

Learning from 'Tugendhat'...

Case-based evolvement of architectural insights and communication skills

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Introduction

Learning to interpret and communicate architectural 'form' is arguably one of the most fundamental challenges of design education, particularly in the earliest years of study... How should one go about teaching 'absolute beginners' in the field of architecture to 'see'? To develop the kinds of insights that should stimulate their curiosities and analytical visualization skills for the benefit of design and research.

There are various, more or less 'recognized', methods of early-stage design learning, which may be put to use, frequently in combination.

One traditional method relies on the students to learn to design by *doing*. This is possibly the most 'proven' method which is still the standard in many institutions, including the Delft faculty of Architecture.

In this approach, there are a number of parameters which may be considered conditions for success. The most obvious is of course that the participating students have a basic level of talent and curiosity, in other words: a capacity to learn and grow academically. This is arguably essential for *any* teaching method: if the student is not willing or able to develop it is best to find out quickly and accept the consequences.

Just as important is the relationship between tutor and student...

As students begin to 'practice' architecture, by trying to create a design on the basis of a given task, so the conventions and characteristics of architectural thinking and technology and the relationships between recurring *issues* of design need to be elucidated step-by-step.

For this to work, the tutor not only has to be skilled on a pedagogical level, but also needs to have sufficient time, to give individual *attention* at the right moment. Only then can eye-openers concerning the effects and potentials of architectural design *qualities* be introduced effectively.

However, sufficient time and attention for the individual coaching of – beginning – students of architecture is increasingly becoming a limited commodity. This is particularly the case in the Netherlands, where numbers of first year students have been steadily rising over the years, whilst funding for the primary process – *teaching architecture* – is steadily being reduced, even marginalized.

The consequence is that there is enormous pressure on students – and staff – to 'deliver', to meet *targets* rather than allowing for an educational rapport which may stimulate an interactive learning – teaching – learning cycle.

So, how else might we try to acquaint 'starters' in architecture with the qualities of architectural form-giving and appreciation in such a changing educational environment?

One particularly fruitful approach, which is considered and discussed here, is to kick-start the individual learning process of 'reading and writing architecture' through the focused study of eye-opening *precedents*...

The case-study project put forward here gets first year students to 'discover' the spatial, functional and experiential qualities of one *particular* building: Ludwig Mies van der Rohe's Tugendhat House of 1929 in Brno, the Czech republic.

Precedent-based analysis as an educational Method

If we want first year students to begin to understand architectural composition, then we have to understand *what they don't understand* and find educational methods to stimulate understanding. After all, if you are not aware of what the qualities of architecture *are*, you really cannot (be expected to) design...

On the other hand, as frequently happens, a student may intuitively (even accidentally) come up with an idea that is then recognized by the teacher as having true architectural qualities, much to the surprise of the student!

What makes understanding architecture so complex, particularly to the 'uninitiated', is the *simultaneity* of expressive and tectonic phenomena within a complex 'whole'.

The fact that a successful design tends to be a *synthesis* of solutions concerning various specific design issues, rather than a simple sum-of-parts, is a situation that needs to be addressed, not ignored.

This means that on an educational level complexity needs to be 'deconstructed', so that the conditions of architecture can be recognized, defined and discussed.

So, what are the qualities we should get students to consider, how can we get them to *identify* them (getting acquainted with architectural conceptions and the related terminology) and – consequently – *judge* their effects in the designs of others and themselves?

What students need to know can arguably best be learnt via a journey of discovery of architectural *precedents*, on the basis of identifiable, 'concrete' aspects of design.

In such an exercise, groups of students, under supervision of their tutors, are set the task to *unravel* the tapestry of a *specific* design artifact and identify the architectural themes, firstly in their own right and subsequently in their relative interplay within the project as a whole.

