

# De-coding the Vernacular

## Dynamic Representation Approaches to Case-based Compositional Study

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*Representational approaches have always played an important role in the design-driven development of built environments, the analytical study of architectural compositions and their effects.*

*With the introduction – and successive steady development – of computer-based platforms of visualization, the professional and intellectual palette of designers, as well as researchers, have expanded considerably. Nonetheless, in recent years the opportunities for systematic scrutiny and understanding of the expressive qualities of design proposals and artefacts have all too frequently been overshadowed by high-flying conceptual developments and seductive representation modes.*

*It is time that the objective description and unravelling of architectural compositions – so to speak the discipline of Ekphrasis in design practice, education and research – is once again given more prominence in architectural discourse and debate.*

*The central idea behind this contribution is that, by linking instruments of design with the methods of formal composition and decomposition, renewed opportunities for representation-driven study in a scholarly context, focusing upon elusive compositional attributes and their workings, may be given a new impulse.*

*The project that is presented here concerns a case-based explorative study into the domains of aesthetic convention and invention, making use of a variety of virtual and physical representation techniques. These include digital as well as tangible modelling and sketching approaches (separately and in combination), in conjunction with computer-based image manipulation techniques, making use of systematic data identification and denotation. The opportunities, merits and shortcomings of the computer-based and physical visualization approaches, which were applied and tested, are discussed on the basis of results and findings from the ongoing AA Variations project.*

**Keywords:** *Design representation; Computer-based sketching; Virtual and physical modelling; Compositional variation; Contemporary aesthetics.*

## Introduction

The ambition of this explorative study was to contribute to the furthering of insight and knowledge, concerning the understanding of compositional strategies and their effects in relation to design development and perception.

What kinds of aesthetic conventions and choices may be identified? Which types of compositional issues should be considered as ‘determining’ factors for a building’s appearance and impact upon the beholder? How might we go about studying such conditions in such a way that the expertise of the designer may be made instrumental in the context of explorative, imaginative architectural design *research*? In which ways can computer-aided visualisation approaches be made instrumental in imaginative, methodically transparent and consistent composition study?

## Designerly Composition Study Approaches

Scientific research into the various interrelated domains of Architecture all too often runs the risk of being dismissed as irrelevant by those who should in principle benefit most: design practitioners and other actors involved in design decision-making.

One way to bridge the apparent gap between ‘science’ and ‘practice’ might be to get designers more actively involved in research by doing what they do best — *designing* — as Geoff Matthews has suggested (Matthews, 1996). This may pose a problem, as the goals of design and scientific study as it were move in opposite directions and should not be confused. However, there is much to be said for bringing the two fields of intellectual enterprise together in *design-driven research* initiatives. One way to bring this about may be to introduce modes of *designerly enquiry* (Archer, 1981) into research by making use of the *methods* and *instruments* of design in the context of case-based research projects.

In a recent survey, an attempt has been made to identify potentials and types of design-based

research, including a category of approaches making use of such ‘designerly’ study procedures (Breen, 2005).

If one wants to learn more about the workings – and effects – of designing activity, it is important to know *what* to look for and to identify the kinds of issues and interrelated levels of design which are at play in architectural composition.

In the course of another range of studies an attempt was made to identify such recurring compositional themes, as determining factors for a building’s *appearance* (Breen, 2004).

This typology of conceptions and interrelated building domains formed the underlying framework of reference for the AA Variations project.

## The AA Variations Case Study

By making use of the aforementioned conceptual framework, relating to different – interactive – levels of compositional expression (such as: overall form, structure, façade arrangement, materialization, detailing and information), an attempt was made to ‘decode’ the formal attributes of a varied ensemble of artefacts, via a series of iterative explorations, involving visual analysis, comparison and formal variation.

The subject matter: a collection of a dozen buildings of relatively modest size. Freestanding structures combining dwelling with workspace facilities, all to be found within the boundaries of one rural municipality in the Netherlands: Aalsmeer (hence: AA Variations). A community situated just south of Amsterdam, which has since around the beginning of the twentieth century been associated mainly with market gardening, trade and recreation.

All of the selected buildings adhere to the specific local/regional context yet are clearly informed by different national/regional ‘styles’, i.e. aesthetic conventions. Stylistically, they span a period of well over a hundred years. The selection ranges from an exemplar of a traditional, local vernacular building type to a state-of-the-art fin-de-siècle ‘globalization’

Table 1  
An overview of the twelve  
AA Variations case study  
projects:

|  |  |   |
|--|--|---|
| <b>1.</b><br><b>Traditional Vernacular</b><br>1825   | <b>2.</b><br><b>Provincial Eclecticism</b><br>1903 | <b>3.</b><br><b>Early Rationalism</b><br>1912       |
| <b>4.</b><br><b>Late Eclecticism</b><br>1913         | <b>5.</b><br><b>Regional Expressionism</b><br>1923 | <b>6.</b><br><b>Early Modernism*</b><br>1925        |
| <b>7.</b><br><b>Early Neo-traditionalism</b><br>1926 | <b>8.</b><br><b>Pre-war Modernism</b><br>1930      | <b>9.</b><br><b>Late Neo-traditionalism</b><br>1957 |
| <b>10.</b><br><b>Post-war Modernism</b><br>1970      | <b>11.</b><br><b>Nineties Eclecticism</b><br>1992  | <b>12.</b><br><b>Global Vernacular</b><br>2002      |

design, more or less representative of this era. The central section of the ensemble consists of a group of intriguing samples of early modernism and traditional revivalism from the Twenties and Thirties.

