have the goal of constructing narratives between events and actions. Sixthly, the narrative quality of historical interpretation is closely related to five components - coherence, chronology, completeness, contextualisation and causation. Seventhly, besides narratives there are also expository components in interpretations of historians. Eighthly, alternative narratives are quite typical in the domain of history. Alternative narratives may be written because of differential interpretation and use of sources, or because of differences in the time at these narratives are written. In addition, alternative narratives are typically found in countries in which the government and the citizens are not in agreement regarding historical-political-social thinking, and alternative narratives are also sometimes produced in classrooms as a result of differences in students' cultural backgrounds. Ninthly, it is typical in the domain of history that "weak methods" of reasoning, such as analogy, decomposition, and hypothesis or scenario generation and testing are used. And tenthly, in reasoning of history there is usually a general absence of control groups and the presence of temporally antecedent events.

When we study the characteristics of history experts presented by Voss and Wiley (2006) it seems that there are no crucial contradictions when these are compared with expertise of art historians. The criticism of sources is an essential practise in art history writing, and the acts of corraboration, sourcing and contextualisation are also typically used in art historical interpretation. In addition, art historians probably construct mental representations of their research subjects the way the general historians do, and there are both similarities and differences in these representations between individual experts.

Although narratives may play a more essential role in the context of general history than in the context of art history, also art historians tend to construct narratives. This is evident, if we, for example, think of biographies of artists usually written by art historians. In addition, also in art history there are plenty of alternative narratives. As we have seen, differences in interpretations between individual art historians are quite typical, and during the last decades, within the New Art History, it has been a very popular practise to construct alternative readings of artworks. For example, during the last decades, many artworks have been reinterpreted through gender theories, social history and narratology. In addition, weak methods of reasoning have also been used in art history. Especially visual analogies between artworks have traditionally played an essential role in art historical interpretation. And finally, also in the context of art historical interpretation there is usually a lack of so-called control groups,

because artistic phenomena art historians study are always somehow individual, although it is naturally possible to compare these phenomena to other phenomena on some level, the same way as it is possible to make comparisons between individual historical events.

Art historical interpretation has also been closely linked with writing skills. As Ronald Kellogg (2006) has put it, serious writing is at once a thinking task, a language task, and a memory task. According to Kellogg, a professional writer can hold multiple representations in mind while adeptly juggling the basic processes of planning ideas, generating sentences, and reviewing how well the process is going. In text production there are three phases, which need not be linear. The first phase is planning, and it includes generating concepts, organising them and setting goals to be achieved in the structure of the text. The second phase is the translation of ideas into sentences and paragraphs. And finally, the third phase is reviewing, which involves reading and editing operations that detect faults at multiple levels of text structure. However, writing, as a task is ill-structured, because the types of text generated by professionals are so varied.

All levels and phases of writing mentioned by Kellogg (2006) are naturally present also in art historical writing. However, in the context of art historical picture interpretation it is important to keep in mind that texts are written for different purposes. There is, for example, a great variety of art books mainly directed to wide audience, who only occasionally visit art museums. There are also publications which are mainly written for other art historians. These both subtypes of writing require specialised skills. For art historian the ability to popularise her or his subject matter is as essential as the ability to construct abstractions on the basis of results received. And of course, in art history writing, the logic of argumentation is as essential, as it is in the context of other disciplines.

Within the study of expertise it is possible to investigate both the ways in which experts excel and the ways in which the experts fail. According to Chi (2006), there are seven main ways in which the experts excel and fail. 1) Experts usually excel in generating the best solution to problems, and they also can complete the task faster and more accurately than non-experts. 2) Experts can also detect and see features that novices cannot and perceive the "deep structure" of a problem or situation. 3) Experts tend to analyse problems qualitatively by using both domain-specific and general knowledge in their tasks. 4) In addition, experts have more accurate self-monitoring skills than the novices, which means that experts are able to detect errors and the status of their own comprehension. 5) Experts are also more successful than novices in choosing the appropriate strategies. 6) In addition, experts are more opportunistic than novices in a sense that they can make use of whatever sources of information are available while solving problems. 7) And finally, experts can retrieve relevant domain knowledge and strategies with minimal cognitive efforts, and execute their skills with greater automaticity.

However, experts can also fail. For these failures Chi (2006) has presented seven reasons as well. 1) Because expertise is domain-limited, experts do not

excel in recall for domains in which they have no expertise. 2) Experts can also miscalibrate their capabilities by being overtly confident. 3) Because experts focus on the deep structure of a problem, they sometimes fail to recall the surface features and overlook details. 4) In addition, because experts tend to rely on contextual cues, they have difficulties when these contextual cues are not available. 5) Sometimes the experts also have trouble adapting to changes in problems, which have a deep structure that deviates from those that are acceptable in the domain. 6) In many cases experts are inaccurate in their prediction of novice performance. 7) And finally, bias is one of the most serious handicaps of experts. For example, medical professionals sometimes tend to generate diagnoses about which they have more knowledge. Sometimes domain-specific knowledge can link with functional fixedness, which means that experts may have difficulties coming up with creative solutions. In addition, it is typical that experts cannot articulate their knowledge, because much of their knowledge is tacit and their overt intuitions can be flawed.

The ways the experts excel and fail are quite relevant also from the perspective of art historical picture interpretation, although it is questionable whether some picture interpretation can totally fail. It feels quite natural to assume that there can be better interpretations as well as worse ones, but it is somehow problematic to think that even some very poor picture interpretation could totally fail in the same sense as medical diagnosis can. However, when we aim to a deeper understanding of those cognitive processes which direct our picture interpretation, we should take a short excursion to concepts of restructuring, reflection and construction. However, it is essential to notice we cannot make any interpretation if we have not apperceived the situation in some way or other. For example, we cannot make any picture interpretation before we have constructed a mental representation of this picture through apperception. In this sense, apperception is a precondition for other processes of thinking and interpretation.

5.2 Restructuring

The main idea of problem solving investigations is to clarify the conceptual processes in human thinking. In this work mental representation is one of the key concepts. Mental representations, which are self-consistent wholes, cannot include inconsistent content elements (Saariluoma, 1995). For example, when one is studying the painting of Vermeer he or she cannot simultaneously see the postures and gestures of a woman as a sign of coquetry and as a sign of Annunciation. The reason is simple: notions of coquetry and Annunciation exclude each other.

However, it is quite possible that some spectator first considers whether the postures and gestures are signs of coquetry, and after that if they have something to do with Annunciation. The main point here is that the spectator must concentrate on one possible interpretation before he or she can

concentrate on any other possible solution. However, it is also evident that two different and successive mental representations of the same spectator can be in opposition to each other, and in these two representations the same visual elements, such as the postures and gestures of the woman in Vermeer's painting, can be used for different purposes. Although mental representations are constructed through apperception, which integrates perceivable information and non-perceivable knowledge into these representations, the shift between different representations is no longer an apperceptive process, but it requires restructuring (e.g., Saariluoma, 1995).

In the context of picture interpretation the shift between mental representations is as essential as it is from the viewpoint of other problem solving tasks (cf. Saariluoma, 1995; Saariluoma, Nevala, & Karvinen, 2006). Although apperception can explain our first impression of the picture it cannot totally cover our experiences of art, because during the interpretation our first impressions of the picture can appear to be either insufficient or totally incorrect. In the former case we can complement our current mental representation, but in the latter case we must shift to another mental representation, in other words, to restructure (cf. Saariluoma, 1995).

The phenomenon of restructuring received its important position in thinking research when Köhler studied the mentality of apes, and also Gestalt theorists, such as Duncker and Wertheimer, discussed the problem of restructuring, but they usually understood restructuring as a change in the perceptual field (Saariluoma, 1995). More recently, Ohlsson (1984a, 1984b) has made representational assumptions attached to restructuring. As Saariluoma (1995) suggests, the distinction between perception and apperception makes it necessary to elucidate the concept of restructuring. According to him, from the viewpoint of restructuring, the content of mental representation is more important than the perceptual field. Although restructuring is characterised by a change between mental representations and this change may sometimes have perceptual consequences, these perceptual consequences are, however, secondary when compared with changes in representational level. As Saariluoma puts it, "Concepts, not percepts, are the key to human cognitions, and restructuring is in the first place a change in conceptual representation" (Saariluoma 1995, p. 167).

Also in the context of art interpretation it is our mental representation of the painting which can change during the process of interpretation while the visual surface of the painting stays unchangeable (cf. Saariluoma, 1995). During picture interpretation we can suddenly apperceive some sign in a painting differently, and that may force us to abandon our earlier mental representation and construct a new one. A new kind of apperception of some essential element in a picture may also guide us to observe some other visual elements within the painting more carefully than earlier, and in this sense a shift between mental representations can have some perceptual consequences.

Saariluoma (1995) has compared restructuring with hypothesis testing. One important feature in restructuring is that it acts both as a test of apperceived mental representations and as a shift from one mental

representation to another representation that might be more successful from a viewpoint of solving the problem. The logic of generating and testing hypothesis is essential in all theories of human thinking. For example, in Popper's (1959) model of scientific thinking the ideas of verification and falsification are important. These ideas, in general, concern how people convince themselves of the truthfulness of their thoughts.

As Saariluoma (1995) has suggested, mental representations are hypothetical solutions to problems, and they must be verified before it is possible to accept them. The main idea of problem solving cycle is quite simple. If the hypothesis generated can be verified through testing, then the solution is accepted, and if no verification can be found, then a new hypothesis must be sought and verified. In problem solving situations the shifting between mental representations is often automatic, which means that people do not pay any conscious attention to it. However, it can also be conscious. In the classic Gestalt theory, insight, i.e., the 'aha' experience, was a highly valuated form of restructuring, probably because it is usually accompanied by an emotional reaction. However, as Saariluoma has pointed out, insight is a relatively uncommon phenomenon, and thus the role of automatic forms of restructuring is even more significant than those of insights.

Also in picture interpretation the representational state received through interpretation acts as a test for hypothesis (cf. Saariluoma, 1995). In addition, written interpretations of art historians published in art journals or books can be understood as hypothesis testing. In this case the acceptance or rejection of interpretation is dependent on opinions of other art historians, because usually it is impossible to test these interpretations empirically. In a case where individual art historian is interpreting some picture the shift between her or his mental representations can be either automatic or conscious. In many cases, the earlier interpretations presented by other art historians function as a starting point of picture interpretation. Restructuring may seem necessary if it seems that earlier interpretations, for example, have ignored some essential visual elements within the pictures, or overestimated the role of some less important visual details in them.

In the context of written interpretations of art historians, it is important to notice that these interpretations do not normally make a difference between the phases through which the whole interpretation is constructed. It is possible that the interpretator has reconstructed her or his mental representations tens of times during the whole process of interpretation, but naturally he or she presents only the end product of this process. And if the spectators of artwork consciously try to pay attention to their mental contents from the psychological perspective, their process of interpretation will be disturbed, because it is not possible to share attention between task of interpretation and meta-level representation of this process. When the process of interpretation is finished we can naturally think of our interpretation on the meta-level, but in this case the problem is, that we still cannot get to our immediate processes of thinking. That is why it is important to study the process of picture interpretation not merely introspectively but also empirically.

As Saariluoma (1995), relying on Gestalt psychology, has pointed out, fixation is one of the key problems in human problem solving. When people construct one mental representation they cannot attend to alternative representations, because the capacity of their attention and working memory does not allow simultaneous representing and manipulation of multiple mental representations. This may lead to a fixation on a representational level, in which the processing of one mental representation interferes with and impairs the processing of an alternative representation. The recognition of a prototypical problem may almost automatically lead to the formation of mental representation. According to Saariluoma, fixation is a meta-level error. In fixation people are satisfied with solution they have found, and therefore they do not actively seek new solutions, even though these were reachable. If it is very difficult to find alternative solutions, the strength of the fixation may increase.

Fixation probably plays an essential role also in the picture interpretations presented by art historians (cf. Saariluoma, 1995). In many cases our first impressions of the paintings, for example, our notions of styles, can direct our interpretation so powerfully that we do not pay enough attention to significant details within the paintings, which can sometimes be more essential from the viewpoint of the meanings of the pictures than, for example, the notions attached to these styles. In the case of art history there sometimes appears to be a phenomenon of "collective fixation", which means that there is a strong tradition of interpretation for certain kind of pictures and these authoritative interpretations are seldom questioned. For example, in Finnish art history there has been a strong tendency to see the landscape paintings of Axel Gallen-Kallela, Pekka Halonen and Eero Järnefelt from the turn of the 19th and the 20th century as manifestation of Finnish national Romanticism. Not until the recent years have there been serious attempts to see these paintings from different angles – for example, as expressions of individual nature experiences of artists, as reflections of growing tourism and forest industry, or as a concern for environmental issues (Lukkarinen, & Waenerberg, 2004).

Although the process called apperception quite well applies to the art experiences of a wider audience, who only occasionally visit art museums, it does not have explanatory power enough to explain the whole process of picture interpretation in which the process of restructuring plays an important role. Thus, it is logical to include the concept of restructuring into content-based approach to experiencing visual art. The process of restructuring can also help us to understand our emotional experiences during art interpretation. When the painting is apperceived in some way, the emotional experience of the spectator is closely bound with her or his current mental representation of the artwork. However, when the content of mental representation changes during the process of restructuring also the emotional experience of the spectator may change.

In their content-based investigation on engineering thinking Saariluoma and Nevala (2006) have explained the process of engineering design through the concepts of apperception and restructuring. In addition they have studied

this process through the concepts of reflection and construction. Might these concepts have some explanatory value in the context of experiencing visual art? Although engineering design is a specific domain of expertise, we can assume that the modes of thinking the design engineers use are also used by artists and art historians in the context of their own domain-typical problem solving activities.

5.3 Reflection and construction

While apperception is a process which constructs consistent mental representations, restructuring is a process, which starts when some inconsistency appears (Saariluoma, Nevala, & Karvinen, 2006). Thus, apperception and restructuring are qualitatively opposite, but still complementary modes of thinking; apperception leads to restructuring and restructuring to apperception, but they cannot prevail at the same time.

Saariluoma, Nevala and Karvinen (2006) have paid attention to the fact that designers can have several hypotheses which are mutually inconsistent in content. For example when engineers are designing some objects they usually have more ideas than one of the materials or structures of these objects. When apperception and restructuring can generate new alternative solutions to problems, the process of reflection is needed when selecting between alternative solutions. Reflection is a process, which controls the comparison and selection between alternative mental representations on the meta-level. When apperception and restructuring focus on a single unified mental representation, reflection compares between several alternatives which are essentially incompatible with each other.

Also in the context of art interpretation the process called reflection plays an essential role. As we have seen, it is possible to construct several inconsistent interpretations of individual pictures. Although we cannot simultaneously construct two conflicting interpretations of some painting, we can first construct one interpretation, and after that we can construct another interpretation, and in these two interpretations the same visual elements can have contradicting meanings. For example, if we have constructed several conflicting interpretations of Vermeer's picture, we can compare these interpretations through reflection and evaluate which one of them is the most comprehensive. In addition, if we compare earlier interpretations of some picture presented by different interpretators, we also use reflection when we aim to figure out, which one of them provides the best explanation for the presence of the visual elements included into this given picture.

As Saariluoma, Nevala and Karvinen (2006) have suggested, there is also a process called construction besides reflection. In engineering design the problems are sometimes so complicated that it is necessary to divide them into sub-problems. Through construction the solutions of sub-problems are

combined into one self-consisted representation. It means that resolved sub-problems will find their places in the total plan. The process of construction essentially differs from restructuring and reflection, because it produces integrated representations. And it also differs from apperception. While apperception entails one sub-problem and a suitable solution to it, construction integrates a large group of solutions together.

Is it senseful to speak about construction in a context of art interpretation? As we have seen, visual artworks can sometimes be quite complicated objects. When art historian is studying them he or she usually finds some partial solutions to her or his questions. For example, diaries or letters of artist can shed light to some symbolic meanings of artwork, comparisons between different artworks can reveal if some element within the painting is typical or atypical within some given period of time, and so on. Thus, in many cases picture interpretation has much in common with puzzle solving activities (cf., Elkins, 1999). Some pieces are found and others are lost. In addition, the pieces found can sometimes be contradictory with each other. In any case the aim of the art historian is to combine the pieces found into as senseful whole as possible. It is possible to see the community of art historians as a social construction, which aims to understand individual artworks as chains of wider narrative, or as parts of great tradition.

If we, for example, think of the interpretation of Michelangelo's picture presented by Maria Ruvoldt (2003), we can easily imagine how complicated the whole process of interpretation has been, although this process is not explicitly depicted by Ruvoldt. The painting of Michelangelo contains plenty of visual signs, which are all carefully analysed by Ruvoldt in the light of Michelangelo's own texts and artworks, in a relation with artworks of other artists, wider literal discourse of the Renaissance, and so on. It is highly possible that during her interpretation Ruvoldt faced numerous difficulties when it comes to contradicting meanings of visual signs in Michelangelo's work. We can assume that interpretation presented by Ruvoldt has been constructed piece by piece; first one visual element within the picture was analysed, after that the second, and the third, and finally the interpretations given to these individual elements were combined into a coherent and senseful whole. In this sense the concept of construction is essential from the perspective of picture interpretation.

Although the process of artistic creation does not belong to the scope of this research, we can assume that apperception, restructuring, reflection and construction also play essential roles in the process of artistic creation (cf. Saariluoma, Nevala, & Karvinen, 2006). Artists create their first drafts of artworks through apperception, and later they can modify these drafts through restructuring. In ways similar to engineering designers, also artists may have many conflicting representations of the artwork when they are designing. These representations can be either external sketches or internal plans. When the artists are searching the best possible expression for their ideas, they have to make several choices between different possible alternatives, and from this perspective the process of reflection naturally is an essential concept when artistic thinking is studied. In addition, the process of artistic creation can also

proceed piece by piece, similarly to the process of interpretation. It is, for example, possible that artists divide their process of creation into several sub-problems, which are solved in different phases of the process. From this viewpoint the process of construction is also crucial in the context of artistic creation.

When restructuring, reflection and construction are studied from the perspective of expertise, it seems evident that these play a more essential role in the context of art historical picture interpretation than in art experiences of tourists, who only occasionally visit museums. Because art historians have wider art-specific knowledge than novices, it is easier for them to generate alternative interpretations for the pictures they are studying and compare the sensefulness of these alternative interpretations on the meta-level. However, it is also essential to notice that in some cases previous knowledge of art can lead to fixation. Sometimes it may be easier for novices to construct fresh interpretations of artworks than it is possible for art historians.

Despite the fact that perception is the starting point of our experiences of visual art, it seems evident that through this concept it is not possible to explain the whole process of experiencing visual art. Otherwise, the concept of perception is so wide that it has only a minimal power of explanation. From this perspective it is essential to differentiate between perception and higher cognitive processes, such as apperception, restructuring, reflection and construction, which are all sub-processes of thinking and interpretation. If we assume that perception directly leads to understanding, these processes of thinking are totally ignored. While speaking of aesthetic experiences the processes of thinking and interpretation have usually played quite a marginal role, and our experiences of visual art have appeared to be less intellectual than they really are. By differentiating between various sub-processes of thinking and interpretation, we can organise the investigation of experiencing visual art in a way that makes it easier to compare the results obtained by different researchers. In addition, the differentiation between various sub-processes of thinking can also help us to understand the problematics of emotions in the context of experiencing visual art.

6 ATTRIBUTING EMOTIONS

In this chapter we will discuss the relationship between artworks and emotions. Firstly we make a short excursion to the ways the problematics of emotions have earlier been discussed in the context of art. After that we will analyse how the Einfühlung theory (feeling-into, theory of empathy) explains our emotional art experiences, and how this approach relates with appraisal theories of emotions. In the end of this chapter we will study the ways our emotional experiences of art could be categorised.

6.1 Relationship between artwork and emotions

> Speaking metaphorically, we might say that to a large extent, emotions are the cement that keeps audiences connected to the artworks... (Carroll, 2001, p. 216).

As Carroll (2001) states, emotions certainly play an essential role in our experiences of art. Probably just the presence of emotions in our art experiences explains why we spend our time in art museums, concerts, cinemas, and by reading literature. Although it is possible to study the processes of thinking in the context of domains, such as engineering design, in the context of art it is more relevant to study the roles of emotions. If we think of the products of engineering design, such as paper machines, lawn-movers, or mobile phones, they do not elicit very diverse emotions in us, at least when they are functioning in a way they should. And if they do not function in ways we expect, our emotional experience is mainly negative. Positive emotions are quite seldom experienced when dealing with products of engineering design. Conversely, when dealing with art the variety of emotions experienced can be much wider.

However, as Carroll (2001) has remarked, in many cases artworks are remote from us in time and place, and it may be difficult for us to understand their emotional dimensions, because we do not have the appropriate cultural background. In cases like this art history, literary history, film history, and the

history of music have an essential role to play, because historians can supply us with the background necessary to make the emotive address of texts from other cultures and periods in the history of our own culture emotionally accessible to us. For example, after reading Ruvoldt's (2003) interpretation of Michelangelo's drawing one certainly experiences this artwork differently, not only cognitively, but also emotionally.

One of the main interests in theoretical literature focusing on the relationship between art and emotions has been the attempt to create a general theory of emotions which covers all forms of art, from visual art to literature and music (e.g., Carroll, 2001; Kreitler, & Kreitler, 1972; Matravers, 1998). Despite the fact that these art forms may have many shared features, such as similar themes, they also have many important emotional characteristics of their own. Pictures have one feature, which makes them ideal object for emotion research; while literature, music and films are temporal, pictures are stable in time. In a context of reading and listening the stimulus transforms when the process of reading or listening continues, but pictorial stimulus stays unchangeable. In addition there is some evidence that compared with words, pictures have a privileged access to a semantic network containing affective information (e.g., De Houwer, & Hermans, 1994).

Although there are numerous empirical researches, which some way or other deal with the relationship between art and emotions (e.g., Cupchik, & Wroblewski-Raya, 1998; De Houwer, & Hermans, 1994; Furnham, & Walker, 2001; Kreitler, & Kreitler, 1972; Lazarus, & Lazarus, 1994; Winston, & Cupchik, 1992), there is a lack of attempts to construct a theory of relationship between emotions and visual art. Emotions are often indirectly involved with studies which explore art preferences of various kinds of personalities or spectators with different levels of art expertise (e.g., Cupchik, & Wroblewski-Raya, 1998; Furnham, & Walker, 2001; Winston, & Cupchik, 1992). Even if these studies may have a great impact on art therapy or art education, they do not directly answer to questions like which kind of stimulus features elicit emotions, or which kind of emotions we exactly experience when we face these features. Usually, the distinctions between emotions and artistic styles are quite rude in these studies, such as pleasure versus displeasure, or abstract versus representational art. However, the relation between abstract and representational art is more complex than these studies suggest - not fixed, but rather sliding. And, in addition, there are more sophisticated ways to differentiate between emotions experienced in the context of art.

As Carroll (2001) states, little attention has been paid to the way in which artworks address the emotions of readers, listeners, and viewers, although recent psychological and philosophical research on emotions has made the possibility of interrogating the relation of art to emotions feasible with heretofore unimagined level of precision. Carroll suggests that we should pay more attention to the dynamics of audience's emotional involvement with artworks, and especially to the way in which such artworks are designed to elicit emotions. According to Carroll, the emotional states in life and in art have a function of focusing attention and organising perception. Emotions direct our

attention to certain details rather than others, and enable us to organise those details into significant wholes or gestalts. In real life the situations we encounter are usually unstructured, but in the case of art the situations have already been structured for our attention. Artists have both chosen the situations we encounter, and decided what features of those events are worthy of direct comment or implication. In other words, artists have prefocused the situation somehow, and in order to analyse how an artwork elicits emotions, it is important to isolate the way in which the text is prefocused, i.e., how it is structured.

Derek Matravers (1998) has argued quite similarly with Carroll (2001) that the emotional effect of the artwork is combination of the content of the work and of the way that the content is presented. According to him, we cannot understand emotional experience aroused by artwork simply by analysing our emotional and aesthetic concepts, but we should also study the properties of those artworks which elicit emotions. Research on how artworks are prefocused is naturally very important if we want to get to a deeper understanding of our emotional art experience, and that is exactly the point which is usually lost in empirical studies of the art. Quite seldom in these studies the exact quality of visual stimulus is clearly explained. For example, it is quite typical that even the names of artists and the titles of their works used as stimulus are missing. If we do not have enough knowledge of the quality of stimulus, how can it be possible to evaluate the significance of the results achieved?

Although the questions attached to the exact quality of stimulus material and prefocusing of artworks are essential, we should not forget the fact that the same stimulus can produce totally different cognitive interpretations, as the comparison between interpretations of Koningsberger and Hustvedt has shown. If we think of this situation from the viewpoint of emotional experience it seems evident that Koningsberger and Hustvedt could not have an exactly similar emotional experience. Because vanitas theme is closely related with the death and Annunciation theme with the birth, it feels quite natural to think that the emotional experience in the context of vanitas theme is more melancholic than the experience in the context of Annunciation theme. However, it is possible that both of these spectators have experienced the painting as maximally pleasant, despite of their differences on the conceptual level, because the evaluation of aesthetic pleasure is closely linked with the evaluated quality of artwork.

Nevertheless, from the viewpoint of content-based approach the differentiation between aesthetic pleasure and displeasure seems too crude, because it cannot powerfully enough explain the differences between our conceptual interpretations behind our emotional experiences. However, when we aim to develop a content-based approach to experiencing visual art we also should be able to link our emotional experiences with this theoretical frame of reference. In this work it is essential to study earlier theories of emotions. First, we will make a short excursion to Einfühlung theories, which have played an essential role in a field of art history, and secondly, we will compare the

Einfühlung approach with appraisal theories of emotions. After that we will examine more closely the categorisations of emotions.

6.2 Einfühlung (feeling-into, empathy)

In the field of art history and aesthetics one key concept attached to emotions has been *Einfühlung*, the literal meaning of which is feeling-into. In English speaking countries the theory of Einfühlung is widely known as the theory of empathy. The concept of Einfühlung was first mentioned by J. G. Herder, and later it was developed by Robert Vischer, Friedrich Theodor Vischer, Johannes Volkelt, Theodor Lipps, and Wilhelm Worringer, among many others. Some theorists have even searched the roots of the concept from the writings of Aristotle. The main idea in Einfühlung theories is that the beholder projects her or his own emotions on art and experiences them as a part of the work. Although psychologists and art historians widely lost their interest to the concept of Einfühlung in the beginning of the twentieth century, the concept lingered for decades within the discourse of modern architecture, and recently this concept has returned to studies of art, literature, film and theatre (See, Koss, 2006.)

In the texts of different writers the phenomenon of Einfühlung receives slightly different meanings. From the viewpoint of spectators' psychology Lipps's (1903, 1903/1960, 1907) approach to Einfühlung is more useful than those presented by art historians, such as Wölfflin, Schmarsow, Hildebrand, and Worringer, because art historians have paid so much attention to styles and individual works of art that some essential psychological points of this theory have obscured (e.g., Koss, 2006).

According to the theory presented by Lipps (1903, 1903/1960, 1907), people have a tendency to imitate externally perceived movements or dynamic postures of people and objects. When children imitate others, also externally, adults usually reduce their imitation to incipient movements of muscles, which are experienced kinetically. Emotions are associated with kinetic sensations on a basis of our earlier experience. When a person observed is undergoing an emotional experience, he or she performs certain movements. If the observer notices these movements, he or she tends to spontaneously imitate them, and then the imitation leads to kinetic sensations. Because these kinetic sensations have previously become intimately associated with emotional experiences, their occurrence evokes an experience of the emotion itself, and the observer feels an emotion quite similar to that the person observed. The main point in Lipps's theory is that we do not merely receive the understanding of other's movements and emotion through imitation, but we actually experience that emotion as if it were our own and directly evoked in us. Of course, feeling-into requires that the observer is ready to experience. (See also, Kreitler, & Kreitler, 1972.)

And how does the Lippsian approach function in the context of art experience? If we think of the theory presented by Lipps from the perspective

of representational paintings it seems to work quite well. For example, so-called "Einfühlung-figures" have been very typical in art of different periods. These figures had a special role in the works of Caspar David Friedrich (1774-1840), in which they dramatised the sublimity of nature by offering to spectators a place where to situate themselves (Figure 9). But how does feeling-into work in the context of abstract paintings, which necessarily do not include any figures or other references to external reality? According to Worringer (1908/1953), Einfühlung plays no essential role in abstract art, but the fact that Einfühlung has been an essential concept in studies of architecture speaks against this. In fact, even Lipps himself sees the dynamism of space as a cause of "inner expansion" (Lipps, 1903/1960). Thus, it seems possible to think that we can mentally imitate the rhythm or compositional dynamism of abstract paintings and experience this dynamism as emotion.

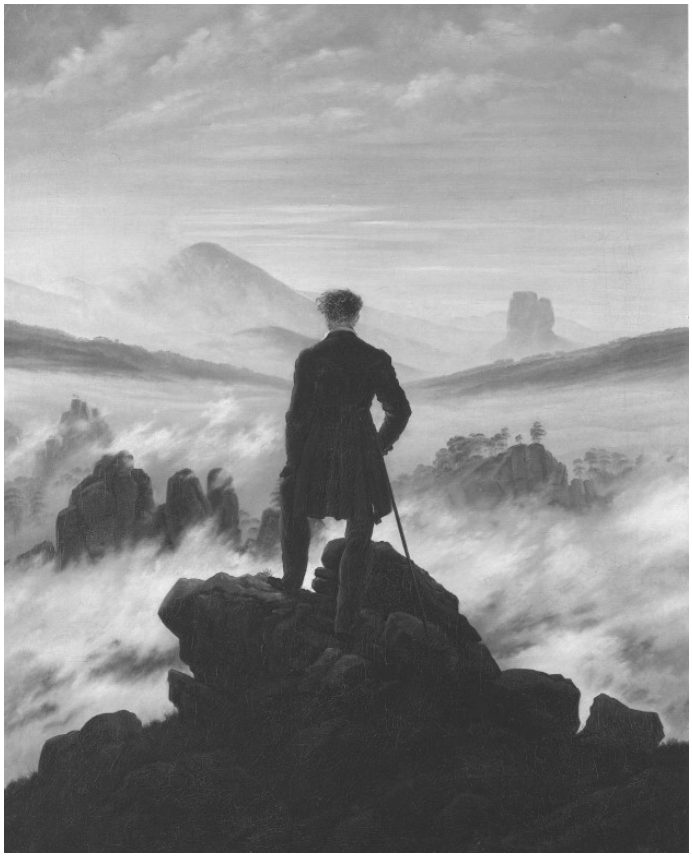

FIGURE 9 Caspar David Friedrich, *Wanderer above the Sea of Fog*, (ca. 1818).

Another essential feature in Lippsian (1903, 1903/1960, 1907) approach is that it seems to suggest that our emotions precede cognitive interpretations. If we, again, think of the two different interpretations of Vermeer's picture presented above by Koningsberger and Hustvedt, should we assume that the difference between them bases on different imitations of the woman's posture? The theory presented by Lipps has mainly been criticised on the basis that it overlooks the role of cognitive processes in imitation, in identification of emotional

expressions, and in the evocation of emotions through kinetic sensation. However, as Kreitler and Kreitler (1972) have stated, Lipps's theory does not absolutely exclude these cognitive processes, but it is possible to reinforce it with these elements. In the next chapter we will study more carefully the relationship between Einfühlung and appraisal theories of emotions.

6.3 Appraisal theories of emotions

During the last decades the questions attached to emotions have appeared in the sphere of cognitive psychology and cognitive science. Earlier, emotions were viewed as something non-cognitive. Nowadays it is usually assumed that cognition and emotions are essentially linked with each other, and that it is impossible to acquire a full understanding of emotions without cognition, or full understanding of cognition without emotions (Hogan, 2003).

Carroll (2001) has analysed the relationship between art and cognitive theories of emotions. As he states, cognitive theories of emotions tend to differentiate between feeling states and emotional states, and see feelings as a part of emotional states. When we are in an emotional state, our heart rate may alter, we may feel our chest expanding or contracting, or we may feel hot and flushed. These kinds of physical, psychological and phenomenological changes are feelings. However, cognitive theories of emotions state that bodily feelings are only one side in emotions. According to these theories, emotional states are linked through our cognitive states to external objects, events, and situations. Thus, emotional states consist of cognitive components and feeling components, and feeling states are usually understood as causes of cognitive states. It is also important to notice that we even can activate bodily changes in ourselves by means of thoughts. From the viewpoint of artworks this means that we may have emotional relationship with fiction, concerning situations, persons, objects and things that do not exist. According to Carroll, fictions, constructed as propositions to be imagined, supply us with relevant propositional content, and in entertaining that content as the author mandates, we can be emotionally moved by fictions.

