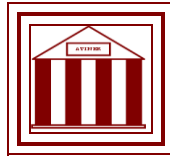


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ARC2013-1842

**The Quality of Architecture
Some Thoughts about how to Evaluate,
Understand and Discuss**

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Dr. Gregory T. Papanikos
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The Quality of Architecture
Some Thoughts about how to Evaluate, Understand and Discuss

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Abstract

Architecture and architectural phenomena are seen very individually. Yet, I think there are objective criteria for evaluating architecture. To understand and discuss value judgments by different persons or cultures about one specific building or various buildings and accept these different views, we need a common basis for making evaluations transparent and comparable.

Distinguishing - objective criteria,

- objective measurements on the one hand,

- subjective individual values on the other hand,

coupled with some basic principles of value benefit analysis, can meet this need, even allowing buildings or architecture to be compared.

Keywords: Architecture, Quality, Evaluation

Introduction

The ideas outlined below are part of a concept of a new theory of architecture in which Architectural Quality (AQ) constitutes an important aspect.

Situation and Motivation

- Defining AQ is difficult.
- Explaining AQ is very hard.
- Discussing AQ is nearly impossible - today.

This is because experts, such as architects and scientists, disagree about the quality of architecture in competitions and awards. Architects discuss quality in a way very different from the approach of users: Everybody has a private, individual view of the quality of architecture and applies personal criteria. Even experts do not explain clearly and understandably their opinions of architectural quality, as can be seen in competitions or awards for architecture (e.g. the Maxxi museum in Rome was named as the Building of the Year 2010 by the *World Architecture Festival* (WAF) for these reasons: "This is a building which is a volume, which takes its place in a very happy way inside the volume of a city – an unwound Guggenheim, with ribbons of connectivity. It is a building which will still be talked about in the history of architecture in 50 years' time." ¹). Very often we find that a unique form is sufficient to qualify a building as good architecture - outside appearance being overrated nowadays.

The quality of architecture (AQ) is not only referred to widely and ambiguously but also very often postulated in an absolute manner although there are many individual views and value systems about architecture. This subjectivity makes a general standard hard to establish and subjective evaluations of architecture difficult to verify. I even suppose that the industry of architecture prevents any standard for marketing reasons.

In this nebulous situation, new certificates for buildings, such as DGNB, LEED or BREEAM, are mushrooming. They now even invade the evaluation of architecture. As they focus on only a few of the many aspects of architecture, such as ecology, architects need to remember the nature of architecture to claim this competence for themselves.

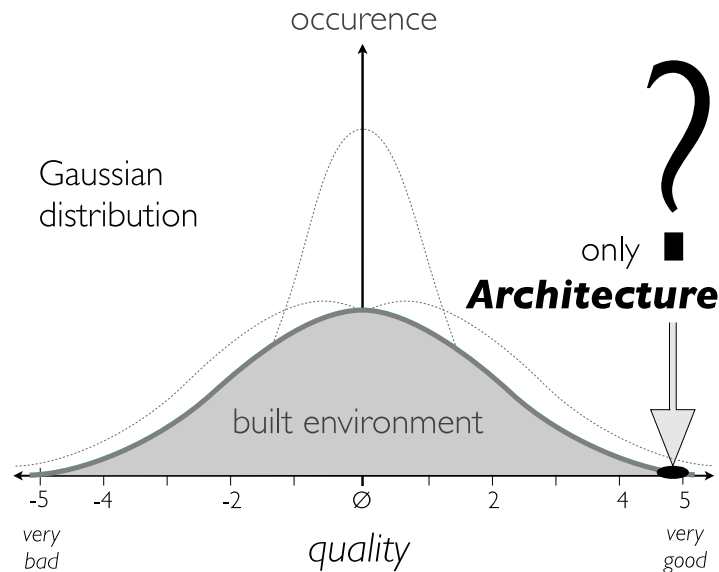
As architecture affects anybody anywhere and at any time, we must discuss the quality of architecture outside of ideologies, i.e. its style, shape, function or ecology, on a scientific basis relative to its individual situation in a transparent way - beyond the interests of the industry of architecture and beyond clever marketing by *big* architects or powerful companies:

Difficulties are no excuse for impossibility, complexity is no excuse to avoid it. The importance of architecture in and for our life is too great.

