

## **Transformation of Baumgarten's aesthetics into instruments for the description of the design process, guidelines for designing and the analysis of works.**

The ontological approach to the projects is based on a thesis stating that the single category or types of artefacts can be characterized by a series of common characters or features.

The epistemological launch pad for the paper is based on Alexander Baumgarten. By way of analysis we can - inside the intellectual recognition - logically deduce an increasingly greater, intensive clearness. In contrast to that, we can only sense the sensitive recognition by way of several co-ordinated individual items. Baumgarten's guidelines are used to throw light on the relation between individual items and theme in the analysis of works and the description of the design process.

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The writers' professional background is the Master of Engineering education with specialization in architecture and design. The outline of objectives for this education states that the students shall acquire skills in propounding a range of aesthetical, functional, technical and environmental demands and wishes for the project, which are collected in a requirement specification. The students will learn to transform the requirement specification into expedient building projects or product proposals. The terms for the demands that are made on the aesthetic quality are not as clear as the other quality, due to the absence of aesthetic concepts that provide a shared understanding of which qualities that a product or work must match. The systematic evaluation methods, which support the selection of the best design, must for the same reasons give up when the functional, technical and environmental demands and wishes are not pivotal in relation to the choice.

By means of Alexander Gottlieb Baumgarten's reflections light is thrown on the design process, while Baumgarten's paragraphs are transformed into operative guidelines for development and evaluation of aesthetic quality. It is a foregone conclusion that aesthetic quality is conditional on that the work is based on holistic considerations regarding rooms (or products) in detail, where everything is classified under a collective theme.

### The problem

The design process is an ongoing iterative process that is difficult to grasp, document and evaluate. There is a lack of tools and vocabulary for documenting, developing and evaluating aesthetic quality.

Product design has two primary tasks:

- A logical functional role (the product's functionality and technology) decided by the laws of physics and ergonomics and so forth.
- A sensitive role (the expression of the product in relation to the user – the emotions that the product might trick when it interacts with the user and its context.) The correlation between the user's values and the signals that the user perceives from the product.

This project looks back at the discussions going on in the enlightenment movement regarding the laws of aesthetics. In this discussion, the project focus on Alexander Gottlieb Baumgarten (1714-62) and his definition of aesthetics in his text: "Meditationes Philosophicae de Nonnullis ad Poema Pertinentibus" 1735, focusing on the interpretation of Søren Kjørup in his text: "Baumgarten and the foundation of aesthetics" from 1968.

Baumgarten described human cognition as consisting of both an intellectual and sensuous knowledge. He established guidelines and a vocabulary to describe the process and evaluate aesthetical quality.

With the intentions of our investigations Baumgarten's thoughts seem to have an interesting potential.

The object of interest consists in transforming Baumgarten's guidelines and vocabulary to operative guidelines for developing and evaluating aesthetic quality and testing these in case studies.

### Viewing the design process in the light of Baumgarten

Descartes objective was to reach ever higher levels of intellectual knowledge, seeking out a logical mathematical approach to all forms of knowledge.

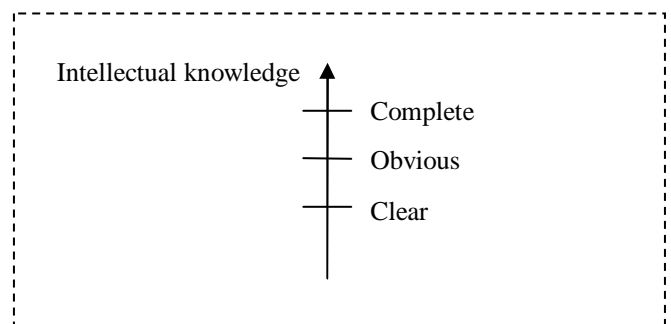
Through analysis one should be capable of reaching the highest possible level of intellectual knowledge.

Intellectual knowledge meaning; that which can be logically deduced:

If we recognize gold just by seeing it we then have a clear knowledge of it. If we have a

definition of its characteristics and can prove these – then we have an obvious knowledge of it.

Complete knowledge is only obtained by having obvious knowledge regarding all of the materials' individual characteristics.