The term "appraisal" was first used in relation to emotions by Martha Arnold in 1960 (e.g., Power, & Dalgleish, 1997), and after that the term has been widely applied by theoreticians, such as Frijda (1986), Oatley and Johnson-Laird (1987), Lazarus (1966, 1991) among many others. Between individual theorists of appraisal there are many differences, but the shared feature in all appraisal theories is an assumption that emotions are essentially linked with our cognitive processes (e.g., Power, & Dalgleish, 1997).

Recently Roseman and Smith (2001) have presented a good summary of the general features of appraisal theories. In appraisal theories, emotions are differentiated by cognitive evaluations, and it is usually supposed that the interpretation of events, rather than events themselves, causes emotions.

Because the same situation can often be interpreted in various ways, individuals who appraise the same kind of situation differently, feel different emotions. And when a certain individual appraises the same situation differently at different times, he or she feels different emotions. It is also possible that physically dissimilar events produce the same emotion if they are appraised similarly. It means that a common pattern of appraisal is found in all the situations that evoke the same emotion. According to appraisal theories, emotions are generated when particular appraisals are made, but also situations remembered or imagined can be appraised. Most appraisal theories assume that appraisal proceeds effortlessly and generates emotions automatically, but appraisal can also be directed in controlled processing. It is also assumed that appraisals start the motion process by initiating the psychological, expressive, behavioural, and other changes that comprise the resultant emotional state. Appraisal, which can occur both on a conscious and unconscious level, guides coping by selecting the emotional responses that are most likely to help in attaining important needs under the prevailing conditions.

From a viewpoint of our emotional engagement with art these definitions seem to make sense. Appraisal theories allow us to feel different emotions when we are looking at the same picture, because these emotions are dependent on our cognitive appraisals. When we now compare the Einfühlung process depicted by Lipps with definitions given above there seems to be no crucial differences between these approaches. According to Kreitler and Kreitler (1972), there are at least three ways to extend the Lippsian approach towards cognitive theories of emotions. Firstly, it is possible to assume that observer's imitation reflects both learned and physiological associations about the relation between specific emotions and inner sensations. Secondly, it may be expected that physiological arousal due to imitation interacts with cognitive interpretation in various forms. For example, a certain cognitive interpretation of the situation may enhance imitation by directing the attention to the expressive features of the model. Cognitive interpretation may even facilitate an imaginary representation of the situation which affects arousal in a manner similar to imitation proper. And thirdly, both imitation and cognitive elaboration may be determined by a host of situational factors and personality dispositions of the observer.

In appraisal theories there is still one feature which may be essential from a viewpoint of our emotional experiences of art. Although these theories assume that cognition and emotion are essentially linked with each other, and usually cognitive appraisal is understood as a cause of evoking emotion, this direction can also be reversed. According to Roseman and Smith (2001), appraisals can also be components of emotions or consequences of emotions. Emotion can arouse automatically, and, only after that, cognitive appraisal will be included into it. It seems intuitively clear that also in our experiences of visual art emotions can sometimes precede our cognitive interpretations of pictures. For example, we can experience the sadness or happiness of pictorial atmosphere before we can explain our experience with cognitive concepts. This

viewpoint is very important when aiming to combine the Lippsian Einfühlung theory with theories of appraisal.

The Einfühlung theory also shares many essential elements with the "make-believe" theory, sometimes called the "imagination hypothesis", which originates from the writings of Gombrich. In his "Mediations on a hobby horse" Gombrich (1963) defines the elements of an artwork as substitutes for reality. He compares this situation with child's play, in which a stick may be a substitute for a real horse. According to Kendall Walton (1978, 1990), viewers of art and readers of literature imagine that they participate in situations depicted in the works of art. They can participate in these situations either as observers or as active characters, and they can also imagine that they feel the emotions depicted in the works of art.

Although the "make-believe" theory seems to leave more room to imagination than the Einfühlung theory, which assumes that our emotions are activated almost automatically, both of these theories suggest that we mentally enter into another reality when we come face to face with a work of art. Currie (2004) in his *Arts and Minds* has studied empathy from the viewpoint of simulation theory (e.g., Gordon, 1986), which assumes that an observer simulates the experiences of other people within his or her own mind. According to Currie, the simulation theory explains our capacity to cope with real people, their thoughts, feelings and behaviour, and, thus, offers a hypothesis about the mental mechanism underlying empathy. Currie (2004) has also approached the problematics of pretending through the concept of meta-representation, which is a mental representation of other people's (or our own) mental representation. It is possible to understand all these approaches as extensions of the Einfühlung theory.

Recently, the questions concerning Einfühlung have been topical, partly as a consequence of research focusing on mirror neurons. In 1995 Iaccomo Rizzollati with his team of the University of Parma were studying the firing of motor command neurons of monkeys performing specific tasks, such as pulling, pushing or grabbing some objects. Accidentally the researchers noticed that these same neurons were also firing when the monkey was watching another monkey or human person performing these tasks, and this same phenomenon happens in humans. Since then these neurons have been called mirror neurons, or "monkey-see, monkey-do" neurons. As V. S. Ramachandran (2004) has stated, mirror neurons permit a sort of "virtual reality" simulation of other people's actions and intentions, which would explain why humans are so good at constructing a "theory of other minds" in order to predict their behaviour. Some studies have shown that the system of mirror neurons does not work normally in the case of autistic children, which would explain their social awkwardness as well as their lack of empathy. Thus, it seems that the phenomenon of Einfühlung might have some neurological evidence, but it is quite difficult to evaluate how this neurological approach functions in the context of our visual art experiences, in which expressive properties of artworks and culture-historical knowledge of their backgrounds usually play an essential

role. In any case, it seems clear that the firings of neurons cannot explain the phenomenological part of our experiences.

When the Lippsian (1903, 1903/1960, 1907) approach to Einfühlung is extended with elements borrowed from cognitive theories of emotions, it is possible that either emotions or cognitive appraisals lead our process of picture interpretation. In different situations and in the context of different artworks either emotions or cognitive appraisals can be primary. From the viewpoint of content-based approach it is possible to see mental representations as integrated wholes of cognitive and emotional content elements. As Saariluoma (2003b) has suggested, we can use the concept of emotional content while speaking of the part of mental representation which is caused by activation of emotions. In mental representations cognitive and emotional content elements are usually closely linked with each other. The process of apperception through which our mental representations are constructed can either be led by our emotions or our cognitive concepts. From this perspective, appraisal, as well as Einfühlung, can be understood as sub-processes of apperception.

As Haviland-Jones and Kahlbaugh (2000) have stated, emotions play an important role in our apperceptive processes, because they unite our experiences. Emotions can attract the self to new experiences and connect our separate experiences that share emotional processes. From the viewpoint of content-based approach this means that emotions can work as a link from one experience to another, just as the cognitive concepts do. For example a painting, which irritates or brings pleasure to the spectator, can evoke associations with other artworks with same kind of emotional influence or with other events or situations where this emotion has been raised.

According to Parrott and Spackman (2000), the field between emotion and memory can be seen in two ways. Either emotion can be a characteristic of the material that is remembered, or it can be a characteristic of the psychological state of the person who remembers. In the latter case, emotional states may affect memory when memories are being formed (encoding) or when memories are being recalled (retrieval). One interesting phenomenon in the relationship between memory and emotions is mood-congruent recall, which means that when some person is in certain mood, he or she is prone to recall memories which are congruent with this mood. For example, when a person is sad, he or she is more prone to recall sad memories than happy ones.

In the study of Snyder and White (1982) the participants were first asked to imagine a series of very happy or very sad feelings and thoughts, and after that the participants were invited to recall autobiographical memories from the previous week of their lives. In this study mood-congruent recall was obtained: happy participants recalled more happy memories than did sad participants, and conversely. According to Parrott and Spackman (2000), the associative-network theory introduced by Isen, Shalker, Clark and Karp (1978) and further developed by Bower (1981) offers an explanation to mood-congruent recall. According to this theory, human memory can be modelled as a network of concepts that are linked together to describe an event. In this network, the concepts are represented as nodes and the associations between the concepts as

links. When a person is consciously aware of a certain thought or concept, the corresponding nodes activate above a certain threshold, and this activation spreads throughout the network. (See also, Parrott, & Spackman, 2000.)

From the viewpoint of experiencing visual art these mood-congruent phenomena are probably very important, because they can explain why individual spectators tend to apperceive the same works of art differently when they are watching them more frequently than once. However, it is also essential to study how we could categorise our emotional experiences in the context of art.

6.4 Categorisations of emotions

Although empathy is an important concept attached to art experience, there are no particular emotions which dominate our experience of art. As Lazarus and Lazarus (1994) put it, aesthetic experience can arouse any of the emotions. The emotion, be it anger, anxiety, hope, sadness, joy, or whatever, depends on the personal meaning of the event depicted. Carroll (2001) calls these kinds of emotions, marked in ordinary speech, "garden-variety emotions". Russel and Lemay (2000) have studied the categorisations of emotion concepts and they have summarised many important features of these categorisations. While some concepts are very general (emotion, feeling, mood), some others are more specific (pride, quilt, outrage). There are both concepts, which imply an object (afraid of something, in love with somebody) and other concepts that do not (it is possible to be anxious, happy, or depressed without knowing why). Some emotion concepts form natural, bipolar pairs (happy-sad, tense-relaxed, elated-depressed), but there are other concepts which seem to lack exact opposites (outrage, terror, and agitation). According to Russell and Lemay, one important feature in emotion concepts is that they have fuzzy boundaries. In order to understand better the relationship of art and emotions it is essential to study more closely some differentiations between emotion concepts.

A-emotions and R-emotions

According to Carroll (2001), normally we do not identify emotionally with fictional characters by taking on their emotions, but usually there is an asymmetrical relation between the emotional state that characters undergo and those of audience. It is really essential to make a difference between emotions we experience while watching the pictures and those emotions we associate with pictures. In addition, there is no agreement of the quality of the relationship between the emotions of the artist and those of audience. For example, Tolstoy thought that the emotion experienced by audience should be the same emotion that has been sincerely undergone by the artist, while Collingwood stated that artistic expression was an occasion for the artist to work through or clarify some initially vague feeling, and thus the emotion of

artist is supposed to stand in contrast to the emotions experienced by audience (Carroll, 2001).

In his article "Emotion, Art and the Humanities" Ed Tan (2000) differentiates between A-emotions, which relate to the artwork itself and R-emotions, which result from appraisals involving elements of the represented world. While A-emotions are mainly linked with style, the theme or subject is the main source of R-emotions. Within R-emotions Tan distinguishes between empathetic and non-empathetic emotions. According to him, in empathetic R-emotion, the beholder imagines what the represented situation means to some person represented, and in non-empathetic R-emotion the situation is viewed outside, stripped of its personal meaning to anyone within represented world.

As Tan (2000) suggests, it is essential to differentiate between emotions the spectators associate with represented world and emotions the spectators associate with artwork. Pictorial figures with their postures and gestures represent different kinds of R-emotions, but necessarily the emotions the figures express are not shared by spectator. In a non-empathetic situation the figure representing sadness does not infect the beholder with its sadness, but the spectator may, for example, feel A-emotion, such as admiration, attached to powerful expression of emotions. It is really different thing to admire a work of art, or to think that some person in a world represented is sad. In the former case we ourselves feel something, and in a latter case we construct a meta-representation of the mood of the people depicted.

However, Tan (2000) does not clearly distinguish between moods of the persons depicted and general atmosphere of the artworks. Of course, both the moods of persons and general atmosphere of the artwork belong to the sphere of R-emotions, but while we can feel empathy towards the persons depicted, it makes no sense to say that we feel empathy towards the situation depicted. When the notions of the moods of figures base on our remarks of postures, gestures and facial expressions of the people, the general atmosphere constructs between all visual elements within the paintings.

Beside figures there are numerous other elements in paintings which elicit emotions, such as colours, forms, and their relationships in abstract compositions. Experiences of balance or imbalance, harmony or disharmony can link with positive or negative feelings. It is important to notice that Tan's (2000) distinction between A- and R-emotions does not correspond with the distinction between representational and abstract art. Both forms of art can raise both types of emotions, although R-emotions probably play a more essential role in the context of representational art. However, A-emotions attached to stylistic questions, such as composition, are equally important in representational and abstract art. In traditional, representational art the postures and gestures of human figures usually function as a signs of their emotional states, but in abstract, expressive art the strokes of brush can express, for example, emotions of artist.

If we think of our emotional experiences in the context of visual art from the perspective of distinction between perceivable and non-perceivable mental contents, it seems that all kinds of emotional experiences belong to the category

of non-perceivable mental contents. Firstly, we cannot directly perceive the mood of some figure depicted. Although we can perceive the posture, gestures and facial expressions of people depicted, we cannot directly perceive the sadness of some person, but only through an abstract representation of sadness. Secondly, when we are talking about the general atmosphere of the painting we make comparisons between different visual elements within the painting and compare our remarks with abstract representations of atmospheres. And finally, when we feel empathy, admiration, or something else, towards people depicted or towards an artistic representation, we have to apperceive the artwork some way, before these kinds of emotions are possible.

Theme, valence, arousal and basic emotions

General theories of emotions and empirical studies supporting them offer diverse tools to categorise emotions experienced in the context of visual art. The most popular theoretical concepts in the context of emotion studies are theme, valence, arousal or intensity. Emotion theme differentiates between various emotional states. For example, envy means that somebody wants something some another person possesses, and hope means the individual is confronted with some unfavourable life condition in which the positive outcome has not yet occurred (e.g., Lazarus, & Lazarus, 1994). The concept of emotion theme, thus, suggests that different emotions have different properties, which define the theme of emotion, and make it possible to differentiate between some specific emotion and other emotions.

While valence is a subjective feeling of pleasantness or unpleasantness, arousal is a subjective state of feeling activated or deactivated (Feldman Barrett, 1998; Feldman Barrett, & Fossum 2001). For example, if we think of emotion concepts, such as happiness and sadness, the valence of these terms is different. While happiness is a positive emotion term, sadness is a negative one. In the context of arousal we can also speak of intensity of emotion terms. Pleasantness, for example is a weaker term than happiness, and happiness weaker than euphoria. Of course, it is important to notice that it is not always possible to group emotions on a basis of their valence or intensity. Pity, for example, is somewhere between positive and negative emotions, and it may be quite difficult in some cases to evaluate, for example, if the intensity of pity is stronger than the intensity of compassion or sympathy.

As Carroll has argued, "Where most storytellers fail (when they fail)... is usually not in evoking the emotions they intend to evoke, but evoking them at the wrong level of intensity" (Carroll, 2001, p. 231). For example, if the writer or artist aims to evoke the feeling of sadness, it is possible that he or she suggests this emotion so powerfully that the reader or spectator thinks that depiction is pathetic. In art of different stylistic periods there seems to be interesting differences just between intensities of emotions depicted. In the art of Baroque and Romanticism, for example, the depiction of emotions is usually very dramatic when compared with the expression of emotions of some other artistic periods, such as Classicism, Realism, or Impressionism. However, it is essential

to notice that all artistic periods have their own conventions for depiction of emotions. In some periods emotions are expressed through human figures, and in other periods through dynamism of colours and forms, and so on.

In the field of psychology there are numerous ready-made tests for our emotional states. The PAD Model developed by Albert Mehrabian (1995) is one example of these tests. In this test participants are asked to evaluate their emotional states with the help of a questionnaire which includes pairs of emotion terms. By using these structured tests it is possible to compare our emotional experiences between various stimuli. If we want, we can compare, for example, emotional effects of some paintings with those of mobile phones or computers. However, results received through these kinds of tests are usually quite rough. They cannot reveal us the exact emotions experienced by participants, but they can present a more generalised evaluation of it, which can be very useful if there are plenty of participants.

Theories of basic, primary or fundamental emotions give a special status to certain emotions, such as anger, fear, sadness and joy, and assume that other emotions are bare variations of them. However, between different theoreticians there is no agreement of how many emotions are basic, which emotions are basic, and why they are basic (e.g., Ortony, & Turner, 1990; Power, & Dalgleish, 1997). The prototype theory of emotions is a kind of variation of basic emotion theories. It assumes that there are no sharp boundaries between different emotions, but emotions rather form fuzzy categories, and that some emotions in these categories are more prototypical than others. Shaver, Schwartz, Kirson and O'Connor (2001), for example, have presented on a ground of their experiments a tree-structured category of emotions, which includes six primary emotions, 25 secondary emotions and 135 tertiary emotions. According to them the primary emotions, which are most commonly used, are love, joy, surprise, anger, sadness and fear.

Although categorisation of emotions may be difficult because of their fuzzy boundaries, it is, however, essential to categorise them as precisely as possible if we aim to reach a deeper understanding of our experiences of visual art. In this work the theories of basic emotions, as well the concepts of emotion theme, valence, and intensity can be very useful tools.

When the problematics of emotions are studied from the perspective of expertise, it seems intuitively clear that for art historians it should be easier to pick emotionally relevant information from pictures than it is for the novices. Because art historians have wider knowledge of culture-specific depiction conventions of emotions than the novices, they should have better possibilities to evaluate, for example, how intensive the depiction of emotions is from the perspective of a given stylistic period. However, this does not mean that own emotional experiences of art historians need to be in any sense deeper than those of novices, because it is possible that there is an asymmetrical relation between emotions depicted and those experienced by the participants.

Summary of content-based approach to experiencing visual art

As we have seen, content-based approach to experiencing visual art aims to clarify the functions of those cognitive and emotional processes which underlie our experiences of visual art. From the viewpoint of content-based approach the presence of visual stimulus and our perception of it is only the starting point. Apperception constructs the mental representations of artworks, and thus, makes the experiencing of art possible. Without mental representations there are no experiences. Apperception assimilates perceptual stimulus information with cognitive and emotional content elements stored in our long-term memory. It is possible to understand imagination, seeing-as, appraisal and Einfühlung as sub-processes of apperception, because through them spectators construct senseful relationships between visual elements they see in pictures. These sub-processes of apperception can also be seen as heuristic tools, in a sense that through each of them we can focus our attention to slightly different aspects when we are studying the contents of mental representations.

Although apperception can quite well explain our immediate experiences of artworks, especially from the perspective of art historical picture interpretation it is also essential to study the functions of restructuring, reflection and construction. Restructuring means the shift from one immediate mental representation to another, reflection controls the comparison and selection between alternative mental representations, and construction integrates larger groups of sub-representations into a coherent whole. Besides apperception, all these sub-processes of picture interpretation can effect on our emotional experiences of visual art. Thus, experiencing visual art consists of complex cognitive and emotional processes, and in order to understand it we must pay close attention to interaction between cognitive and emotional contents of our mental representations and also study their relationships with stimulus features.

7 EXPERIMENTS

Although definitions of theoretical concepts and their relationships play an essential role in content-based approach to experiencing visual art, it is also important to study these questions empirically, because the testing of theoretical hypotheses is only possible through empirical work. Thus, beside theoretical work, content-based approach should also develop empirical methods through which it is possible to study the mental contents of those who are interpreting the works of art. This chapter presents some experiments, which are developed for the study of mental contents. However, it is essential to notice that these experiments only present some preliminary results, and in future it is important to further develop both experimental methodology and practices of data analysis.

Experiments 1-4 aim to clarify the functions of perceivable and non-perceivable contents in mental representations. In these experiments different tasks are given to participants in order to find out how the instruction of experiments effects on mental contents of subjects. Two sets of pictures are used in these experiments, and also the effects of individual pictures are studied. In Experiments 2-4 differentiation between art experts and inexperienced spectators will be made for finding out if there are some differences in the ways these groups conceptualise their experiences of art.

Experiments 5-7 focus on emotional contents of mental representations. In Experiment 5 the participants are asked to list all emotion terms the pictures bring to their mind, and in the analysis that follows emotion terms listed are studied more carefully with the help of different emotion categorisations. Experiments 6-7 study the spectator's ratings of emotion terms and clustering of these terms in the context of different pictures.

In Experiments 1-4, where mental representations of participants are studied through protocol analysis and interview, the number of participants is not as great as it is in Experiments 5-7, where art experiences of participants are studied through questionnaires. The reason for small number of participants in Experiments 1-4 is clear: protocol analysis is an extremely time consuming process, (e.g., Beyerlein, Beyerlein, & Markley, 1991), and the same is true of

interviews. In all the experiments the language used was Finnish, because all the participants were native Finnish speakers. The data of Experiments 1-2 was collected by research assistant of Pertti Saariluoma, and the data of Experiments 3-7 by Sari Kuuva, who has made all analyses of data presented in this thesis.

It addition, it is essential to notice that the experiment reports below include discussions of results, which are not statistically significant, but which anyway are worth of attention in this preliminary phase of experimental research. Some differences between the groups of participants, which now seem to be quite marginal, might have proved more significant if the number of participants had been be greater. Also some notions of purely quantitative differences between the participants are discussed, because these notions can be important when designing experiments in the future.

7.1 Experiment 1

INTRODUCTION

The main difficulty in theoretical language concerning the experience of visual art is that it so heavily leans on the concept of perception. Although some investigators, such as Beyerlein, Beyerlein and Markley (1991) and Rollins (2001), have presented notions of implicit or invisible contents of our experiences of visual art, experimental investigation of spectators' mental contents has not been very systematic. The main reason for this might be that it is quite complicated and time-consuming to experimentally study the mental representations of spectators in such a way that we can reach the exact contents of them, and not only rough evaluations measured through scales. At the moment, the most practicable way to experimentally study the mental contents of spectators is protocol analysis, introduced by Ericsson and Simon (1984/1996).

Also in a study of Beyerlein, Beyerlein, and Markley (1991) protocol analysis was used. In their experiment the task of participants was to sort art pictures into groups, and the subjects were instructed to say aloud everything they were thinking during the task. Beyerlein, Beyerlein and Markley analysed the protocols of participants, for example, by differentiating between explicit and implicit expressions presented by the spectators. According to these researchers, proposition was considered explicit when it was completely based on observable cues in the stimulus situation, or when it was an interpretation of explicit cues based on general word knowledge. And conversely, proposition was considered implicit when it consisted of information not directly perceived or interpretable from the stimulus situation. An example of explicit propositions was the report of the presence of "a dog" in van Eyck's *The Marriage of Giovanni Arnolfini and Giovanna Cenami* (see, Figure 7) and an example of an implicit proposition was a report that a particular work is

"abstract expressionist". The results received by Beyerlein, Beyerlein and Markley showed that experienced participants used implicit expressions clearly more than inexperienced participants.

Although the study of Beyerlein, Beyerlein and Markely (1991) suggests that implicit mental contents play an essential role in our experiences of visual art, it, however, is unclear about which kinds of concepts the spectators exactly used in their experiment, because the categories of explicit and implicit expressions are not further divided into more specific sub-groups. As these researchers present only one experiment, in which all participants performed the same task, it also remains unclear whether the instruction for the task might some way effect on results. In addition, because the study of Beyerlein, Beyerlein and Markley only aims to compare the knowledge structure of experts and novices, attention is not paid to more general functions of mental representations in our experiences of visual art. However, as Rollins (1999, 2001) has suggested, internal representations direct our perception of visual art.

If we think the problematics of explicit and implicit or perceivable and non-perceivable contents from the viewpoint of mental representations, attention should be directed to a process called apperception discussed, for eample by Leibniz, Kant, and Husserl. According to Saariluoma (1995, 2002) apperception is a process which integrates non-perceivable content elements into our mental representations, and from this perspective, it also directs our perception. However, it is only possible to understand the functions of apperception, and its sub-processes, such as imagination and seeing-as, by analysing explicit and implicit, or perceivable and non-perceivable, content elements in mental representations of spectators. In this work it is important to study mental contents also qualitatively, not only by means of quantitative comparisons, because it is essential to reach a deeper understanding of those conceptual categories which contribute to our experiences of visual art.

Thus, the goal of Experiment 1 is to clarify the functions of apperception in our experiences of visual art by analysing the mental contents of those who are interpreting works of art. While the use of perceivable concepts mainly bases on perception, the presence of non-perceivable content elements in our mental representations suggests that apperception has an essential role in our experiences of visual art. If non-perceivable content elements seem to play an important role in our interpretations of visual artworks, this suggests that we should assimilate the concept of apperception into our theoretical language concerning the problematics of experiencing visual art. In Experiment 1 mental contents of spectators are studied through two different tasks given to the participants. It is probable that instructions to experiment somehow guide the flow of thoughts of spectators and thus effect on the presence of perceivable and non-perceivable content elements in their mental representations.

METHOD

Participants. Fourty-three subjects participated in the experiment. They all were academic students. Thirty-one subjects were female and twelve male.

Materials. Four coloured reproductions of paintings were used as stimulus material (Appendix 1). These paintings were made by Vincent van Gogh (Picture 1), Pablo Picasso (Picture 2), Salvador Dali (Picture 3), and Marc Chagall (Picture 4). The pictures were presented to the subjects as A4-sized colour prints.

Procedure. Standard protocol analysis was used. Two different instructions were given to the participants. The task of the first group (Content-group, 20 participants) was to describe the contents of the pictures. The second group (Atmosphere-group, 23 participants) was instructed to depict the atmosphere of the paintings. The pictures were presented to the subjects in a randomised order. The verbal protocols of the participants were collected by means of a tape recorder.

RESULTS

In the study of protocols content analysis was used. The verbal protocols of the subjects were graded using a three-level classification frame. The classifications were based on expressions which were either single words or word combinations, such as clauses, sentences or even larger grammatical structures. Expressions were divided into two main classes: 1. perceivable kinds and 2. non-perceivable kinds. When perceivable kinds have ostensive references in the pictures, non-perceivable kinds lack these direct visual references within the pictures. For example, in the context of van Gogh's painting a statement “there is a horse and two persons in a picture”, bases on perception, but a statement “there is love between these people” is categorised as non-perceivable expression.

It is impossible to perceive love in van Gogh's painting as directly as the presence of human or animal figures. There should be no disagreement that there are human figures in the picture, but it is possible that different persons apperceive the emotional state of human figures differently. In other words, all spectators should agree that there are human beings in the picture, but it is not so evident that all spectators would assume that there is love between these people. For example, it is possible that some participants apperceive the pictorial situation differently and assume that there is not love, but fear and aggression in the postures and gestures of human figures. Thus, the use of non-perceivable concepts, such as emotional terms, usually provides comparisons between information received through different visual details within the pictures.

The classes of perceivable and non-perceivable kinds were further divided into more specific subclasses. The class of perceivable concepts includes: 1.1 visual figures and objects, 1.2 forms and areal expressions, 1.3 colours and their values, 1.4 spatial remarks, and 1.5 references to actions and motions of figures. The class of non-perceivable concepts includes: 2.1 emotional concepts, 2.2 references to non-perceivable entities, 2.3 abstract concepts and qualities, 2.4 mentions of subject, theme or meaning of pictures, 2.5 temporal remarks, and 2.6 the use of art history concepts. Finally, the group of art history concepts was divided into more specific sub-classes: 2.6.1 expressions which require a general knowledge of culture, history or society, 2.6.2 names of artists, 2.6.3 references to styles and isms, 2.6.4 concepts attached to modus and technique of art works, 2.6.5 compositional concepts, and 2.6.6 theoretical art concepts. The basic conceptual classification frame with concrete examples is shown in Table 1.

TABLE 1 Conceptual classification frame with concrete examples, (Experiments 1-4)

1. Perceivable concepts		
1.1	Figures and objects	Man, woman, horse, plants, samovar, clothes of persons
1.2	Forms and areal expressions	Angulated form, round form, line, spot, colour field
1.3	Colours and values	Red, blue, white, dark, light
1.4	Spatial remarks	Right, left, up, down, middle
1.5	Action and motion of figures	Riding, dancing, walking, listening, watching
2. Non-perceivable concepts		
2.1	Emotional concepts	Joyful, sad, chaotic, calming, confusing
2.2	Non-perceivable entities	War, coins inside a chest, people not depicted in paintings
2.3	Abstract concepts and qualities	Life, death, destiny, goodness, evilness
2.4	Subject, theme, meaning	Helping situation, brokenness of man, contradictory goals of human beings
2.5	Temporal remarks	Earlier, later, a moment ago, subsequently, in future
2.6	**Concepts of art history**	
2.6.1	Culture, history, society	Christianity, Russian/Spanish/Oriental culture, culture of the Middle Age
2.6.2	Names of artists	Van Gogh, Picasso, Dali, Chagall, Rembrandt, Miró
2.6.3	Styles and isms	Impressionism, surrealism, cubism, modernism, abstract art
2.6.4	Modus and technique	Water colour, brush strokes, abstracted, realistic, use of light and shadows
2.6.5	Compositional concepts	Composition, foreground/background, golden section, dynamics, perspective
2.6.6	Art theoretical concepts	Iconography, psychoanalytic theory of art, allegory, metaphor, symbol

The expressions of subjects were classified with the help of the frame presented above. Each conceptual expression classified received one point. For example, the sentence "there is a horse and two persons in a picture", received three points. The mention of the horse and each of two human figures was included in subclass 1.1. (visual figures and objects). Respectively, the statement "there is love between these people" received three points. The notion of two human

figures was again included in subclass 1.1., and the notion of love in class 2.1. (emotional concepts). If some participant studied more carefully, for example, the visual attributes of human figures, and said something of their postures, gestures, or clothing, he or she received one point for each expression. However, when the participant referred to a certain perceivable or non-perceivable concept, such as some figure, object or emotional state, more frequently than once in a context of some individual picture, only the first expression was rated.

The total sum of classified expressions was 5937. Content-group presented 3087 remarks (mean = 154), and Atmosphere-group 2850 (mean = 124). There were great differences in the amount of notes taken between individual participants. Content-group: min. = 81, max. = 263, range = 182, median = 171; Atmosphere-group: min. = 36, max. = 211, range = 175, median = 126. T-test showed significant differences between Content-group and Atmosphere-group in the context of all other perceivable concepts except forms and areal expressions. In addition T-test showed significant differences between these two groups of participants in the context of emotional concepts and references to non-perceivable entities. The basic comparison between the different types of perceivable and non-perceivable conceptual concepts used is presented in Table 2.

TABLE 2 The basic comparison between perceivable and non-perceivable concepts used in Experiment 1

EXPERIMENT 1		**Content**		**Atmosphere**		**T-test**	
		Mean	SD	Mean	SD	T (41)	Sig.
1. Perceivable concepts		19,20	9,25	10,89	9,25	3,542	**0,001**
1.1	Figures and objects	10,21	4,12	6,35	3,13	3,486	**0,001**
1.2	Forms and areal expressions	1,01	1,02	0,62	0,64	1,537	0,132
1.3	Colours and values	3,43	2,61	1,29	1,11	3,400	**0,002**
1.4	Spatial remarks	2,81	2,11	1,38	1,32	2,615	**0,014**
1.5	Action and motion of figures	1,74	0,72	1,25	0,76	2,144	**0,038**
2. Non-perceivable concepts		19,33	8,74	20,09	8,74	-0,278	0,782
2.1	Emotional concepts	4,94	2,89	7,00	3,47	-2,094	**0,042**
2.2	Non-perceivable entities	5,23	3,76	3,24	1,94	2,218	**0,032**
2.3	Abstract concepts and qualities	3,23	2,23	4,87	3,37	-1,856	0,071
2.4	Subject, theme, meaning	0,80	0,40	1,08	0,69	-1,573	0,123
2.5	Temporal remarks	0,88	1,04	0,96	0,74	-0,300	0,766
2.6	**Concepts of art history**	4,26	3,13	2,95	2,23	1,604	0,117
2.6.1	Culture, history, society	0,84	0,63	0,66	0,73	0,833	0,410
2.6.2	Names of artists	0,44	0,69	0,23	0,36	1,266	0,213
2.6.3	Styles and isms	0,26	0,30	0,23	0,42	0,304	0,762
2.6.4	Modus and technique	1,45	1,40	0,96	0,81	1,436	0,159
2.6.5	Compositional concepts	1,18	0,97	0,80	0,63	1,504	0,140
2.6.6	Art theoretical concepts	0,10	0,21	0,07	0,11	0,702	0,487
Overall		38,53	15,18	30,98	13,90	1,702	0,096

N = 43 (Content-group: N =20, Atmosphere-group: N = 23).

DISCUSSION

Between Content-group and Atmosphere-group there were great differences especially regarding the use of perceivable concepts. The participants in Content-group presented clearly more perceivable kind remarks than the participants in Atmosphere-group. Conversely, the participants in Atmosphere-group used slightly more non-perceivable concepts than the participants of Content-group. These differences between the two groups of participants are presented in Figure 10.

