

## 12. towards an aesthetics for interaction

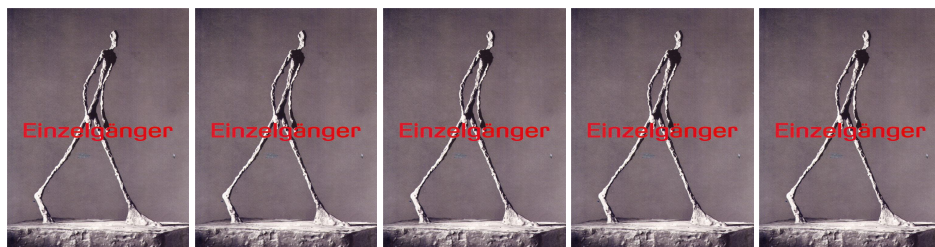
experience is determined by meaning

### learning objectives

*After reading this chapter you should have an understanding of the model underlying game playing, and the role of narratives in interaction. Furthermore, you might have an idea of how to define aesthetic meaning in a cultural context, and apply your understanding to the creative development of meaningful interactive systems.*

As in music, the meaning of interactive applications is determined, not only by its sensory appearance, but to a high extent by the structure and functionality of the application. This observation may, also, explain, why narratives become more and more important in current video games, namely in providing a meaningful context for possible user actions.

In this chapter, we take an interactive game-model extended with narrative functionality as a starting point to explore the aesthetics of interactive applications. In section 12.1, we will introduce a model for interactive video games, and in section 12.2 we will present a variety of rules for the construction of narratives in a game context. Finally, in section 12.3, we will characterize the notion of meaning from a traditional semiotics perspective, which we will then apply in the context of games and interactive multimedia applications.

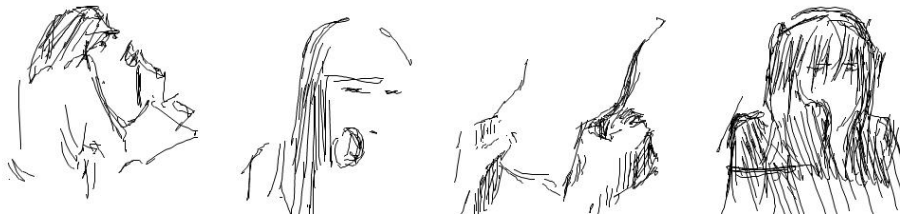


## 12.1 a game model

### game theory perspectives

- system – (formal) set of rules
- relation – between player and game (affectionate)
- context – negotiable relation with 'real world'

dictionary



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### classic game model

- *rules*: formal system
- *outcome*: variable and quantifiable
- *value*: different valorisation assignments
- *effort*: in order to influence the outcome
- *attachment*: emotionally attached to outcome (hooked)
- *consequences*: optional and negotiable (profit?)

rules vs fiction

Game fiction is ambiguous, optional and imagined by the player in uncontrollable and unpredictable ways, but the emphasis on fictional worlds may be the strongest innovation of the video game.



Are *games* relevant for a theory of interaction?



### example(s) – *intimate media*

From the company that used the slogan "let's make things better", and now advertises its products with "sense and simplicity", there is the MIME<sup>1</sup> project, not to be confused with the multipart internet mail standard, which focusses on *Multiple Intimate Media Environments*.

As can be read on their website: *Intimate media describes the things that people create and collect to store and share their personal memories, interests and loves. And: Intimate media is central to how people make sense of their world by representing roots, heritage and a sense of belonging, achievement and connection.*

In the MIME project seven core qualities are identified which *capture the essence of the intimate media experience*:

intimate media

- sensorial – experience is visual, audible, tactile, olfactic
- personalized – objects embody meaning and memories
- analogue – people relate to physical objects

<sup>1</sup>[www.design.philips.com/about/design/section-13484](http://www.design.philips.com/about/design/section-13484)

- enhancement – people already have extensive intimate media collections
- serendipity – it supports unstructured and flexible usage
- longevity – objects may exist over generations