¹ <http://www.evolo.us/architecture/maxxi-museum-wins-world-building-of-the-year-at-2010-world-architecture-festival/> - 8.6.2013 10:13

Architectural Quality

Figure 1. *What is Architecture?*



Architecture

Even the term “architecture” is a problem, because some people equate architecture with buildings of very high quality only (e.g. N. Pevsner), especially one aspect of a building only - i.e. form - as many architects do. Others perceive architecture as the totality of all buildings irrespective of their quality. The first interpretation would exclude 98 % of all buildings from architecture. Can this be the right approach? Do we need to distinguish between common (profane) buildings (98%) and architecture (0,5%) as a category of fine arts?

Let me propose a definition of architecture:

Architecture is all artifacts which provide locations for activities of human life regardless of the quality of these artifacts.

Quality

In general, *quality* means meeting the demands of users. Evaluating quality thus is measuring the level of fulfillment of these demands. Consequently we need to know the needs of the users of architecture:

- What do we (i.e. ordinary people, expert architects or scientists, users etc.) ask for in buildings?
- How important are these demands?

Architectural Quality

It is common knowledge that we have emotional needs besides functional necessities! Consequently, I will deal not only with functional aspects, but also with aesthetic, environmental and other needs. Architectural quality in this sense depends not only on the form (as architectural and art history maintains) or

on function (as users do) or on the financial returns (as investors do) or on ecology (as new ecologic certificates imply), but also on a state of well-being (emotion, feeling etc.), on construction, economy and many other demands and aims of all people concerned with a building. In addition, aspects of space and place, integration in the broadest sense, time, and, especially, the people are important. For a building, this is always specific because of its individual context. The quality of an object also is affected by every process at any stage. And it is produced by the influences of the persons acting and affected.

Figure 2. Pyramid of Needs to be met by Architecture

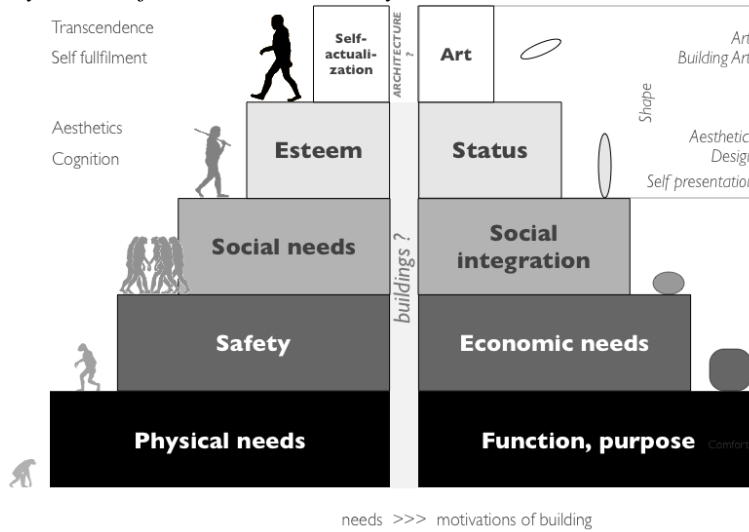
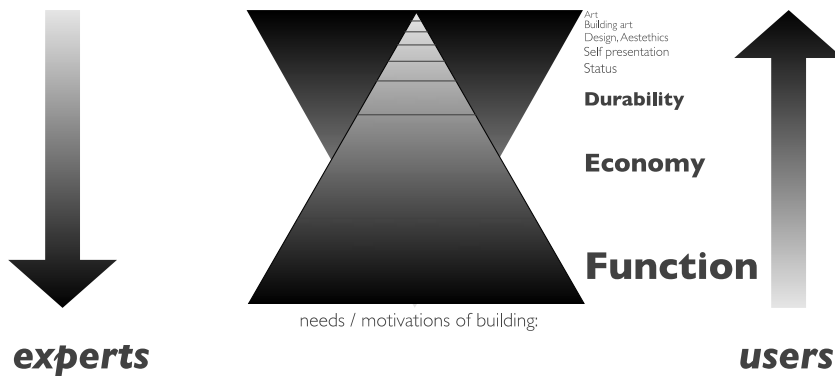