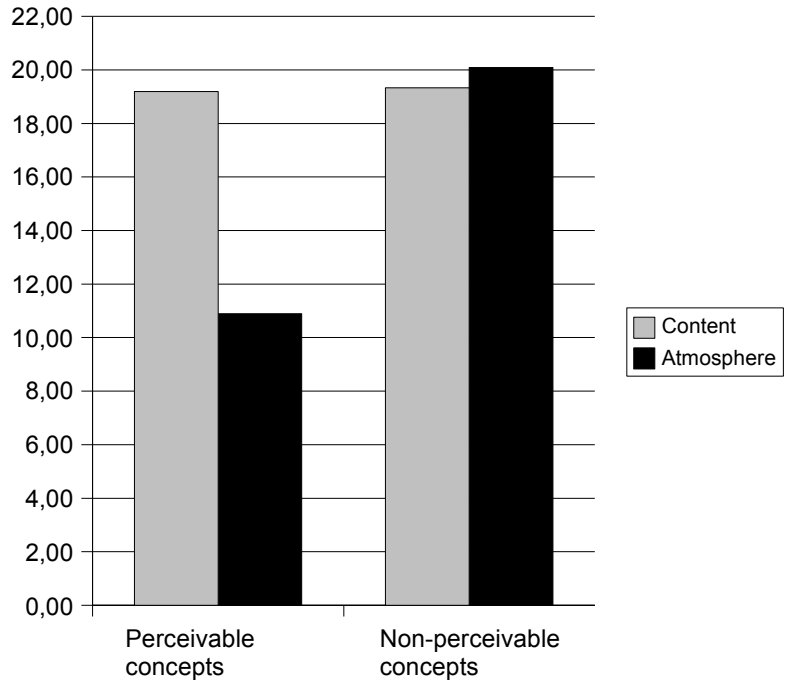

FIGURE 10 Differences between Content-group and Atmosphere-group in the use of perceivable and non-perceivable concepts in Experiment 1.

The participants of Content-group used all types of perceivable concepts more frequently than the participants of Atmosphere-group. They referred more often to objects, figures and their motions, forms, colours and values, and spatial dimensions of the pictures than the spectators in Atmosphere-group. Only in the context of forms and areal expressions the differences between the groups were not statistically significant.

In addition, the participants of Content-group also presented more notions of non-perceivable entities, i.e., of objects and things, which have no unambiguously ostensive correspondents within the pictures, than the participants in Atmosphere-group. Typically, the spectators made guesses about what there might be inside the chest of Gogh's painting, or in the cup depicted by Chagall. It was also very typical that the participants in both groups associated with the paintings some objects, people and events, which

literally are not there. Through these non-perceivable entities the participants seemed to construct senseful relations between visual elements within the pictures. Content-group also used the concepts of art history more frequently than the subjects in Atmosphere-group, although this difference between the two groups was statistically non-significant. However, in this experiment, art history concepts, such as references to names of artists, styles, or other art theoretical concepts, were quite seldom used.

When Content-group used perceivable concepts more frequently than the participants in other group, the participants of Atmosphere-group referred slightly more often to non-perceivable concepts. Regarding the use of emotional concepts the difference between the groups was statistically significant. The atmosphere of van Gogh's painting was most commonly depicted with concepts such as warmth, indifference, alarmed and suffering. In the context of Picasso's picture the spectators used terms such as anxiety, angriness, chaotic and gloomy. Dali's painting was typically seen as a depiction of loneliness and expectation, but many spectators also referred to warmness of its atmosphere. In the context of Chagall's painting the spectators typically used terms such as joyfulness and comfortableness, but they also presented notions of chaotic quality of its atmosphere.

In addition to emotional concepts, Atmosphere-group also referred slightly more often to abstract concepts and qualities, to temporal dimensions of pictures, and to subjects, themes and meanings of paintings than Content-group. However, these differences between Atmosphere-group and Content-group were statistically non-significant.

While Chagall's painting gained most classified expressions from Content-group, the Atmosphere-group presented the least number of notes about this picture. Conversely, in Content-group the painting of Picasso received the least number of notes, and in Atmosphere-group the painting of Dali gained most remarks. While the painting of van Gogh was most commonly depicted with perceivable concepts, non-perceivable concepts were most frequently used in the context of Dali's picture. Conversely, the painting of Dali gathered less perceivable concepts than other pictures, and the picture of Picasso received less non-perceivable remarks than other pictures. In the context of van Gogh's painting participants referred more often to figures and their motions, emotions, subject, theme, meaning, and temporal dimensions of picture than in the contexts of other paintings. Also the concepts of art history were most commonly used in the context of van Gogh's picture. Picasso's painting received most remarks about forms, colours and their values. In the context of Dali's picture the participants referred more frequently to spatial dimensions and to abstract concepts and qualities than in the context of other pictures. Non-perceivable entities were most commonly associated with Dali's and Chagall's paintings.

The painting of van Gogh was typically studied from the viewpoint of the story of Good Samaritan. However, there were also individual participants who interpreted the situation differently. Some participants saw the helping situation as an abduction or as some kind of sexual act. Picasso's painting was

usually understood as some kind of metamorphosis between a plant and a figure of a woman. However, many participants told that they had difficulties in the interpretation of this painting. In the context of Dali's painting there seemed to be clear differences in interpretations between the participants who paid close attention to the malformed body of a human figure and those participants who directed their attention to the landscape of this painting. Usually the former group experienced the painting more negatively than the latter group, who was impressed by the sunny colouration of the picture. There were also interesting differences in evaluations of the mood of the male figure in Dali's picture. While some participants assumed that this man has experienced deep disillusions in his life and is bitter somehow, others thought that he is very happy and pleased with himself. The painting of Chagall was typically situated to Russia because of its samovar, and the uniform of the male figure directed the thoughts of the participants towards the war. However, the interpretations of the participants tended to differ where it comes to the tiny dancing couple on the foreground of the picture. Some participants assumed that this couple represents hallucinations, memories or future plans of the male figure on the background, while other participants thought that this couple is dancing in the room where the man is spending his leisure time.

Experiment 1 clearly shows that non-perceivable content elements play an essential role in our experiences of visual art. Although there was some variation in quantity and quality of perceivable and non-perceivable concepts in the contexts of different pictures, non-perceivable concepts were eagerly used in the context of every picture and by both groups of participants. Both Content-group and Atmosphere-group used non-perceivable concepts more frequently than perceivable concepts. In Atmosphere-group the proportion of non-perceivable concepts was very high when compared with perceivable concepts.

Because non-perceivable concepts seemed to play an essential role in the protocols of the participants it is clear that theoretical language, which aims to explain the experiencing of visual art merely through the concept of perception has not enough explanatory value over our experiences of visual art. If our ability to imagine, or our ability to see things as representations of something is reduced to sub-processes of perception, the concept of perception becomes so wide that it really cannot explain anything. Thus, if we want to avoid this conceptual confusion, we should adopt the concept of apperception into our theoretical language and understand the phenomenon of seeing-as and imagination as sub-processes of apperception. From this perspective apperception is a process which constructs our mental representations and assimilates into these representations non-perceivable content elements which organise our perception.

Experiment 1 suggests that with the help of non-perceivable concepts all participants aimed to construct senseful relationships between visual elements within the pictures. In our experiment participants used very abstract concepts, such as life, death, destiny and freedom while aiming to fill the gaps between visual elements in pictures. Although different participants used different kinds

of non-perceivable concepts in their interpretations, they all used non-perceivable concepts in order to make sense of their experiences of visual art. Without the use of non-perceivable concepts we cannot make sense of our visual perceptions and explain them in an understandable way.

When we compare our results with the study by Beyerlein, Beyerlein and Markley (1991) there seems to be some similarities, but also important differences. Already the study of Beyerlein, Beyerlein and Markley suggested that implicit propositions might play an essential role in our experiences of visual art. However, these researchers were only comparing the quantity of expressions, not their quality. On a basis of our experiment it seems that there is some variation in the quality of perceivable and non-perceivable concepts, not only in the context of different pictures, but also in the context of different kind of instructions for the task. Our results showed that the participants who were instructed to study the emotional atmosphere of the paintings used more emotion concepts than the spectators who were instructed to depict the contents of the pictures. Thus, more attention should be paid to qualitative differentiations between the sub-categories of both perceivable and non-perceivable concepts in order to get to a better understanding of interaction between perception and apperception.

However, it is also essential to notice that Beyerlein, Beyerlein and Markley (1991) differentiated between experienced and inexperienced spectators of art. Interestingly, their results suggest that implicit propositions are more frequently used by experts than by novices.

7.2 Experiment 2

INTRODUCTION

Although Experiment 1 showed that participants conceptualise paintings differently when different instructions are given to them, the differentiation between experienced and inexperienced spectators was not made. However, during their education students of art history learn to know thousands and thousands of art works. This naturally changes their conceptual systems and should also affect the way they experience art. Many studies on expertise have suggested that experts use more higher-level concepts within their problem-solving activities than novices do, and through these kind of concepts the experts can reach the deep structure of the problem (e.g., Chi, 2006; Ericsson, & Lehmann, 1996).

As the experiment of Beyerlein, Beyerlein and Markley (1991) has shown, experienced participants tend to use both explicit and implicit propositions more frequently than inexperienced spectators while they are grouping the works of art. Especially in the context of implicit propositions the difference between skill groups was great. However, as already mentioned in the context of previous experiment, on the basis of research report presented by Beyerlein,

Beyerlein and Markley it remains unclear, which kinds of explicit and implicit propositions the participants exactly tended to present during their task.

In addition to the study of Beyerlein, Beyerlein and Markley (1991) there are numerous investigations in which the skill differences between art experts and novices are studied (e.g., Cupchik, & Gebotys, 1988; Cupchik, Winston, & Herz, 1992; Winston, & Cupchik, 1992). For example, Cupchik and Gebytos (1988) found out that inexperienced participants pay attention to recognisable objects and prefer literal order of the pictures, while experienced subjects are more sensitive to stylistic transformations and prefer visual effects order of pictures. Another study, presented by Cupchik, Winston and Herz (1992), suggests that differences between paintings are registered more accurately, more quickly and with greater certainty than similarities between paintings, and subject matter of paintings was judged more easily than style. In addition, these researchers found out that art experts were more certain in their judgements between paintings than were the inexperienced spectators. And finally, according to third investigation, presented by Winston and Cupchik (1992), inexperienced participants prefer popular art which provides warm feelings to a broad audience, while experienced participants prefer more complex high art which provides challenges to spectators.

When we study the results summarised above it seems evident that there are many different levels of visual information processing. To summarise, the results presented by Cupchik et al., (Cupchik, & Gebotys, 1988; Cupchik, Winston, & Herz, 1992; Winston, & Cupchik, 1992), suggest that experts and novices pay attention to different properties within the pictures. While inexperienced participants pay attention to subjects and narrative possibilities of the pictures, the experts study more carefully the stylistic properties of the pictures. In addition, for novices the emotional atmosphere of the paintings is more essential than it is for experts. It is essential to notice that the notions of emotional atmosphere, as well as the notions of subjects or styles of pictures are all implicit propositions. When distinctions between different sub-categories of implicit propositions are not made, as in the context of the study by Beyerlein, Beyerlein and Markley (1991), it is not possible to reach these qualitative differences between art experts and novices.

In Experiment 2, we will compare two groups of subjects. The first group of participants consists of art history students and can also be called the group of medium level experts or experienced participants. The second group consists of lay people, also called inexperienced participants or novices. From the perspective of the results presented by Cupchik et al., (Cupchik, & Gebotys, 1988; Cupchik, Winston, & Herz, 1992; Winston, & Cupchik, 1992), art students might be expected to use plenty of concepts, such as style, composition, and dynamics, which belong to the sub-category of art historical concepts. Conversely, novices should present more remarks than the experts concerning the subjects and narrative possibilities of pictures, such as notions of temporal dimensions of pictures. In addition, because inexperienced participants are assumed to pay more attention to emotional atmosphere of the paintings they

should also use more emotion terms than experts, when they are interpreting the paintings.

By means of comparison between experts and novices, we aim to achieve a deeper understanding about the way apperception works in the context of our experiences of visual art. Because in the previous experiment Content-group seemed to produce conceptually richest protocols, we decided to study their interpretations more closely from the viewpoint of skill differences. When participants are instructed to describe the contents of artwork, it is probable that experienced participants use both perceivable concepts and art historical concepts more frequently than novices do.

METHOD

Participants. Sixteen subjects participated in the experiment. The group of experts consisted of nine art history students, and the novice group of seven students of psychology. Eleven subjects were female and five male.

Materials. The same four pictures were used as in the previous experiment (Appendix 1).

Procedure. Standard protocol analysis was used. The participants were instructed to describe the contents of the pictures. They had ten minutes to study each picture. The pictures were presented to the subjects in a randomised order. The verbal protocols of the participants were collected by means of a tape recorder.

RESULTS

Verbal protocols of the subjects were graded by using the same three-level classification frame as in the previous experiment (see, Table 1). The total sum of classified expressions was 2576. The experts presented 1578 remarks (mean = 175) and novices 998 (mean = 143). There were great differences in the amount of notes taken between individual participants (min. = 81, max. = 263, range = 182, mean = 161, median = 171). In general, T-tests showed no significant differences between experts and novices. However, there was a significant difference between the groups attached to abstract concepts and qualities, and concepts of art history. The basic comparison between different types of perceivable and non-perceivable conceptual content is presented in Table 3.

TABLE 3 The basic comparison between perceivable and non-perceivable concepts used in Experiment 2

EXPERIMENT 2		Experts		Novices		T-test	
		Mean	SD	Mean	SD	T (14)	Sig.
1. Perceivable concepts		21,28	10,91	16,29	8,14	1,009	0,330
1.1	Figures and objects	9,92	4,75	9,71	4,31	0,088	0,931
1.2	Forms and areal expressions	1,31	1,22	0,50	0,76	1,521	0,151
1.3	Colours and values	4,42	3,10	2,43	1,68	1,523	0,150
1.4	Spatial remarks	3,81	2,37	1,89	1,31	1,907	0,077
1.5	Action and motion of figures	1,83	0,88	1,75	0,74	0,201	0,844
2. Non-perceivable concepts		22,56	8,52	19,36	9,33	0,715	0,486
2.1	Emotional concepts	5,58	1,87	5,79	3,81	-0.140	0,891
2.2	Non-perceivable entities	4,83	3,99	6,25	4,54	-0.663	0,518
2.3	Abstract concepts and qualities	4,61	2,08	2,46	1,81	2,165	**0,048**
2.4	Subject, theme, meaning	0,81	0,43	0,93	0,43	-0.571	0,577
2.5	Temporal remarks	0,56	0,62	1,50	1,46	-1.597	0,150
2.6	**Concepts of art history**	6,17	3,75	2,43	1,26	2,796	**0,019**
2.6.1	Culture, history, society	0,86	0,71	0,75	0,52	0,347	0,733
2.6.2	Names of artists	0,69	0,95	0,18	0,24	1,567	0,151
2.6.3	Styles and isms	0,44	0,35	0,07	0,12	2,984	**0,013**
2.6.4	Modus and technique	2,33	1,69	0,61	0,43	2,950	**0,016**
2.6.5	Compositional concepts	1,72	1,18	0,75	0,52	2,217	**0,047**
2.6.6	Art theoretical concepts	0,11	0,25	0,07	0,19	0,345	0,735
Overall		43,84	17,69	35,65	14,54	0,990	0,339

N = 16 (Experts: N = 9, Novices: N = 7).

DISCUSSION

Also the second experiment illustrated that non-perceivable kinds have an essential role in the experiencing of art. The experts used both perceivable and non-perceivable concepts more frequently than the novices, and the participants in both student groups referred more frequently to non-perceivable concepts than perceivable concepts. In addition, the experts used art history concepts significantly more than the novices. These differences between experts and novices are presented in Figure 11.

In Experiment 2 the experts presented slightly more remarks than the novices regarding every subcategory of perceivable concepts. Although these differences between the two skill groups were statistically non-significant, the experts studied the figures, objects, forms and colours of the paintings more carefully than did the novices, and they also presented more spatial remarks. In general, the experts seemed to pay more attention to purely visual properties of pictures than the novices. However, it is also essential to notice that there were clear differences between individual participants in both student groups in the use of perceivable and non-perceivable concepts. Some subjects remained closely in the visible surface of the pictures and used only minimally non-

perceivable kind of concepts. But there were also participants who almost ignored the concrete pictures and filled them with their own associations.

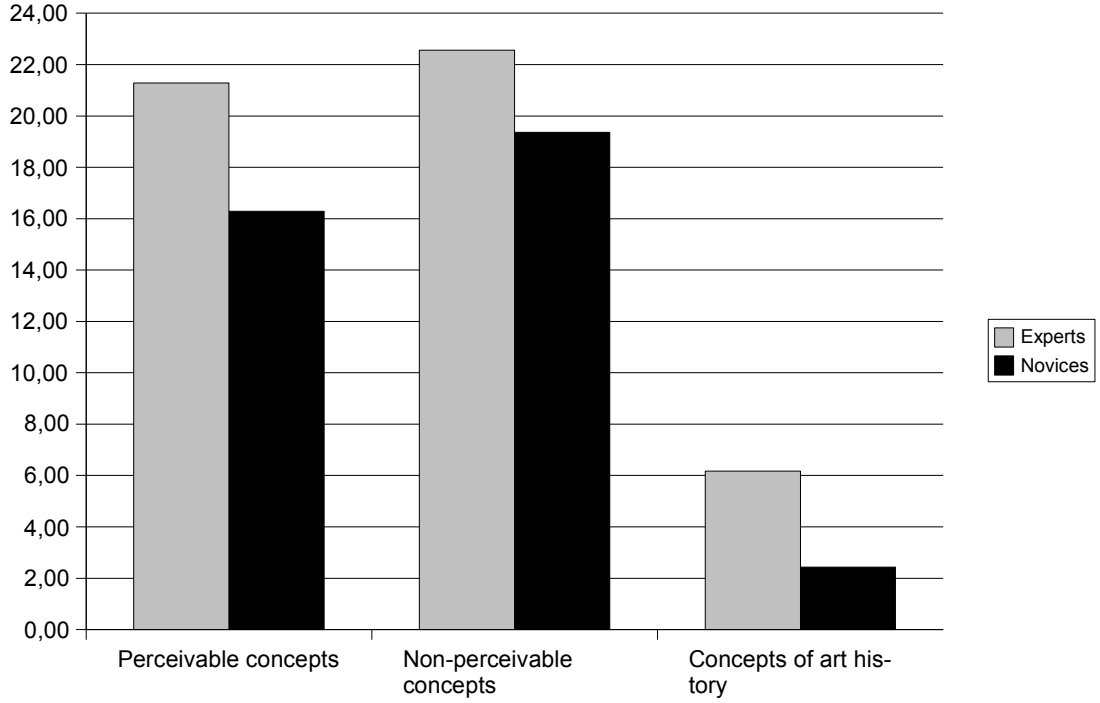

FIGURE 11 Differences between experts and novices in the use of perceivable and non-perceivable concepts in Experiment 2.

Although the experts, in general, used more non-perceivable concepts than the novices, there were also many sub-categories of non-perceivable concepts which were more frequently used by the novices than by the experts. The novices presented slightly more notions attached to emotional concepts, non-perceivable entities, subjects, themes and meanings, and temporal dimensions of paintings than did the experts. Although these differences between student groups were not statistically significant, they are worth noticing, because many of these subcategories of non-perceivable concepts somehow link with the narrative or literal qualities of the paintings. For example, the novice participants associated with the pictures more non-perceivable entities, such as persons and objects, which were not explicitly in the pictures, and they also referred more often to temporal dimensions of these pictures, considering what had happened before the present moment of the pictures and what would happen afterwards. It also seemed that these kinds of associations helped the novice participants to explicate the subject, theme or the meaning of the paintings. Presumably, because the task of the participants was to depict the contents of the pictures, not to interpret their meanings, the group of experts paid more attention to visual qualities than to subjects, themes, or general meanings of the paintings.

The experts used both abstract concepts and concepts of art history more frequently than the novices. Attached to these conceptual categories the differences between the student groups were statistically significant. This result is in harmony with earlier studies of expertise, which have suggested that experts tend to use domain-specific concepts during their problem-solving activities (e.g., Chi, 2006; Ericsson, & Lehmann 1996). The experts used slightly more often all types of art history concepts than did the novices, but the differences between the groups were statistically significant only in the context of styles and isms, modus and technique, and compositional concepts. However, the art concepts in general, and especially the style concepts, were quite seldom and randomly used in this experiment. The concepts of art history were most frequently used in the context of van Gogh's painting, and most seldom used in the context of Dali's picture. Both skill groups presented most notions about Chagall's painting, but while the experts presented the least number of remarks about van Gogh's painting, the novices presented the least number of remarks about Picasso's painting.

When we compare the results summarised above with those presented by Cupchik and Gebotys (1988), Cupchik, Winston, and Herz (1992), and Winston and Cupchik (1992) it seems that there are no contradictions. While the experts pay slightly more attention to perceivable elements within the pictures and use more concepts of art history than the novices, the novices pay marginally more attention to emotional atmosphere and narrative possibilities of paintings than the experts. From the viewpoint of content-based approach this means that experts and novices tend to apperceive the paintings qualitatively differently.

However, we can also ask if the tasks given to the participants or the stimulus material used have something to do with the results obtained. If the participants are instructed to depict the contents of the paintings, or to make comparisons between these pictures, as is typically done in experiments of empirical aestheticians, it is quite natural that the art experts pay more attention to visual properties and art historical quality of the paintings than to symbolic meanings of artworks, for example.

7.3 Experiment 3

INTRODUCTION

In the studies of empirical aesthetics relatively little attention has been paid to symbolic meanings of artworks. Usually the studies of empirical aesthetics tend to produce results according to which experienced spectators of art pay more attention to compositional and stylistic properties of the pictures, while inexperienced spectators more eagerly concentrate on representational, semantic and literal properties of paintings (e.g., Cupchik, & Gebotys, 1988; Nodine, Locher, & Krupinski, 1993). Shortly put, on a basis of empirical study of art it seems that experienced spectators are interested in stylistic questions,

whereas inexperienced participants are mainly interested in subjects of paintings.

However, when we think of this situation from the viewpoint of symbolic meanings it seems quite problematic. Symbolic meanings have something to do both with styles and subjects of artworks. For example, it is possible to express some emotional meaning through the postures, gestures and face expressions of people depicted, but it is also possible to express emotions through colours, compositions, and strokes of brush. Thus, both the subjects and the styles can construct the symbolic meanings of the paintings. In many cases styles are closely linked with subjects depicted. For example, artistic styles have usually connections with different kinds of isms, and very often these isms set some guidelines to possible subjects of depiction.

From the perspective of empirical aesthetics symbolic meaning is probably quite a problematic subject of research, because it is quite difficult to study this topic through the scales which are typically used in experiments of empirical aestheticians. In addition, because empirical aestheticians usually aim to search clear differences between a wide group of participants it is difficult to pay enough attention to qualitative differences between individual participants. Style concepts, for example, are quite coherently used by all art historians, but when we study the symbolic meanings associated with visual elements in pictures, there are much more personal differences between spectators.

Visual signs may carry both personal and cultural meanings. Although all spectators project some personal meanings to visual elements they see, these signs also have some conventional, culturally shared meanings (e.g., Beardsley, 1958). Cultural meanings of visual signs are known by the spectators within some given culture-historical period of time. However, when the works of art are culturally remote from us, it may be difficult to understand the meanings of visual elements they include (e.g., Carroll, 2001). Because art historians are familiar with wider culture-historical reference frame of artworks, also the symbolic meanings of the paintings should be more familiar for them than they are for lay persons.

From the viewpoint of content-based approach the symbolic meanings given to paintings is a very important question. Although all normal people have similar perception of paintings, they apperceive the meanings of these paintings differently. For art historians some visual element within the painting can function as a key to wide intertextual or intericonic network between different artworks or cultural narratives. In this case the symbolic meaning of the painting constructs in interaction with other works of art or cultural narratives. From this perspective the concept of style has also an essential role to play. For example, if we think of some typical subject of art, such as Crucifixion, it is obvious that there is a wide intertextual and intericonic network of literature and visual art, which somehow has dealt with this subject. However, it is also evident, that Classicist tradition of art has treated this subject differently from post-modern art, for example.

In the previous experiment the subjects were instructed to describe the contents of the paintings. In the next experiment we will ask the participants to

study the symbolic meanings of artworks. When the participants are instructed to study the symbolic meanings of the paintings, they probably conceptualise their experiences differently than when they are describing the contents of the paintings. In this situation experienced participants probably use more art historical concepts than they would when describing the contents of the pictures, because symbolic meanings are usually essentially linked with artistic styles and isms and historical context of the paintings. In the next experiment we will also use a different set of pictures from that of the previous experiment.

METHOD

Participants. Sixteen subjects participated in the experiment. Participants were all students at the University of Jyväskylä. The group of experts consisted of eight art history students, and the novice group of eight other students, who reported to have had no studies in the field of art history. To gauge their level of experience with art works, the participants were asked how often they attended art exhibitions. Experts visited art exhibitions approximately once a month, and novices only once a year or even less frequently. Seven subjects were female and nine male. The age of the participants ranged from 20 to 41 years (mean = 27, median = 28). The experts were approximately seven years older than the novices. All participants were rewarded with a cinema ticket.

Materials. Six coloured reproductions of paintings were used as stimulus material (Appendix 2). The paintings were from different artists. The oldest picture was from the seventeenth century and the latest from the end of the twentieth century. Pictures were presented to the subjects as A4-sized colour prints. Further information of pictures, such as the names of artists, titles of the work, years, sizes and locations, were not given to the subjects. The pictures included a variety of symbolism: postures and gestures of human figures, natural symbols such as animals, plants and landscapes, geometrical and free forms, colours, Christian figures, and other cultural symbols, like buildings, boats, flags and clothing of figures. Three pictures were by Finnish artists (Eero Järnefelt, Risto Suomi and Pasi Tammi) and the rest of the pictures by foreign artists (Nicolas Poussin, Claude Monet and Wassily Kandinsky).

Procedure. The subjects were told that the aim of the experiment is to study apperception of pictures. Standard protocol analysis was used. The participants were asked to interpret the pictures and tell what kind of symbolic meanings the pictures brought to mind. They had ten minutes to interpret each picture. The verbal protocols of the participants were collected by means of a mini-disc recorder. After the experiment the subjects were asked to fill out a questionnaire, which included questions about their studies, artistic and visual interests and familiarity of pictures seen in the experiment. The pictures were more familiar to the art history students than to the novices. The novices had earlier seen an average of one picture, and the experts two or three.

RESULTS

Verbal protocols of the subjects were graded by using the same three-level classification frame as in the previous experiments (see, Table 1). The total sum of classified expressions was 3426. The experts presented 1920 (mean = 240) remarks and novices 1506 (mean = 188). The difference between the groups was 414. There were great differences in the note amounts between individual participants (min. = 118, max. = 296, range = 178, mean = 214, median = 210). In general, T-tests showed no significant differences between experts and novices. However, there was a significant difference between the groups attached to non-perceivable concepts, and concepts of art history. The basic comparison between different types of perceivable and non-perceivable conceptual content is presented in Table 4.

TABLE 4 The basic comparison between perceivable and non-perceivable concepts used in Experiment 3

EXPERIMENT 3		**Experts**		**Novices**		**T-test**	
		Mean	SD	Mean	SD	T (14)	Sig.
1. Perceivable concepts		17,96	3,52	15,96	2,85	1,249	0,232
1.1	Figures and objects	7,54	1,32	7,23	1,49	0,442	0,665
1.2	Forms and areal expressions	1,71	0,37	1,48	0,48	1,083	0,297
1.3	Colours and values	3,13	1,37	2,38	0,86	1,311	0,211
1.4	Spatial remarks	3,58	1,20	2,90	1,04	1,222	0,242
1.5	Action and motion of figures	2,00	0,42	1,98	0,62	0,076	0,941
2. Non-perceivable concepts		22,04	5,94	15,42	4,65	2,483	**0,026**
2.1	Emotional concepts	3,19	2,07	3,27	1,41	-0.093	0,927
2.2	Non-perceivable entities	3,35	1,31	2,81	1,11	0,891	0,388
2.3	Abstract concepts and qualities	2,75	1,08	2,58	1,84	0,221	0,829
2.4	Subject, theme, meaning	1,81	0,52	1,52	0,72	0,925	0,370
2.5	Temporal remarks	1,33	0,57	1,29	0,60	0,146	0,886
2.6	**Concepts of art history**	9,61	4,80	3,94	1,26	3,232	**0,006**
2.6.1	Culture, history, society	2,48	0,88	1,81	0,66	1,712	0,109
2.6.2	Names of artists	1,73	1,57	0,29	0,38	2,518	**0,025**
2.6.3	Styles and isms	1,94	1,74	0,23	0,20	2,756	**0,028**
2.6.4	Modus and technique	1,38	0,53	0,83	0,56	1,997	0,066
2.6.5	Compositional concepts	1,29	0,54	0,38	0,37	3,948	**0,001**
2.6.6	Art theoretical concepts	0,79	0,39	0,40	0,34	2,139	0,051
Overall		40,00	8,29	31,38	5,88	2,399	**0,031**

N = 16 (Experts: N = 8, Novices: N = 8).

DISCUSSION

In the group of experts, non-perceivable concepts were used more frequently than perceivable kinds, but the novices used both types of concepts almost equally. The experts referred both to perceivable and non-perceivable concepts more often than the novices. However, the difference between the skill groups was statistically significant only in the context of non-perceivable concepts. In the context of perceivable concepts the difference between the groups was non-significant. In addition, the experts referred to concepts of art history significantly more frequently than the novices. These differences between experts and novices are presented in Figure 12.

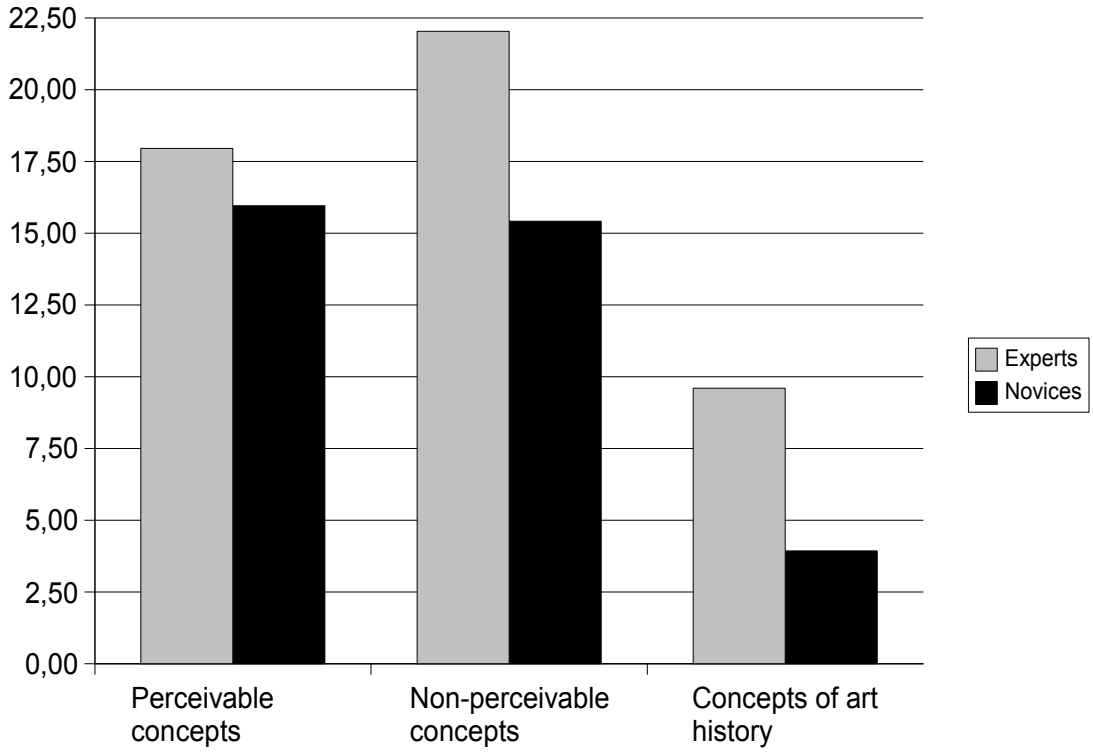

FIGURE 12 Differences between experts and novices in the use of perceivable and non-perceivable concepts in Experiment 3.