As concepts embodying their ideas they propose, among other:

intimate media

1. *GlowTags* – a subtle way to trigger the person who has placed it or who sees it
2. *Living Scrap Book* – to capture and collect information and media digitally
3. *Picture Ball* – as an object of decoration and a focus for storytelling
4. *Lonely Planet Listener* – enabling people to listen to a real time connection to another place

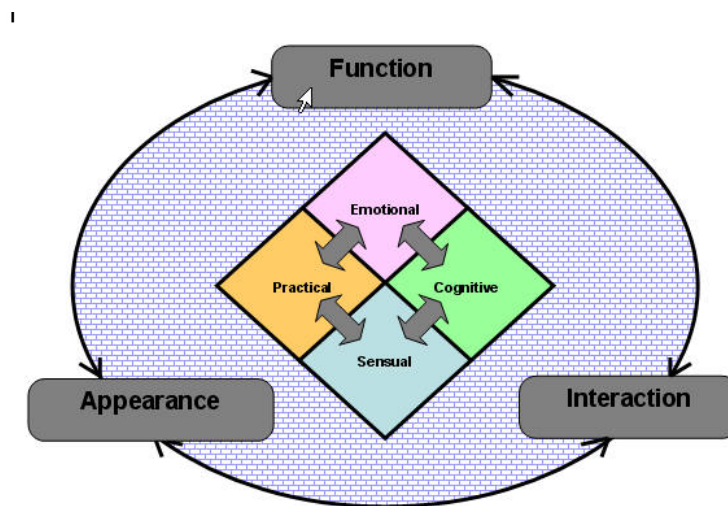
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## research directions– *experience as meaning*

framework set up by Dhaval Vyas Vyas and van der Veer (2006) .

experience as meaning

user's experience = meaning s/he construct



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framework

- experience occurs during the interaction between the user(s) and the interactive system(s) in the lived environment
- designers convey meaning (consciously or unconsciously) through the appearance, interaction and function of the system

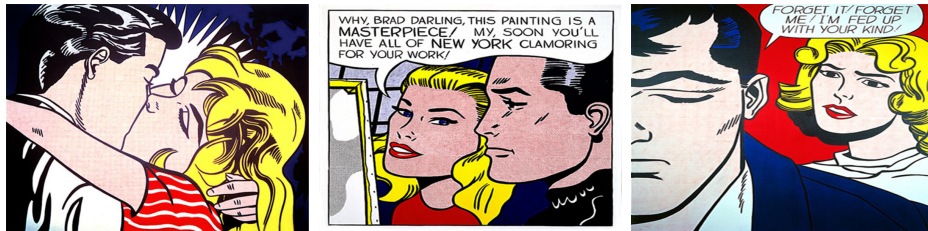
- user(s) construct a coherent whole that is a combination of sensual, cognitive, emotional and practical forms of experience

In other words, an *interactive system* is determined by *function*, *interaction* and *appearance*.

## 12.2 guidelines for narrative construction(s)

film as art

By still being read, the little treatise seems to prove that in spite of all the changes that have taken place in their *form*, *content* and *function*, films are still most genuinely effective when they rely on the basic properties of the *visual medium*.



illusion

Similarly, in film or theatre, so long as the essentials of any event are shown, the illusion takes place

patterns of light

Thus we can perceive objects and events as living and at the same time imaginary, as *real objects* and as simple *patterns of light* on the projection screen, and it is this fact that makes film art possible.

frames of reference

It is one of the most important formal qualities of film that every object that is reproduced appears simultaneously in two entirely different frames of reference, namely the two-dimensional and the three-dimensional, and that as one identical object it fulfills two different functions in the two contexts.

principles of montage

- cutting – unit length, whole scenes, cuts within scenes
- time relations – synchronized, before/after, neutral
- space relations – same place (different time), different place
- subject matter – similarity and/or contrast

film technique

- camera – position, focus, movement
- transitions – fading in/out, dissolving, stills

- arrangement – light/shade, color, sound

cinematographic motion

- movement of objects
- effect of perspective
- motion of camera
- montage of scenes

### aesthetics of shock

aesthetics of shock

It is within the realm of probability that the *shock*, which Walter Benjamin diagnosed as being film's aesthetic innovation, will undergo renewal and intensification with far more sophisticated means.

voyeurism

The most obvious symptom of this loss of distance will be a voyeuristic, dissecting penetration of representations of objects and bodies.