Figure 3. Paradox of Architectural Quality



In line with Maslow's hierarchy of common needs, let me propose a pyramid of needs for architecture (Figure 2). In a general sense, it shows the importance of different demands on architecture, affecting the assessment of architectural quality. It helps understand the needs of people and the way they are ranked. It shows also the discrepancy in evaluations of architecture between the needs of users and the criteria applied by experts, the result being a general lack of comprehension of the quality of architecture.

Architectural quality is more than fulfillment of needs (although this is discussed here as a first step). It is, indeed, a philosophical, artistic or aesthetic issue that architecture besides fulfilling needs should also be coherent and balanced as well as harmonious within and between the elements of the architecture system. Of course, every product should reflect these principles, but it applies to architecture in particular. There is no excuse for the evident lack of comprehension.

When an idea is expressed by an object and recognized by people, only then would I call it a work of the art of building as a category of the fine arts.

Figure 4. *Qualitative and Quantitative Characteristics of Quality*

		ARCHITECTURE		
		built	building	art
QUALITIES	meets needs	*	*	*
	inter-coherent	-	*	*
	intra-consistent	-	*	*
	harmonic	-	*	*
	expressed idea	-	-	*

* very important + important - not relevant

Problems

I see these main problems in architectural quality:

1. The criteria of quality
 - are either measurable quantitatively and objectively
 - or they are qualitative and often subjective only.
2. The assessment of a building by an individual is the result of subjective needs, views, feelings, and values
3. A person does not always know his or her needs: We can distinguish conscious expectations, desires and unknown needs.
It is up to experts to find and analyze them all.
4. Many people are affected by architecture, which gives rise to many different opinions based on different criteria.
5. This results in conflicts among stakeholders.
6. Their evaluations cannot be compared because the underlying criteria are different.
7. Because of these problems experts often serve as benchmarks. However they differ very much from users who usually are laymen.

8. Evaluations usually are not explained in a transparent fashion.
9. Neutral and objective evaluation requires a lot of effort.

Subjectivity of Many Stakeholders

We can distinguish two kinds of subjectivity when discussing a building:

- Obviously people looking at a building have their personal views.
- Clearly every building exists within its specific situation.

So, buildings cannot be compared or evaluated on the basis of identical canons as far as personal criteria and surroundings are concerned.

Creating one general view of buildings is impossible because of

- different needs a building is erected for,
- different views from which a building is seen,
- different feelings caused by architecture,
- different values of criteria in the individual systems of values of people acting on, or affected by, a building, including changes over time,
- the specific situation a building is erected in.