Although the experts used more concepts than the novices regarding all subclasses of perceivable concepts, there were no essential differences between student groups in the amounts of notes attached to the figures and objects, forms and areal expressions, spatial dimensions, or action and motion of figures. In the group of experts there was a tendency to register colours and values more carefully than the novices. Sometimes the experts used more specific colour concepts than the novices. For example, while the novices typically mentioned brown and blue, individual experts spoke of sepia and ultra-marine. The experts also paid more attention to certain visual elements

within the pictures, such as the architectural details in the painting of Poussin. While most of the participants studied the painting of Poussin in a reference frame of Crucifixion, in the group of novices there were individual participants who did not recognise this Christian picture tradition called pietà.

While the experts used more cognitive concepts than the novices, the novices referred slightly more often to emotions than the experts did. Although there were no statistically significant differences between the experts and the novices in the use of emotional concepts, there were many qualitatively interesting differences between the student groups in the use of cognitive and emotional concepts. For example, Järnefelt's Finnish landscape from Koli raised positive emotions, such as gladness and the feeling of freedom among the novices, while the experts approached this picture mainly with cognitive concepts. The experts usually studied this picture from the viewpoint of Finnish national Romanticism and associated political themes with it. In addition, there were individual participants who understood the autumnal colours of the painting as a sign of forthcoming winter and thus associated melancholic meanings with the painting.

The experts presented slightly more expressions than the novices regarding every other sub-class of non-perceivable concepts apart from emotional terms. Notions of temporal dimensions of pictures were divided almost equally between groups. However, there were important qualitative differences between the pictures attached to temporal remarks. Some pictures made the subjects think what happened before the present moment in the pictures (the paintings of Poussin and Tammi), and some other pictures directed the thoughts of participants towards the future (the paintings of Järnefelt and Suomi). In a context of Risto Suomi's picture the participants either assumed that the shark is threatening the hare, or that the hare is safe being only an outsider observer of the situation.

The greatest difference between the groups was in the field of art history concepts. The experts presented more notes than the novices regarding all sub-classes of art history concepts. The differences between the two groups were statistically most significant regarding the names of artists, styles, isms, and compositional concepts. There were also several interesting differences between the skill groups in interpretations of the pictures. For example, the novices tended to experience the abstract painting of Kandinsky as chaotic and unbalanced while the experts tended to saw it as harmonic and well-balanced. Experienced subjects, who recognised the artist and knew something about his intentions, mentioned frequently that the painting of Kandinsky is a visual equivalent of music. While the experts mainly studied the picture of Kandinsky in a reference frame of Abstract Expressionism, the group of novices tended to see recognisable figures in its abstract forms.

Sometimes the styles and isms drew the attention of the experts so powerfully that many significant details in the pictures received no attention at all. For example, while the experts interpreted the painting of Monet from the viewpoint of Impressionism, they paid no serious attention to the pictorial details, such as ships in the background. Conversely, for some novices these

details functioned as a sign of modernisation. We can compare this situation with Chi's (2006) lists of the ways the experts excel and fail. According to Chi, experts can detect and see features that novices cannot, and thus, understand the deep structure of a problem or situation. However, experts can also fail on a basis of this same reason. When they focus on the deep structure of a problem, they sometimes fail to recall the surface features and overlook details.

Because novices do not have the style concepts in their vocabulary, they have to concentrate on details, while the experts can interpret the pictures from a more general viewpoint. Despite the fact that the concept of style has received plenty of criticism in the field of art history during the last few decades (e.g., Farago, 2003), it still works as a conceptual tool through which it is possible to set the pictures in a wider historical frame of reference. Style concepts were used more frequently in the context of older paintings than of later ones. The painting of Poussin was seen as an example of Classicism, Monet's work as Impressionism, Kandinsky's picture as Expressionism, and Järnefelt's painting as Finnish national Romanticism. The pictures of Suomi and Tammi did not receive such unanimous style labels, because there are no established categories in which to set them.

When we compare the results of the second and the third experiment there appears many differences. In the second experiment both student groups used more perceivable kind concepts than in the third experiment. While the amount of non-perceivable concepts remained almost unchangeable in the group of experts it decreased in the group of novices in the third experiment. The group of experts presented more notes attached to temporariness, subject, theme and meaning of the pictures than in the previous experiment, and they also used more concepts of art history than in the previous experiment. This suggests that the experts have a stronger tendency to differentiate between visual surface and meanings of paintings than the novices. When the experts are instructed to interpret symbolic meanings, not to depict the content of the pictures, they approach the paintings from a different kind of reference frame. From the viewpoint of symbolic meanings it may be more relevant to study the subjects of artworks or to use temporal, artistic and culture-historical concepts than it is from the viewpoint of pictorial contents.

7.4 Experiment 4

INTRODUCTION

In the previous experiments, the subjects formed their mental representations quite freely and could take any point of view they liked. It might be that the subjects' way of experiencing would essentially change if they were asked to pay attention to certain art historical aspects in pictures, such as given symbolic elements within the paintings. In this way, we could further test the role of

perceivable and non-perceivable concepts when experiencing art. In addition, this kind of experiment can provide us exact knowledge of the meanings given to certain visual elements within the works of art.

Signs in paintings are visual but they also function conceptually. These signs may have many kinds of visual attributes, such as their size and location in artwork. In addition, visual attributes given to some specific sign may vary in the works of different artists, or even in the different works of some individual artist. If we, for example, think of some symbolic element, such as red colour, we can easily imagine how differently it can be used in the context of different works of art. Sometimes it can be the most dominant colour in the whole painting, and sometimes it can be used only as a colour of some visual detail within the painting. Naturally, the whole context of visual artwork influences conceptual meanings we attribute to some given symbolic elements in the work of art (e.g., Beardsley, 1958; Dickie, 1971/1979).

Although some meanings of visual signs are understood by most spectators, there are also levels in meanings, which are known only by those spectators who are experts in some special field of art history. For example, some meanings typically associated with red colour, such as its connections with blood, passion, love, anger, and other powerful emotions, are known by most spectators, but there are also other levels of meanings, which are not so generally known. For example, in Christian colour symbolism, red, as a colour of clothing of Mary signifies the earthly properties of this character while blue colour in Mary's clothes refers to her divine properties (e.g., Tresidder, 2004).

From this perspective, there should be differences between art experts and novices in meanings associated with given visual elements in the paintings. Because art historians have wider culture-historical knowledge of symbolic meanings, they should associate more specific meanings with given symbolic elements in paintings than the novices do. From the viewpoint of content-based approach it is essential to understand which kinds of meanings spectators tend to associate with certain kinds of symbolic elements. Visual signs are basic elements in paintings, and through them we construct our mental representation of artwork.

In the next experiment we will study, with the help of interviews, the kinds of meanings participants associate with given symbolic elements in paintings. Because in the previous experiment the participants constructed their interpretations freely, different spectators paid attention to different elements within the pictures. However, when all participants are asked questions of the same symbolic elements within the picture it is easier to compare their answers. It is probable that when participants are asked specific questions of meanings associated with given symbolic elements they would use less perceivable kind of expressions than in the previous experiments. In addition, participants probably would refer more often to abstract concepts and qualities than in the context of previous experiments, because symbolic meanings are usually expressed by means of quite general concepts, such as life, death, and destiny.

METHOD

Participants. Sixteen subjects participated in the experiment. The subjects were different from those in Experiment 3, but they were from the same population, i.e., students from the University of Jyväskylä. The group of experts consisted of eight art history students and the novice group of eight other students, who reported to have had no previous studies in the field of art history. Nine subjects were female and seven male. The age of the participants ranged from 21 to 35 years (mean = 26, median = 25). The experts were approximately seven years older than the novices. All participants were rewarded with a cinema ticket.

Materials. The same six pictures were used as in the previous experiment (Appendix 2).

Procedure. The subjects were told that the aim of the experiment is to study apperception of symbols. A short definition of symbols was given to them: "Symbols are pictorial elements, which do not have fixed meanings, but they have divergent meanings in different contexts." After that the subjects were asked what meanings they associated with the given symbolic elements in the pictures, such as colours, forms, animals and gestures of human figures. The same three questions per picture were presented to all participants. Interviews of the subjects were recorded by means of a mini-disc recorder. The pictures were more familiar to the art historians than to the novices. The novices had earlier seen an average of one picture, and the experts two or three.

RESULTS

Interviews of the subjects were graded by using the same three-level classification frame as in the previous experiments (see, Table 1). The total sum of classified expressions was 2858. The experts presented 1488 (mean = 186) remarks and novices 1370 (mean = 171). The difference between the groups was 118. There were great differences in the amount of notes taken between individual participants (min. = 115, max. = 265, range = 150, mean = 179, median = 170). In general, T-tests showed no significant differences between experts and novices. However, there was a significant difference between the groups attached to art theoretical concepts. The basic comparison between the different types of perceivable and non-perceivable conceptual content is presented in Table 5.

TABLE 5 The basic comparison between perceivable and non-perceivable concepts used in Experiment 4

EXPERIMENT 4		Experts		Novices		T-test	
		Mean	SD	Mean	SD	T (14)	Sig.
1. Perceivable concepts		13,42	4,08	13,56	4,02	-0.073	0,942
1.1	Figures and objects	5,69	1,66	5,94	1,37	-0.329	0,747
1.2	Forms and areal expressions	1,38	0,64	1,15	0,52	0,777	0,450
1.3	Colours and values	3,29	0,74	3,23	1,07	0,138	0,892
1.4	Spatial remarks	1,52	0,88	1,81	0,98	-0.625	0,542
1.5	Action and motion of figures	1,54	0,96	1,44	0,51	0,276	0,787
2. Non-perceivable concepts		17,58	5,62	14,98	4,74	1,001	0,334
2.1	Emotional concepts	3,08	1,03	3,27	1,77	-0.259	0,800
2.2	Non-perceivable entities	2,40	1,08	2,02	1,05	0,703	0,494
2.3	Abstract concepts and qualities	4,56	1,95	3,86	1,86	0,741	0,471
2.4	Subject, theme, meaning	1,71	0,50	1,33	0,62	1,339	0,202
2.5	Temporal remarks	0,96	0,41	1,02	0,66	-0.220	0,830
2.6	**Concepts of art history**	4,88	1,81	3,48	0,99	1,915	0,076
2.6.1	Culture, history, society	2,10	0,88	1,65	0,48	1,291	0,218
2.6.2	Names of artists	0,17	0,98	0,13	0,17	0,430	0,674
2.6.3	Styles and isms	0,44	0,44	0,21	0,21	1,332	0,204
2.6.4	Modus and technique	0,92	0,36	0,88	0,36	0,229	0,822
2.6.5	Compositional concepts	0,73	0,25	0,50	0,37	1,461	0,166
2.6.6	Art theoretical concepts	0,52	0,29	0,13	0,15	3,458	**0,004**
Overall		31,00	9,42	25,54	7,60	0,575	0,575

N = 16 (Experts: N = 8, Novices: N = 8).

DISCUSSION

The novices used marginally more perceivable kinds of concepts than the experts, and the experts presented more expressions regarding non-perceivable concepts. In both groups, non-perceivable concepts were used more frequently than perceivable concepts, and the difference between the skill groups was greater in the context of non-perceivable concepts than in the context of perceivable concepts. The experts used the concepts of art history slightly more frequently than did the novices, but this difference between the groups was statistically not as significant as in the previous experiments. These differences between experts and novices are presented in Figure 13.

The novices paid marginally more attention than the experts to figures and objects and spatial dimensions of the pictures, while in the group of the experts there was a tendency to register forms, colours, actions and motions of the figures more carefully than in the group of the novices. In the field of non-perceivable concepts, the novices referred slightly more often to emotional concepts and temporal dimensions of the pictures than did the experts. Conversely, the experts tended to mention more non-perceivable entities and referred more frequently to abstract concepts and qualities, subjects, themes or meanings of the pictures than the novices. In addition, the experts used more all

kinds of art history concepts than the novices. However, it is essential to notice that all the differences mentioned above were statistically non-significant. The only significant difference between the student groups was in the field of art theoretical concepts.

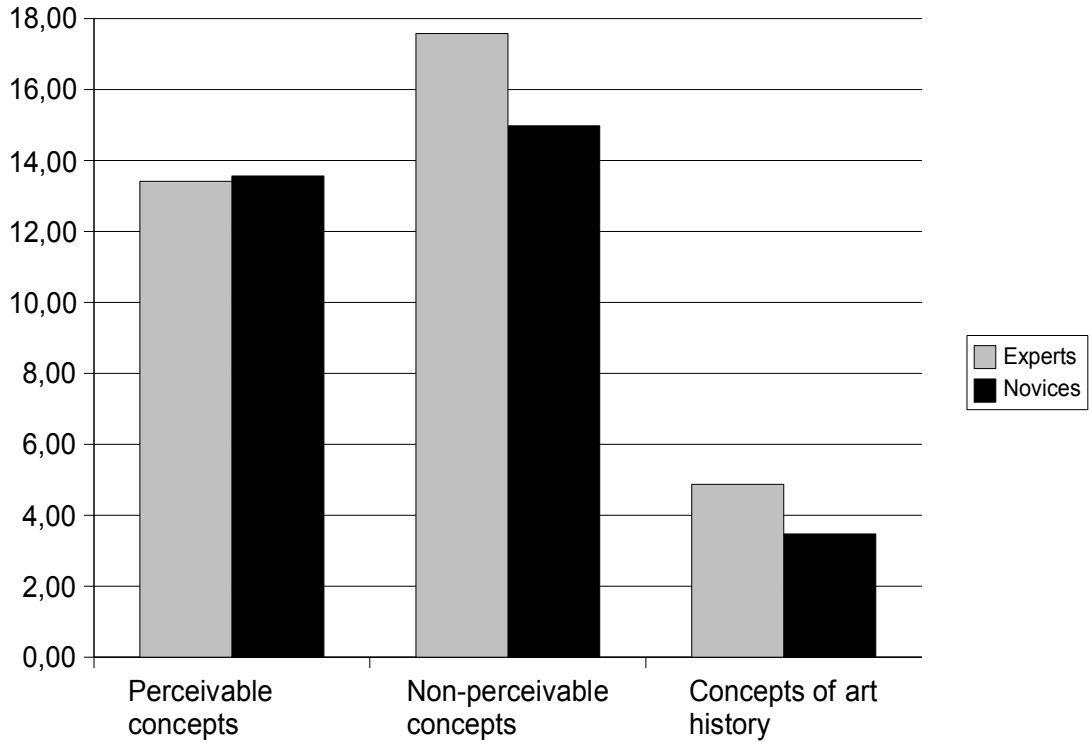

FIGURE 13 Differences between experts and novices in the use of perceivable and non-perceivable concepts in Experiment 4.

When we compare the results of the third and fourth experiments we find out that the total amount of expressions was lower in this experiment than in the previous experiment. In the fourth experiment both perceivable and non-perceivable concepts gained less expressions from both student groups than in the previous experiment. The difference between these experiments was greater in the group of experts. This suggests that the instruction of the third experiment corresponds better with the skills of experts than the instruction of the fourth experiment. Both student groups presented less remarks attached to the figures and objects, forms, spatial dimensions of pictures, and actions and motions of the figures than in the third experiment. Conversely, the mentions of colours and values increased in both groups. Naturally, when the attention of the subjects is directed by questions to given symbolic elements within the pictures, such as colours, the other pictorial details receive less attention.

Interestingly, both student groups clearly mentioned more abstract concepts and qualities than in the third experiment. However, both the experts and the novices presented less expressions attached to non-perceivable entities and temporal dimensions of pictures than in the previous experiment. This

suggests that the narrative possibilities of the pictures receive less attention when the subjects concentrate on individual elements within the pictures. Also the concepts of art history were more seldom used in both student groups than in the previous experiment. However, in this experiment the experts studied very carefully the symbolic details within the pictures. For example, the ships, flags and the clothing of people in Monet's painting received clearly more attention than in the previous experiment, and simultaneously the notions attached to Impressionism decreased. This suggests that when the pictures are interpreted through details, the notions attached to styles are not so dominant in the group of experts than they are when the pictures are studied more freely and holistically as in the previous experiment.

There were interesting qualitative differences between individual spectators in their interpretations of given symbolic elements within the pictures. For example, the swan in Pasi Tammi's picture was sometimes seen as a depiction of a real bird, sometimes as a symbol of other people not present in the painting, and sometimes as a symbol of some abstract value that is very important for the man in the picture. In the context of different pictures the same visual elements, such as colours, sometimes received slightly different meanings. For example, in the context of Suomi's picture, blue colour, as a visual attribute of the shark and roses, was usually seen as a somewhat negative element, but in the context of Poussin's painting, blue colour was typically associated with heaven and divinity by the experts. However, in the context of these both paintings red colour was typically associated with blood and pain, and white colour with innocence and purity.

In Experiments 3-4 Poussin's painting received most remarks from both student groups. In general, it seemed that the pictures, which were rich in recognisable details (for example, the painting of Poussin), received more perceivable kinds of expressions than the more reduced pictures. Conversely, the pictures with only a few recognisable details (for example, the painting of Suomi) gained proportionally more non-perceivable kind expressions. The situation was somehow similar to that in the Experiments 1-2, in which the painting of van Gogh received more perceivable kind expressions than the other pictures, while the picture of Dali was most commonly approached with non-perceivable concepts.

In Experiments 3-4 Poussin's picture received more remarks than other pictures regarding figures and their motions, spatial dimensions and emotional concepts. Also the concepts of art history were most frequently used in the context of van Poussin's painting. In the context of Suomi's picture the participants used the widest set of abstract concepts, and they also referred most often to non-perceivable entities. Notions of subjects, themes or general meanings of paintings were most commonly presented in the context of Suomi's and Järnefelt's pictures, and while interpreting Tammi's painting the participants referred most often to temporal dimensions of the picture. Notions of forms, colours and values were most commonly presented in the context of Kandinsky's abstract painting. Also in Experiments 1-2 the most abstract painting (Picasso) gathered most remarks attached to forms, colours and values.

In all previous experiments the most abstract pictures (Experiments 1-2: Picasso and Experiment 3-4: Kandinsky) received the least number of expressions from both student groups.

In Experiments 1-4 the main task was to search the conceptual categories the spectators use while studying the pictures. The conceptual classification frame we used in the analysis of protocols seemed to function quite well in the context of all different pictures and instructions in Experiments 1-4. Although the styles of the pictures varied from representational to fully abstract the interpretations of the participants seemed to fit into the classification frame. However, it is important to notice that categorisation of expressions is always a somewhat subjective task and bases on the interpretations of the person who classifies.

Our experiments clearly show that all the pictures were differently conceptualised. Despite this, there were also some interesting similarities between different kinds of pictures. In Experiments 1-4 the paintings of van Gogh and Poussin received most remarks. The most essential shared feature between these paintings is that they are both representational artworks in which human figures and natural landscapes are depicted. In addition, both paintings include plenty of visual details. Probably, on the basis of these features, the paintings of van Gogh and Poussin also received more perceivable kind remarks than other pictures. In addition, emotion terms and art history concepts were most commonly used in the context of these paintings. It is easy to understand the frequency of emotion concepts in the context of these paintings, because in both of these paintings expression of emotions is very explicit and becomes apparent when we study the faces of human figures. In addition, it is possible to explain the frequency of art historical concepts in the context of these paintings on the basis that the painting of Poussin is a typical example of Classicist painting while the expressive style of van Gogh is generally well known.

In Experiments 1-4 the paintings of Picasso and Kandinsky received fewer notions than other pictures. The most obvious shared feature between these pictures is that they were the most abstract paintings in our two sets of pictures. Although references to forms, colours and values were most commonly presented in the context of these pictures, non-perceivable concepts were relatively seldom used in the interpretations of these pictures when compared with other pictures. Non-perceivable concepts were most commonly used in the context of Dali's and Suomi's paintings. While interpreting these pictures spectators referred more often to abstract concepts and non-perceivable entitites than in their interpretations of other paintings. When we compare the paintings of Dali and Suomi it seems obvious that they are both somewhat surrealistic. In Dali's painting the human figure is assimilated into a table, and in Suomi's picture there is an unusual meeting between hare and shark, and between natural and abstract forms. When spectators are interpreting artworks, which include some contradicting elements, it feels quite natural that they have to use plenty of non-perceivable concepts when they aim to construct senseful relations between visual elements within the pictures.

In all the experiments presented above the participants tended to use a large variety of non-perceivable concepts. In Experiments 2-4 where the distinction between the skill groups was made, art experts seemed to use non-perceivable concepts more frequently than inexperienced participants. The differences between the groups were greatest in the context of art history concepts. This suggests that during their education art history students have learned a large set of concepts, which essentially organise their perceptions of artworks. In addition to these notions, also different interpretations given to visual symbols within the pictures suggest that apperception plays an essential role in our experiences of visual art. Thus, we should adopt the concept of apperception into our theoretical language concerning the problematics of experiencing visual art. We cannot explain the problematics of experiencing solely through the concept of perception. In addition, we can assume that apperception also plays an essential role from the viewpoint of our emotional experiences of art. If emotions directly follow retinal perception, all normal spectators should have similar emotional experience of given artworks.

7.5 Experiment 5

INTRODUCTION

Previous experiments have shown that novices tend to use slightly more emotional concepts in their interpretations of pictures than the students of art history, at least when they are not directly instructed to study the emotional effects of the paintings. These results are in accord with the results obtained by Winston and Cupchik (1992). According to their study inexperienced participants evaluate the paintings on the basis of their emotional atmosphere, while experienced participants tend to evaluate paintings on a basis of their complexity. From this perspective we can understand why inexperienced participants use more emotion terms than the experts when they are freely interpreting artworks, as in our Experiments 2-3.

As Farago and Zwijnenberg (2003) state in their anthology *Compelling Visuality*, it has not been very typical for art historians that they acknowledge the formative role of personal experiences. However, although personal experiences have not played a very essential role in the writings of art historians that does not mean that art historians do not have personal experiences of artworks, but it only means that art historians tend to base their interpretations of artworks on some grounds that are less subjective than their own emotions. Intuitively it seems evident that through their education art historians should even have better possibilities than lay persons to understand emotional dimensions of artworks.

Thus, we can ask whether the tasks typically given for participants somehow tend to reduce emotional experiences of art experts. For example, in our previous experiments the attention of participants was directed to the

contents of the pictures and their symbolic meanings. However, if participants are asked to list emotions they associate with the paintings, it is probable that art experts list emotion terms even more than the novices, because they have a wider storage of culture-historical knowledge concerning conventions of emotional expression in art. Previous experiments have shown that art experts and novices apperceive differently the pictures they see. This should also effect on their emotional experiences of the paintings.

When we aim to compare emotion terms used by art experts and novices it is essential to compare not only the quantity but also the quality of the emotion terms used. For example, it is important to differentiate between positive and negative emotion terms, and between the intensity of emotion terms used. In addition, we should be able to de0fine which kind of emotions the spectators typically associate with certain kinds of artworks, for example, whether their emotional experience is dominated by love, joy, surprise, anger, fear or sadness when they are studying some work of art presented to them.

From the viewpoint of content-based approach it is important to study emotional levels in our experiences of art, because emotions are as essential content elements in our mental representations as cognitive concepts are. This means that our perceptions of artworks can be directed not only through cognitive concepts but also through emotions.

METHOD

Participants. Twenty-eight subjects participated in the experiment. They were all undergraduate students from University of Jyväskylä. Half of them were students of art history, and the rest were students of computer science and information systems. A group of experts was participating in a method seminar of art history, and a group of novices was attending a lecture of user psychology. Novices reported to have had no previous studies in the field of art history. Fifteen participants were females and thirteen males. The group of experts was dominated by women, and the group of novices by men, but both groups included both males and females. The age of the participants ranged from 21 to 41 years (mean = 25, median = 23).

Materials. The same six pictures were used as in the previous experiment (Appendix 2). The pictures were shown by means of data projector. Each picture was two minutes on the screen.

Procedure. The participants were asked to fill out a questionnaire, which included questions about their age, sex, studies, and artistic interests. In addition, the following instruction was given to the participants: The aim of this experiment is to study the emotions in art experience. You will see six pictures made by different artists. Your task is to list all emotion terms the pictures will bring to your mind. Try to be as spontaneous as possible. You have two minutes to look at each picture and write the answer.

RESULTS

All other terms mentioned by participants were included to results, but the names of artists (Gallen-Kallela), mentions of artistic styles (Symbolism) or periods (the nineteenth century). Some participants tended to explain the terms they had listed: "Nostalgia, because the sea is important to me." In cases like this, only emotion concepts, such as nostalgia, were included to results. Some expressions required interpretation before it was possible to register them. For example, the expression: "there is no balance" was understood as a notion of imbalance.

The total sum of emotion terms the participants listed was 534. There were great differences in the amounts of terms between individual participants (min. = 6, max. = 32, range 26, mean = 19, median = 20). The experts mentioned 338 terms (63%) and the novices 196 (37%). T-test showed a significant difference in term amounts between experts and novices. The basic comparison between the different types of emotion concepts is presented in Table 6.

TABLE 6 The basic comparison between different types of emotion terms used in Experiment 5

Experiment 5	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (26)	Sig.
Positive emotions	12,07	4,16	5,57	4,00	4,217	**0,000**
Negative emotions	12,07	4,18	8,43	2,59	2,772	**0,010**
Love	4,36	2,17	1,79	1,42	3,707	**0,001**
Joy	7,93	3,54	3,64	3,46	3,242	**0,003**
Surprise	1,00	1,52	1,00	1,24	0,000	1,000
Anger	0,79	0,98	1,07	0,92	0,799	0,432
Sadness	6,00	2,15	3,93	1,94	2,678	**0,013**
Fear	4,07	2,62	2,57	1,16	1,962	0,061
Intensity 1	8,79	3,29	3,79	3,04	4,178	**0,000**
-positive terms	5,21	2,52	2,21	2,58	3,116	**0,004**
-negative terms	3,57	2,10	1,57	1,28	3,038	**0,005**
Intensity 2	8,43	2,59	5,79	2,05	2,994	**0,006**
-positive terms	4,00	2,60	2,21	1,76	2,126	**0,043**
-negative terms	4,43	2,10	3,57	1,34	1,286	0,212
Intensity 3	6,93	2,67	4,43	2,28	2,663	**0,013**
-positive terms	2,86	1,88	1,14	1,23	2,859	**0,008**
-negative terms	4,07	2,30	3,29	1,90	0,985	0,334
Overall	24,14	5,19	14,00	5,23	5,151	**0,000**

N = 28 (Experts: N = 14, Novices: N = 14).

The number of different emotion terms was 192. There were 96 terms, which were used only once. The experts mentioned 105 terms, which were not used in the group of novices. Conversely, the novices listed 34 terms, which the experts did not mention. The most popular emotion terms were: sadness (23),

peacefulness (18), anxiety (17), longing (13), joyfulness (11), fear (11), warmth (11), and despair (10). Also the comment that some picture is undistinguished, in other words, that it can excite any kinds of emotions, was quite common (14).

Each of the six pictures seen in the experiment gathered different sets of emotions. The most frequently mentioned terms attached to each picture were: Picture 1 (Monet): peacefulness, warmth, and joyfulness; Picture 2 (Suomi): irritation, fear, threatening, and aggression; Picture 3 (Poussin): sadness, despair, agony, anxiety, and gloomy; Picture 4 (Kandinsky): speedy, joyfulness, chaotic, and incoherence; Picture 5 (Tammi): sadness, anxiety, and despair; Picture 6 (Järnefelt): peacefulness, autumnal, and happiness. The paintings of Poussin (Picture 3) and Tammi (Picture 5) were emotionally quite close to each other. Poussin's painting (Picture 3) received the greatest number of emotional terms (100) and the painting of Monet (Picture 1) the least number of them (76). There were significant differences between experts and novices in term amounts attached to paintings other than Picture 6 (Järnefelt). The basic comparison between the different pictures is presented in Table 7.

TABLE 7 The basic comparison between emotion terms mentioned in the context of different pictures in Experiment 5

Experiment 5	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (26)	Sig.
Picture 1	3,64	1,50	1,79	1,22	3,711	**0,001**
Picture 2	4,36	1,60	2,36	0,84	4,142	**0,001**
Picture 3	4,50	1,35	2,64	1,28	3,747	**0,001**
Picture 4	4,21	1,63	1,71	0,99	4,908	**0,000**
Picture 5	4,21	1,37	2,64	1,08	3,370	**0,002**
Picture 6	3,21	1,67	2,86	1,83	0,538	0,595
Overall	24,14	5,19	14,00	5,23	5,151	**0,000**

N = 28 (Experts: N = 14, Novices: N = 14).

The great amount of different emotion terms mentioned in the experiment is explained through the fact that there are many terms which are close relatives to each other, for example, compassion, pity and sympathy. However, it is possible to reduce the number of terms by grouping them in different ways.

Valence

One possible way to group emotions is to divide them into positive and negative ones. Usually this aspect in emotions is called valence, and it refers to pleasantness or unpleasantness of emotions. Valence focus is defined to the extent to which an individual incorporates pleasantness or unpleasantness into their conscious affective experience (Feldman Barrett, 1998; Feldman Barrett, & Fossum, 2001). Thus, the emotion terms the participants used in our experiment were divided into positive and negative ones. It was not always easy to decide to which group individual terms should be placed. For example, the terms such

as compassion are somewhere between positive and negative ones. In this context they were defined to be positive ones. The group of positive emotions includes 102 terms and the group of negative emotions 90 terms. The list of the positive and negative emotion terms is in Appendix 3.

The group of experts used positive and negative terms equally. They mentioned 169 positive and 169 negative terms. The group of novices used more negative (118; 60%) than positive (78; 40%) terms. T-test showed significant differences between experts and novices in a use of positive and negative emotion terms. The difference between the groups was greater regarding positive terms. There were some individual novices, who used no positive terms at all. Paintings of Monet (Picture 1), Kandinsky (Picture 4), and Järnefelt (Picture 6) received more positive than negative terms, and paintings of Suomi (Picture 2), Poussin (Picture 3), and Tammi (Picture 5) more negative than positive ones. The most negatively apperceived was the painting of Poussin (Picture 3) and the most positively the painting of Järnefelt (Picture 6). Figure 14 shows the use of positive and negative emotion terms in the context of different pictures.

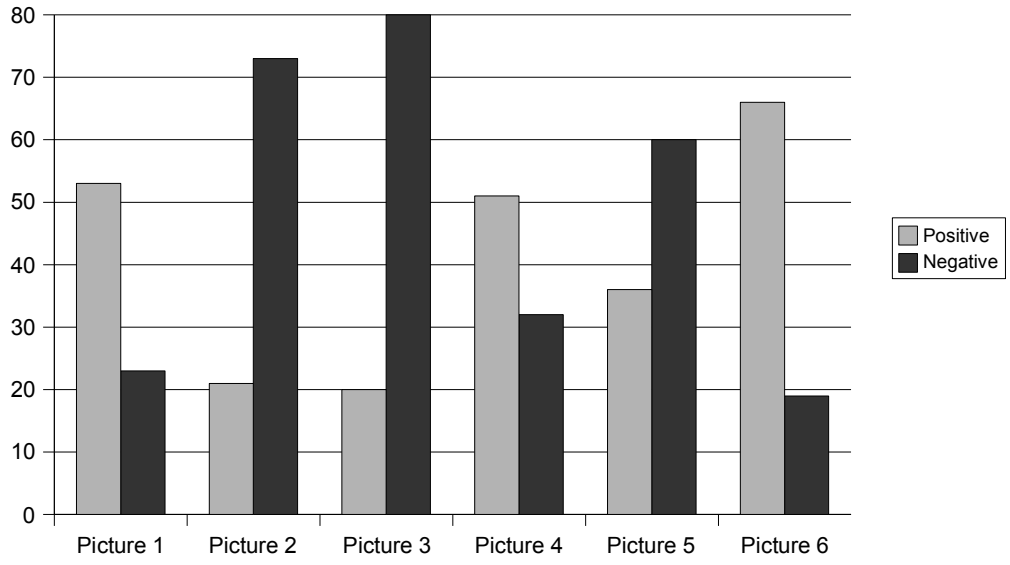

FIGURE 14 The use of positive and negative emotion terms by pictures in Experiment 5.

Intensity

The second way to categorise emotion terms is to evaluate their intensity. Some emotion terms are stronger in their intensity than others. For example, pleasantness is weaker term than happiness, and happiness weaker than euphoria. The notion of intensity is sometimes associated with arousal, which refers to emotional state with bodily activation or deactivation. Arousal focus is defined as the extent to which an individual incorporates subjective experiences

of arousal into a conscious affective experience (Feldman Barrett, 1998; Feldman Barrett, & Fossum, 2001). However, in the context of art experience, intensity of emotion terms used is more relevant measure than bodily activation.