### the meaning of composition

narrative implications

- objects – the items in the image
- vectors – (imaginary) lines suggesting interaction
- gaze – inward (offer) / outward (demand)

transactional or non-transactional

composition

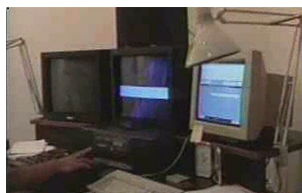
Composition, then, relates the *representational* and *interactive* meanings of the picture to each other, through three interrelated systems.

representations

- information value – left/right, top/bottom, centre/margin
- salience – foreground/background, relative size, contrast
- framing – connecting or dissolving lines

information value

- left/right – given versus new
- top/bottom – ideal versus real
- centre/margin – important versus marginal



### example(s) – *edgecodes*

The *edgecodes*<sup>2</sup> documentary film by Phillip Daniels gives an inside account of film editing, a history of the evolution of editing conventions, as well as an account of the technological innovations of the late 20th century and their impact on film editing. It was shown at the documentary film festival IDFA<sup>3</sup> 2004, in Amsterdam. Movies were, as Daniels states, the new artform of the 20th century, which distinguishes itself from other artforms by ... *editing*!

The film begins with the statement such as *the concept that a film is shot is entirely false, a film is not shot, it is built*, continuing with the statements that *the message of the movie medium is that of transition*, and that *a movie must have a beginning, middle and ending, but not necessarily in that order*.

The documentary is highly visual, after all it is an editor's movie, and contains many fragments from wellknown movies and interviews with famous directors, among which George Lucas, who introduced the *editoroid* in the eighties, an editing machine built with at the time modern computing technology. George Lucas, image left above, explained the introduction of his editing machine by saying that he wanted to have *a system, ... that is intuitive, obvious, ... and highly malleable, ... visual ....* He wanted a machine that allowed him to use his moterskills, without the intervention of an engineer. But in the interview he admitted that they were *on the bleeding edge* in those days. Nowadays, real-time editing, with computer graphics (CG) support is (finally) feasible. See chapter 4.

### research directions – *multimedia in context*

Course organized in 1998 with Lynda hardman (CWI) for PhD students: *multimedia in context*<sup>4</sup>.

**the scientific context** Als gebied van onderwijs en onderzoek heeft multimedia een raakvlak met vele wetenschapsgebieden:

wetenschappelijke context

- mathematics – matrix algebra, transforms
- physics – game physic, particle systems
- computer science – technological infra-structure
- information theory – compression and delivery
- media theory – history of communication
- semiotics – theory of meaning

### the societal context

maatschappelijke context

- cultural heritage – digital dissemination of art

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<sup>2</sup>[www.edgecodes.com](http://www.edgecodes.com)

<sup>3</sup>[www.idfa.nl](http://www.idfa.nl)

<sup>4</sup>[www.cs.vu.nl/~eliens/online/courses/siks98](http://www.cs.vu.nl/~eliens/online/courses/siks98)

- education & communication – presentation of concepts and examples

### the technological context

technological context

- modelling – objects, characters
- interaction – game programming
- architecture – game engine design
- rendering – programming the graphics hardware

### the creative context

creative context

- visual design – style, models and attributes
- story telling – narrative structure

### multimedia & game development

multimedia & game development

- game modelling and design
- game programming
- game engine architecture

## 12.3 the definition of meaning

From Bruner (1972):

learning/meaning

- actionary level – action and movements
- sensory/iconic – images and impressions
- symbolic – language and mathematics

learning by doing





The basic geometrical shapes have always been a source of fascination, even of religious awe. And our scientific age is no exception.