Figure 5. Opinions of People Acting on / Affected by Architecture

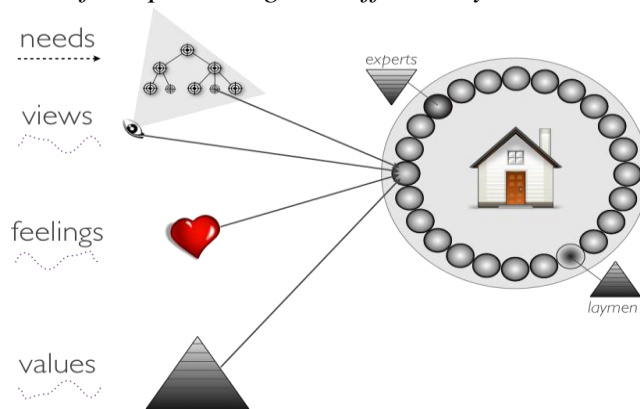
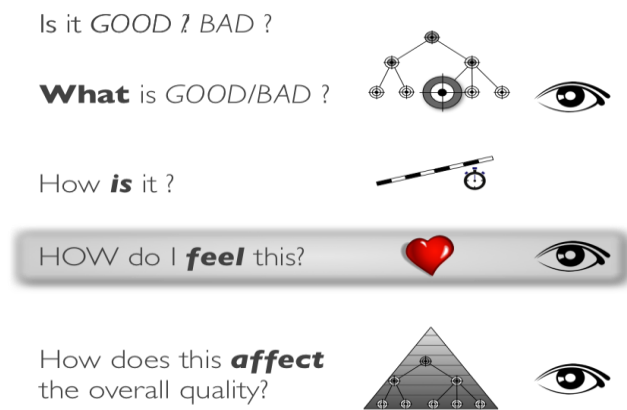


Figure 6. Qualitative and Quantitative Characteristics of Performance



Qualitative and Quantitative Characteristics of Performance

Evaluating architecture means observing many different criteria which can be recognized either quantitatively or qualitatively only (see Figure 5).

Quantitative criteria can be measured in an objective way. However assessing changes objectivity to subjectivity.

To eliminate or minimize subjectivity, qualitative criteria must be turned into quantitative criteria. Although this is possible in most cases, it adds the effort and greatly costs to an evaluation.

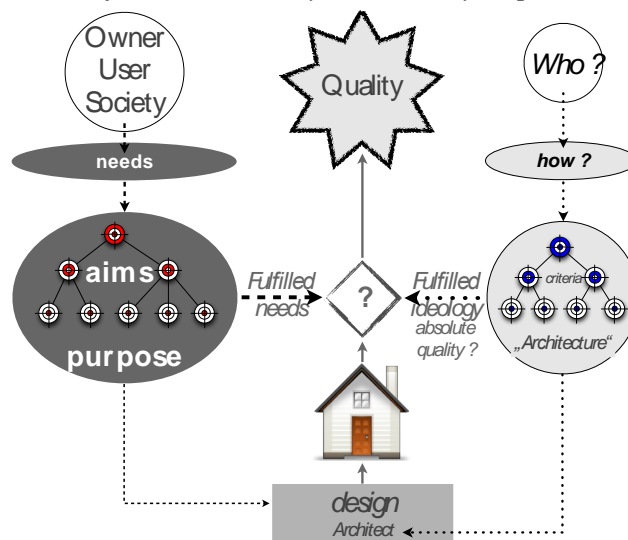
Experts versus Laymen

Often experts are called in to avoid this problem and reduce the effort. But then the question appears, whether their expertise corresponds to the opinions of the other stakeholders, including society (usually it does not!): In my experience, users see a building in its situation, whereas experts are strongly affected by ideologies of architecture.

Ideology

In many cases, architecture is evaluated ideologically subjective opinions being considered normative rules. Experts - architects, historians, and theoreticians act in this way, but they are not the only ones to do so. What is the legitimation their subjective view as being touted as objective rule?

Figure 7. *Evaluation of Architecture by Users or by Experts?*



Efforts and Costs

Finally, differentiated evaluations take a lot more of effort and are more costly than a general opinion.

Aims

Common evaluation of architecture requires a method generally accepted and considering the nature of architecture. This requires

1. Objectivity.
We need a common structured basis.
This may be a method and/or a basic catalog of aspects and criteria.
2. Subjectivity.

We need the possibility to adapt this basis

- to the specific situation of a building and
- to incorporate individual views of people about a building.

3. Subjectivity must be transparent to be understood, accepted and discussed.

Therefore these questions need answering:

- What criteria must be evaluated for architectural quality in general, and which ones in a specific case? (What consists AQ of?)
- How can we include specific situations and subjective opinions?
- How should we present architectural quality in a transparent way, so that everyone can understand, accept and discuss external opinions?