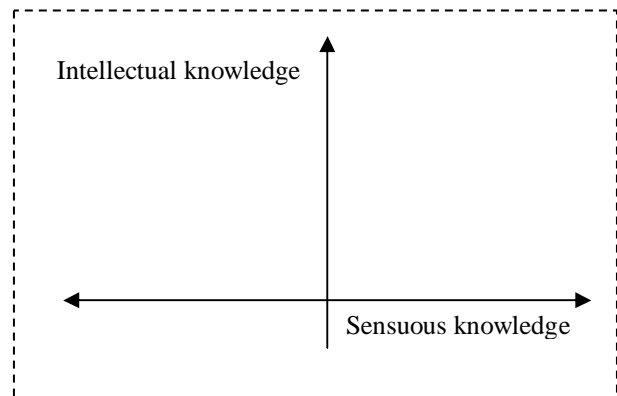
Unfortunately, applying this mathematical logic when analyzing aesthetic quality gives us some problems. The reasons for an aesthetic success are rarely revealed through this type of analysis.

And an artefact that we would logically assume possesses aesthetic quality does not necessarily move us.

In search of a solution to the problems concerning the strict logical analysis, Baumgarten adds a new type of knowledge to Leibniz's model – sensuous knowledge.

Baumgarten's ideas of an intellectual and sensuous knowledge can be illustrated in a system of co-ordinates. This does not mean that the sensuous knowledge is placed hierarchically beneath intellectual knowledge.

The sensuous knowledge is assumed to regard all that is sensed as well as filtered through memory and recognition.



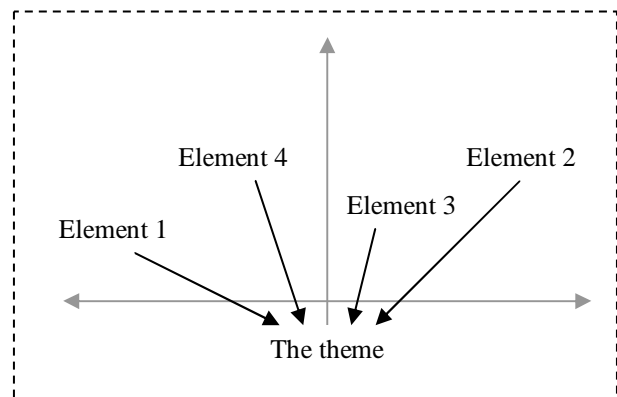
Intellectual knowledge is clear to us – we can put words to it and logically deduce elements to ever more exact intensive clearness.

On the other hand, sensuous knowledge is in the dark and cannot be argued or described like we do regarding intellectual knowledge – to do so we need other tools.

Baumgarten imagined the existence of logic-like guidelines concerning sensuous knowledge.

An artefact ought to consist of many coordinated elements that all point towards a unifying theme. In this sense, it is through thorough coordination of each distinct element that we reach extensive clarity – that is the concise representation of the theme. Baumgarten's logic-like guidelines are supposed to help us administrate the importance of each and connections between all elements.

We can sense a theme unifying all elements in an aesthetically successful artefact, but not express the exact relation between each distinct element. This is the dilemma that we encounter when trying to create an artefact or evaluate an artefact.



Within this terminology “beauty” is a definition of a complete interpretation of a theme. That is; that the elements making up the artefact are perfectly coordinated in a way that expresses the values and morale that make up the idea behind the artefact.

In this sense, a beautiful artefact might as well be a complete interpretation of a horrific, hideous theme.

The guidelines instructed by Baumgarten are primarily referred to poetry. However, to some degree, there seems to be correlating rules regarding industrial design.

- One should use as few elements as possible to describe the theme.
- Some elements should be accentuated while others should be toned down. In this way, the shadows will emphasize the light.
- Things out of the ordinary have the power to move us, and thereby add to the sensuous experiences. In this sense, the use of new technology is assumed to contribute to aesthetic quality.
- During the process the design should continually advance towards extensive clarity. That is; all elements have to be coordinated and point towards the theme.

### **Operationalization – the design process**

Baumgarten's thoughts were mainly concerned with poetry. In industrial design a product's main goal is to service some sort of a practical need. This practical need defines the setting for the interaction between user, product and context.

The theme, being the focal point of all elements, has to be defined early on in the design process and should be based on the practical needs and setting for interaction.

The theme lies in the dark beyond our reach, but often working in teams we, as designers, have to narrow it down early on in the process and all agree to a suitable theme. In order to do so we suggest that one uses a number of different techniques: Poetry, moodboards, and an essay describing a scenario where the user interacts with the product. They are all ways to express and define the theme of the product.

Now, the theme makes out a basis for generating new ideas – functional and technical concepts, as well as means for generating sensuous experience.

The following design process consists of administering the connections between elements – accentuate some, tone down others and so forth.