(basic geometrical shapes) have been thought to have the power to directly affect our nervous system, for instance by the constructivist artist Gabo: "The emotional force of an absolute shape is unique and not replaceable by any other means ..."



## semiotics – a theory of meaning

### semiotics – a theory of meaning

- signifier – sign/symbol
- signified – what is referred to

meaning: relation between signifier and signified

style: ???

semiotic modes

... is the move from the verbal to the visual a loss, or a gain?

complexity

... it has to be handled visually, because the verbal is no longer adequate?

multimedia

The multi-modality of written texts has, by and large, been ignored, whether in educational contexts, in linguistic theorizing, or in popular common sense. Today, in the age of *multimedia*, it can suddenly be perceived again.

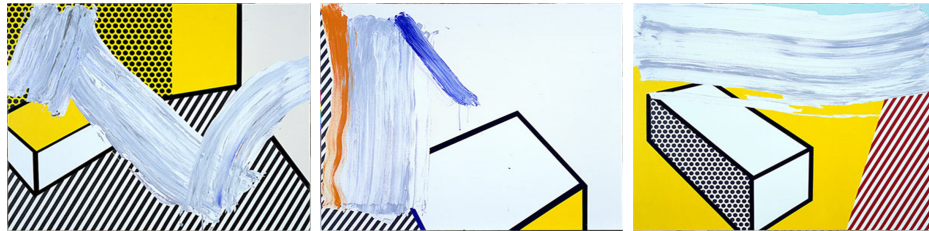
quotes

- *myth of transparency* – visual communication is always coded!

- *literacy* – standards for semiotic order
- *semiotic modes* – text, visual, auditive, ...
- *computer technology* – central to semiotic landscape
- *semiotic activities* – production, transformation, development

semiotic landscape

The place of visual communication in a given society can only be understood in the context of, on the one hand, the range of forms or modes of public communication available in that society, and, on the other hand, their uses and valuations.



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meaning

What is the meaning of meaning when apparently meaningless media expressions, eg. *Sonic Acts*, are experienced as meaningful?

## markers of veracity

From Kress and van Leeuwen (1996):

reliability

One of the crucial issues in communication is the question of the *reliability of messages*. Is what we see or hear true, factual, real, or is it a lie, a fiction, something outside reality? To some extent the form of the message itself suggests the answer.

modality markers -> motivated signs -> transparency

modality markers (1)

- *color saturation* – black/white
- *color differentiation* – monochrome
- *color modulation* – true to life

modality markers (2)

- *context* – background, frame
- *representation* – level of detail
- *depth* – perspective
- *illumination* – light or shade
- *brightness* – a matter of degree

modality

Modality is realized by a complex interplay of visual cues. The same thing may be abstract in one or several markers and naturalistic in others.

Coding orientation, what counts as real.

coding orientation

- *technical/scientific* – effectiveness, blueprint
- *sensory* – pleasure principle is dominant
- *abstract* – used by socia-cultural elite
- *naturalistic* – dominant common sense paradigm of realism

## TV

From Arnheim (1957):

TV

For the first time in the history of man's striving for understanding, *simultaneity* can be experienced as such, not merely translated as a succession in time.

From Arnheim (1957):

sensory stimulation

Although the new victory over time and space represents an impressive enrichment of the perceptual world, it also favors a *cult of sensory stimulation* which is characteristic of the cultural attitude of our time.

From Arnheim (1957):

direct experience

Proud of our inventions – photography, film, radio, ... – we praise the educational virtues of *direct experience*.

From Arnheim (1957):

communication

When communication can be achieved by pointing with the finger, however, the mouth grows silent, the writing hand stops and the mind shrinks.



## new media

From Grau (2003):

channels

Here the decisive questions remain: who controls the channels, who distributes right of access, and who exercises economic and political authority over the networks?

From Grau (2003), p. 281:

visions

The history of technological visions is the history of our dreams, our vagaries and our errors. Media utopias fluctuate, often occurring in a magical or occult ambience.