The terms mentioned by the participants were divided into three categories on the basis of their intensity. The first category (Intensity 1) includes the weakest terms, and the third category (Intensity 3) the strongest ones. Positive and negative emotion terms were also treated separately. The list of emotions with different intensities is in Appendix 4.

Experts used more emotion terms attached to each categories of intensity than the novices. T-tests showed significant differences between the groups in each level of intensity. The differences between the groups were more significant in the context of positive terms than negative ones. Regarding stronger negative terms there was no significant difference between experts and novices.

In the context of Monet's (Picture 1) and Järnefelt's (Picture 6) paintings participants mainly used emotion terms with the lowest intensity. Other pictures were dominated by terms with medium level intensity. While viewing the painting of Poussin (Picture 3) spectators used most emotion terms with the highest intensity. Figure 15 shows the use of emotion terms with different intensities in the context of different pictures.

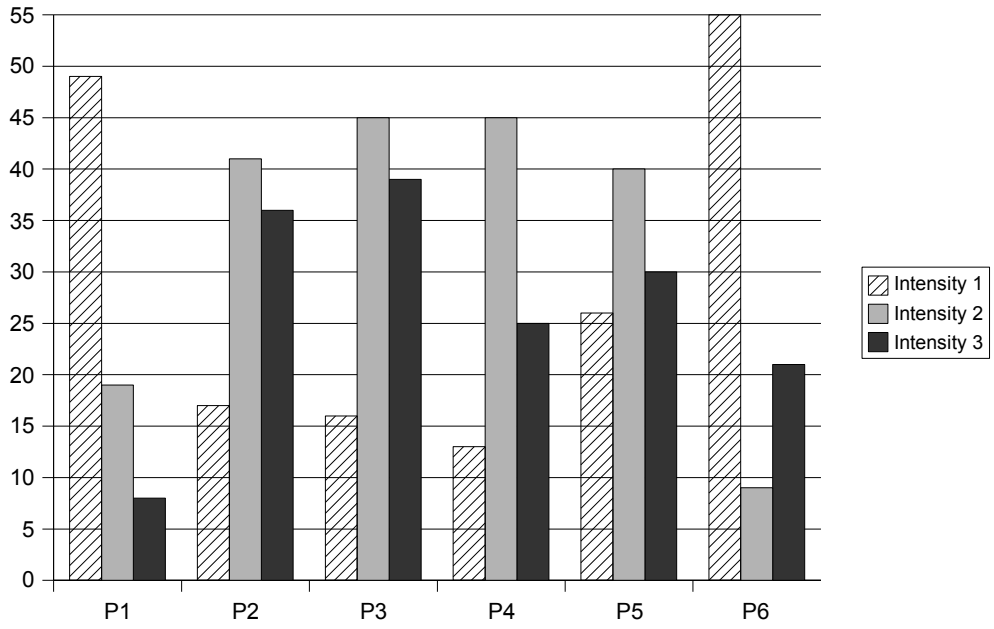

FIGURE 15 The use of emotion terms with different intensities by pictures in Experiment 5.

Basic emotions

The third way to group emotion terms is to use lists of basic emotions presented by different theoreticians. Theories of basic, primary or fundamental emotions give a special status to certain emotions, such as anger, fear, sadness and joy, and assume that other emotions are mere variations of them. Although the theories of basic emotions have received plenty of criticism (e.g., Ortony, & Turner, 1990; Power, & Dalgleish, 1997), it is possible to use them as tools when categorising emotions. One of the main problems of basic emotion lists in the context of art experience is that they mainly include negative emotions. Typically there are four or five emotions, and only one of them is positive. Shaver, Schwartz, Kirson and O'Connor (2001) have presented on a ground of their experiments a tree-structured category of emotions, which includes six primary emotions, 25 secondary emotions and 135 tertiary emotions. The primary emotions in their list are love, joy, surprise, anger, sadness and fear. It is possible to group the emotion terms mentioned in our experiment under these six categories. However, it is important to notice that our categorisation of emotion terms is not equivalent with the groupings of Shaver, Schwartz, Kirson and O'Connor attached to secondary and tertiary emotions, because participants in our experiment mentioned terms which are not in the list of these investigators.

In our classification the category of love includes 46 emotion terms attached to affection, passion and longing, and also some other powerful emotion terms, which are somehow linked with values, nationality or religious experience, such as assimilation, piety and patriotism. The category of joy contains 56 positive emotion terms, like cheerfulness, happiness and euphoria. It also includes some positive emotion terms, which people tend to associate with nature experience, such as freshness, freedom and peacefulness. The category of surprise contains 6 terms, which are somehow linked with attention and orientation, like wondering, interest and curiosity, and the category of anger includes 11 strong negative emotion terms, such as aggression, disgust and jealousy. The category of sadness contains 45 negative emotions terms, which are linked with depression, sorrow or social isolation, and finally the category of fear includes 28 terms, such as anxiety, dread and threatening. The list of basic emotions is in Appendix 5.

Experts mentioned more terms than novices attached to categories of love, joy, sadness and fear. Conversely, novices used more terms, which included the category of anger. In the category of surprise, the terms divided equally between the groups. T-tests showed significant differences between the groups in term amounts of love, joy, and sadness. The differences between the groups regarding categories of surprise, anger, and fear were non-significant. Figure 16 shows the use of emotion terms related to love, joy, surprise, anger, sadness and fear.

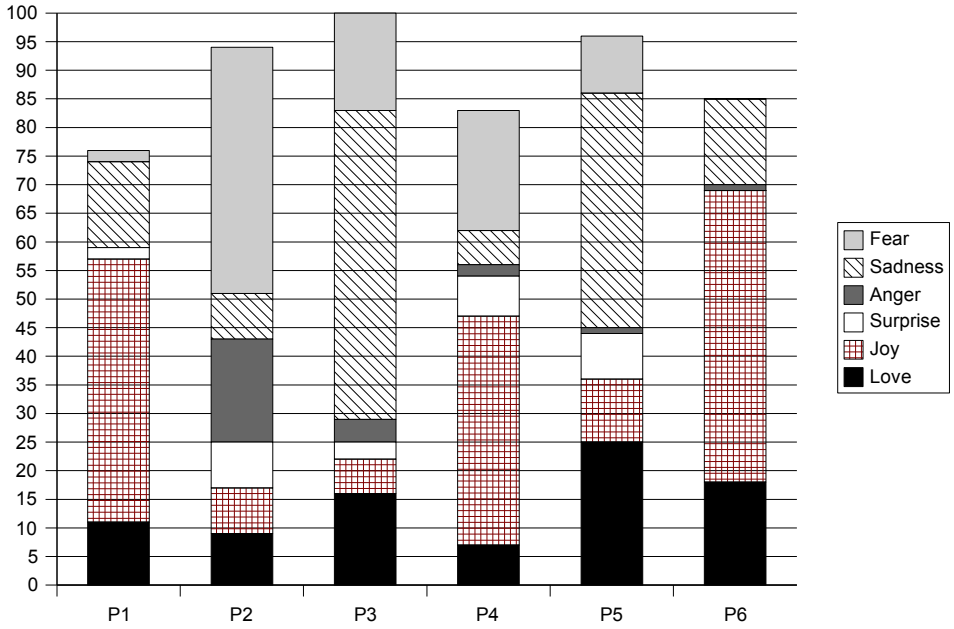

FIGURE 16 The use of emotion terms related to love, joy, surprise, anger, sadness and fear by pictures in Experiment 5.

It is important to notice that in connection with each picture emotion terms formed different combinations. Paintings of Monet (Picture 1), Kandinsky (Picture 4), and Järnefelt (Picture 6) were dominated by joy, paintings of Poussin (Picture 3) and Tammi (Picture 5) by sadness and the painting of Suomi (Picture 2) by fear. Emotion profiles of Monet's (Picture 1) and Järnefelt's (Picture 6) paintings, as well as Poussin's (Picture 3) and Tammi's (Picture 5) paintings, are close to each other, but there is also some variation.

DISCUSSION

Experiment 5 clearly showed that expert's way of emotionally experience art is systematically different from lay people. Experts ascribe more all kind of emotions to the works of art they see than novices do. Especially the scale of positive emotions listed by experts is much wider than those of novices. Thus, on the basis of Experiment 5 it seems clear that art historians are better able to pick emotionally relevant information from the pictures they see than the novices.

If we look at the basic emotions, experts are more prone to express positive emotions which belong to the larger categories of love and joy. The differences between experts and novices were most clear-cut in the context of these categories. Experts also used more terms than novices attached to categories of sadness and fear, but only in the category of sadness the difference between groups was significant. Interestingly, in the context of surprise there was no difference at all between the groups. Although surprise was not an important category of emotions in our experiment, it is worth noticing that the

pictures, which received even few terms of this category, were the most modern ones – paintings of Suomi (Picture 2), Kandinsky (Picture 4) and Tammi (Picture 5). There is no agreement of surprise's status as basic emotion. Although many theoreticians have included surprise in their lists of basic emotions, there are other theoreticians who tend to understand surprise as an cognitive state rather than emotional one (e.g., Ortony, & Turner, 1990).

The logic of emotion terms used can be analysed picturewise. When studying the Figure 16, in which the emotion terms mentioned are presented by pictures, it is possible to notice that emotion profiles of Monet's (Picture 1) and Järnefelt's (Picture 6) paintings are quite similar, as are the profiles of Poussin's (Picture 3) and Tammi's (Picture 5) paintings, although there is also some variation. In the context of Monet's and Järnefelt's paintings the most dominant basic emotion is joy, but also sadness and love are important. The most central shared feature in these pictures is that they both represent landscapes with a sea or lake, and another shared feature is that they are both quite colourful. However, there are also important differences between paintings. While there are flags, ships, and human figures in the painting of Monet, the landscape of Järnefelt includes no signs of human culture. In addition, the painting of Monet is an example of French Impressionism, and the painting of Järnefelt belongs to the sphere of Finnish national Romanticism. Despite these differences the emotion profiles of these pictures are quite similar. Some participants experienced these paintings somehow melancholic or nostalgic, and the term "longing" was usually associated with these pictures. In the context of Järnefelt's painting the emotion terms used were more intensive than in the context of Monet's painting. One reason for this may be the presence of typical Finnish landscape in the painting of Järnefelt, and national isms often associated with this type of landscapes.

As the paintings of Monet and Järnefelt, also the paintings of Poussin (Picture 3) and Tammi (Picture 5) seem to form a pair with similar emotion profile. The dominant basic emotion in the paintings of Poussin and Tammi is sadness. It is easy to notice that in these paintings the situation depicted is somewhat similar – somebody has died and people are mourning over a death. Another shared feature between these paintings is the dark colouring. Despite of these similarities it is interesting that emotion profiles of these paintings are so close to each other, because the styles and themes of these paintings are totally different. While the painting of Poussin is from the seventeenth century the painting of Tammi is from the end of the twentieth century, and while the subject of Poussin's painting is Christian, the subject of Tammi's painting has no direct connections with Christianity.

The paintings of Suomi (Picture 2) and Kandinsky (Picture 4) seem to form emotion profiles, which are not shared with other pictures. Both of these paintings are modern, but while the painting of Kandinsky is totally abstract, the painting of Suomi also includes representational details. The colours of red and blue, and a dominant black line are central elements in both pictures. Despite these similarities the pictures are experienced quite differently. In the context of Suomi's painting the most dominant basic emotion is fear, and in the

context of Kandinsky this feeling is joy. The comparison between emotion profiles and pictorial subjects and themes indicates that it is important to pay close attention both to stylistic features and subjects and themes of paintings when studying their emotional dimensions. Although all paintings belong to some wider category artworks, such as Expressionism, Impressionism, or Romanticism, they usually have some individual characteristics of their own, which may effect on our cognitive and emotional interpretations of them.

Of course, there are also other ways to group emotions associated with paintings than that presented above. One possible distinction could be categorisation between A-emotions and R-emotions presented by Tan (2000). However, this distinction appeared to be somehow problematic in the context of our experiment, because there were terms, such as "confusion", "zest for life" or "relaxed", which referred more directly to subjective states of spectators than to artistic expression or world of representation. However, on a basis of our experiment it seems quite evident that emotion concepts related to artistic expression were most frequently used in the context of Kandinsky's (Picture 4) abstract painting while the terms related to the world of representation were mainly used in the context of representational paintings. Examples of other possible divisions between emotions are 1) terms expressing psycho-physiological dimensions of emotions vs. other emotion terms, 2) social emotions vs. individual emotions, and 3) aesthetic emotions vs. other emotions.

However, in our data these dimensions were not very essential. Most commonly the terms, which expressed the psycho-physiological dimensions in emotions, were notions of temperature, such as warmth, coolness, coldness, or chillness. Typically these terms were used in the context of the impressionistic painting of Monet (Picture 1), and sometimes in the context of Järnefelt's (Picture 6) landscape painting. Additional examples of individual terms referring psycho-physiological dimensions of emotions were: breathtaking, queasiness, and pain. However, the use of these terms was minimal. Only few participants mentioned them, and the use was limited to certain pictures.

The division between social and individual emotions was not very useful either. Most of the emotion terms mentioned in our experiment belonged to the class of individual emotions. Nevertheless the terms expressing social emotions, such as attachment, compassion, empathy, pity and sympathy, were mainly used in the context of pictures which represent human or animal figures. Normally, social emotions were not mentioned in the context of Kandinsky's (Picture 4) abstract painting, or Järnefelt's (Picture 6) landscape painting. However, the landscape painting of Järnefelt raised some cultural emotions, such as patriotism.

It was slightly surprising that the emotion terms typically used while speaking of aesthetic experiences played no essential role in our experiment. Nobody reported to have an aesthetic experience. One participant referred to experience of beauty and another participant mentioned the concept of sublime. Individual participants used terms such as interest, admiration, pleasantness and compelling. In addition, there were participants who mentioned terms which refer to non-aesthetic emotions, such as undistinguished, antipathy and

disgust. However, these few terms, both aesthetic and non-aesthetic ones, divided almost equally between different pictures and student groups. In the context of Kandinsky's abstract painting individual experts tended to use concepts such as well-balanced and harmony while some novices referred to the chaotic aspects of this painting.

In general, the results of Experiment 5 suggest that emotional dimensions in our visual art experiences cannot solely be explained through vocabulary typically used in aesthetics, because the major part of the terms participants used were the names of everyday-emotions, which are called "garden-variety emotions" by Carroll (2001). Thus, the divisions between pleasure vs. displeasure, which have been typically used in empirical studies of art, are too rough to explain all aspects of emotions in art experience.

It is important to notice that all the terms mentioned by the participants in our experiments do not directly refer to their own emotional experiences, because the participants were instructed to list all emotion terms the pictures, one way or another, brought to their mind. Thus, it is possible that the spectators also listed emotions, which they associate with atmosphere of the paintings or persons depicted in these paintings. For example, the participants may have listed emotions, such as sadness, agony and despair in the context of Poussin's painting (Picture 3), but they might not have themselves experienced these kinds of emotions while watching this painting. Anyway, we can assume that even recognition of these emotions in pictures somehow influenced the experiences of those participants who listed these terms.

Although the word recognise has been quite often used while speaking of emotions in the context of visual art, we can, however, ask if it really can explain the relationship between artwork and beholder, because the concept of recognition suggests that one has earlier seen something and then he or she sees this same thing again and recognises it. However, this viewpoint is somehow problematic when speaking of emotions in the context of visual art, because the spectators who evaluate the emotional dimensions of paintings have not necessarily seen just these pictures before, and thus they are studying the emotional aspects of paintings through their abstract representations of emotions. From this perspective it might be more reasonable to use the concept of apperception than the concept of recognition while speaking of emotions in the context of visual art.

In the context of findings presented above it is also worth considering if the verbal abilities of the participants somehow influenced the results received. For example, we may ask whether the students of art history have a wider vocabulary of emotion terms than the students of computer science and information systems. However, in the end, this question can be answered only experimentally, and in both groups of participants there were clear differences between individual spectators in the quantity and quality of emotion terms they listed. Nevertheless, it is quite natural to assume that the skill to pick up emotionally relevant information from the pictures is closely linked with our conceptual abilities. In other words, it seems intuitively clear that a person who has the widest set of emotional concepts is probably most prone to pay her or

his attention to emotionally essential elements in the pictures. In this sense, we can assume that persons with different kinds of verbal abilities probably experience the paintings somehow differently.

Of course, it would be equally possible to compare the use of emotional terms, for example, between the students of art history and those of literature, because we can assume that linguistic abilities of students of literature are greater than those of art historians, for example, because the students of literature have worked much more with language than the students of art history. However, it is also evident that many students of literature are also interested in visual arts, and conversely, and for this reason it might be very difficult to find participants, who were totally ignorant of the questions concerning either visual art or literature. In addition, in the sphere of empirical aesthetics there is already an established tradition of comparing the skill differences between art experts and novices.

Finally, it is essential to notice that the study presented by Winston and Cupchik (1992) suggested that for novices the emotional atmosphere of the paintings pays a more essential role than for experts. If the situation were considered from this perspective, it would indicate that the novices are more sensitive for expressions of emotions in artworks than the experts, and, thus, the novices should list more emotion terms than the experts. In our experiment the result was controversial. However, the study by Winston and Cupchik also suggests that inexperienced participants prefer popular art, while experienced participants prefer high art. Usually, in the context of popular art, the expression of emotions is more explicit than it is in the context of high art. From this viewpoint it seems evident that while novices easily associate emotions with works of popular art, expert knowledge is needed in order to associate emotions with works of high art, in which the expression of emotions is sometimes more implicit than in the context of popular art. However, as the distinction between representational and abstract art, also the distinction between high art and popular art is not fixed but rather sliding. If we, for example, think of the paintings used in our experiments 3-5, which are all made by professional artists, there are elements such as landscape elements, animal figures and powerful expressions of emotions, which are all typical elements also in the works of popular art.

7.6 Experiment 6

INTRODUCTION

Experiment 5 showed that the students of art history associated with the paintings a more varied range of emotions than inexperienced participants when they were instructed to list emotion terms the pictures brought to their mind. This suggests that the students of art history are able to register more diversified quality of emotions than lay persons when they are studying works

of art. In the previous experiment the participants described their emotional experience quite freely: they were allowed to list any emotion terms they wanted.

In the next experiment we explore whether there are differences between experts and novices when emotion terms are given to them and their task is to rate the consistency of these terms with their own emotional experience of the pictures. Because in the previous experiment the experts tended to use emotion terms with higher intensity than the novices, we could assume that the experts give higher ratings for emotion terms given to them than the novices do.

However, it is also essential to notice that the study presented by Winston and Cupchik (1992) suggests that for novices the emotional atmosphere of the paintings plays a more essential role than for the experts. If the situation were considered from this perspective, it would indicate that novices are more sensitive for expression of emotions in artworks than experts, and, thus, novices should give higher ratings for emotion terms than experts do.

When the participants are asked to rate the emotion terms given to them, we can also study how the given emotion terms tend to cluster in the context of different pictures. For example, if high rating is given to some emotion term such as sadness, would the participants also give similar ratings to other terms, such as agony, loneliness or quilt? We can investigate the loadings between emotion terms by means of principal components analysis.

METHOD

Participants. 58 subjects participated in the experiment. They were undergraduate students (30 females and 28 males) from University of Jyväskylä. Their age ranged from 19 to 47 (mean = 25, median = 23). A group of experts consisted of 26 students, who were attending a practical course of art history. In a group of novices there were 32 students of computer science and information systems participating in a lecture called Human information systems. The novices reported to have had no previous studies in the field of art history.

Materials. The same six pictures were used as in the previous experiment (Appendix 2). All pictures were simultaneously projected on the screen by means of data projector. The pictures were fifteen minutes on the screen.

Procedure. The subjects were asked to fill in a questionnaire, which included questions of their age, sex, studies, and artistic interests. In addition, the following instruction was given to the participants: "The aim of this experiment is to study the emotions in art experience. You will see six pictures made by different artists and then we will give you ten emotion terms attached to each picture. Your task is to evaluate how well these terms correspond with your own emotional experience while looking at the pictures. Number one means that there is no correspondence between the term and your own experience,

and number five means, that the correspondence is complete." The emotion terms given to the participants were selected from the terms the subjects mentioned in the previous experiment. There were ten emotion terms, which were most frequently mentioned attached to each picture.

RESULTS

The basic comparison between emotion terms used in Experiment 6 is shown in Appendix 6. There were no systematic differences between experts and novices in the ratings of emotion terms. There were only few individual terms, for which T-test showed significant differences between the skill groups. These terms were: Picture 1 (Monet): freedom, Picture 3 (Poussin): gloomy, Picture 4 (Kandinsky): liveliness, Picture 4 (Kandinsky): speedy, and Picture 6 (Järnefelt): freshness. Novices rated higher than experts all other terms but liveliness and speedy.

Principal components analysis

The data collected in Experiment 6 was analysed by means of principal components analysis, with promax rotation. Although the sample was quite small (N=58), the various indicators of factorability were good. 2-3 components with an eigenvalue of greater than 1.0 were found for each picture. The screen plots also indicated 2-3 components. The table of components and the variables that load on them is shown in Appendix 7. The components seemed to represent different emotional dimensions.

Picture 1 (Monet): Three components were found. Component 1 is dominated by warm and positive emotions with moderate intensity (warmth, summery, joyfulness and happiness). Component 2 consists of melancholic emotions, which are somewhere between love and sadness (nostalgia, longing and coolness). Component 3 includes positive emotions people often tend to associate with their experiences of nature (freedom, freshness and peacefulness).

Picture 2 (Suomi): Three components were found. Component 1 mainly includes strongly negative emotions attached to fear (threatening, dangerousness, fear, anxiety, tension and expectation). Component 2 contains average strong negative emotions attached to anger and surprise (confused, irritating, anger). It is worth noticing that irritation and anger also load quite strongly on Component 3, which is dominated by aggression.

Picture 3 (Poussin): Three components were found. Component 1 includes strong and average strong negative terms mainly attached to fear (despair, alarmed, helplessness, fear and anxiety). Component 2 contains strong negative emotion terms dominated by sadness (quilt, agony and sadness). It is also important to notice that sadness in Component 2 also loads quite strongly to Component 3. Component 3 involves emotions attached to love (compassion and longing).

Picture 4 (Kandinsky): Three components were found. Component 1 includes positive terms attached to joy (liveliness, joyfulness, speedy, warmth). Component 2 is dominated by negative emotions related to fear and surprise (incoherence, chaotic, confused). Also component 3 mainly includes emotions attached to fear (anxiety, nervousness and eagerness), but these terms are stronger in their intensity than those of Component 2.

Picture 5 (Tammi): Three components were found. Component 1 mainly includes negative emotion terms attached to sadness and fear (sadness, despair, anxiety, fear, longing and agony). Component 2 contains negative emotion terms dominated by sadness and related to social isolation (loneliness and quilt). Component 3 includes terms which depict the attitudes of the participants toward the pictorial situation (curiosity and pity).

Picture 6 (Järnefelt): Two components were found. Component 1 includes positive emotion terms attached to nature (stillness, peacefulness, freedom, safety and autumnal). Component 2 is mainly dominated by emotion terms attached to joy and love (happiness, freshness, patriotism and longing). Component 2 also includes depression, but the loading of the term is negative.

In general, there were no significant differences between art experts and novices regarding the components explained above. However, the participants of art history gave higher values than novices to terms which dominated the Component 1 in the context of Kandinsky's (Picture 4) painting (liveliness, joyfulness, speedy, warmth). The difference between experts and novices regarding this component was also statistically significant, ($t(56) = 2.017$, $p < .05$).

DISCUSSION

In principal components analysis the emotion terms with a shared valence tended to cluster within the same components. Usually positive and negative terms were parts of different components. If there were positive and negative terms inside the same component, the signs of positive and negative terms were different. In some cases the components included emotion terms, which belonged to the sphere of the same set of basic emotions, but in many cases the terms inside the components were from different categories of basic emotions. Typically the intensities of emotion terms in the same components were quite similar.

For example, in the context of Kandinsky's (Picture 4) painting the terms liveliness, joyfulness, speedy and warmth all belong to the category of “joy” and all other emotion terms are negative. In the context of different pictures the same terms were differently combined. For example, the term anxiety was clustered with threatening, dangerousness, fear, tension and expectation in the context of Suomi's picture (Picture 2), with despair, alarmed, helplessness and fear in the context of Poussin's picture (Picture 3), with nervousness and eagerness in the context of Kandinsky's picture (Picture 4), and with sadness, despair, fear, longing and agony in the context of Tammi's picture (Picture 5).

To summarise, Experiment 6 showed that there are no essential differences between experts and novices when they are rating emotion terms given to them. For this reason it is important to study the emotional experiences of spectators also in situations where the spectators can themselves list the emotions they associate with pictures. However, it is also essential to study emotional experiences by using more structured tests like this in order to find out if there are some loadings between emotional terms. When we systematically investigate how emotion concepts tend to cluster in the context of different kind of artworks we will receive general knowledge of interaction between artworks and emotions.

7.7 Experiment 7

INTRODUCTION

Although the previous experiment showed that there are no essential differences between art experts and novices when they are rating emotion terms given to them, we still decided to investigate whether there is a difference between these skill groups when they are rating both suitable and unsuitable emotion terms.

As art historians have wider knowledge of depiction conventions of emotions in the context of artworks from different periods than the novices have, art historians should be more able to differentiate between suitable and unsuitable emotion terms in the context of given pictures. From this perspective there should be greater differences between the ratings of suitable and unsuitable emotion terms in evaluations made by art historians than those of novices.

The previous experiment showed that those emotion terms which share some basic features, such as valence, intensity, or membership in some emotional category, tend to form certain factors on a basis of their loadings. In this experiment we aim to study whether suitable and unsuitable emotion terms tend to load on different factors.

METHOD

Participants. 54 subjects participated in the experiment. They were undergraduate students (29 females and 25 males) from University of Jyväskylä. Their age ranged from 20 to 46 (mean = 24, median = 22). A group of experts consisted of 21 students, who were attending a practical course of art history. In the group of novices there were 33 students of computer science and information systems participating in a lecture called Human information systems. Novices reported having had no previous studies in the field of art history.

Materials. The same six pictures were used as in the previous experiment (Appendix 2). All pictures were simultaneously projected on the screen by means of data projector. The pictures were fifteen minutes on the screen.

Procedure. The procedure was similar to that in the previous experiment, but the list of emotions given to participants was slightly different. The list included five emotion terms which were most frequently mentioned in the context of each picture in Experiment 6. In addition, the list included five emotion terms, which were not mentioned in the Experiment 6 in connection with these pictures.

RESULTS

The basic comparison between emotion terms used in Experiment 7 is shown in Appendix 8. There were no systematic differences between experts and novices in the ratings of emotion terms. There were only few individual terms, for which T-test showed significant differences between skill groups. These terms were: Picture 2 (Suomi): threatening, Picture 4 (Kandinsky): liveliness, Picture 4 (Kandinsky): speedy, Picture 5 (Tammi): antipathy, Picture 6 (Järnefelt): compassion. The terms threatening, antipathy and compassion were rated higher by novices than experts, and conversely, the terms liveliness and speedy were rated higher by experts. However, in Experiment 6 there were clear differences between ratings of suitable and unsuitable emotion terms. For example, in the context of Tammi's painting suitable emotion terms (anxiety, despair, sadness, pity and pain) received means which varied between 2.91-4.06. Conversely, unsuitable emotion terms (aggression, energetic, happiness, relaxed and antipathy) received means which varied between 1.24-2.45.

Principal components analysis

The data collected in Experiment 7 was analysed by means of principal components analysis, with promax rotation. Although the sample was quite small (N=53), the various indicators of factorability were quite good. 2-3 components with an eigenvalue of greater than 1.0 were found for each picture. The screen plots also indicated 2-3 components. The table of components and the variables that load on them is shown in Appendix 9. The components seemed to represent different emotional dimensions.

Picture 1 (Monet): Three components were found. Component 1 includes mainly positive emotions with low intensity (summery, joyfulness and warmth), and it also includes sorrow, but the loading of this term is negative. Component 2 contains somehow melancholic emotion terms, which mainly belong to categories of sadness and love (longing, nostalgia, mercy and cosiness). Component 3 is dominated by two terms attached to fear (dangerousness and alarmed).

Picture 2 (Suomi): Three components were found. Component 1 includes strong negative terms, which belong to categories of fear and anger (tension, threatening, aggression and fear). Component 2 contains mainly positive terms attached to joy and love (happiness, romance, carelessness and melancholy), which are not so easily associated with the atmosphere of this picture. Component 3 includes negative terms related to sadness and anger (disillusion and irritating).

Picture 3 (Poussin): Two components were found. Component 1 includes negative emotion terms dominated by sadness and fear (despair, agony, sadness, anxiety and gloomy), and it also contains the term enjoyable, but the loading of this term is negative. Component 2 includes a set of very different emotion terms (jealousy, romance, satisfaction and disgust), which are not so easily associated with atmosphere of this picture.

Picture 4 (Kandinsky): Three components were found. Component 1 includes positive terms attached to joy (joyfulness, speedy and liveliness). Component 2 mainly contains emotion terms related to love (longing, compassion, piety and confused). Component 3 includes terms dominated by fear and sadness (chaotic, dread and depression).

Picture 5 (Tammi): Three components were found. Component 1 includes negative terms mainly attached to sadness and fear (agony, sadness, anxiety, despair and pity). Component 2 contains terms which belong to the category of joy, but which are not so easily associated with the atmosphere of this picture (happiness and relaxed). Component 3 mainly includes emotions attached to anger and joy (energetic, aggression and antipathy), which also seem to conflict with the atmosphere of the picture.

Picture 6 (Järnefelt): Three components were found. Component 1 includes positive emotion terms dominated by joy and love (happiness, longing, freedom, peacefulness and compassion). Component 2 includes a set of different emotions, which are not easily associated with the atmosphere of the picture (aggression, fear and lust). And finally, Component 3 includes two terms, which seem to have no senseful relation with each other, uneasiness and autumnal, and the loading of uneasiness is negative.

In general, there were no significant differences between art experts and novices regarding the components explained above. However, the participants of art history gave higher values than novices to terms which dominated Component 1 in the context of Kandinsky's (Picture 4) painting (joyfulness, speedy and liveliness). The difference between experts and novices regarding this “liveliness component” was also statistically significant, $t(51) = 2.930$, $p < .01$.

DISCUSSION

Experiment 7 showed that there are no significant differences between experts and novices in rating of suitable and unsuitable emotion terms. However, as in the previous experiment, also in this experiment emotion terms seemed to

cluster in a sense making way. Those emotion terms which shared some essential features, such as a membership in a category of certain basic emotion, tended to cluster, and usually unsuitable emotion terms, which somehow seemed to conflict with the atmosphere of given pictures, formed their own components.

If we compare the results from Experiments 1-7 it seems obvious that through different kinds of instructions we receive very different kind of knowledge of emotions experienced by spectators. To summarise: In Experiment 1 where different tasks were given to two groups of spectators, the group whose task was to depict the atmosphere of the paintings naturally used more emotion terms than the participants in the other group. In Experiments 2-4 where differentiation between experts and novices was made, the novices used more emotion terms than the experts, although the difference between the skill groups was not statistically significant. In addition, in Experiments 6-7, where the participants were instructed to rate the emotion terms given to them, there were no significant differences between experts and novices.

Thus, clear differences between emotional experiences between art experts and novices were only found in Experiment 5 where the task of participants was to freely list all emotion terms they associated with pictures. This result suggests that in order to reach emotional experiences of art experts we have to instruct them to pay attention to emotions, because art experts are not accustomed to evaluate the paintings from the viewpoint of their emotional side. However, the result also suggests that the emotional experience of art experts can be deeper and better-defined than the emotional experience of novices.

From the perspective of content-based approach it is possible to interpret the results received in such a way that experts' culture-historical knowledge of art allows them to associate emotions with paintings more independently than it is possible for novices. Conversely, when some emotional terms are directly given to participants and their task is to evaluate the relevance of these terms, the difference between the skill groups disappears, because the task is not so constructive and the use of expertise knowledge is not as essential as in the case of Experiment 5.