Procedures/Methods

Transparency has to be achieved by the following steps:

- (1) Definition Which aspects/criteria are reviewed.
- (2) Measurement Which parameter data were measured in which way.
- (3) Evaluation How are quantitative data transformed into a quality.
- (4) Rating How are different criteria weighted relative to each other.

According to benefit analysis, the first two steps are objective while the steps three and four express subjectivity:

- (3) Objective data are transformed into quality values by a subjective transformation function.
- (4) Specific criteria are assigned relational values.

These four steps guarantee clarity and transparency. They also provide an objective way of measuring data by combining and comparing with different sets of values. As subjectivity depends on the individual situation a building is built in and the subjective values of the people involved in a building, there is no longer any “absolute” quality of architecture.

The high complexity of architecture seems to make it impossible to cover all aspects in their relative importance. However neglecting the possibility to achieve transparency in judging architectural quality is no excuse for subjective, partial views of architecture.

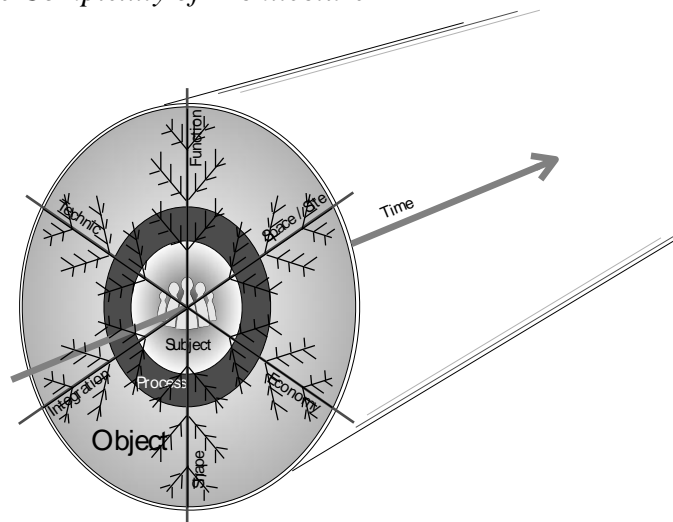
The basic methodology employed is benefit analysis as used in many industries and in science. It is important to divide the general definition of properties and their objective measurements from the subjective attribution of values.

Criteria

As architecture is very complex, evaluating architecture must consider a variety of criteria. And as different people use many different catalogs of criteria, it is necessary to work out a common basis for combining them for comparisons. Thus all possible criteria must be organized in a general structure for architecture and architectural quality. For this purpose, I propose a system with three major subsystems influencing architecture and its quality:

- (1) Object = the building.
 (2) Projects = the processes of designing, planning, building and using.
 (3) Subjects = the people acting on, or affected by, a building.
- (1) *Object* *A building is characterized by:*
- 1.1 Function meeting all demands of users.
 1.2 Space offering space for activities in human life.
 1.3 Construction all technical aspects of a building, building construction as well as all other technologies and services.
 1.4 Shape covers in general all aspects like form and material such as dimensions, proportions, colours, surfaces and others, and the atmosphere evoked by these parameters.
 1.5 Integration A building always exists in a specific context. It must be fitted to its surrounding. Other special requirements are integration into natural environment, cultural meaning, law of the society.
 1.6 Economics The ratio of benefits and efforts is not only important in the sense of financial investments, but also in the ecological sense or with respect to design and other aspects.
 1.7 Time Every building is a product of its time and culture. Buildings exist over time, they form and express the history of the people building and using them.
 1.8 Human Being Last, but not least, there are we ourselves, the people – investors, architects, builders and especially, users of architecture. I am very surprised to see this aspect reflected in evaluations of architecture only very rarely.