**panorama** See [www.cs.vu.nl/~eliens/mma/panorama.html](http://www.cs.vu.nl/~eliens/mma/panorama.html)

## research directions– *intelligent advice*

From the adapted version of I-GUARD<sup>5</sup> proposal, discussed in section 10.3.

Our aim is to arrive at a general framework for artist's digital dossiers, that provide intelligent guidance to both the expert user, responsible for the future re-installation of the work(s), and the interested layman, that wishes to get acquainted with a particular work or collection of works. In general, there are two techniques that we can apply to provide such guidance:

- filtering the information space according to the user's perspective, and
- intelligent agents, that (pro) actively aid the user in searching the information space.

<sup>5</sup>[www.cs.vu.nl/~eliens/research/i-guard.html](http://www.cs.vu.nl/~eliens/research/i-guard.html)

Filtering the information space may be used to restrict the concept graph that defines the navigation structure, by stating assumptions with respect to the relevance of particular categories from a user's perspective.

Intelligent agents is an approach stemming from artificial intelligence which allows for providing guidance in a variety of ways, possibly even in an embodied form using a face or humanoid figure to give suggestions to the user on what interactions to perform. In Empathic we have investigated the use of embodied agents in a digital dossier for the artist Marinus Boezem. In our current research, however, we will very likely not use embodied agents. Nevertheless, we will investigate to what extent we can use an agent model, possibly with learning capabilities as explored in Hildebrand et al. (2003), to provide guidance and support interaction.

Our goal is to arrive at an *advice function*, that offers the user at any navigation point a choice of continuations and/or a selection of guided tours, focussing on a topic of interest.

For selecting the items to be presented in a guided tour, the most obvious way is to pre-define a sequence based on user profiles. Very likely this can be done in a more flexible way in a rule-based manner, applied to a template tour. More interesting, however, is to investigate whether guided tours can be generated dynamically based on tracking actual user interaction of (expert) users, using techniques from prediction theory, as explained in section 6b.

To allow for meaningful interaction with 3D models, allowing to view for example information about the materials used or its installation procedure, we must find a way to connect that information to user actions in a generic way. In other words, there is an information representation problem, namely, how to relate contextual information in a generic fashion to elements of a 3D model representing an artwork. Although such interactions can be realized by embedding (invisible) action/event objects in the model, a more generic way of representing such relations is desirable, to avoid the need for the time-consuming hand-crafting for which in practice there may not even be the necessary (human) resources.

### **regret function(s)**

For the selection of items in guided tours and the generation of interesting sequences, we will explore the use of *prediction theory*. As explained in Cesa-Bianchi and Lucosi (2006), prediction theory uses a model of prediction based on *expert advice*. However, instead of the traditional *loss* function, used in a stochastic approach, prediction theory uses a *regret* function, which expresses the difference between an actual prediction and the advice of a *collection of experts*. An *expert*, in this context, is an abstract entity, that may be either embodied by an algorithm, a random selection, or an actual expert.

We will investigate, for the construction of guided tours, whether it is possible to generate interesting sequences by using a (sequence of) prediction(s) that minimizes the *regret* function, which respect to the navigation sequence(s) recorded from actual expert users.

In particular, we will strive for implementing the *advice function*, in a generic

way, by means of a learning mechanism that extracts recommended continuations and guided tours from tracking expert user navigation.

## 12.4 development(s) – philosophy and beyond

### phrase(s)

- to be aware what is there
- the rethorics of the material (Brancusi)
- Play Station Double Time
- art – select material
- technology – solving a problem
- scientist – establish a theory
- creative impulse will set you free (ad)
- design should serve us, rather than demand that we conform

### history of thought

Philosophy is not a very popular subject, and some seem to easily do away with philosophical abstractions and apparently tedious theory, even though these same philosophical abstractions may provide better understanding of the *forces* that are at work.