The educational method of project-based analytical study follows a series of steps:

- *Orientation*: getting acquainted with the project and its parameters, researching the context and conditions for 'being';
- *Exploration*: learning to 'read' the composition on the basis of data (drawings, photos, texts, site information);
- *Identification*: beginning to recognize the recognizable layers of design and naming what is to be seen;
- *Interpretation*: distilling and visualizing recognizable aspects in schemes and diagrams, using symbols and colors;
- *Conclusion*: analyzing findings and characterizing these in the context of the project at hand and architecture in general;
- *Communication*: creating an informative, well organized research portfolio and presenting results and insights to others.

The ambition of such an approach is to accelerate the development of necessary architectural insights and skills in creative analysis. This is important for the students' evolving understanding of architecture, but also their own architectural design pursuits.

In this sense it may be opportune to let students as much as possible make use of the 'instruments' of design – drawings, schemes, diagrams and models, as well as graphic design – as these tend to be effective and communicative in such an analytical study, but should also stimulate their use in their design development and presentation.



Fig. 1: Views of the exterior and interior of the Tugendhat House.

The Casus: Ludwig Mies van der Rohe's Tugendhat House project

In principle, *any* design artifact could be worthy of analytical study...

It can for instance be extremely insightful to analyze one's own, familiar, living circumstances, especially at the start of the study trajectory.

However, it may be *particularly* rewarding to identify the architectural qualities of a wholly *unfamiliar* architectural object, as this tends to 'shake up' preconceptions and raise the awareness of what might *also* be possible.

In this sense, Mies van der Rohe's Tugendhat House (1928 -1930) is a particularly 'rich' architectural sample for analytical study, generally viewed as an icon of Modernist architecture and a masterpiece within the designer oeuvre...

The housing project marked an important turning point in the Architect's career, establishing Mies's international 'star' status as an architect, furniture designer and as a driving force of the Modern Movement.

The house was conceived in the same year his groundbreaking Barcelona pavilion was built and on certain levels the two are comparable, yet at the same time uniquely different. For one thing, the spacious and spatial Tugendhat family residence literally turns architectural conventions 'upside-down'. The house (set on a slope overlooking the city centre of Brno, which is 'framed' in the architectural composition) is entered from above and visitors descend through the family quarters into the free-form living level, following an orchestrated route.

At the same time the house was and is highly innovative on the levels of *structure* (a regular steel construction organizing the whole), *service elements* (including 'hi-tech' windows sinking into the basement), *materialization* (varying upon themes explored in the Barcelona pavilion), and *furnishing* (including specially designed chairs and tables) to name but a few...

In other words, there is quite a bit to be discovered for the inquisitive first year student!

First year plan analysis in practice: the Tugendhat case-study

In the developed 'designerly' study approach, students were required to unravel the dynamic qualities of the composition by first of all 'finding their way', using photographs and drawings and subsequently delving deeper into the interconnected architectural layers of functionality, routing, building construction *and* aesthetics by making (free-hand) drawings and schemes (making analytical use of colors) and elementary models.

Although it was not possible for the students to actually visit the building as it stands, sufficient material could be offered for them to begin to appreciate the qualities of the composition on the level of *dynamic perception*. The initial 'puzzle of discovery' – making

use of a selection of photos, trying to determine the proper 'viewpoint' for each of these in the floor plans, captured their imaginations.

From this point on they set about analyzing the underlying qualities of the now somewhat familiar project on a number of thematic levels:

Context:

- Time and place: historic backgrounds and conditions;
- Designer and client: position and meaning in its circumstances.

Situation:

- Location: geography and climate, urban setting, orientation;
- Functional program and conditions for daily use, natural lighting.

Organization:

- Plan: interpretation of the program as a spatial living concept;
- Routing: external and internal movement and dynamic experience.

Structure:

- Load bearing structure: principle and technical execution;
- Measurement system: plan modules, organization and variation.

Composition:

- Volumetric arrangement: overall organization and massing, positioning;
- Façade design: open and closed segments, inside/outside relations, rhythm.

Articulation:

- Materialization: combinations and treatment of components inside and out;
- Detailing: textures, dimensions, connections, fixtures and ornaments.

Information:

- Furnishings: built-in interior elements, furniture design, lighting;
- Change: patina, deterioration, transformation, durability.