8 PROCESS OF PICTURE INTERPRETATION

Previous experiments aimed to clarify the functions of apperception in our experiences of visual art by analysing perceivable and non-perceivable mental contents and emotional experiences of those who were interpreting works of art. In the previous chapter the data collected in experiments was mainly studied by means of statistical analysis. Because the key interest was in the categorisation of the concepts the spectators used in their interpretations, attention was paid only minimally to individual processes of interpretation. However, if we want to acquire a deeper understanding of the process of interpretation we also should study the protocols of individual participants in a more detailed way, paying close attention to concepts they use and to transformation of conceptual structures in protocols while the process of interpretation continues. Therefore, in this chapter, one qualitative case study of picture interpretation process is presented. In the end of this chapter I will present a summary of relationships between sub-processes of picture interpretation discussed in previous chapters.

8.1 Case study of picture interpretation

The following analysis is constructed on a basis of a protocol of an individual participant, who interprets Pasi Tammi's painting *Poem forces to kneel down* (1999) in the context of our third experiment, reported in Chapter 6.3. In the third experiment the task of participants was to construct free interpretation of symbolic meanings of the paintings, and they had ten minutes to interpret each picture. This individual protocol is selected for further analysis, because in this case the process of restructuring seemed to play a more essential role than in any other protocols collected in our experiments. In addition, in the context of this individual protocol it is easy to follow the logic of interpretation, because the spectator very clearly expresses what she is thinking while looking at the picture. The critical features of the protocol more closely analysed are presented

in Table 8. Some non-informative parts of the protocol, such as some unnecessary words, have been cut out.

TABLE 8 Spectator's interpretation of Pasi Tammi's painting, *Poem Forces to Kneel Down* (1999).

1	Lower part of the picture is very black. In upper part the colours are lighter.
2	In upper corner, on the left, there is a man who is naked and in crawling position.
3	His hands are lower than his head, and he has crossed his fingers.
4	Then there are angel's wings on the right side of the man.
5	The man is fallen angel.
6	He has lost his status as an angel when he has done something bad.
7	That is why he has lost his wings, and why he is in position like this.
8	If some person cries or is sad he or she can fall at a position like this.
9	And this figure is even on the edge of dark gulf, mountain, or promontory
10	in a position which suggest that he will rush down
11	to darkness, gloominess, or damnation.
12	This is very interesting and excellent picture.
13	In upper part there are very beautiful, sensitive pastel colours.
14	And then the lower part, as a contrast, is very gloomy and black,
15	it almost seems to absorb the figure and the wings into some black hole.
16	Then those wings,
17	although they are not so symmetrical as the wings of sugar candy angels,
18	I see them as wings.
19	However... When I watch more carefully,
20	there are wings, but there is also a neck and a head, like a head of a swan,
21	which is embraced by the man.
22	Now this picture receives totally different interpretation.
23	If this is not angel's wing, but it is a swan or something like that,
24	it is obviously stained with oil.
25	One of its wings is still quite white and health,
26	but the other is totally messy, dirty and seems to be dead.
27	So, there could be some kind or environmental message in this work.
28	But still it has something to do with damnation theme.
29	The person is maybe not mourning over his lost position as angel,
30	but he is mourning over the nature, which has been destroyed.
31	A new interpretation is that the person in the picture is a human being,
32	and these wings belong to this dead bird.
33	The bird symbolises destroyed nature.
34	and the human being symbolises repentance and sorrow for this situation.
35	There is clearly some aspect of nature conservation in this work.

When we compare Tammi's painting with the protocol of the participant it seems evident that the spectator starts the process of interpretation by studying the visual elements within the picture. In Tammi's painting there is a relatively small number of visual elements: just a human figure, a figure of a bird, a light colour field in the upper part of the picture, and a dark field in the lower part of it. All interpretations of the picture somehow base on these elements. In the beginning of the protocol, in rows 1-3, the participant mentions dark and light colour fields of the picture, and presents some notions of the position, posture and gestures of the human figure. In this phase the spectator merely uses perceivable concepts. Then, in the fourth row the participant mentions the wings, which lie on a ground, and presents an assumption that they are the wings of an angel. In this phase the spectator first time draws away from the visual reality of the picture by combining two visual elements, the man and the wings, into wholeness called an angel (Figure 17).

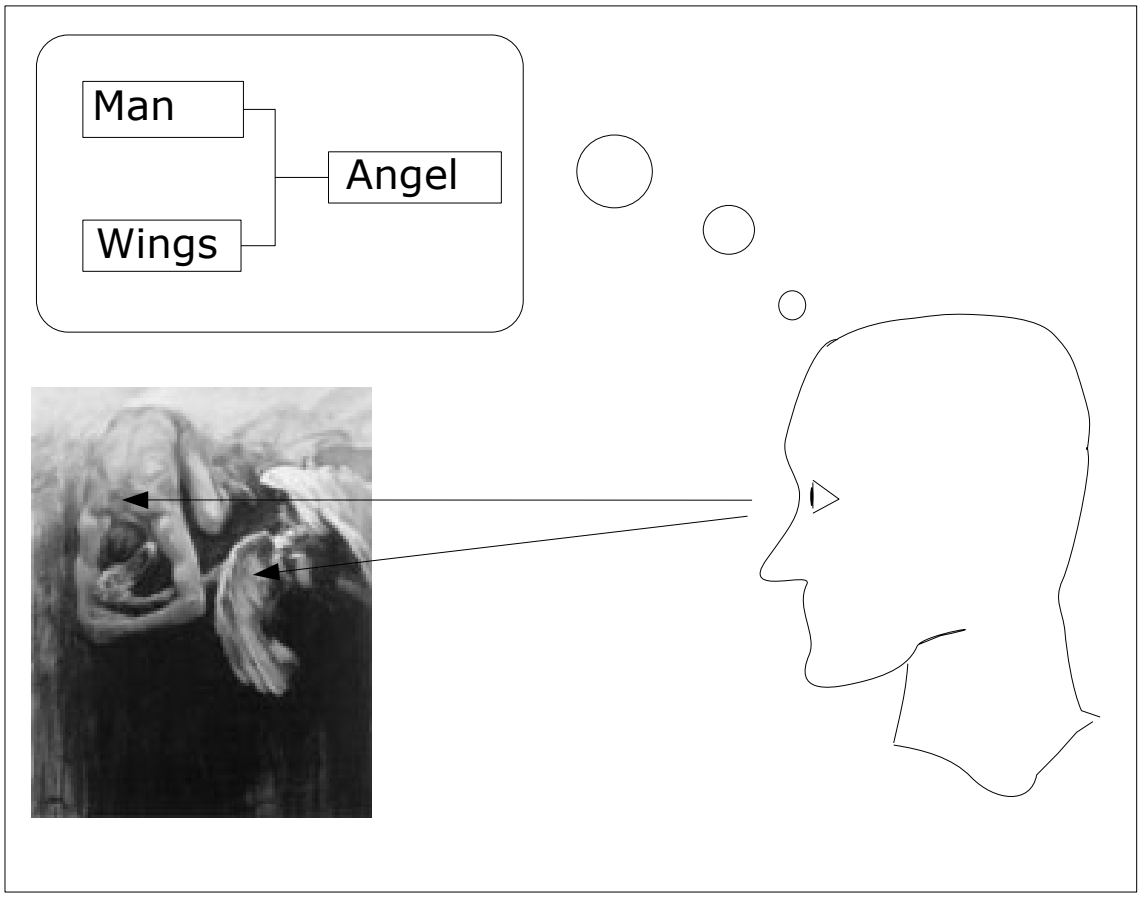

FIGURE 17 Assimilation of perceivable and non-perceivable content elements in mental representation of the spectator.

Although it is possible to explain the notions of man, wings, dark area, and light area in the painting through the concept of perception, the notion of angel cannot be explained through perception alone, because it is evident that all spectators do not see an angel in Tammi's picture. In our experiments there was one other participant, who presented a notion of angel in the context of this

picture, but besides these two spectators, no other participant reported seeing an angel. Thus, the notion of angel is a non-perceivable concept in a sense that not all spectators can see it in the picture. Through the use of a non-perceivable concept, in this case the concept of angel, the spectator aims to construct senseful relationships between visual elements, which can be seen in the picture. From this perspective we can explain the notion of angel through Wittgenstein's (1953/2001) definitions of a phenomenon called seeing-as. While seeing the painting of Tammi as a depiction of angel, the spectator probably compares the painting with other depictions of angel she has seen. We can also understand the situation in such a way that the painting of Tammi activates the scheme of angel in the long-term memory of the spectator. In any case, the notion of angel suggests that apperception plays essential role in visual information processing.

In the rows 5-7 the spectator further develops her interpretation, which bases on a notion of angel. The participant starts to think what might have happened before the present moment of the picture and assumes that the man is a fallen angel, who has made something bad and has therefore lost his wings and his position as an angel. In this phase the interpretation heavily bases on the use of non-perceivable concepts. Although we can explain the notion of angel through the seeing-as phenomenon, because there are the wings in the picture, which can be seen as references to angel, we cannot in any sense see that the man has done something bad and has therefore lost his status as an angel. Thus, from this viewpoint we can state that the spectator is using productive imagination, in a Kantian (1790/1994) sense, while aiming to construct senseful relationships between visual elements in the picture. However, it is possible to understand both imagination and seeing-as as sub-processes of apperception.

In row 8 the participant returns to the visual reality of the picture and starts to restudy the position of the human figure. On a basis of these notions the spectator makes assumptions of the emotional state of this figure and thinks that he is sad. When we think of the spectator's notions of emotions it seems clear that she has already appraised the pictorial situation somehow before she presents evaluations of the emotional state of the figure depicted. When the protocol of participant is studied from this perspective it seems clear that in this case the appraisal theory of emotions better explains the emotional experience of the spectator than does the Lippsian (1903, 1903/1960, 1907) theory of Einfühlung, which suggests that emotions are experienced directly, before cognitive evaluation of situation. However, in our experiments there were also participants who started the interpretation of Tammi's painting by mentioning that the figure depicted is sad, and only after that they started to study more carefully the other visual elements in the painting. When comparing the protocols of different participants, it seemed evident that some spectators were more sensitive to the emotional atmosphere of the picture than the others, in a sense that there where spectators who did not present any notions of emotional atmosphere of this picture. Some other participants mainly studied the picture through its emotional influence.

After notions concerning the emotional state of the man the figure depicts, in row 9 the spectator restudies the dark area of the painting, which was first registered in the beginning of the task. Now she sees this dark area as some kind of gulf or promontory, and assumes that the human figure is on the edge of it. In row 10 the spectator again restudies the posture of the figure and thinks that he will soon rush down to darkness, gloominess and damnation. It is worth noticing how easily the notion of the darkness is associated with the concept damnation. Thus, in row 11 there is a very quick shift from perceivable concepts to non-perceivable ones. Whereas it is possible to understand the notions of darkness and gloominess as perceivable concepts in the context of Tammi's painting, the notion of damnation is clearly of non-perceivable kind. Probably the notion of damnation so easily appears, because the spectator has earlier presented notions of fallen angel.

Figure 18 shows the key concepts the spectator uses in the former part of her interpretation (rows 1-11) and the relationships between these concepts. While the notions of wings, man and dark background of the painting are perceivable kind concepts, the notions concerning angel and damnation, as well as the evaluation of the emotional state of the human figure depicted are non-perceivable kinds of concepts.

In row 12 the spectator's viewpoint to picture changes in a very important respect. She starts to study the painting from evaluating perspective and examines the colour contrasts of the painting. It almost seems that the interpretation will be finished. However, in row 16 the spectator starts to restudy the wings and compares them with those of sugar candy angels. Then in row 19 the participant seems to hesitate and re-examines the wings more carefully. In the next rows the spectator notices that there is a swan, which is embraced by the man. This new conceptual perception of the picture leads to restructuring of mental representation, because the earlier interpretation, which based on the notion of angel, is not consistent with the notion of swan figure. In row 22 the spectator explicitly expresses that new interpretation must be constructed. Implicitly this notion suggests that the participant is studying her earlier interpretation on the meta-level in relation with her new apperception of the picture. From this perspective we can assume that she is in a phase called reflection, which means that two or more alternative mental representations are compared.

When the figure of the bird has once been noticed it is more carefully studied in rows 23-26. Because the other wing of the bird is white and the other is messy, dirty, and seems dead, the spectator assumes that the swan is stained with oil. Thus, the situation before the present moment of the painting is re-evaluated. In row 27 the participant presents an assumption that there might be some environmental message in this work. When studying the protocol we can notice that restructuring have some influences on a perceptual level. When one element within the painting is differently understood during re-evaluation, other visual details in the painting are restudied from this new perspective. This means that restructuring leads to a new apperception of the painting. When the senseful relationships between visual elements of the picture were earlier

constructed through non-perceivable concepts, such as angel and damnation, in the latter part of the protocol sensefulness is constructed through the notions concerning oil accident.

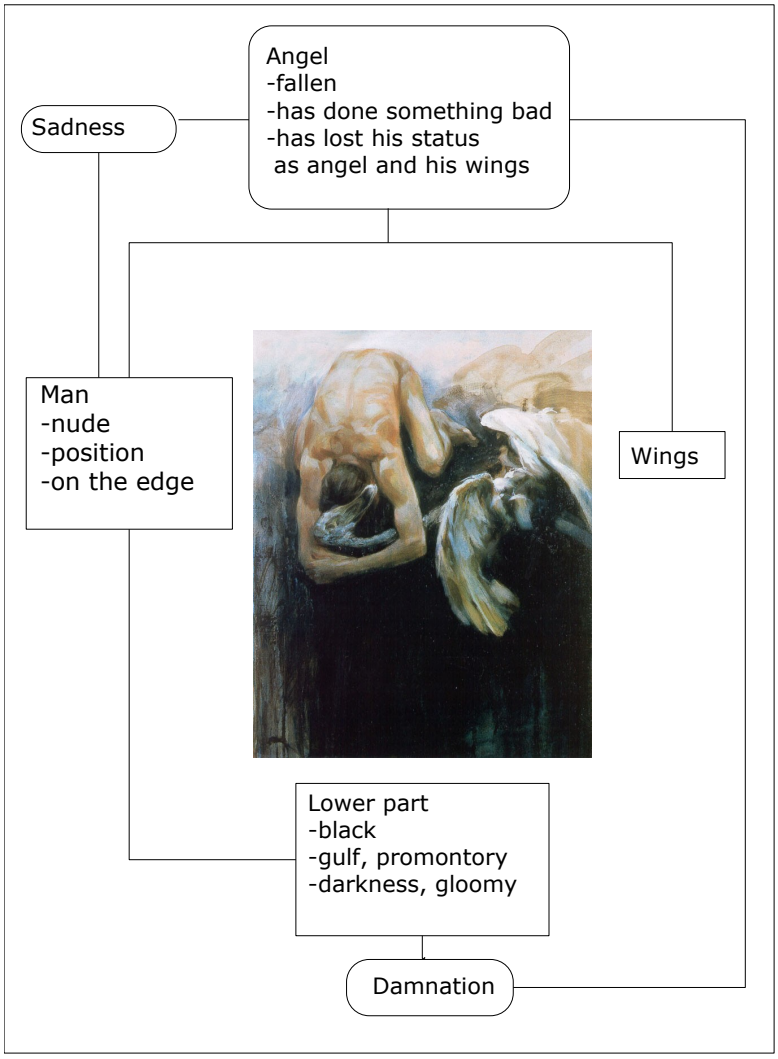

FIGURE 18 Relations between perceivable and non-perceivable concepts in the former part of spectator's protocol.

However, it is important to notice that within this new interpretation all earlier concepts are not abandoned. In rows 28-30 it is found that the spectator still uses the concepts of damnation and sadness, but now these concepts are closely linked with destruction of the nature. From this perspective we can also see features of constructive thinking in this interpretation. Through construction the solutions of sub-problems are combined into one self-consistent representation. When the spectator's protocol is studied from the viewpoint of construction, we can see the concepts of damnation and sadness as partial sub-solutions to the total interpretation presented by the spectator. Although the spectator has associated these concepts with the picture before she has noticed the figure of the swan, she assimilates these concepts to her new interpretation

of the picture, and therefore, construction plays an essential role in this process of interpretation.

And finally, in rows 31-35 the spectator summarises the main features of this new interpretation and confirms the presence of nature conservational aspect in this work. Figure 19 shows the key concepts the spectator uses in the latter part of her interpretation (rows 19-35) and relationships between these concepts.

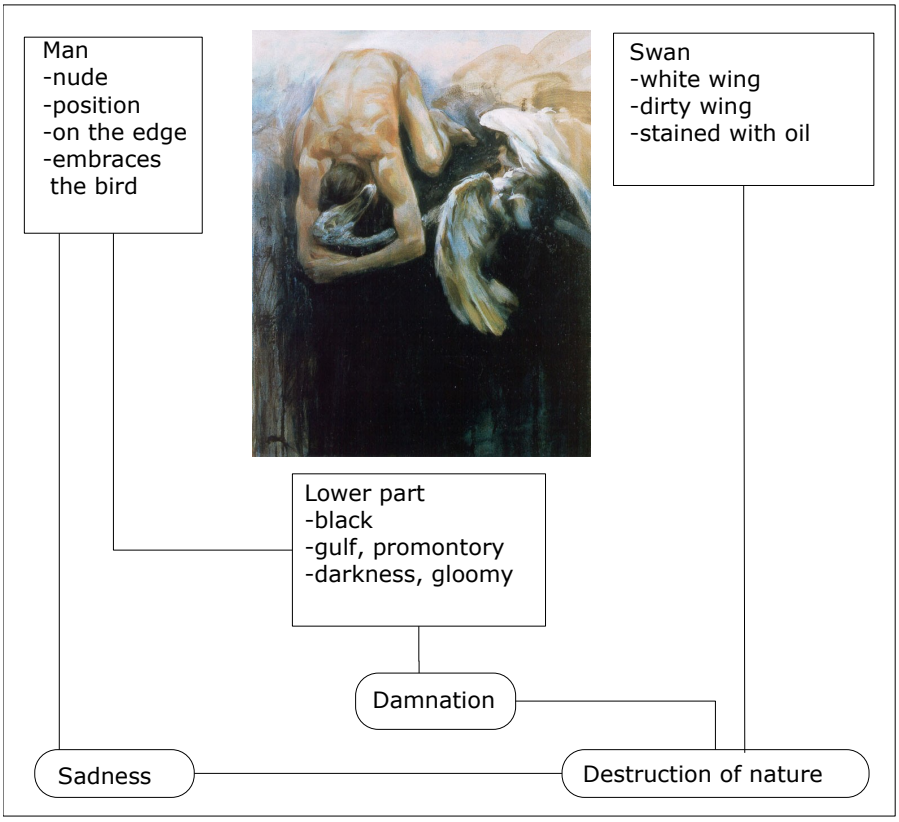

FIGURE 19 Relations between perceivable and non-perceivable concepts in the latter part of spectator's protocol.

The protocol analysed above clearly shows that picture interpretation does not proceed linearly from visual perception to conceptual thinking, but it is more like a continuous movement between perceptual information and conceptual thinking. Although the process of interpretation naturally begins with a close reading of visual information, the spectator soon breaks away from the visual reality of the picture and starts to complete the painting with non-perceivable concepts, for example, by considering what has happened before the present moment of the picture. However, it is also essential to notice that the spectator regularly tests her interpretations by comparing them with the visual reality of the painting. When perception and interpretation appear to be contradictory, the interpretation is restructured, but only as much as it is necessary. The spectator only abandons the concepts which are in a strict contradiction with the new interpretation, but still uses many other concepts, which were used as a

part of earlier interpretation. She only transforms the attributes of earlier concepts in such a way that they match with the new interpretation.

On a basis of previous analysis we can see that the concepts of apperception, restructuring, reflection and construction can have explanatory value in the context of picture interpretation. Through these concepts we can reach a better understanding of conceptual processes of the spectators interpreting the paintings. However, it is essential to notice that the protocol analysed above is somehow exceptional when compared with other protocols collected in our experiments. It is the only protocol in which the process of restructuring seems to play a central role. Most of the participants noticed immediately that there is a figure of a swan in the picture and therefore it was not necessary to restructure. In addition, there were some individual participants who did not recognise the figure of a swan at all during their interpretation. Although every participant noticed some new aspects in the painting while in the process of interpretation, usually these new aspects were assimilated with their previous interpretations.

In general, the process of restructuring did not play a very essential role in our experiments, reported in the previous chapter, because these experiments were designed for the study of apperception. In our experiments the time for interpretation was quite short, only ten minutes. If the process of restructuring is directly studied there probably should be more time for interpretation. In addition, it might be good if the spectators would have the possibility to somehow search information of the pictures used as stimulus material. And of course, the quality of stimulus material is essential. When restructuring is investigated, the stimulus material should be ambiguous in such a way that it would allow various contradictory interpretations.

With a help of qualitative data analysis it would be possible to analyse, almost endlessly, different processes of interpretations and concepts included to these interpretations. In all cases this kind of analysis is not very rational. For example, if we want to clarify the general principles of visual information processing, more general conceptual categorisations combined with statistical analysis may reveal essential features of the data. If we study individual picture interpretations in isolation, the results received may be somehow misleading. For example, the interpretation analysed above is constructed by an art historian. However, when we compare this interpretation with interpretations presented by other art historians there appears to be many differences. This individual spectator uses both perceivable and non-perceivable concepts clearly more than art historians on average. However, the concepts of art history are only minimally used by this individual spectator. She only presents some notions of the use of colours in Tammi's painting. This interpretation, thus, is not a very typical art historical interpretation although it is presented by a person who has studied art history.

In content-based analysis of experiencing visual art it is important to use both qualitative and quantitative analysis, because these approaches reveal different aspects of the data. With the help of statistical analyses it is possible to

study general structures of the data, and qualitative analysis of the data can shed light on conceptual differences between individual spectators.

8.2 Relationships between sub-processes in picture interpretation

On a basis of our theoretical discussion and experimental results reported above it is possible to present a summary of relationships between different sub-processes in picture interpretation. Figure 20 depicts the process of picture interpretation through which our mental representations of artworks are constructed. Our experiences of visual art base on perceivable and non-perceivable contents of mental representations. Without mental representations there are no experiences.

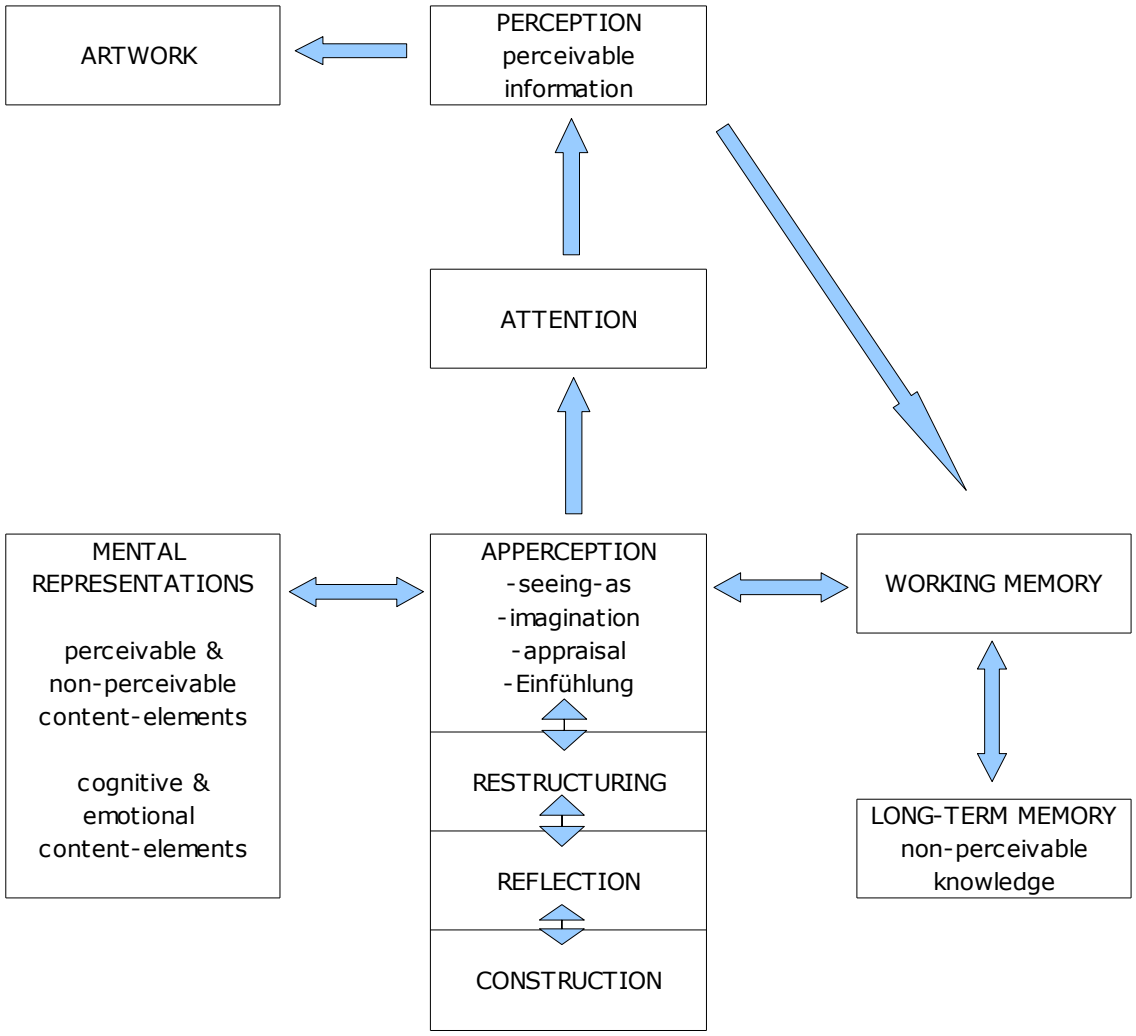

FIGURE 20 The process of picture interpretation.

Although artwork as visual stimulus and our perception of it naturally play a very essential role in our process of picture interpretation, apperception is at the heart of all visual information processing. Apperception, which provides self-consciousness of the spectator, directs our attention, and through attention it also directs our perception. Apperception is a process through which our mental representations are constructed. In addition, it is essentially linked with our memory system and with the processes of restructuring, reflection and construction. Through the functions of apperception it is possible to explain why the spectators of art, including the experts of art history, tend to present slightly different interpretations of the artworks they see. Through apperception our every single perception is coloured with our previous experiences.

Artworks contain visual information, signs, whose potential symbolic meanings cannot be actualised before they are in some way or other apperceived. Although perception is a process through which we receive visual information and which transmits perceivable information into our working memory, this perceivable information has no meaning without apperception. To perceive something means that one has to have a retinal representation of something. From this perspective perception is somehow unintelligent, but naturally essential sub-process in art interpretation. However, without the functions of attention we cannot make a separation between meaningful figures in pictures and perceptual noise of background. Attention, thus, is a higher cognitive process than perception in a sense that it directs perception, but it is also important to notice that like perception, also attention is a stimulus-bound process. Without the functions of apperception it is impossible to explain why we pay attention to some visual elements within the pictures while ignoring some other elements. Therefore, it seems clear that apperception directs perception through attention.

Although our memory system naturally plays an essential role in visual information processing, as a capacity-based system memory is more like a platform for the representations of thoughts rather than a faculty which can provide our mental representations with their senseful structure. Working memory both retrieves knowledge from long-term memory and transmits knowledge into long-term memory for later retrieval. The knowledge stored in long-term memory can include both cognitive and emotional dimensions. Although perceivable stimulus information and non-perceivable knowledge stored in long-term memory are brought into contact with each other through the functions of working memory, it is apperception, which creates the senseful structures between perceivable and non-perceivable content elements in our mental representations.

It is possible to understand seeing-as, imagination, appraisal, and Einfühlung as sub-processes of apperception, because they are all processes which help us to make sense of our visual perception. Through the faculty of seeing-as we can explain, for example, why some element in a picture is understood as a symbol of something more general. Imagination makes it possible to associate with pictures things which literally are not there, but

which help us to understand the relations between visual elements depicted. Appraisal, which means cognitive evaluation of a situation depicted, is closely related with seeing-as, and in some cases it can also relate to imagination. Einfühlung, which literally means feeling-into, refers to presence of emotions more powerfully than other sub-processes of apperception. However, all these sub-processes of apperception aim to construct senseful relationships between visual elements depicted in paintings.

As apperception, also the processes called restructuring, reflection, and construction are closely related with mental representations. Restructuring means the shift from one immediate mental representation to another. While interpreting the pictures we can notice some aspects in them which are somehow in contradiction with our earlier interpretation of the picture. In this case we have to restructure, i.e., to shift from one mental representation to another, because the capacity of our information processing system does not allow us to simultaneously construct several mental representations in which some content element have contradictory meanings. However, we can construct several independent mental representations of some picture, one after another. In this case reflection can control the comparison and selection between alternative mental representations. And finally, through construction we can integrate wider groups of sub-representations into a self-consistent whole.

However, it is important to notice that the process of interpretation does not proceed linearly from apperception to restructuring, reflection and construction, but the process of interpretation is more like a cycle in which all sub-processes of interpretation are mediated through apperception. It is entirely possible that restructuring, reflection, or construction launch a new cycle of interpretation, in which the visual stimulus offered by artwork is restudied in the light of our prevalent mental representation. Naturally, the cycle of interpretation continues until some acceptable solution has been found. When picture interpretation is studied through the concepts of apperception, restructuring, reflection and construction, it is easier to compare this task type with other human problem solving activities. However, when comparing picture interpretation with other problem solving activities, such as chess playing, medical diagnosis, or engineering design, there is at least one crucial difference. In the context of art there is much more room for emotions than in the context of many other problem solving activities.

9 CONTENT-BASED APPROACH TO EXPERIENCING VISUAL ART

Content-based approach to experiencing visual art

In this thesis the problematics of experiencing visual art were studied in a reference frame of content-based approach. In content-based psychology the information contents of mental representations form the explanatory ground of investigation (e.g., Saariluoma, & Nevala, 2006). On more general level, content-based approach aims to clarify the functions of content-specific modes of thinking, such as apperception, restructuring, reflection, and construction, in the context of various human problem solving activities. From this perspective content-based approach is essentially linked with study of expertise.

When experiencing of visual art is studied through content-based approach, the investigation focuses on information contents of those who are watching and interpreting the works or art. It is possible to understand picture interpretation as one sub-type of human problem solving activities, and conversely, art historians can be defined as experts in picture interpretation. In this thesis art historians were thought of as experts in picture interpretation, because they are accustomed to deal with visual research material and study these materials as a part of their wider culture-historical reference frames. In addition, there are some earlier investigations, in which skill differences between art historians and inexperienced spectators have been compared (e.g., Beyerlein, Beyerlein, & Markley, 1991; Cupchik, Winston, & Herz, 1992; Winston, & Cupchik, 1992).

Because one goal of this thesis was to present a general overview of those psychological resources and processes which play an essential role in our experiences of visual art, the problematics of experiencing were studied through the concepts of memory, perception, attention, apperception, restructuring, reflection, and construction. Of course, it would be equally possible to study our experiences of visual art, for example, solely through the concept of perception, which actually has been quite a typical practice in the context of psychological study of visual art (e.g., Arnheim, 1954/1974, 1970;

Solso, 1994, 2003). However, if experiencing art is only studied from the viewpoint of some individual sub-process of human thinking, such as perception or imagination, it is quite difficult for those readers who are not familiar with modern theories of information processing, to understand how this individual sub-process links with our other cognitive processes.

When the problematics of experiencing visual art are studied in a reference frame of content-based approach, it is naturally essential to pay close attention to interaction between different sub-types of perceivable and non-perceivable content elements in spectator's mental representations, because through these distinctions we can get to a better understanding of the ways apperception functions in the context of experiencing visual art. Although the quality of concepts the spectators use in their interpretations is one of the key issues in content-based study of experiencing visual art, it is also important to analyse how the individual processes of interpretation tend to proceed, because in this way we can reach a deeper understanding about how the sub-processes of interpretation relate with each other. While studying the processes of individual interpretations the concepts of restructuring, reflection, and construction can function as tools through which it is possible to separate different phases of interpretation. And finally, in content-based study of experiencing visual art, it is naturally essential to pay attention to functions of emotions as a part of our experiences. However, it is not reasonable to study the functions of emotions in isolation, without analysing how they relate with our cognitive processes of interpretation.

Because content-based approach has not earlier been applied in studies which focus on experiencing visual art a great part of this thesis concentrates on conceptual analysis, although some preliminary experimental results are presented also. In this dissertation, it was important to define, what the concepts typically used in content-based investigation, such as mental representation, apperception, restructuring, reflection, and construction, mean from the perspective of experiencing visual art. In addition, in this thesis it was necessary to discuss some of the concepts, such as emotions and imagination, which have not earlier been defined in the context of content-based studies, but which have played a very important role in theoretical discussion concerning aesthetic experience (e.g., Carroll, 2001; Currie, 2004; Kant, 1790/1994; Lipps, 1903; Matravers, 1998; Scruton, 1974).