In this section, we will briefly trace the evolution of the notion of aesthetics to our current day understanding, starting with the idealist transcendental conception of aesthetics as the abstract a priori form of experience, ending with semiotic theory that emphasizes the social determinants of aesthetic experience. Our discussion, in this section, is based on our studies in the past, Creativity, and the outline given below includes the references to the material we originally studied. However, for reference, links to relevant online material are also included.

perspective(s)

1. transcendental – abstract form of experience<sup>6</sup>, Kritik
2. speculative – criteria for beauty<sup>7</sup>, Urteil
3. phenomenological – self-conscious subjectivity<sup>8</sup>, Phenomenology
4. psychoanalytical – sub-conscious meaning<sup>9</sup>, Witz

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<sup>6</sup>[philosophy.eserver.org/aesthetic-excellence.txt](http://philosophy.eserver.org/aesthetic-excellence.txt)

<sup>7</sup>[www.iep.utm.edu/k/kantaest.htm](http://www.iep.utm.edu/k/kantaest.htm)

<sup>8</sup>[www.rowan.edu/philosop/clowney/Aesthetics](http://www.rowan.edu/philosop/clowney/Aesthetics)

<sup>9</sup>[human-nature.com/free-associations/glover](http://human-nature.com/free-associations/glover)

5. pragmatical – art as experience<sup>10</sup>, Pragmatics
6. hermeneutical – understanding of the senses<sup>11</sup>, Hermeneutics
7. semiotics – social construction of meaning<sup>12</sup>, Kress and van Leeuwen (1996)

To our mind, the epistemological understanding of aesthetics as the *pure form of sensuousness*, as expressed in Kritik, is most fundamental in understanding the notion of aesthetics in the context of interactive systems, since it allows us to characterize the dimensions of sensuous awareness delimiting our experience of art, architecture and interactive systems. The epistemological or transcendental characterization of aesthetics describes, in other words, the a priori principles of sensuousness, that determine our perception of reality, by imposing organisation and form on the chaotic multitude of appearances. As phrased in Kritik, appearances consist of *material*, which is a posteriori given, and *form*, determined by the a priori nature of our mind.

As dimensions of pure sensuousness, or aesthetic awareness, Kant distinguishes between *space* and *time*. In Urteil, the notion of aesthetic judgement is introduced. Our ability for aesthetic awareness allows us to recognize and appreciate beauty, however Kant emphasizes that any attempt to conceptualize the judgement of beauty is doomed to fail, or may at best be determined empirically, in an ad hoc manner.

Later thinkers in the idealist school took over Kants conception of aesthetic awareness as the receptive side of our mind, in search for knowledge, and emphasized the relation between truth and beauty, Erziehung. In particular Phenomenology characterized *beauty* as the *sensuous presence of Idea*, and he identifies our need for truth and beauty with the intrinsic *movement of self-consciousness*. In other words, aesthetic awareness is not a dis-interested a priori ability that allows us to organise our perceptions and to recognize and appreciate pure form, rather it is intentional and through self-reflection subject to recurrent improvement and change, continuously looking for truth and beauty, that is meaning. We may note here that psychoanalytic theory has contributed to understanding the hidden dimensions of meaning, Witz.

Hegels conception of aesthetic awareness is surprisingly close to the idea of pragmatic aesthetics as expressed by Pragmatics, a representative of the anglo-saxon school of empiricist philosophy which is in many ways irreconcilable with the German idealist/phenomenologist school of thinking. Essential in Dewey's thinking is the notion of *qualitative immediacy* and the unification of awareness and judgement in the experience of art, where Dewey stresses the re-creating role of the subject/recipient in experiencing art. In this way, the experience of art is instrumental, according to Dewey, to reconcile the individual with his environment.

A similar concern with the existential role of the experience of art, and consequently aesthetic awareness, may be found in hermeneutic thinking of the 20th

<sup>10</sup>[www.iep.utm.edu/d/dewey.htm](http://www.iep.utm.edu/d/dewey.htm)

<sup>11</sup>[plato.stanford.edu/entries/gadamer](http://plato.stanford.edu/entries/gadamer)

<sup>12</sup>[ucf.edu/~janzb/aesthetics](http://ucf.edu/~janzb/aesthetics)

century, where for example Hermeneutics speaks of *beauty bridging the gap between the ideal and reality*. However, by that time art is no longer pure but must as *aesthetic art* be appreciated with a certain degree of *distance*, that is its judgement is no longer direct, governed by pure sensuousness, but regulated by reflection and to a certain extent disciplined appreciation. This position may, however, be attributed to the role of the arts in the 19th and 20th century, and even, as argued by Grau (2003), be seen as an opposition to the mass media of the 19th century, which strived for direct sensuous immersion, for example in life-like panoramas.