Figure 8. *The Complexity of Architecture*



- (2) *Projects* *All Stages and Processes of a Building*
 The way processes are planned or performed have an important bearing on the quality of architecture, such as the possibility of recycling or the provisions in local law

about controlling the building. Building projects comprise these main activities:

- 2.1 developing,
- 2.2 planning,
- 2.3 constructing,
- 2.4 using,
- 2.5 changing,
- 2.6 removing.

- (3) *People* *All people influence the quality of architecture*
irrespective of whether they
- act on the building or
 - are affected by the building.

This all-encompassing framework avoids the quality of architecture being defined any longer by a single criterion or a few special criteria as significance of its form or a unique, new solution to an architectural task.

This framework ensures that the *quality of architecture* is recognized and verified under nearly *all* important aspects. The criteria do not determine any values of quality.

Even if a criterion cannot be measured in an objective way (for example, the “atmosphere of a room“), defining this criterion is important in the interest of transparency. Only if it is defined clearly its relative weight in the overall quality of architecture can be discussed and determined - not in a general sense, but for a special situation.

All dimensions, fields and aspects must be decomposed to quantitatively measurable or accessible criteria.

Objectivity

As many people and their different demands and values are involved, it is not possible to generalize quality evaluation.

It is possible, however,

- to define the criteria which must be checked in evaluation as normative rules (checklist, see above),
- to define the methods and rules of measurement.

These two general definitions are independent of a specific situation; they establish objectivity.

Moreover, the function of transformation from measured data into values should be proposed in general for each criterion.

Subjectivity

These definitions need to be adapted to specific situations and people of a building. There are several possibilities to do this for a specific situation:

- (1) The selection of criteria can be changed.
- (2) The transformation of measured data into values can be adapted.

- (3) Besides predefined aspects and criteria, there can be a separate block for individual criteria for a specific situation. Its share can vary (e.g. 25 % of all aspects).
- (4) Weighting the aspects and criteria can be customized.

The criteria and their measurements are objective, whereas their choice and their weighting (valuation) can add subjective conditions and individual views to an evaluation. Thus, weighting must be carried out for every evaluation individually. Together with the objective basic principle, however, an individual evaluation will become transparent and understandable.

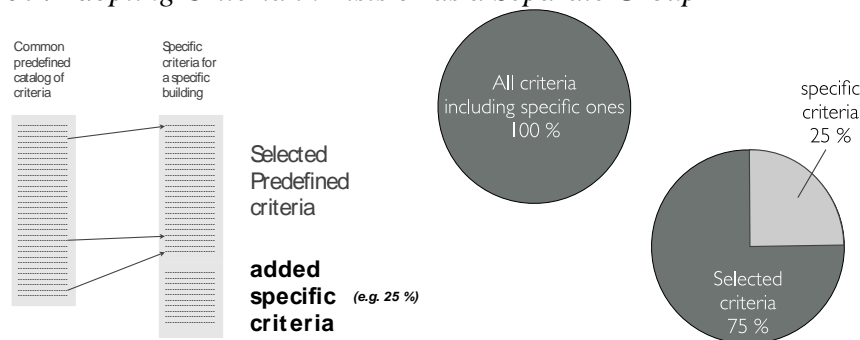
This is the way benefit analysis will work even on architecture.

Criteria selection

Of course, the framework mentioned above must be broken down further until criteria are available which can be measured. While some aspects have been detailed in this way (for example in the quality labels) already, most areas still need to be developed: This is an important problem and task for a scientific theory of architecture.

The certificates referred to above only evaluate special ecological aspects, but not architecture in general with all its facets. Architecture is more than form or ecology. But the methods these certificates include for monitoring buildings open up possibilities for developing a common view on buildings which is transparent and comprehensive and includes subjectivity, as discussed above. I think it is necessary to prevent architecture from being evaluated henceforth only in that way!