Through the iterative process of integrating functional concepts, technical solutions as well as sensuous effects, the product continually advances towards a theme of extensive clarity.

### **Operationalization – evaluating aesthetic quality**

With this approach towards the design process one can evaluate the artefact using the same guidelines and terminology: "Does the theme of the artefact appear to be extensively clear?" To answer that question one also has to be capable of answering the questions:

- Does the artefact move us sensuously?
- Can we sense a theme – values, insight, some sort of moral?
- Do some elements seem to be superficial regarding the theme?
- Does the artefact contain something out of the ordinary?
- Does the artefact contain something new – new technology etc?

## Documenting and using guidelines in the design process

The process documentation and guidelines were tested in Bent Ekfeldt Olesen's master project: "Designing an ACL knee brace". Among other issues Baumgarten's thoughts were used in the project. The experiences are illustrated in the following.

The project's objective was to: Design an ACL knee brace for patients that need functional support while rehabilitating after having ruptured their anterior cruciate ligament. Designing this type of knee brace involves functional and technical demands as well as demands regarding the overall sensuous experience when interacting with the product.

The project was initiated while researching the factual and logical conditions regarding the problem at hand as well as interviewing users and using the product personally for a period of time. With the research in mind a vision regarding the functional and sensuous experience of the new product was established. In this way, a theme emerged:

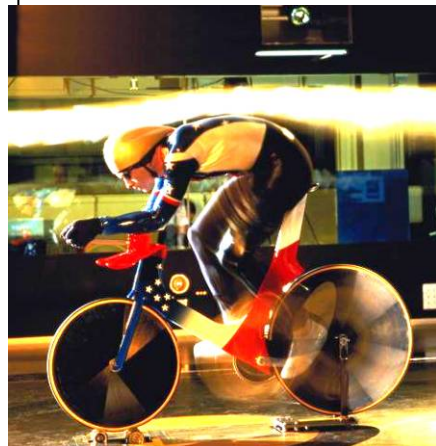
### The theme:

The user does not want the knee brace to express his or her weakness – a ruptured ligament. Instead, it would be beneficial to place the knee brace in a category with regular sports equipment that tries to push athletes towards new limits of what is physically possible.

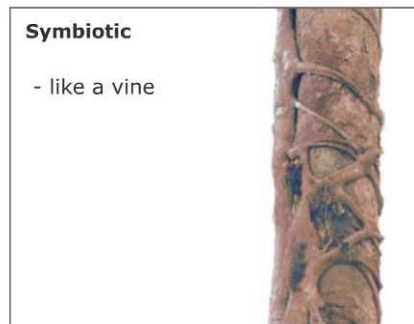
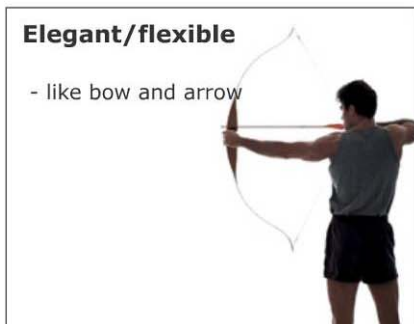
This type of equipment is often characterized by a futuristic optimism where human evolvment is walking hand in hand with technological evolvment.

Within this genre sports equipment is experienced as a mere elongation of the body, adapting the organic shapes experienced in nature.

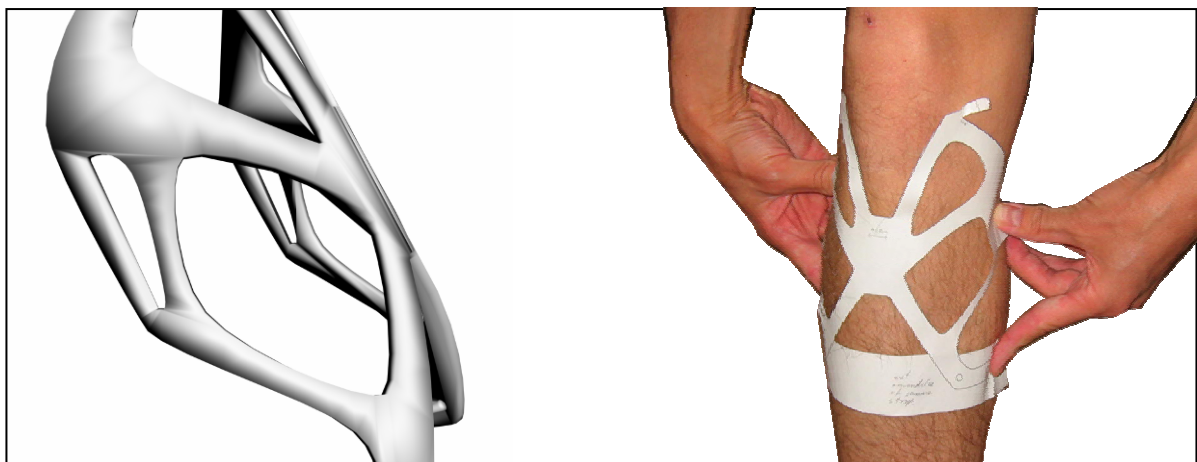
Sport seems to talk directly to our instincts and our nature: "Survival of the fittest".