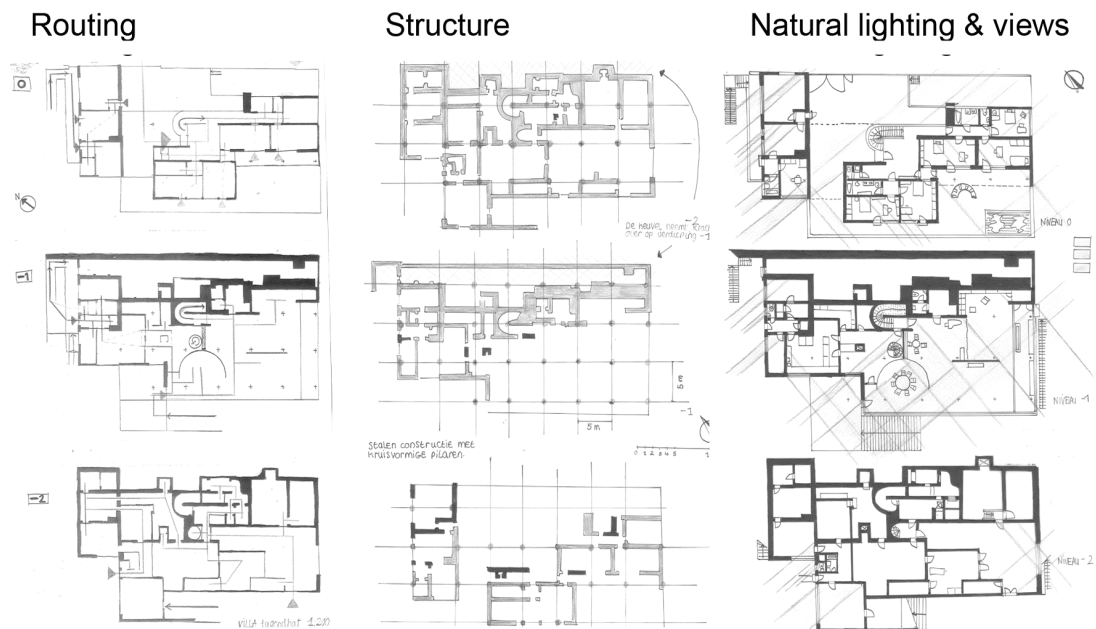


Fig. 2: A selection of student analyses from a project portfolio.

Education and research: comparison, documentation and experience

Each of the eight first semester students participating in the Tugendhat case study was required to carry out his or her own 'detective' study on the basis of this one house. In practice this meant that they tended to collaborate on parts of the study and exchange items of documentation.

This is a good way to get students to learn from each other, but the downside is that it may lead to the repetition of findings, but only presented in another 'hand'. The personal portfolio facilitated the comparison of study results, but less so the actual research *process*. For this reason it might be opportune to offer a number of *different* projects and thereby introduce a level of competition...

What worked very well in this project was that – after they had completed their Tugendhat analyses – they were required to apply the same method of analysis to another icon of Functionalist architecture: the Sonneveld House by Brinkman & Van der Vlugt (1929 – 1933) in Rotterdam.

The advantage was that – the second time round – students knew what to expect and where to look for useful clues.

Also, an added value was that this time they were able to visit this groundbreaking house (like the Tugendhat house: built for a progressive industrialist and his family, now a part of the Dutch Architectural Institute) and experience the material and spatial composition with its innovative fixtures and furnishings at first hand...

This also sharpened their awareness about similarities as *well as* distinctly different qualities between the two projects, which became apparent through systematic analytical comparison.



Fig. 3: Participants visiting the Sonneveld House in Rotterdam.

As the students who took part in this study were clearly beginners – after all they were still in their first month of study – the visualization techniques tended to be quite basic: hand drawn plans, cross sections, and simple axonometric projections on transparent paper, with schematic highlights using color pencils and hand-written explanations.

This should not be seen as a negative point, as the main intention was to *encourage* hands-on analysis and 'the guts to draw'.