Relationship between content-based approach and other approaches to problematics of experiencing visual art

Because there are already many approaches to problematics of experiencing visual art, one can naturally ask whether it is really necessary to construct any new approach, as suggested in this thesis. In this dissertation experiencing visual art is approached through examples of two conflicting interpretations presented on a basis of Vermeer's painting. Although there are many schools and disciplines which some way or other deal with the questions concerning the experiencing of visual art, none of these fields of visual arts research has

presented unambiguous ways to approach the problematics of conflicting interpretations, because they have not paid enough attention to mental contents.

One of the most powerful approaches to problematics of experiencing visual art has been the psychology of vision, which originates from the writings of Arnheim (1954/1974, 1970). In the Arnheimian approach, which heavily leans on Gestalt psychology, the concept of perception is defined so widely that it practically covers the whole range of experiencing visual art, and for this reason the explanatory power of the Arnheimian concept of perception is quite minimal. In addition, because Arnheim so powerfully concentrates on the concept of perception and functions of the eye, he does not pay attention enough to mental processes of spectators, and for this reason it is impossible to explain individual variations between interpretations presented by different spectators from the viewpoint of the Arnheimian approach. The key difference between the Arnheimian approach and the content-based approach is that the latter pays more attention to mental processes of the spectators and assumes that perception as well as attention is guided by apperception.

In addition to the Arnheimian approach, there are fields of philosophical aesthetics, empirical aesthetics, and neuro-aesthetics, which have also studied the questions related to experiencing visual art. Whereas the Arnheimian approach focuses on the functions of the eye, neuro-aesthetics studies the functions of the brain while experiencing visual art. However, if we think of the relationship between content-based approach and neuro-aesthetics introduced by Zeki (1999a, 1999b), we find that the goals of these two approaches are different. While neuro-aesthetics focuses on biological part of experiencing, content-based approach aims to investigate the psychological part of this same process.

Because content-based approach literally studies the mental contents of those who are studying the works of art, (cf. Saariluoma, & Nevala, 2006), neuro-biological problems remain outside of its scope. However, this does not mean that there should be any crucial contradictions between content-based approach and neuro-aesthetics; it only means that the scopes of these two approaches are different. As Zeki (1999a) has admitted, in the light of present-day neuro-aesthetics it is not possible to study questions of why some of us prefer certain artistic schools to others, the emotive power of the works of art, their power to disturb and arouse, and the role of cultural and historical knowledge in appreciating and interpreting works of art. However, in the context of content-based approach these questions are very relevant. Of course, it is important to observe the development of neuro-aesthetics in the future, because it is highly possible that the steps taken now in this field are only preliminary. Here it is essential to notice that interest in mental contents does not suggest that the significance of neurological aspects is denied, and in this sense there is no danger to fall into the mind-body trap, depicted, for example, by Antonio Damasio (1994).

When comparing content-based approach with the studies of empirical aesthetics, which has followed theoretical guidelines presented by D. E. Berlyne

(1971, 1974), there are more shared interests. Empirical aesthetics is usually practised by psychologists, who study the experiencing of art experimentally. Normally there are two groups of participants, whose responses to works of art are compared through statistical analysis. However, although empirical aestheticians have studied the themes, such as evaluation and interpretation of artworks, and aesthetic experiences aroused by paintings (e.g., Cupchik, & Gebytos, 1988; Cupchik, Winston, & Herz, 1992; Millis, 2001; Winston, & Cupchik, 1992), these researchers very seldom clearly differentiate between perception and higher cognitive processes in picture interpretation. In addition, because empirical aesthetics so powerfully concentrates on experimental investigation through statistical data-analysis, it has not really increased our understanding of individual differences in picture interpretation. From the viewpoint of humanistic art research it would be important to pay more attention to individual differences between artworks which are used as stimulus material than is possible in the context of empirical aesthetics. However, in a reference frame of content-based approach, where both qualitative and quantitative data-analysis are allowed, it is possible to focus on individual differences between individual artworks and spectators' interpretations of them.

In the sphere of philosophical aesthetics the problematics concerning aesthetic experience have been discussed more profoundly than in any other fields of research mentioned above (e.g., Beardsley, 1958; Carroll, 2001, 2006; Dewey, 1934/1980; Kant, 1790/1994). However, from the viewpoint of content-based approach purely aesthetic experience is only one aspect in the wider concept of experiencing art, in which various sub-processes of interpretation, such as apperception, restructuring, reflection, and construction play an essential role. In addition, in the sphere of philosophical aesthetics, where empirical investigation is not practised, it is not possible, or even necessary, to compare the experiences or interpretations between wider groups of different spectators. From this perspective philosophical aesthetics crucially differs from content-based approach in which conceptual analysis and experimental study are closely linked.

However, it is essential to notice that in the sphere of philosophical aesthetics there have been discussions of many themes, which are also important from the viewpoint of content-based approach. For example, Sibley's (1959) discussion of the quality of aesthetic concepts is closely related with differentiation between perceivable and non-perceivable concepts, which is crucial in the context of content-based approach. Another example of similarities between content-based approach and philosophical aesthetics can be drawn from Carroll's (2001, 2006) notions concerning content-oriented approach to aesthetic experience, according to which we should study how the works of art are prefocused in order to arouse aesthetic experiences in us. Despite the fact that perceivable features of artworks naturally play an essential role also in content-based approach, the main importance of content-based approach, however, lies in the study of contents of spectators' mental representations.

Although the concept of mental representation is quite rarely noted while studying the problematics of experiencing art, there are, however, some individual theoreticians, such as Currie (2004), and Rollins (1999, 2001, 2003, 2004) who have discussed some functions of mental representations in the context of art. In addition with Currie and Rollins, also Solso (1994, 2003) has studied visual art in a cognitive psychological reference frame. Although there are naturally many points in common between these writers and the content-based approach presented in this thesis, none of these theoreticians has discussed the concept of apperception, which forms the core of content-based approach, and through which, it is possible to approach the problematics of conflicting interpretations.

Despite the fact that some basic concepts of content-based approach essentially differ from those concepts through which the problematics of experiencing visual art have earlier been approached, it is, however, possible to compare the results received in the sphere of different schools and disciplines with those received in the context of content-based approach. For example, we can analyse the definitions of aesthetic experience presented in the sphere of philosophical aesthetics, and study how these definitions link with the conceptual reference frame of content-based approach. In the sphere of content-based approach we can also test empirically some statements presented by philosophical aestheticians. In addition, experiments made in the sphere of empirical aesthetics have clarified many conceptual differences between aesthetic experiences of experts and novices, although the conceptual reference frame of empirical aesthetics is somewhat different from the reference frame of content-based approach.

On a general level, we can state that different approaches to experiencing visual art ground on different kinds of conceptions of humanity. While neuro-aesthetics emphasises the material quality of humanity, philosophical and empirical aesthetics leave more room to human mentality. However, in the sphere of empirical aesthetics there is not enough room to individual variations between different works of art which have traditionally played a very essential role in humanistic art research. From this perspective it is essential that content-based approach could be flexible enough, in such a way, that both general level abstractions and individual variations would fit into its scope.

Empirical findings

Although the main part of this thesis focuses on conceptual analysis, also some preliminary experimental results are presented in order to find out if content-based approach really might have enough explanatory power over our experiences of visual art. However, it is essential to notice that the results received are only first steps in the experimental study of experiencing visual art in the context of content-based approach, and experiments reported in this thesis mainly focus on perception, apperception and emotional experience of spectators. The key findings of the seven experiments are briefly summarised below.

1) Experiments 1-4, where different tasks were given to participants, clearly show that instructions essentially guide spectators' flow of thoughts. Very different kinds of results were received when participants were asked to depict the contents of paintings, study emotional atmosphere of pictures, or interpret the symbolic meanings of the pictures. In addition, in Experiments 5-7, where emotional experience of participants is studied through different instructions, there are clear differences in results received through scales and free interpretation.

2) In Experiments 1-4, where differentiation is made between perceivable and non-perceivable concepts that the participants used, non-perceivable concepts were systematically more frequently used than perceivable ones. This observation is obviously in contradiction with Arnheimian psychology of visual art, which bases its theoretical constructs on the notion of perception (e.g., Arnheim, 1954/1974, 1970). When the use of perceivable concepts bases on perception, the use of non-perceivable concepts provides apperception, which assimilates non-perceivable contents in our mental representations. Thus, our results suggest that apperception has an essential role in art experiences of all spectators. Although there are individual researchers, who have paid attention to non-perceivable features in our visual art experiences, this conceptual bias has not been systematically corrected so far in the psychology of visual art, and the concept of perception still dominates our language concerning the problematics of experiencing visual art (e.g., Blank, Massey, Gardner, & Winner, 1984; Solso, 1994, 2003). Although in everyday speech it is naturally possible to say that one perceives the seventeenth century or some political theme in a work of art, this does not make sense in accurate scientific language. The construction of mental representations is simply not expressible in terms of perceiving only, it is necessary to investigate also non-perceivable dimensions of these representations.

3) Experiments 2-4, where differentiation between art experts and novices is made, show that art historians tend to use non-perceivable concepts more frequently than novices do. From this perspective our results are somewhat similar to the results received by Beyerlein, Beyerlein and Markley (1991). They found out that implicit propositions, such as references to styles, have an important role especially in art interpretations of experts while novices mainly use explicit propositions. Although the differentiation between explicit and implicit propositions presented by Beyerlein, Beyerlein and Markley presumably somehow corresponds with our division between perceivable and non-perceivable concepts, it, however, is unclear about which kinds of conceptual sub-categories these investigators exactly included in their categories of explicit and implicit propositions. In our experiments the differences between art experts and novices are systematically greatest in the context of art historical concepts. In the context of other kinds of non-perceivable concepts our results slightly vary when different instructions are given to participants. However, this finding suggests that during their education art historians learn a great number of domain-specific concepts through which they organise their perception of art. The result is in harmony

with other studies of expertise, which have suggested that experts tend to use higher-level concepts than novices do, and through these concepts these experts are more prone to reach the deep structure of the problem (e.g., Ericsson, & Lehmann, 1996; Chi, 2006). From this perspective it is also possible to compare the expertise of art historians, for example, with the expertise in medicine (e.g., Norman, Eva, Brooks, & Hamstra, 2006). In both cases the experts study symptoms and make diagnoses on a basis of these symptoms.

4) In the context of Experiments 2-4 where the task of participants is to interpret pictures through different instructions novices use slightly more emotional terms than experts do. These results are in harmony with earlier studies, which have suggested that inexperienced participants evaluate pictures on a basis of their emotional influence while experts evaluate them on a basis of their complexity (e.g., Winston, & Cupchik, 1992). However, the situation was totally different in the context of our Experiment 5, where the task of participants is to freely list all emotion terms the pictures bring to their mind. In this experiment experts used significantly more all kinds of emotion terms than novices did, and especially they used more positive emotion terms than novices. Thus, these results suggest that although novices are more prone to explicitly evaluate the paintings on the basis of their emotional influence, the emotional experience of experts can still be more diversified than the experience of novices. It seems that experts are more prone than novices to pick emotionally relevant information from the paintings. Although it is not typical for art historians to implicitly express their own emotional experiences when they are interpreting pictures (cf. Farago, & Zwijnenberg, 2003), this does not mean that they do not have emotional or other kinds of subjective experiences.

5) In Experiments 1-4 all pictures used as stimulus material were differently conceptualised. In general, perceivable concepts are most commonly used in the context of representational paintings which include plenty of visual details, such as human and animal figures and landscape elements, whereas non-perceivable concepts are most frequently used in the context of pictures which are surrealistic in a sense that they include somehow contradictory elements, juxtaposed in surprising ways. However, in the context of all paintings participants seemed to use non-perceivable concepts in order to construct senseful relationships between visual elements in pictures. In addition, Experiment 5 clearly shows that in a context of different pictures spectators used different kinds of emotion terms. When the emotion terms listed by the participants were divided into more specific sub-groups of emotions related to love, joy, surprise, anger, sadness and fear, all pictures seemed to have their own kind of emotion profile. However, there also were interesting similarities in emotion profiles between some pairs of pictures. Although those pictures which received a similar kind of emotion profile were stylistically quite different, there were some similarities between general themes of these pictures. Thus, the result suggests that from the viewpoint of our emotional experience the individual content elements within the pictures can play a role that is as essential as, for example, the stylistic quality of the paintings.

6) In Experiments 6-7 where the task of participants was to evaluate how well the emotion terms given to them match with their own emotional experience of the paintings, no essential differences between experts and novices in their ratings of emotion terms were found. When these results are compared with the result obtained in Experiment 5, it seems that when we let the spectators themselves name the emotions they associate with the pictures we receive rich information of emotional contents in their mental representations. Usually these freely constructed lists of emotions were individual in such a way, that all lists constructed were slightly different. Conversely, when we asked the spectators to rate emotion terms given to them, they all tended to rate them quite similarly. Thus, through the scales we can only get a rough idea of their emotional experience. However, by using the scales we can get systematic information of the ways emotion terms tend to cluster in the context of different kinds of pictures. This way we can, in a long run, obtain a better understanding of interaction between the features of visual stimulus and our emotional experiences.

7) While Experiments 2-5 show that art experts systematically experience the works of art differently from novices, there were also clear individual differences between spectators in both groups of participants. While some participants studied very carefully the visual elements within the paintings and used non-perceivable concepts quite minimally, there were also participants who almost ignored the visual surface of the pictures and filled the paintings with their own associations. There were also remarkable differences in the use of art historical concepts between the experts. While some experts used tens of art historical concepts in the context of individual pictures, others mentioned only few. However, this situation is not untypical, because, for example, the studies focusing on expertise in history have shown that there may be great differences between individual experts (e.g., Voss, & Wiley, 2006). In addition, in Experiment 4, where the participants were asked specific questions of given symbolic elements within the paintings it is easy to see that visual symbols are apperceived slightly different ways by all participants, although there are naturally some general meanings typically associated with these symbols. Thus, although it is important to study the differences between art experts and novices it is also essential to study individual differences in their processes of interpretation.

8) Because our experiments were mainly designed for the study of apperception and emotional experiences of spectators, the processes of restructuring, reflection and construction received less attention. For this reason one case study of the process of picture interpretation was constructed. In this analysis one picture interpretation presented by individual spectator was closely studied through the concepts of apperception, restructuring, reflection and construction. Although the process of restructuring, i.e., the shift from one mental representation to another, did not play a very important role in our experiments in general, through this individual interpretation it was possible to show how the process of restructuring can function in the context of picture interpretation. In addition, in this interpretation also the processes called

reflection and construction closely related with restructuring. Therefore, this constructed case study clearly suggests that besides apperception, the concepts of restructuring, reflection, and construction, as general modes of thinking, can also have power of explanation in the context of experiencing visual art.

In general, all experiments reported in this thesis show that apperception plays a very crucial role in our experiences of visual art. If visual art experience is solely approached through the concept of perception, it is very difficult to explain why different spectators tend to give different interpretations for the paintings they see, or why different beholders tend to use slightly different emotion terms when they are studying the same works of art. The sub-processes of apperception, such as seeing-as, imagination, appraisal, and Einfühlung, create these differences, because they mix the stimulus information emanating from the pictures with personal experiences of the spectators. On a basis of our experiments it seems evident that all spectators organise their visual perception through non-perceivable kinds of concepts. Through the use of non-perceivable concepts they aim to construct senseful relationships between visual elements within pictures. From this perspective it seems clear that we cannot ignore the problematics of apperception, when we aim to study the experiencing of visual art.

Of course, one can ask whether apperception really is a crucial concept from the perspective of our visual information processing. Naturally it is possible to speak of constructing mental representation without the concept of apperception. We should remember, nevertheless, that the concept of apperception is nothing new; it has roots already in the psychological writings of Leibniz (1704/1965), and Kant (1781/1974). In addition, redefinitions of apperception made by Saariluoma (1995) link this concept with modern psychological discussion of mental representations. From a psychological angle it is essential to differentiate between the concept of mental representation and those processes which operate on representations. From this perspective the concept of apperception is important, because it brings conceptual clarity for the study of human thinking, and it helps us to understand the crucial difference between perception and higher cognitive processes which organise our perception.

Contributions and research in future

Because of its cross-disciplinary nature, content-based approach to experiencing visual art might have contributions to make to several fields of research, although until now only some preliminary steps have been taken. Naturally, content-based approach to experiencing visual art relates with other content-based investigations, which have focused on skills, such as chess playing, engineering design, and architectural design (e.g., Saariluoma, 2003a; Saariluoma, & Maarttola, 2003a, 2003b; Nevala, 2005). Although the task types studied in the context of earlier content-based investigations are quite different from the process of picture interpretation, there are, however, many shared features between different task types, and from this perspective the study of

picture interpretation can open some new perspectives for content-based investigation. As already mentioned, in the context of art, emotions probably play a more important role than in the context of many other task types, and therefore a study which focuses on experiencing art can enrich our understanding of interaction between cognition and emotions in human thinking.

In addition, the problematics of experiencing visual art can open up some perspectives to problematics concerning visual information processing in general. In future it is essential to study the interaction between eye-movements and think-aloud protocols of spectators. In this work it is also important to study the viewpoints presented in the sphere of cognitive linguistics more profoundly than it has been possible in this thesis**.** From this perspective the approach presented in this thesis might have some contributions to make to cognitive psychology. When picture interpretation is understood as one subtype of human problem solving, it also relates with studies of expertise. Although there are investigations in which the expertise in general history is studied (e.g., Voss, & Wiley, 2006), there are no systematic studies of art historical expertise. The questions concerning art historical expertise have sometimes been touched in studies of empirical aesthetics, (e.g., Beyerlein, Beyerlein, & Markley, 1991; Cupchik, Winston, & Herz, 1992; Winston, & Cupchik, 1992), but usually these studies only aim to clarify the differences between art experts and novices from some quite narrow angle without relating the results to more general discussion of art historical expertise.

Because art historical expertise in picture interpretation is discussed in this thesis, this investigation also might have some contributions to make to art history. Traditionally the questions attached to experiencing have not played a very crucial role in the field of art history, but during the recent years there have been some attempts to strengthen the status of experiencing as a part of art history writing (e.g., Farago, & Zwijnenberg, 2003). From this angle, content-based approach might open some new perspectives for the problematics of experiencing in the context of art historical research. Traditionally art historians have tended to assume that meanings somehow lie inside the pictures, and the task of art historians is to reveal these meanings. In this case art historical expertise greatly bases on recognition, and picture interpretation appears to be a task that is quite non-intellectual. However, the notions concerning apperception, restructuring, reflection and construction, might clarify the nature of art historical research in a sense that it would be easier to understand art historians as active producers of meanings. Through these concepts it is possible to approach the problematics of conflicting interpretations, which is actually quite typical in a field of art history. This way, content-based approach could work as a tool in meta-theoretical discussions of art history.

In addition, there are many possibilities for interaction between aesthetics and content-based approach. In the sphere of philosophical and empirical aesthetics there is a great amount of literature which somehow touches the problematics of experiencing visual art. However, in the context of one thesis it is not possible to thoroughly treat all the themes discussed in these fields. For

this reason wide themes, such as art theoretical discussion of interpretation and aesthetic experience, are not very profoundly analysed in this dissertation. However, in future it will be important to study in more detail how the discussion concerning these themes relates with content-based study of experiencing visual art. Thus, between content-based approach and different fields of aesthetics there are still many interesting possibilities for cross-disciplinary discussions in future. It will be crucial to further investigate the ways of how empirical and philosophical approaches to problematics of experiencing visual art could be brought into contact with each other in such a way that the results received could benefit these both fields.

In addition to art history and aesthetics, content-based approach outlined in this thesis might have some contributions to art education. If we could acquire a better understanding of the ways that our earlier experiences interact with our perceptual abilities, we could utilise this knowledge as a part of art education. From this viewpoint systematic study of relationships between perceivable and non-perceivable concepts the spectators tend to use in their picture interpretations can open up some perspectives for art educational purposes. For example, it would be essential to understand how perceivable and non-perceivable information is combined in apperception. In addition, we should ask how non-perceivable content elements effect on perceptual selection processes. Also, interaction between cognitive and emotional contents in mental representations should be further investigated.

In future, one of the most essential tasks is to sharpen the theoretical reference-frame of content based analysis both with the help of conceptual analysis and experimental investigation. In that work it is important to develop relevant measurement methods consistent with content-based approach. When we aim to study the mental contents of those who are watching and interpreting works of art, we can use both published art interpretations and data collected in experimental situations. These both types of data have their advantages and disadvantages. The published interpretations of artworks do not reveal the immediate processes of thinking, but the experts who have constructed these interpretations have constructed them freely, without those limitations which are typical in experimental situations. Conversely, the interpretations constructed in experimental situations can shed light on immediate processes of thinking, but experimental situations have other limitations. For example, it is quite typical that an art historian constructs and reconstructs her or his picture interpretation during a long period of time and uses various literary sources in this work. For this reason it is quite difficult to build an experimental situation with a high ecological validity for art experts. And even if it is possible, it is quite difficult to record and analyse experimental data collected within a very long period of time.

However, only by combining the results obtained by using various types of data, different experimental settings, and different methods of analysing, it is possible to get to a more comprehensive understanding of experiencing visual art. While statistical analysis can provide us with a good overview of general features of the data, qualitative analysis can reveal us different aspects of the

same data. Only through qualitative analysis it is possible to find those individual differences which usually play a very essential role in our experiences of art. In this thesis only skill differences between art experts and novices were studied, but it would be equally possible to study the conceptual differences between children, adults and older people, spectators of different cultures, or spectators of other domains of expertise than art history, including philosophers, sociologists, psychologists, physiologists, or researchers of literature or theology. In addition, although education naturally influences our visual art experiences, there are always some personal aspects, which can also guide our thoughts and emotions, (e.g., Cupchik, & Wroblewski-Raya, 1998; Furnham, & Walker, 2001). All these standpoints mentioned above are relevant in the context of content-based approach to experiencing visual art.

In future, more attention should be paid to integration of perceivable and non-perceivable contents into mental representations of artworks. One useful tool in this work might be manipulation of stimulus. For example, we could systematically transform some visual content elements in pictures and then study how these transformations effect on our interpretations and on our emotional experiences of these pictures. This work naturally presumes a careful study of relations between visual stimulus and interpretations of artworks. In experimental studies of experiences of visual art it has been very typical to present strong distinctions between high and popular art, or between different artistic styles (e.g., Molnar, 1981; Winston, & Cupchik, 1992). In "real world of art" these distinctions are not so sharp, and that is the reason why we should pay more attention to cognitive and emotional dimensions of individual artworks. This does not mean that we should not use these distinctions at all; rather we should compare the properties of individual artworks with those of more general categorisations.

In this thesis the experiencing of visual art has mainly been studied from a viewpoint of paintings. It is, of course, possible to use content-based approach in the context of different kinds of visual phenomena, such as photographs, sculptures, architecture, cartoons, performances, films, or even commercial advertisements. However, when we study different species of visual phenomena it is essential to carefully consider which are the most important conceptual categories and sub-categories through which our experience is organised. While paintings have only two dimensions, sculptures and architecture are three-dimensional. In the context of cartoons, performances, and films temporal and narrative dimensions are probably more important than they are in the context of paintings. In addition, cartoons, films, and commercial advertisements also use language and/or music beside visuality. In any case, it is possible to use content-based approach also in the context of these mixed genres.

Within the reference frame of content-based approach we can also investigate the changing traditions of art historical interpretation, or changing conceptions of art during different artistic periods. By means of documentary analysis, i.e., through the analysis of written documents, we can study both the conceptions of art historians and those of artists. In the history of art history

there are many examples in which artistic preferences of art historians have strongly influenced their categorisations of art. Also manifests of different artistic schools have consciously aimed to manipulate the artistic attitudes of audience. By analysing the concepts used in art definitions presented by different actors within art world we can become more conscious of the contents of our own experiences of art. Systematic conceptual analysis is the only way to recognise intuitive aspects of our concepts.

In a reference frame of content-based analysis it is also possible to research creative thinking of artists. Those processes, which play an essential role in our art interpretation, such as apperception, restructuring, reflection, and construction are probably quite important concepts also in a reference frame of artistic creation. When we study artistic thinking, we can, for example make comparisons between the sketches and finished works or between different versions of the same subject matter. However, in this work it is also important to find the intentions of artist some way, for example, by studying her or his biographical material, such as diaries or letters, or by making interviews if the artist is still alive.

The main importance of content-based study of experiencing visual art bases on the fact that we should reach a better understanding of those mental processes which direct our visual perception and interact with our emotions. Visual information is all around us, not only in the works of art but also in commercial advertisements. Every day we watch television and use many kinds of objects and products, such as clothes, vessels, furniture, mobile phones and computers which all have various visual properties. Despite this, we have relatively little knowledge of the effects the visual stimulus has on our emotions. When compared with other visual phenomena artworks have traditionally been most analytically studied, and there are different kinds of texts available for the use of content-based analysis. Artists, art historians, aestheticians and art critics have written thousands and thousands of pages of text, which deal with cognitive and emotional dimensions of visual stimulus. From this perspective the most economical way to start content-based study of visual experiencing is from the sphere of visual art; the materials, easily available there, can be used as data. However, in future it is important to extend the range of content-based approach to the sphere of those visual objects and products we tend to use every day, and usually without even paying conscious attention to them.

YHTEENVETO (FINNISH SUMMARY)

Sisältöperustainen lähestymistapa visuaalisen taiteen kokemiseen

Huolimatta siitä, että visuaalisen informaation tiedetään vaikuttavan voimakkaasti tunteisiimme, ei meillä ole tarkkaa käsitystä niistä kognitiivisista prosesseista, jotka ohjaavat visuaalista havaintoamme. Tutkimuksessa visuaalisen informaation prosessointia lähestytään taidekokemuksen viitekehyksessä. Visuaalisen taiteen kokeminen on taidehistorioitsijoiden, psykologien, taiteenfilosofien, estetiikan tutkijoiden ja neurotieteilijöiden jakama monitieteinen tutkimusongelma, jota on perinteisesti lähestytty havaitsemisen käsitteen kautta.

Havaitsemisen käsitteen varaan rakentunut teoreettinen kieli (esim. Arnheim, 1954/1974, 1970; Solso, 1994, 2003) on kuitenkin ongelmallinen taiteen kokemisesta puhuttaessa, koska havaintoamme ohjaavat korkeammat kognitiiviset prosessit jäävät liian vähälle huomiolle. Tutkimuksessa visuaalisen taiteen kokemista lähestytään Pertti Saariluoman 1990-luvulta lähtien kehittämän sisältöperustaisen lähestymistavan (content-based approach) kautta. Sisältöperustainen lähestymistapa pyrkii selittämään ihmisen käyttäytymistä mentaalisten representaatioiden informaatiosisältöjen kautta ja täsmentämään käsitystämme niistä kognitiivisista prosesseista, jotka ohjaavat mentaalisten representaatioiden konstruointia.

Tutkimuksessa kuvantulkintaa tarkastellaan taitolajina olettaen taidehistorioitsijat kuvantulkinnan asiantuntijoiksi. Teoreettisessa osassa kuvantulkintaa lähestytään aluksi havaitsemisen ja tarkkaavaisuuden käsitteiden kautta, mutta esimerkkien kautta osoitetaan, ettei ristiriitaisten tulkintojen problematiikkaa ole mahdollista selittää yksinomaan havaitsemisen ja tarkkaavaisuuden pohjalta. Tästä syystä kuvantulkintaa lähestytään seuraavaksi näkeminen jonakin – ilmiön ja kuvittelun käsitteiden kautta, jotka edelleen määritellään apperseption aliprosesseiksi. Apperseptiolla tarkoitetaan tässä yhteydessä mentaalisten representaatioiden konstruointiprosessia.

Apperseption käsitteen jälkeen huomio kiinnitetään representaatioelementteihin ja niiden välisiin suhteisiin. Kun merkin ja symbolin käsitteiden avulla viitataan taideteoksissa oleviin visuaalisiin elementteihin, määritellään mentaalisten representaatioiden keskeisimmiksi elementeiksi käsitteet. Taideteoksen merkitys rakentuu siten vuorovaikutuksessa taideteoksen visuaalisten elementtien ja katsojan käsitteiden välillä. Taideteosten pohjalta konstruoiduissa mentaalisissa representaatioissa on sekä eksplisiittisiä, havaintoon pohjautuvia (perceivable) että implisiittisiä, havainnon ylittäviä (non-perceivable) sisältöjä. Eksplisiittisille sisällöille pystymme osoittamaan yksiselitteisen visuaalisen vastineen kuvassa, mutta implisiittiset sisällöt pohjautuvat aikaisempaan kokemukseemme. Pyrkiessämme ymmärtämään visuaalisen taiteen kokemista huomiota tulisi kiinnittää vuorovaikutukseen mentaalisten representaatioiden eksplisiittisten ja implisiittisten informaatiosisältöjen välillä.

Tutkimuksessa kuvantulkintaa tarkastellaan myös ongelmanratkaisun alalajina. Tässä yhteydessä kuvantulkintaa taitolajina verrataan muihin tehtävä-

tyyppeihin, kuten shakinpeluuseen, lääketieteellisen diagnoosiin, historiantulkintaan ja kirjoittamiseen. Tällöin kuvantulkinta ymmärretään prosessiksi, jossa voi olla erilaisia vaiheita, kuten restrukturointi, reflektio ja konstruointi. Restrukturointi tarkoittaa siirtymistä yhdestä mentaalisesta representaatiosta toiseen, reflektio viittaa siihen, että kahta keskenään ristiriitaista tulkintavaihtoehtoa verrataan toisiinsa metatasolla ja konstruointi taas tarkoittaa useamman osaratkaisun yhdistämistä toisiinsa (Nevala 2005; Saariluoma, Nevala, & Karvinen, 2006.)

Analysoimalla taideteoksen kognitiivista prosessointia on myös mahdollista päästä käsiksi emootioihin, joita taideteoksia katsoessamme ja tulkitessamme koemme. Estetiikassa emotionaalisia kokemuksia on perinteisesti lähestytty mielihyvän käsitteen kautta. Tässä tutkimuksessa tunteiden problematiikkaa tarkastellaan sekä tunnestautumisteorian (Einfühlung, feeling-into, theories of empathy) että kognitiivisen appraisal-teorian näkökulmasta. Lisäksi tutkimuksessa esitellään erilaisia tapoja kuvien äärellä kokemiemme tunteiden kategorisoimiseksi.

Tutkimuksen empiirisessä osuudessa visuaalisen taiteen kokemista lähestytään seitsemän kokeen kautta. Kokeissa taidehistorian opiskelijoille ja kokemattomille taiteen katsojille näytettiin kuvia eri taiteilijoiden maalauksista ja heille esitettiin erilaisia tehtävänantoja niihin liittyen. Kokeet osoittavat, että katsojat assosioivat maalauksiin paljon sellaista, mille ei ole osoitettavissa yksiselitteistä visuaalista vastinetta kuvissa. Kuviin assosioitiin esimerkiksi tunnekäsitteitä ja muita abstrakteja käsitteitä, olentoja, joille ei ollut visuaalista vastinetta kuvassa, ylimääräisiä aikaulottuvuuksia, teoksen teemaan, sanomaan ja yleiseen merkitykseen liittyviä huomioita sekä taidekäsitteitä. Kokeneet taiteen katsojat käyttivät implisiittisiä, havainnon ylittäviä käsitteitä enemmän kuin kokemattomat taiteen katsojat. Ryhmien väliset erot olivat suurimpia taidekäsitteiden kohdalla. Tiivistettynä kokeet osoittivat, että havaitsemisen käsitteen varaan rakentunut teoreettinen kieli on riittämätön puhuttaessa visuaalisen taiteen kokemisesta. Apperseption käsite selkiyttäisi siten huomattavasti sekä teoreettista keskustelua taiteen kokemisesta että ilmiön kokeellista tutkimusta.

Tunnekokeessa, jossa katsojia pyydettiin luettelemaan tunnetermejä, joita kuvat toivat heidän mieleensä, listasivat taidehistorian opiskelijat huomattavasti suuremman määrän tunnetermejä kuin kokemattomat taiteen katsojat. Kokeneet taiteen katsojat assosioivat maalauksiin kaikentyyppisiä tunnetermejä enemmän kuin kokemattomat katsojat, mutta erot ryhmien välillä olivat suurimpia positiivisten tunnetermien kohdalla. Kokeissa, joissa katsojia pyydettiin arvioimaan valmiina annettujen tunnetermien vastaavuutta heidän oman tunnekokemuksensa kanssa, ei taitoryhmien välisiä eroja syntynyt. Huolimatta siitä, että tunnekokeet olivat vasta alustavia, osoittivat ne kuitenkin selvästi, että taiteen ja tunteiden vuorovaikutusta on mahdollista tutkia kokeellisesti, toisin kuin monesti on annettu ymmärtää.