The influence of convention and social context has been studied in semiotic theory, Kress and van Leeuwen (1996), and in our time, where we are concerned with the influence of the old and new media, and *media literacy* is (again) one of the urgent topics on our political agenda, the relation between sensuousness and reflection is again of interest. We believe that the semiotic perspective is of particular importance for the design of interactive systems. Nevertheless, to summarize this section, for our epistemological understanding of aesthetics the original notion of sensuousness as the *receptive side of our faculty of knowledge* still seems to provide a good starting point. However, both an analytic view of *aesthetic awareness*, which for example forces us to think about the difference between aesthetic experience and a drug-induced state of mind, Aesthetics, and a recognition of the *moral dimension of beauty*, Meditations, may serve us in establishing the value of aesthetics for the design and appreciation of interactive systems.

### aesthetic awareness

In Presence it is observed that *the aesthetic potential of the narrative space centered on the consumer product has received surprisingly little attention*. The authors then argue that, motivated by insights from phenomenology, there should be a shift of attention from *use* to *presence*, where presence does not merely mean appearance but a more complex dialectic process of appearance and gradual disappearance dependent on the role the object plays in the life of the user/subject. The notion of *expressional* is then introduced, to convey the expressive meaning of objects, and in particular interactive objects, in our surroundings. For the *design of presence*, *aesthetics* is then considered as a *logic of expressions*, in which *expressions* act as *the presentation of a structure in a given space of design variables*.

However appealing the notion of *expressional*, in the light of our discussion in section 3, where we distinguish between aesthetic awareness as a given, or a priori, sensibility and aesthetic judgement as being of a more empirical nature, we would prefer to consider *aesthetics* as a *logic of sensibility*, which includes a dimension of self-reflection in the sense of its being aware of its own history. Put differently, to characterize the contextual aspect of aesthetics, as it certainly applies to art, we may speak of *aesthetic literacy*, that is aesthetic awareness that is self-reflective by nature.

Assuming a notion of aesthetics as a *logic of sensibility*, we may distinguish between three dimensions of *form*, extending Kant's original proposal, as indicated



below:

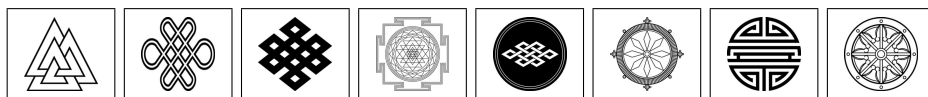
- spatial – topological relations, layout of image
- temporal – order, rhythm, structure
- dynamic – interaction, reflection, involvement

The dimension of *dynamics* clearly is the great unknown, and more in particular it is the dimension we have to explore in the context of interactive systems, not in isolation but in relation to the other dimensions, not so much to establish definite criteria, but to understand the forces at work, or in other words the relevant parameters of design. Imagination gives an existential foundation for the dimension of *dynamics*, by observing that the human body is instrumental in gaining awareness, as the *centre of both obscurity and reflection from which consciousness emerges*, through selection and action.

It is in the existential dimension of aesthetic awareness that we come most close to the experience of the new digital artefacts, since it concerns both involvement and human action. Interestingly, and in apparent contradiction with Presence, cited previously, to establish a foundation for the aesthetics of interactive systems Interaction seek refuge with *pragmatist aesthetics* as it *promotes aesthetics of use rather than aesthetics of appearance*. Again, although we agree with the gist of Interaction, we wish to emphasize that the contribution of pragmatist aesthetics is not its focus on *use*, but the role of *experience* in understanding and appreciating aesthetic artefacts, that is the active role of the subject in becoming aware of its meaning.