Nonetheless, in later phases of the curriculum, more articulate instrumentation – notably models – may be desirable...

In the education and research programs of the Delft Form and Modeling Studies group the emphasis has increasingly come to lie on the development of physical and digital modeling techniques for the benefit of analytical project-based studies. Recently, model-based research has been carried out in the context of the House of the Future project (also discussed at the DCA conference) and in context of the Form and Modeling Studies research program.

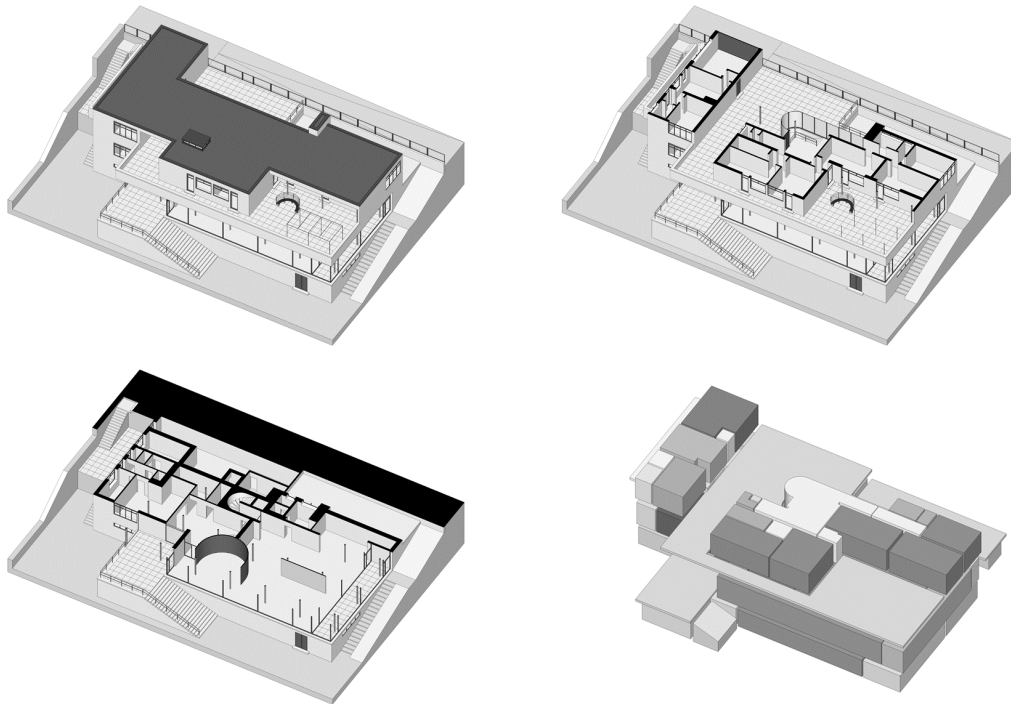


Fig. 4: A selection of 3D Sketch model images of the Tugendhat House.

Conclusions and perspectives

In architectural design, 'learning-by-doing' is arguably a life-long experience... If, however, we want to inform students who are *new* to the world of architectural design effectively – and *economically* – we need to start raising their conceptual awareness from the outset.

This means we have to begin to stimulate the opening of their 'analytical eyes' to the formal conventions of the architectural discipline – and simultaneously: develop an 'ear' for its jargon – by actively studying design artifacts, using characteristic instruments of design.

The idea behind the case-study based analysis method discussed here is that by selecting one or more sufficiently evocative, complex architectural 'exemplars', students may become challenged by the creative analysis of architectural artifacts to such an extent that it will also inform analytical approaches to their *own* design decision-making. The challenge is to begin to make students aware of the *systematic* nature of particular choices determining a building's appearance and experience. Compositional aspects that figure in buildings of various levels of complexity and can be identified as such...

The effect of the method of precedent-based analytical study presented here can lead to a 'leap in consciousness' for students of architecture, particularly for 'absolute beginners'... A rewarding *learning experience*, not only for the students themselves, but also for academics in the context of educational development and *research*...