Figure 9. Adopting Criteria in Lists or as a Separate Group



Specific criteria added

According to a specific situation. This can be done in a separate, predefined block of "specific criteria" or just added to the selection of criteria from the catalog. The first case offers the possibility to adjust the weight of these criteria (e.g. 25 % or 30 %), the second option has no influence on weighting.

Transformation

Transformation means the translation of a measured, quantitative property of a building into a qualitative value of the resultant benefit.

The same building (architecture) will achieve different quality levels in different environments or cultures because of the different values attached to properties as a function of prevailing points of view. For example, a residential building for a family is reviewed in different situations:

- (a) normal,
- (b) a house on a slope,
- (c) a house for a handicapped person,
- (d) a house in Japan.

It is always the same house, but according to the specific situation, the function of transformation is adopted and the house will be rated differently.

Figure 10. *The Transformation of a Quantity to a Value*

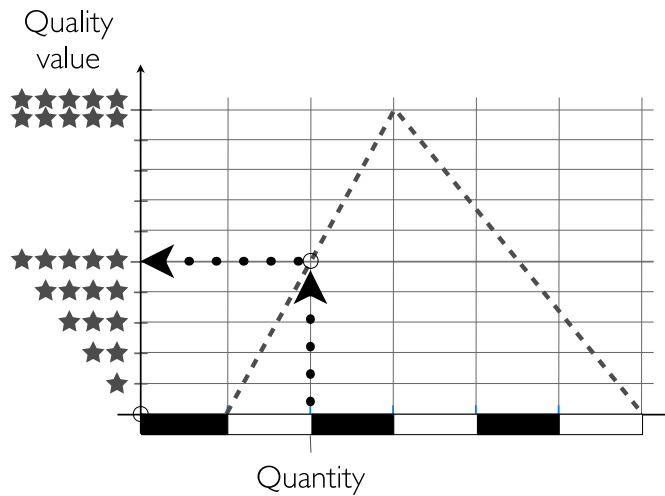
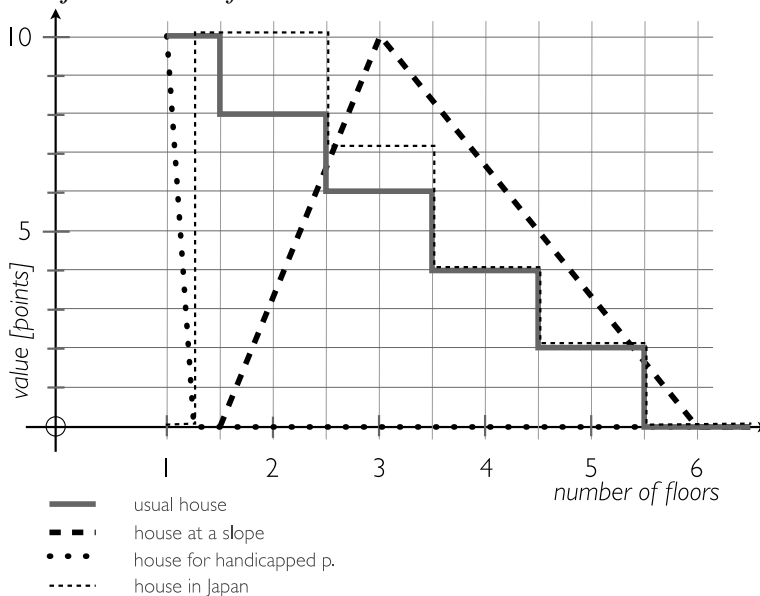