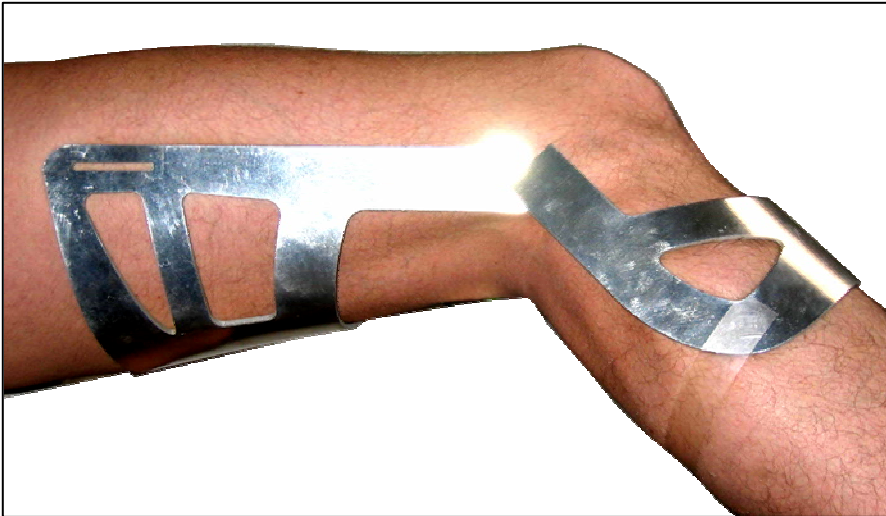
Pictures, words and metaphors were established in order to get closer to an experience of the new knee brace.



The research revealed a need for great physical strength and lightness. These demands equal the results one gets from a topology optimization. This technique uses the computer's ability to simulate numerous constructions in a few seconds. Through each simulation the program removes a bit of material from the overall construction and tests its strength. Like one would imagine evolution, the program selects the strongest and lightest construction and continues to run tests. The end result is a cell-like structure like the structures found in nature. This is a logical intellectual approach that seems to fit nicely with the theme of the artefact. The design process continually shifted from topology optimization – intellectual knowledge, to traditional sketching and working with association – sensuous knowledge.



Topology optimization was tested but later on in the process it had to be rejected, because the end result did not seem to match the initial theme.



Instead of using the topology optimization technique, composite materials were used to ensure strength and lightness. This type of materials matches the theme – composites share many technical and conceptual aspects with nature. Using new technology might add positively to the sensuous experience regarding Baumgarten's guidelines. Among other details, the texture of the woven fibres was reduced in respect to other elements.

Documenting the design process revealed problems. One cannot argue why one-minute detail seems more fitting than the other – and not at all solely on the basis of Baumgarten's thoughts. His logic-like guidelines are a good foundation, but not an argument.

The initial design process was controlled by the topology optimization technique, partly because the program obviously does not adapt sensuous ideas from hand-drawn sketches. The program reacts solely on physics. In that sense, it was very much one-way-communication, and not distinctly an iterative process.

The end result of the technique implemented about half of the initial metaphors used to describe the versioned experience of the knee brace, but did not at all describe a whole as such. Using the composite materials resulted in a much better design matching the initial theme.

### **Method selection on the basis of aesthetic demands**

The hopeful artists, designers and architects hand in pieces - together with autodidact pieces of works or work proposals - to censored exhibitions or competitions. Only prize winners from the competition will receive an explanation from the jury with regard to why precisely their proposals won. Press coverage may give people a hint about how a piece of work, which has made its way to the competition, will be received. It is strange that the jury do not make use of transparent evaluation or selection methods considering that machine engineers used such methods as early as the 1980s in connection with evaluation and selection of draft proposals that will be further developed or brought into being. Together with the appurtenant checklist of features and qualities that a product must comprise, the method provide the jury with a manageable foundation for giving people feedback that can work as inspiration for further professional development.