For objects that are not designed for usability in the functional sense the notion of *use* is too strict and is, using a dialectic argument, subject to the dialectics of *presence*, as argued in Presence. Conversely, using a similar dialectic argument, for new categories of objects, *presence* requires *use*, or getting used to, in other words a process in which the user becomes interested and familiar with the object. We may even speak of *aesthetic affordance*, with the realization that the notion of *affordance*, explaining an ecology of behavior, originally stems from the late-idealist phenomenology expounded in Sein.

For the design and appreciation of the new category of digital systems we may, looking back at our discussion of the history of thought, well take *pragmatist aesthetics* as a common ground, since it does justice to the existential dimension of aesthetic awareness, and allows for a process of aesthetic literacy, that is becoming sensible to aesthetic awareness and reflection.



## questions

*towards an aesthetics for interaction*

1. (\*) Discuss the factors affect interactive game playing, and indicate how they may contribute to the success of a game.

*concepts*

2. Describe the model underlying game playing.
3. Discuss how narrative(s) affect interaction in game playing.
4. Characterize the notion of meaning from a semiotics point of view. Explain why meaning is dependent on cultural context.

*technology*

5. How would you characterize the role of interaction in game playing?
6. Give at least two construction rules for cinematographic narrative, and explain their use by an example.
7. What is the difference between a signifier and a signified?
8. Explain the role signifiers play in the aesthetic appreciation of an application.

**projects & further reading** As a project, explore the ways narratives may be constructed from a collection of images. Deploy the various editing facilities for providing flashbacks, flashforwards, and other (temporal) relations within storytelling.

You may implement this using flash, VRML, or even try to embed such a narration facility in a game level developed with the Delta3D or the Source SDK.

For further reading I suggest you to take a look at more theoretical material from media theory, such as Bolter and Grusin (2000). Also there is a large collection of books from MIT Media Press that is of relevance for our new visual culture.

## the artwork

1. einzelgänger – *walking man* of Alberto Giacometti, taken from an announcement of the Ives Ensemble, Amsterdam.
2. diagram MIME
3. diagram *experience as meaning*
4. Roy Lichtenstein, 1962, (a) Kiss II, (b) Masterpiece, (c) Forget it, forget me.
5. edgecodes – showing George Lucas and his *editoroid*.
6. El Lissitzky, suprematist works
7. El Lissitzky, suprematist works
8. Roy Lichtenstein, 1999, Still lifes with brushstrokes
9. Les Demoiselles d'Avignon, Picasso, 1908, regarded as the start of Cubism, and Le Goutier, Jean Metzinger, 1911, often referred to as the Mona Lisa of Cubism.
10. signs – abstract, van Rooijen (2003), p. 228, 229.

The *walking man* is one of my favorite sculptures, for over a long time. It is also associated to the motto of part iv: *a journey of a thousand miles begins with the first step*. As an autobiographical note, the *walking man*, with *einzelganger* superposed (in translation *loner*), reflects the writing of *topical media*. In particular, the image put in sequence, reminds me of the repetitive complaints of my superior at the faculty, who over and over again told me that I was always *alone in my room, isolated, on an island*. I must admit there is a truth in this, as I felt that the disciplines of software engineering and multimedia are widely divergent, and in that sense I was on my own. This book has undergone many rewritings, due partly to a clash between the expectations of others and my own vision on multimedia. And with a superior who emphasizes that he is "the boss", but has no intellectual authority nor any inspirational leadership whatsoever, at least not in the area of multimedia and game development, there is really no other way than to go your own way. So I did it my way, indeed, quoting Paul Anka's song, made 'unforgettable' by Frank Sinatra.

In other words, after this brief autobiographical digression, the visual theme of this chapter on the aesthetics of interactive systems is on individual judgement, as exemplified among others by the suprematist works of El Lissitzky, the amplification of cartoons as art by Roy Lichtenstein, and the pioneers of Cubism. After all, individual judgement is what you need, when you wish to be involved in multimedia and/or game development.