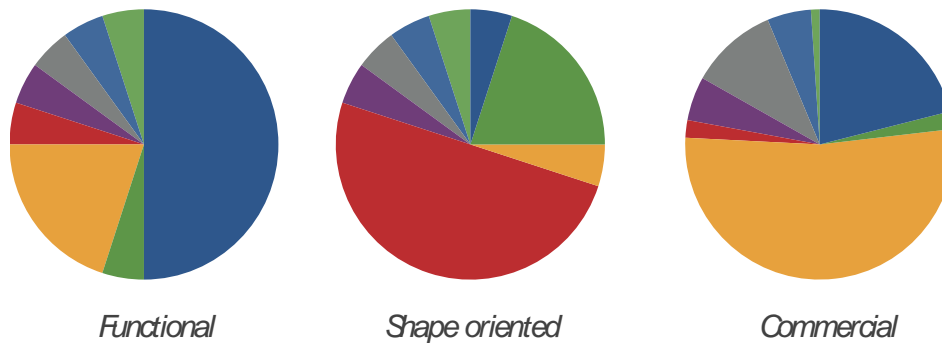
Figure 11. *Subjective Transformations*



Weighting/Rating

Weighting architectural quality is always individual and specific to a building in its specific situation. It also depends on the persons evaluating and their value system. So, the same list of criteria applied to a building leads to different results depending on the underlying value system: Architectural quality varies.

Figure 12. *Examples for Different Value Systems*



Each color symbolizes a field of criteria, such as shape (red), economics (yellow), technology (blue), etc.

Transparency

Transparency reveals all facts, steps in the evaluation process, and all decisions to other people. This is important for the presentation.

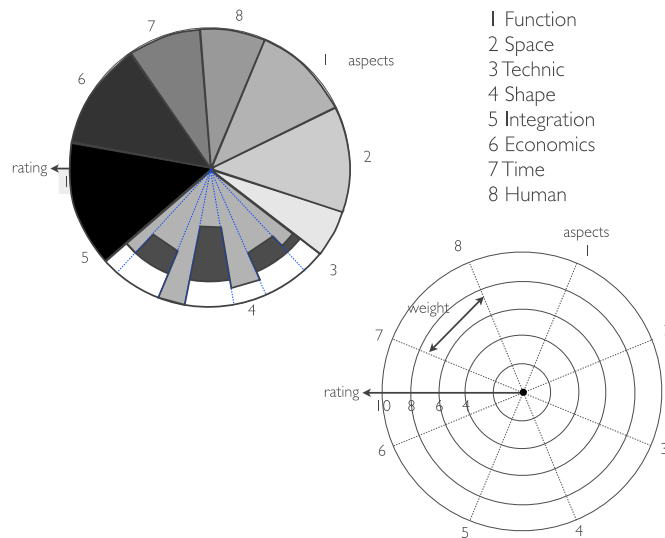
Presentation

Therefore presentation of architectural quality should consist of

- definitions of criteria and their measurement,
- functions for transformation from quantities to qualities,
- relative weightings of criteria,
- comprehensive graphs of overall quality expressing weights, ratings and values of all, or groups of, criteria.

This can be done very well by polar diagrams.

Figure 13. Presentation of Architectural Quality in Polar-Diagrams



Conclusion & Recommendations

Most systems for evaluations of buildings such as DGNB or architecture awards are forced to specific subjective issues. However, evaluating architecture in a comprehensive sense needs these points to be taken in account:

- AQ expresses the fulfillment of requirements.
- AQ is complex, not a result of form or sustainability only.
- AQ is subjective, depending on situations and people, never objective.
- Transparency is necessary and possible.
- Separation of theory, practice, and review is essential.
(like the separation of legislative, executive and adjudication).
- Developing and establishing such a method for evaluating architecture is an fundamental problem and an important task for a new Architectural Theory as a science:
 - Defining a catalog of criteria,
 - Determining rules of measurement,
 - Showing examples of evaluation.

There are other, very important, aspects regarding quality of architecture:

Quality = fulfilling needs
 + cohesion,
 + consistency,
 + harmony.

The latter three aspects were not discussed here. However they must not be neglected in discussions about the quality of architecture.

In particular, it is important to realize that architecture is like food: Everybody needs it, everywhere, all the time. Our life is shaped by architecture. Therefore we must be more sensitive towards architecture, anybody, anywhere, at any time, in a transparent and scientific way. Let's do it!