The method will also secure transparency with regard to selection criteria so that the public and especially professional groups have the possibility to discuss the relevance of the selection quality criteria and their suitability in relation to giving a graduated expression for the qualities of the

works. Through this process you can ensure that there can be created a consensus - at any time – regarding the basis, upon which works are selected at censored exhibitions, competitions etc.

The process of selecting and formulating new criteria is an important element in the efforts to achieve a shared understanding of how people perceive quality in a given context.

The evaluation method was exemplified through a case study “Guldagergaard”, International Ceramic Centre, which was performed during the symposium ‘Culture & identity’ on July 20<sup>th</sup> 2004, where participants in the ‘artist in-residence’ programme were asked to select three out of six works for the fifth exhibition at the newly renovated gallery building. The exhibition was meant to demonstrate what Guldagergaard stands for. The six artefacts, which were all made at the place, were placed on a table and they were all provided with a letter.

The group was handed a method description and the following six examples of possible criteria that were partly formulated on the basis of Baumgarten’s guidelines:

- Aesthetics: The degree of harmony between content, structure and expression
- Strangeness: The degree of something relatively incomprehensible
- Composition: The degree of structure (hierarchy / order) between single parts
- The style: The degree of agreement between intention and means
- Ethics: Represent the rather positive or negative basic values of the artefact
- Something new: The news value of the artefact and substance

First, the group discussed which criteria the pieces of works should comprise in order to be relevant for precisely this fifth exhibition at the newly restored gallery building. After that the group discussed how important they considered the single criterion to be in relation to a collected assessment and quoted that as a weight factor in the scheme.







Next, every group member conducted an evaluation of how salient the desired features were with regard to the six artefacts. After counting the points for each criterion, the sum was multiplied with the weight factor and after this the weighted scores for all the criteria that the artefact should match were added. The three pieces of works, which have achieved the highest collected weight score, are in principle chosen for the exhibition. In this example, E, D and A were selected.

The result should always be followed by a discussion of whether the features of the other most competitive pieces of works possess ignored qualities that could have affected the result.

If the evaluation had been sent to them, the artists or artist craftsmen behind the artefacts marked C and D would get a clear indication of whether they should aim at more original solutions.

The method is described in ‘Engineering Design: a systematic approach’ (G. Pahl & W. Beitz, 1996) and in ‘Aesthetic philosophy’ (2000) David Favrholt has developed a similar schematic method that however does not seem to emphasize the importance of the dialog surrounding the selection and formulation of new criteria in step with the development and the significance of the checklist as a tool to ensure that all relevant characters are taken into consideration.

The following scale of value was used: 0 ≈ insufficient , 1 ≈ just acceptable , 2 ≈ average , 3 ≈ good and 4 ≈ optimum.

Evaluation criteria selected by the group	Rating												
		Work A	Work B	Work C	Work D	Work E	Work F						
The clearness in the theme	0.1	15	1.5	13	1.3	12	1.2	16	1.6	17	1.7	12	1.2
Technical quality	0.2	16	3.2	12	2.4	13	2.6	17	3.4	17	3.4	14	2.8
Long lasting importance	0.1	12	1.2	13	1.3	13	1.3	15	1.5	17	1.7	12	1.2
Originality	0.2	12	2.4	10	2.0	6	1.2	10	2.0	15	3.0	15	3.0
Experimental value	0.2	16	3.2	13	2.6	12	2.4	12	2.4	16	3.2	13	2.6
Clearness in idea/concept	0.2	12	2.4	16	3.2	15	3.0	18	3.6	19	3.8	14	2.8
Total score		Sum:	13.9	Sum:	12.7	Sum:	11.7	Sum:	14.5	Sum:	16.8	Sum:	13.6

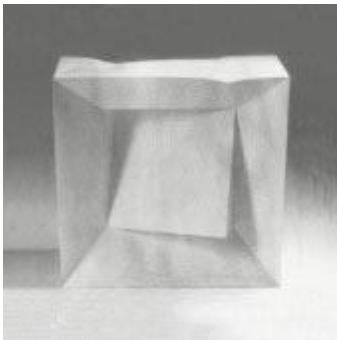
The priority list of the group resulted in that E, D and A were selected for the exhibition and B, C and F were not. Group member 1 had prioritised A, F, and B, and group member 2 had prioritised E, D, and F, member 3 had A and E and then B, member 4 had A, B and E, while member 5 had C, E, and F. This illustrated that it had influence on the collective result if a member in general had assigned criteria a higher value than the other members. In dance and skating competitions the highest and lowest marks are eliminated; maybe this principle should also be applied here.