Seitsemän kokeen lisäksi tutkimuksessa esitettiin tapaustutkimus yksittäisen katsojan kuvantulkintaprosessista. Tulkintaprosessia tarkasteltiin apperseption, restrukturoinnin, reflektion ja konstruoinnin käsitteiden kautta. Kun katsoja tulkintaprosessinsa kuluessa hahmotti kuvan eri tavoin kuin aikaisemmin,

hänen täytyi restrukturoida eli hylätä aikaisempi tulkintansa kuvasta ja konstruoida uusi. Uutta tulkintaa konstruoidessaan katsoja kuitenkin piti kiinni monista käsitteistä, joiden varaan aikaisempi tulkinta oli rakentunut ja muokkasi tulkintaa ainoastaan sen verran kuin se oli välttämätöntä.

Kokonaisuutena tutkimus osoitti, että sisältöperustainen lähestymistapa soveltuu hyvin tutkimukseen, jossa kiinnostuksen kohteena on visuaalisen taiteen kokeminen. Tutkittaessa taiteen kokemista sisältöperustaisen lähestymistavan näkökulmasta huomiota tulisi kiinnittää vuorovaikutukseen taideteoksen visuaalisten ominaisuuksien ja katsojan mentaalisten representaatioiden sisältöjen välillä. Tästä näkökulmasta havaitsemisen käsitteen varaan rakentunut teoreettinen kieli on riittämätön viitekehys tutkimukselle, joka kohdistuu visuaalisen taiteen kokemiseen. Tarkentamalla teoreettista kieltä apperseption, restrukturoinnin, reflektion ja konstruoinnin käsitteillä, pystymme jäsentämään taiteen kokemisen problematiikkaa ja siihen kohdistuvaa tutkimusta mielekkäämmällä tavalla.

Pyrkiessämme tarkentamaan käsitystämme visuaalisen taiteen kokemisesta pelkkä teoreettisen kielen täsmentäminen ei kuitenkaan riitä, vaan lisäksi tarvitaan systemaattista kokeellista tutkimusta, jonka avulla teoreettisten käsitteiden selitysvoimaa on mahdollista tutkia. Tämän tutkimuksen yhteydessä ainoastaan alustavia kokeellisia tuloksia on esitelty. Jatkossa huomiota tulisi kiinnittää erityisesti siihen, kuinka apperseptio ohjaa havaitsemistamme, ja kuinka se vaikuttaa tunnekokemuksiimme. Tällöin keskeistä on pyrkimys niiden käsitteellisten kategorioiden löytämiseksi, joiden avulla jäsennämme visuaalista havaintoamme. Vaikka kokemisen problematiikkaa on tässä tutkimuksessa lähestytty yksinomaan taiteen kautta, on sisältöperustaisen lähestymistavan kautta mahdollista tutkia myös kokemuksiamme muista arjen visuaalisista ilmiöistä.

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PICTURE SOURCES

PICTURES USED AS EXAMPLES IN TEXT

Figure 1
Vermeer, Jan (Johannes) (1632-1675)
Woman with a Pearl Necklace, (ca. 1662-65)
Source: Koningsberger, H. (1967/1973). *The world of Vermeer 1632-1675*. Time-Life International, (Nederland) B. V., p. 129.

Figure 2
Dali, Salvador (1904-1989)
Burning Giraffe, (1936/37)
Source: Maddox, C. (1983/1988). *Salvador Dali. Eksentrisyys ja nerous*. (Transl. by L. Teittinen-Walter). Köln: Benedikt Taschen, p. 6.

Figure 3
Vermeer, Jan (Johannes) (1632-1675)
Girl with a Pearl Earring, (ca. 1665-1666)
Source: Koningsberger, H. (1967/1973). *The world of Vermeer 1632-1675*. Time-Life International, (Nederland) B. V., p. 161.

Figure 4
Munch, Edvard (1863-1944)
The Scream, (1893)
Source: Eggum, A. (2000). *Edvard Munch. The frieze of life from painting to graphic art.* Oslo: J. M. Stenersen, p. 228.

Figure 5
Gallen-Kallela, Akseli (1865-1931)
The Mother of Lemminkäinen, (1897)
Source: Valkonen, M. (1989/1995). *Kultakausi*. WSOY: Porvoo, Helsinki, Juva, p. 182.

Figure 6
Suomi, Risto (b. 1951)
The cross of destiny, (1988)
Source: Mikkola, K. (ed.) (1997). *Risto Suomi*. Helsinki: Amos Andersonin taidemuseo, julkaisuja, uusi sarja, no 25, p. 44.

Figure 7
Eyck, Jan van (1385-1441)
The Marriage of Giovanni Arnolfini and Giovanna Cenami, (1434)
Source: Chatelet, A. (1968). *Toul l'oeuvre peint des frères van Eyck*. Paris: Flammarion, pl. xxxvii.

Figure 8
Michelangelo Buonarroti (1475-1564)
The Dream, (1533)
Source: Tolnay, C. de (1960). *Michelangelo. V. The final period*. Princeton: Princeton University Press, p. 131.

Figure 9
Friedrich, Caspar David (1774-1840)
Wanderer above the Sea of Fog, (c. 1818)
Source: Koener, J. L. (1990). *Caspar David Friedrich and the subject of landscape.* London: Reaktion Books, p. 155.

PICTURES USED IN EXPERIMENTS

EXPERIMENTS 1-2

Picture 1
Gogh, Vincent van (1853-1890)
The Good Samaritan (After Delacroix), (1890)
Source: Walther, I. F. (2000). *Vincent van Gogh (1853-1890). Näky ja todellisuus*. (Transl. by M. Punkki-Roscher). Köln: Benedikt Taschen. p. 81.

Picture 2
Picasso, Pablo (1881-1973)
Woman with a Flower, (1932)
Source: Walther, I. F. (1988). *Pablo Picasso (1881-1973). Vuodisadan nero*. (Transl. by P. Ruohomäki). Köln: Benedikt Taschen, p. 59.

Picture 3
Dali, Salvador (1904-1989)
The Ghost of Vermeer of Delft Which Can Be Used as a Table (1934)
Source: Maddox, C. (1983/1988). *Salvador Dali. Eksentrisyys ja nerous*. (Transl. by L. Teittinen-Walter). Köln: Benedikt Taschen, p. 39.

Picture 4
Chagall, Marc (1887-1985)
The Soldier Drinks, (1911/12)
Source: Walther, I. F., & Metzger, R. (1989). *Marc Chagall 1887-1985. Maalaaminen runoutena*. (Transl. by P. Ruohomäki). Köln: Benedikt Taschen, p. 27.

EXPERIMENTS 3-7

Picture 1
Monet, Claude (1840-1926)
Terrace at Sainte-Adresse, (1867)
Source: tuckey, C. (ed.) (1985). *Monet. A retrospective*. New York: Parklane, p. 45.

Picture 2
Suomi, Risto (b. 1951)
The Cross of Destiny, (1988)
Source: Mikkola, K. (ed.) (1997). *Risto Suomi*. Helsinki: Amos Andersonin taidemuseo, julkaisuja, uusi sarja, no 25, p. 44.

Picture 3
Poussin, Nicolas (1593/94-1665)
Lamentation over the Dead Christ, (17th century)
Source: Mérot, A. (1990). *Nicolas Poussin*. New York: Abbeille Press Publishers, p. 42.

Picture 4
Kandinsky, Wassily (1866-1944)
B*lack bow*, (1912)
Source: Düchting, H. (1991). *Wassily Kandinsky. 1866-1944. Maalaustaiteen vallankumous.* (Transl. by T. Braun). Köln: Benedikt Taschen, p. 56.

Picture 5
Tammi, Pasi (b. 1971)
Poem Forces to Kneel Down, (1999)
Source: Brochure of Art Centre Salmela, Mäntyharju, Finland, 2000.

Picture 6
Järnefelt, Eero (1863-1937)
Koli-landscape, (the turn of 19th and 20th century)
Source: Sundell, D. (1986). *Eero Järnefelt (1863-1937), Retretti 25.5.-21.9.1986.* Punkaharju: Retretti, p. 21.

APPENDICES

Appendix 1: Pictures used as stimulus material (Experiments 1-2)

Picture 1: Vincent van Gogh,
The Good Samaritan, (1890)

Picture 2: Pablo Picasso,
Woman with a Flower, (1932)

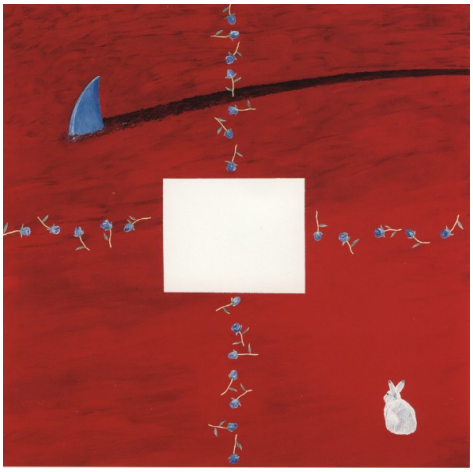
Picture 3: Salvador Dali,
The Ghost of Vermeer of Delft, (1934)

Picture 4: Marc Chagall,
The Soldier Drinks, (1911-12)

Appendix 2: Pictures used as stimulus material (Experiments 3-7)

Picture 1: Claude Monet,
Terrace at Sainte-Adresse, (1867)

Picture 2: Risto Suomi,
The Cross of Destiny, (1988)



Picture 3: Nicolas Poussin,
Lamentation over the Death Christ, (17th century)

Picture 4: Wassily Kandinsky,
Black Bow, (1912)

Picture 5: Pasi Tammi,
Poem Forces to Kneel Down, (1999)

Picture 6: Eero Järnefelt,
Koli-landscape,
(the turn of 19th and 20th century)

Appendix 3: List of positive and negative emotion terms (Experiment 5)

POSITIVE EMOTION TERMS

activeness, admiration, airy, assimilation, attachment, authenticity, beauty, breathtaking, calming, calmness, carelessness, cheerfulness, comfortableness, compassion, compelling, contemplative, continuity, cosiness, courage, curiosity, desire, drunkenness, dynamic, eagerness, easiness, ecstasy, effectiveness, empathy, enchantment, energetic, enjoyable, enthusiastic, euphoria, expectation, faintness, fantastic, festive mood, Finnishness, forgiving, freedom, freshness, gentleness, glow, happiness, harmony, hope, idealism, identification, innocence, interest, joyfulness, laughter, liveliness, love, lucid, lust, mercy, mightiness, mysteriousness, mystical, mythical, naturalness, nearness, passion, patriotism, peacefulness, piety, pleasantness, powerful feelings, prepared, protectiveness, purity, quietness, relaxed, religiousness, respect, romance, safety, satisfaction, sensational, sensitiveness, serenity, sincerity, softness, solicitude, speedy, stillness, strength, stunning, sublime, summery, supernatural, sympathy, tenderness, touching, tranquillity, unspoiled, warmth, well-balanced, vividness, wondering, zest for live

NEGATIVE EMOTION TERMS

aggression, agony, alarmed, anger, antipathy, anxiety, apostasy, autumnal, barrenness, black-and-white, borderline, broken-hearted, chaotic, chillness, coldness, conflicting, confused, coolness, corporality, cowardice, dangerousness, darkness, depression, desolation, despair, discord, disgust, disillusion, dizziness, dramatic, dread, emptiness, fear, fear of death, fear of God, fragmentariness, gloomy, harshness, hectic, helplessness, hurry, imbalanced, incoherence, indignation, insecurity, insignificance, irritating, jealousy, loneliness, longing, loss, melancholy, nervousness, nostalgia, oppression, outsider, pain, panic, passiveness, pity, queasiness, quilt, repentance, restless, sadness, sentimental, seriousness, shame, slowness, smallness, sorrow, stagnation, strange, submission, suffering, surprised, tension, threatening, tragic, truculence, uncertainty, undistinguished, uneasiness, unforgiving, unhappiness, unimaginative, unsheltered, wretched, yearning, yielding

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Appendix 4: List of emotion terms with different intensities (Experiment 5)

INTENSITY 1

Positive: airy, authenticity, calming, calmness, carelessness, comfortableness, continuity, cosiness, lucid, faintness, easiness, expectation, fantastic, freshness, gentleness, harmony, innocence, naturalness, peacefulness, pleasantness, prepared, purity, quietness, relaxed, safety, satisfaction, sincerity, softness, stillness, summery, tranquillity, unspoiled, warmth, well-balanced

Negative: apostasy, autumnal, barrenness, black-and-white, borderline, coolness, cowardice, darkness, discord, emptiness, insecurity, insignificance, longing, loneliness, melancholy, nostalgia, outsider, passiveness, seriousness, slowness, smallness, stagnation, strange, submission, uncertainty, undistinguished, unimaginative, yielding

INTENSITY 2

Positive: activeness, attachment, cheerfulness, compassion, courage, curiosity, desire, dynamic, empathy, energetic, enjoyable, enthusiastic, festive mood, forgiving, happiness, hope, interest, joyfulness, laughter, liveliness, mercy, nearness, protectiveness, romance, sensational, sensitiveness, solicitude, speedy, strength, stunning, sympathy, tenderness, vividness, wondering, zest for live

Negative: alarmed, antipathy, chillness, conflicting, confused, desolation, disillusion, fragmentariness, gloomy, harshness, helplessness, hurry, imbalanced, incoherence, indignation, irritation, loss, nervousness, oppression, pity, repentance, restless, sadness, surprised, tension, threatening, uneasiness, unforgiving, unhappiness, unsheltered, yearning

INTENSITY 3

Positive: admiration, assimilation, beauty, breathtaking, compelling, contemplative, drunkenness, eagerness, ecstasy, effectiveness, enchantment, euphoria, Finnishness, freedom, glow, idealism, identification, love, lust, mightiness, mysteriousness, mystical, mythical, passion, patriotism, piety, powerful feelings, religiousness, respect, serenity, sublime, supernatural, touching

Negative: aggression, agony, anger, anxiety, broken-hearted, chaotic, coldness, corporality, dangerousness, depression, despair, disgust, dizziness, dramatic, dread, fear, fear of death, fear of God, hectic, jealousy, pain, panic, queasiness, quilt, sentimental, shame, sorrow, suffering, tragic, truculence, wretched

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Appendix 5: List of emotion terms related with love, joy, surprise, anger, sadness and fear (Experiment 5)

LOVE: admiration, assimilation, attachment, beauty, breathtaking, compassion, compelling, contemplative, desire, effectiveness, empathy, enchantment, Finnishness, forgiving, gentleness, idealism, identification, innocence, longing, love, lust, mercy, mightiness, mysteriousness, mystical, mythical, nearness, passion, patriotism, piety, pity, powerful feelings, protectiveness, religiousness, respect, romance, sensitiveness, sentimental, solicitude, strength, sublime, supernatural, sympathy, tenderness, touching, yearning

JOY: activeness, airy, authenticity, calming, calmness, carelessness, cheerfulness, comfortableness, continuity, cosiness, courage, drunkenness, dynamic, eagerness, easiness, ecstasy, energetic, enjoyable, enthusiastic, euphoria, expectation, faintness, fantastic, festive mood, freedom, freshness, glow, happiness, harmony, hope, joyfulness, laughter, liveliness, lucid, naturalness, peacefulness, pleasantness, prepared, purity, quietness, relaxed, safety, satisfaction, sensational, serenity, sincerity, softness, speedy, stillness, summery, tranquillity, unspoiled, warmth, well-balanced, vividness, zest for life

SURPRISE: confused, curiosity, interest, stunning, surprised, wondering

ANGER: aggression, anger, antipathy, disgust, imbalanced, indignation, irritating, jealousy, queasiness, unforgiving, wretched

SADNESS: agony, apostasy, autumnal, barrenness, black-and-white, borderline, broken-hearted, chillness, coldness, coolness, corporality, darkness, depression, desolation, despair, discord, disillusion, gloomy, helplessness, insignificance, loneliness, loss, melancholy, nostalgia, outsider, pain, passiveness, quilt, repentance, restless, sadness, seriousness, shame, slowness, smallness, sorrow, stagnation, strange, submission, suffering, tragic, undistinguished, unhappiness, unimaginative, yielding

FEAR: alarmed, anxiety, chaotic, conflicting, cowardice, dangerousness, dizziness, dramatic, dread, emptiness, fear, fear of death, fear of God, fragmentariness, harshness, hectic, hurry, incoherence, insecurity, nervousness, oppression, panic, tension, threatening, truculence, uncertainty, uneasiness, unsheltered

Appendix 6: The basic comparison between emotion terms (Experiment 6)

EXPERIMENT 6 N = 58 (Experts: N = 26, Novices: N = 32)

PICTURE 1	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Nostalgia	2,84	1,143	2,75	1,107	0,300	0,765
Joyfulness	2,48	0,823	2,53	0,950	-0.214	0,831
Longing	3,16	0,987	2,88	1,070	1,032	0,307
Summery	3,92	1,077	3,38	1,157	1,818	0,074
Warmth	2,84	0,987	2,72	1,114	0,428	0,670
Happiness	3,23	0,992	3,09	1,174	0,473	0,638
Freshness	3,46	1,240	3,69	1,203	-0.702	0,486
Peacefulness	3,31	0,928	3,69	1,256	-1.283	0,205
Freedom	2,85	0,925	3,65	1,142	-2.865	**0,006**
Coolness	3,16	1,106	3,00	1,295	0,493	0,624

PICTURE 2	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Aggression	3,19	1,234	3,34	1,066	-0.501	0,618
Anxiety	3,04	1,311	3,06	1,190	-0.073	0,942
Confused	3,23	1,032	2,88	1,238	1,171	0,246
Tension	3,42	1,206	3,31	1,148	0,357	0,723
Expectation	3,46	1,029	3,09	1,400	1,116	0,269
Fear	2,77	1,394	2,78	1,263	-0.034	0,973
Threatening	3,35	1,355	3,66	1,066	-0.976	0,333
Dangerousness	3,31	1,087	3,53	1,244	-0.720	0,475
Anger	2,42	1,137	2,50	1,270	-0.240	0,811
Irritating	2,42	1,270	2,41	1,388	0,048	0,962

PICTURE 3	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Anxiety	3,92	0,744	3,56	1,318	1,311	0,196
Helplessness	3,85	0,834	3,91	0,893	-0.263	0,794
Despair	3,85	1,047	3,94	0,982	-0.342	0,734
Alarmed	3,58	1,027	3,63	1,129	-0.168	0,867
Longing	2,46	0,989	2,59	1,214	-0.447	0,656
Compassion	2,85	0,881	3,16	1,167	-1.120	0,268
Fear	2,62	1,023	2,68	1,107	-0.218	0,828
Sadness	3,77	1,032	3,91	1,279	-0.442	0,660
Gloomy	3,42	1,137	4,03	0,933	-2.238	**0,029**
Agony	3,73	0,919	4,03	0,999	-1.180	0,243

EXPERIMENT 6 N = 58 (Experts: N = 26, Novices: N = 32)

PICTURE 4	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Anxiety	2,35	1,018	2,50	1,244	-0.507	0,614
Liveliness	3,46	1,104	2,34	1,260	3,549	**0,001**
Nervousness	3,04	1,216	3,19	1,447	-0.419	0,677
Confused	2,73	1,343	3,25	1,078	-1.634	0,108
Joyfulness	2,69	1,011	2,16	1,139	1,874	0,066
Chaotic	3,62	1,235	3,94	1,134	-1.034	0,306
Eagerness	3,31	1,087	2,81	1,148	1,673	0,100
Warmth	2,50	0,990	2,13	1,024	1,383	0,172
Incoherence	3,58	1,238	4,13	1,100	-1.784	0,080
Speedy	3,48	1,229	2,78	1,237	2,122	**0,038**

PICTURE 5	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Anxiety	3,65	1,093	3,91	1,058	-0.890	0,377
Despair	3,77	1,032	3,63	1,289	0,463	0,646
Longing	3,08	1,093	2,81	1,281	0,834	0,408
Fear	2,46	1,104	2,69	1,230	-0.728	0,469
Sadness	3,62	1,134	3,41	1,341	0,632	0,530
Guilt	3,27	1,251	2,84	1,221	1,305	0,197
Pity	2,77	1,275	2,94	1,318	-0.491	0,626
Agony	3,58	1,065	3,75	1,107	-0.602	0,549
Curiosity	1,92	0,977	2,00	1,164	-0.269	0,789
Loneliness	3,77	1,032	3,50	1,218	0,895	0,374

PICTURE 6	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Patriotism	3,46	1,363	3,66	1,285	-0.558	0,579
Longing	2,62	0,983	2,88	1,157	-0.908	0,368
Depression	1,85	0,784	1,69	1,030	0,647	0,520
Happiness	3,04	1,038	3,19	1,030	-0.546	0,587
Freshness	3,12	0,993	3,97	0,999	-3.243	**0,002**
Peacefulness	4,19	0,694	4,50	0,842	-1.495	0,141
Autumnal	4,31	0,884	4,56	0,759	-1.181	0,243
Safety	3,15	0,925	3,22	1,008	-0.253	0,801
Stillness	3,85	0,967	4,06	0,878	-0.892	0,376
Freedom	3,46	1,272	3,97	1,062	-1.655	0,103

Appendix 7: Table of components and the variables that load on them (Experiment 6)

PICTURE 1	Component		
	1	2	3
Warmth	**0,906**	-0,261	0,369
Summery	**0,802**	-0,191	0,232
Joyfulness	**0,793**	-0,360	0,361
Happiness	**0,764**	-0,325	0,629
Nostalgia	-0,272	**0,884**	-0,179
Longing	-0,222	**0,852**	-0,162
Coolness	-0,486	**0,610**	-0,160
Freedom	0,134	-0,145	**0,829**
Freshness	0,515	0,003	**0,825**
Peacefulness	0,439	-0,346	**0,628**

PICTURE 2	Component		
	1	2	3
Threatening	**0,890**	0,248	0,222
Dangerousness	**0,879**	0,339	0,209
Fear	**0,796**	0,561	0,071
Anxiety	**0,737**	0,603	0,301
Tension	**0,725**	0,132	0,259
Expectation	**0,640**	0,060	-0,512
Confused	0,228	**0,825**	0,003
Irritating	0,140	**0,769**	0,577
Anger	0,448	**0,758**	0,585
Aggression	0,480	0,299	**0,790**

PICTURE 3	Component		
	1	2	3
Despair	**0,914**	0,584	0,016
Alarmed	**0,840**	0,331	0,111
Helplessness	**0,680**	0,472	0,344
Fear	**0,679**	0,334	0,289
Anxiety	**0,603**	0,542	-0,215
Quilt	0,388	**0,853**	0,139
Agony	0,509	**0,833**	0,020
Sadness	0,352	**0,737**	0,569
Compassion	0,024	0,059	**0,802**
Longing	0,307	0,236	**0,718**

PICTURE 4	Component		
	1	2	3
Liveliness	**0,844**	-0,414	-0,098
Joyfulness	**0,807**	-0,346	-0,369
Speedy	**0,789**	-0,073	0,194
Warmth	**0,760**	-0,302	-0,260
Incoherence	-0,335	**0,945**	0,288
Chaotic	-0,170	**0,866**	0,418
Confused	-0,386	**0,610**	0,453
Anxiety	-0,231	0,322	**0,856**
Nervousness	-0,164	0,531	**0,786**
Eagerness	0,541	0,046	**0,621**

PICTURE 5	Component		
	1	2	3
Sadness	**0,870**	0,559	0,187
Despair	**0,818**	0,353	0,158
Anxiety	**0,805**	0,270	0,086
Fear	**0,777**	0,316	0,069
Longing	**0,731**	0,585	0,208
Agony	**0,721**	0,444	-0,195
Loneliness	0,258	**0,863**	0,064
Quilt	0,597	**0,840**	0,210
Curiosity	-0,131	-0,045	**0,883**
Pity	0,547	0,443	**0,747**

PICTURE 6	Component	
	1	2
Stillness	**0,762**	0,225
Peacefulness	**0,751**	0,586
Freedom	**0,749**	0,488
Safety	**0,586**	0,275
Autumnal	**0,510**	0,140
Happiness	0,410	**0,755**
Freshness	0,543	**0,652**
Patriotism	0,453	**0,646**
Depression	0,246	**-0,644**
Longing	0,275	**0,502**

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
N = 58.

Appendix 8: The basic comparison between emotion terms (Experiment 7)

EXPERIMENT 7 N = 54 (Experts: N = 21, Novices: N = 33)

PICTURE 1	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Mercy	1,67	0,730	2,12	1,053	-1.728	0,090
Nostalgia	2,95	1,024	2,76	1,200	0,615	0,541
Alarmed	1,24	0,539	1,30	0,529	-0.436	0,664
Joyfulness	2,52	1,078	2,64	1,084	-0.373	0,711
Longing	3,25	0,851	3,24	1,091	0,027	0,979
Summery	3,90	0,944	4,09	1,042	-0.663	0,510
Cosiness	1,95	0,805	2,39	0,966	-1.743	0,087
Warmth	3,00	1,000	3,06	1,144	-0.199	0,843
Sorrow	2,33	1,017	2,03	1,104	1,014	0,315
Dangerousness	1,67	0,913	1,73	0,944	-0.233	0,817

PICTURE 2	**Experts**		**Novices**		T-test	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Aggression	3,05	1,203	3,33	0,990	-0.951	0,346
Melancholy	1,81	0,814	1,78	0,941	0,113	0,911
Carelessness	1,95	0,973	1,73	1,008	0,810	0,421
Tension	3,29	1,007	3,30	1,159	-0.056	0,955
Happiness	2,00	1,183	1,55	0,938	1,567	0,123
Fear	2,52	1,078	2,85	1,149	-1.036	0,305
Disillusion	1,67	0,856	1,67	0,990	0,000	1,000
Romance	1,43	0,746	1,36	0,822	0,293	0,771
Threatening	3,10	1,300	3,79	1,139	-2.062	**0,044**
Irritating	3,00	1,517	2,52	1,326	1,239	0,221

PICTURE 3	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Anxiety	4,00	0,949	3,61	1,029	1,413	0,164
Despair	3,90	0,889	3,88	1,111	0,090	0,928
Disgust	2,24	0,995	2,03	0,933	0,769	0,445
Jealousy	1,76	0,995	1,39	0,747	1,548	0,128
Enjoyable	1,57	0,870	1,30	0,585	1,245	0,222
Romance	2,33	1,390	1,67	0,957	1,926	0,063
Sadness	3,76	0,889	3,82	0,983	-0.213	0,832
Gloomy	3,86	0,964	3,88	1,023	-0.077	0,939
Agony	3,90	0,831	3,91	1,100	-0.015	0,988
Satisfaction	1,19	0,512	1,27	0,517	-0.572	0,570

EXPERIMENT 7 N = 54 (Experts: N = 21, Novices: N = 33)

PICTURE 4	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Liveliness	3,95	0,921	3,33	1,242	2,098	**0,041**
Piety	1,24	0,436	1,58	0,902	-1.838	0,072
Confused	3,10	1,179	2,97	1,185	0,380	0,705
Joyfulness	2,90	1,044	2,64	1,245	0,820	0,416
Longing	1,86	1,153	1,67	1,051	0,625	0,534
Chaotic	3,67	1,155	3,67	1,109	0,000	1,000
Dread	1,57	1,121	1,82	1,103	-0.796	0,429
Depression	1,67	0,856	1,85	1,093	-0.646	0,521
Compassion	2,00	1,225	1,70	0,847	1,076	0,287
Speedy	4,05	0,865	3,39	1,197	2,165	**0,035**

PICTURE 5	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Aggression	2,14	1,276	1,97	0,951	0,57	0,571
Anxiety	3,95	1,117	4,03	1,015	-0.264	0,792
Energetic	2,05	0,865	1,76	0,936	1,142	0,259
Despair	3,86	1,153	4,06	0,998	-0.687	0,495
Happiness	1,43	0,746	1,24	0,561	1,044	0,301
Relaxed	1,43	0,811	1,48	0,870	-0.238	0,813
Sadness	3,76	0,944	3,45	1,121	1,043	0,302
Pity	3,05	1,284	2,91	1,331	0,378	0,707
Agony	3,86	1,108	3,64	1,319	0,637	0,527
Antipathy	1,48	0,814	2,45	1,460	-3.156	**0,003**

PICTURE 6	**Experts**		**Novices**		**T-test**	
	Mean	SD	Mean	SD	T (df = 56)	Sig.
Aggression	1,14	0,359	1,27	0,574	-0.926	0,359
Lust	1,33	0,796	1,33	0,854	0,000	1,000
Longing	3,10	0,944	3,33	1,164	-0.787	0,435
Uneasiness	1,76	0,995	1,45	0,905	1,171	0,247
Compassion	1,86	1,014	2,61	1,171	-2.410	**0,020**
Happiness	2,71	0,902	3,06	1,088	-1.216	0,230
Fear	1,43	0,676	1,36	0,895	0,284	0,777
Peacefulness	4,00	1,095	4,21	1,053	-0.710	0,481
Autumnal	4,29	1,007	4,67	0,692	-1.649	0,105
Freedom	3,90	0,944	4,09	1,011	-0.676	0,502

Appendix 9: Table of components and the variables that load on them (Experiment 7)

PICTURE 1	Component		
	1	2	3
Summery	**0,850**	-0,021	0,020
Joyfulness	**0,798**	0,327	-0,088
Warmth	**0,746**	0,237	0,002
Sorrow	**-0,635**	0,323	0,445
Longing	-0,123	**0,802**	-0,041
Nostalgia	0,164	**0,801**	0,085
Mercy	0,176	**0,624**	0,121
Cosiness	0,405	**0,525**	0,179
Dangerousness	-0,012	-0,101	**0,823**
Alarmed	-0,057	0,278	**0,697**

PICTURE 2	Component		
	1	2	3
Tension	**0,891**	0,181	-0,109
Threatening	**0,819**	-0,395	0,119
Aggression	**0,779**	-0,175	0,237
Fear	**0,743**	-0,242	0,125
Happiness	-0,336	**0,779**	0,007
Romance	0,040	**0,743**	-0,084
Carelessness	-0,295	**0,663**	0,062
Melancholy	0,297	**0,431**	0,423
Disillusion	-0,076	0,148	**0,863**
Irritating	0,270	-0,306	**0,756**

PICTURE 3	Component	
	1	2
Despair	**0,869**	0,140
Agony	**0,861**	0,087
Sadness	**0,844**	-0,037
Anxiety	**0,787**	0,239
Gloomy	**0,746**	-0,114
Enjoyable	**-0,542**	0,509
Jealousy	0,028	**0,808**
Romance	-0,120	**0,728**
Satisfaction	0,076	**0,624**
Disgust	0,254	**0,471**

PICTURE 4	Component		
	1	2	3
Joyfulness	**0,809**	0,040	-0,322
Speedy	**0,799**	-0,019	0,223
Liveliness	**0,797**	0,244	-0,220
Longing	-0,027	**0,841**	-0,166
Compassion	0,123	**0,727**	-0,054
Confused	0,051	**0,542**	0,354
Piety	0,050	**0,526**	0,045
Chaotic	0,138	-0,241	**0,816**
Dread	-0,184	0,040	**0,700**
Depression	-0,333	0,361	**0,663**

PICTURE 5	Component		
	1	2	3
Agony	**0,848**	-0,040	0,180
Sadness	**0,847**	-0,128	0,071
Anxiety	**0,821**	-0,233	0,206
Despair	**0,770**	-0,108	0,205
Pity	**0,737**	0,193	-0,172
Happiness	0,130	**0,906**	-0,041
Relaxed	-0,364	**0,611**	-0,044
Energetic	-0,052	0,428	**0,800**
Aggression	0,278	-0,189	**0,765**
Antipathy	0,071	-0,308	**0,433**

PICTURE 6	Component		
	1	2	3
Happiness	**0,854**	0,041	0,041
Longing	**0,820**	0,275	-0,161
Freedom	**0,715**	0,013	0,441
Peacefulness	**0,702**	-0,352	0,404
Compassion	**0,516**	0,445	0,230
Aggression	0,151	**0,841**	-0,198
Fear	-0,007	**0,794**	0,088
Lust	0,033	**0,734**	-0,077
Uneasiness	0,040	0,294	**-0,809**
Autumnal	0,343	0,248	**0,694**

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
N = 54.