## Investigation of the aesthetic quality concept

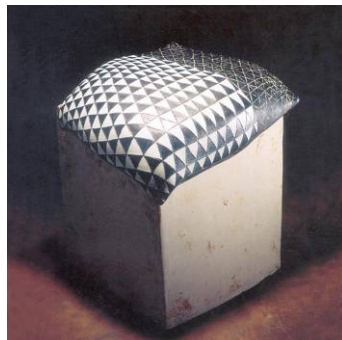
Local church councils, which predominantly consist of laymen, have regularly problems with the lack of harmony between what they expected from a sketch project and what they actually get. Jakob's ladder on the roof of Fønnesbæk church can be an example of this. The scaffold, as it was baptized by the public, gives evidence to the aesthetic experience that local church council has with regard to the work. The latter even sent the tune into the room of the church when the wind sat plumps in motion so that they had to be replaced by steel grates; these corroded and had to be changed again before the church celebrated its 10th anniversary:  
<http://www.folkekirken.dk/stifter/viborg/ikast/fonnesbaek/> 2004-09-15

Such communication problems draw the attention to the need of an extension of the before-mentioned checklist so that it met the artistic, aesthetic qualities with a vocabulary that could be used to describe that kind of characteristics in the future in order for specialists as well as laymen to acquire a shared understanding of the intention.

At Nordjyllands Kunstmuseum (the Art Museum of Northern Jutland) you will find an exhibition concept that is in the process of being developed. This must constitute the foundation for the investigation of what the Danish people understand by aesthetic and artistic quality and spread the knowledge of the mentioned evaluation method. The idea of the project is to ask people to rate three art, design, or architectural pieces with the use of an interactive computer program. The computers will save those evaluation criteria, which people use as a basis for their rating. From this material, generic assertions will subsequently be deduced regarding aesthetic and artistic qualities for the types of artefacts, which will be displayed at the exhibition.



*Form* by Erik Lyngé



*Sitting sculpture* by ceramic designer Betty Engholm



*Bar stool* by designer Anders William Larsen MDD

A typical comparison of artefacts, which the audience will be asked to evaluate.

Methodical reductionism forms the basis for the analysis of the received data, with the purpose of identifying distinctive and necessary features that characterise the specific types of artefacts.

Albeit the characteristics are an abstract expression for the total quality of artefact, we work with an idealized representation based on the action-based investigation of how professionals as well as laymen with a shared culture characterize a collection of artefacts, which has been produced by artists, designers and architects.

In the manual about 'Choice of contractor to public new buildings' (April 2003), The Danish Commerce and Residence Agency has suggested that the method used in connection with the assignment of entrepreneur assignments. In this connection, the evaluation criteria are designated assignment criteria that contribute to defining the assignment and to provide a guide that illustrates where the applicants lie compared to each other and that also helps to explain the reason for the

choice. In this context, it is also about an overall view of how the applicants have fulfilled the assignment criteria, as it mostly concerns a qualitative evaluation and not a strictly mathematical choice.

In the future, the assignment of decorations jobs will be able to take place in a similar way. The investigation is expected to give a hint as to how a similar guidance regarding selection of artist can be produced.

### **Putting into perspective**

Baumgarten's reflections, which seek a correlation between the intellectual recognition and the sensitive recognition, seem to give a definition of the wish to create an idiom, where the function, technique and the aesthetics of the product may be incorporated into the whole subject under a common theme.

The wish regarding brief and extensive clarity, which Baumgarten expresses, can be transformed to a guideline that recommends using a few artistic effects as possible, to present a given set of values to the user and the outside world, and by doing so making the signal as clear as possible.

Baumgarten's guidelines are not clearly logical, but they are reasonable. The aesthetics is thus not an exact science and does not enable a logically deducible aesthetics, but it can take us closer to the pregnant expression - the extensively clear.

Baumgarten's guidelines are based on speculation, which is difficult to defend today. However this is a key point: We have to allow sensuous cognition the same attention that we allow logical intellectual knowledge.

The papers attention has been drawn towards the potential of Baumgarten's aesthetics and how he offers tools and a vocabulary in our field. In the future more of Baumgartens methods and ideas will be investigated concerning instruments for the description of the design process, guidelines for designing and the analysis of works.