### Project-based Variations

The project represented here as an exemplar of design driven study is an early-modern market gardener's house with integrated flower shed, designed by Dutch Functionalist architects J. Duiker and B. Bijvoet, built in 1925. This emblematic work, with its distinctive sloping roofs, proved to be a turning point in their oeuvre, which up to that time had been stylistically inspired by the work of Frank Lloyd Wright (Molema, 1996).

The preliminary design drawings, from 1924, still reveal rudimentary ornamental articulations, but the project as it was built demonstrates the kind of rigorously elegant modernist aesthetic, which would become the trademark of their later work. The modest wood frame structure with its circular stone tower, horizontal wooden cladding and steel window frames did not prove to be very durable. Structural problems and functional limitations eventually led to drastic alterations, to such an extent that by the late 70's the house was only barely recognisable by its characteristic contours. In 1980's the house acquired the status of 'young' monument and was subsequently reconstructed under the supervision of architect Claudia Breen in 1988, albeit without the

two walled terraces.

On the basis of design artefacts and interpretations, a series of historically verifiable as well as *fictional* design variation studies was carried out, employing different visualisation techniques.

### The Medium as Method

A conviction, underlying this study as a whole, is that design *and* research in architecture stand to benefit from the active, imaginative use of design media. To paraphrase Marshal Mc Luhan's famous mantra, with a twist, our central thesis might be defined as: *the medium is the method* (Breen, 2000).

Design media play a crucial role in all layers of design driven analysis and development. As John Zeissel has noted, designing (but also design based research) is seldom straightforward and linear, but rather tends to follow unpredictable, *iterative* 'loops' of development, analysis, decision-making triggered by various forms of *imaging* (Zeissel, 1984).

There are parallels between bottom-up design processes and top down analytical design studies. These can be compared and distinguished. Both processes are searches that in their own ways can be characterised as being *iterative*. A design process starts from scratch, the result is unknown and its conditions ill defined. Through the generation of variants the 'solution' is approached step by step.

However, in a design *analysis* process, the design object is available as an artefact, even though this is

not always straightforward. In this case it is the method of analysis that is not determined and as yet ill defined. Via iterative steps a fitting methodological approach (as a goal in its self) needs to be developed. Once the method is found, other case subjects (i.e. other designs) can be analysed in more or less similar ways. By working on the subject matter, by using different visualisation and notation techniques and tools, different hypotheses and views on the subject may arise. Performing such iterative analyses, within a clearly defined methodical —i.e. *media*— framework, may arguably be recognised as a new ‘way to study’ (De Jong, van der Voordt, 2002).

On the basis of a ‘map’ of design media (Table 2), drawn up previously, three (combinations) of media approaches were put into operation for the benefit of this study. These media-based methods are described briefly and illustrated with some intermediate results.

### 3D computer aided physical modelling

Inspired by previous, influential physical model-based studies, such as those initiated by Max Risselada (1987), an analytical project was set up, with a selection of the AA Variations projects as the subject

matter. Participating students were asked to re-interpret one of these designs by constructing scale models that would give insight into the architectural qualities of the designed object. Besides 3D printing techniques, extensive use was made of laser cutting techniques on the basis of 2D CAD files. A number evocative models was produced, several of which were exhibited in the context of our ongoing Models in Architecture project.

### 2D digital image based variation

Another approach, which was used to stimulate the generation of designery variations, was image manipulation, using digital photo-editing software. In a series of variations on the basis of the Duiker and Bijvoet house, a photograph of a physical model from the previous exercise was transformed in different ways. The resulting images are intended to reflect upon different ‘historical’ states of the house (the preliminary design, the realised building, the deplorable state before restoration and the state of the house after reconstruction). Furthermore, ‘fictitious’ variations were generated, on the basis of the original information and using ‘sampled’ material, to indicate the effects of different form, cladding, win-

Table 2  
An indication of the four Design Media in types:

|  |   |
|--|---|
| <p><b>1.</b><br/><b>Drawing:</b><br/>Documentation-, Presentation- and Perspective Drawing, Coding, Sketching.</p> | <p><b>4.</b><br/><b>Symbol:</b><br/>Sign, Text, Scheme, Logo; Diagram, Graphic Representation &amp; Design.</p>         |
| <p><b>2.</b><br/><b>Image:</b><br/>Photography, Film, Collage, Design Simulation, Image References.</p>            | <p><b>3.</b><br/><b>Model:</b><br/>Scale Model, Virtual Model; Imaging Model; Interpretative Model; Deconstruction.</p> |



Figure 1  
3D physical modelling on the basis of 2D CAD files.

Figure 2  
2D variations on the basis of  
digital photography.

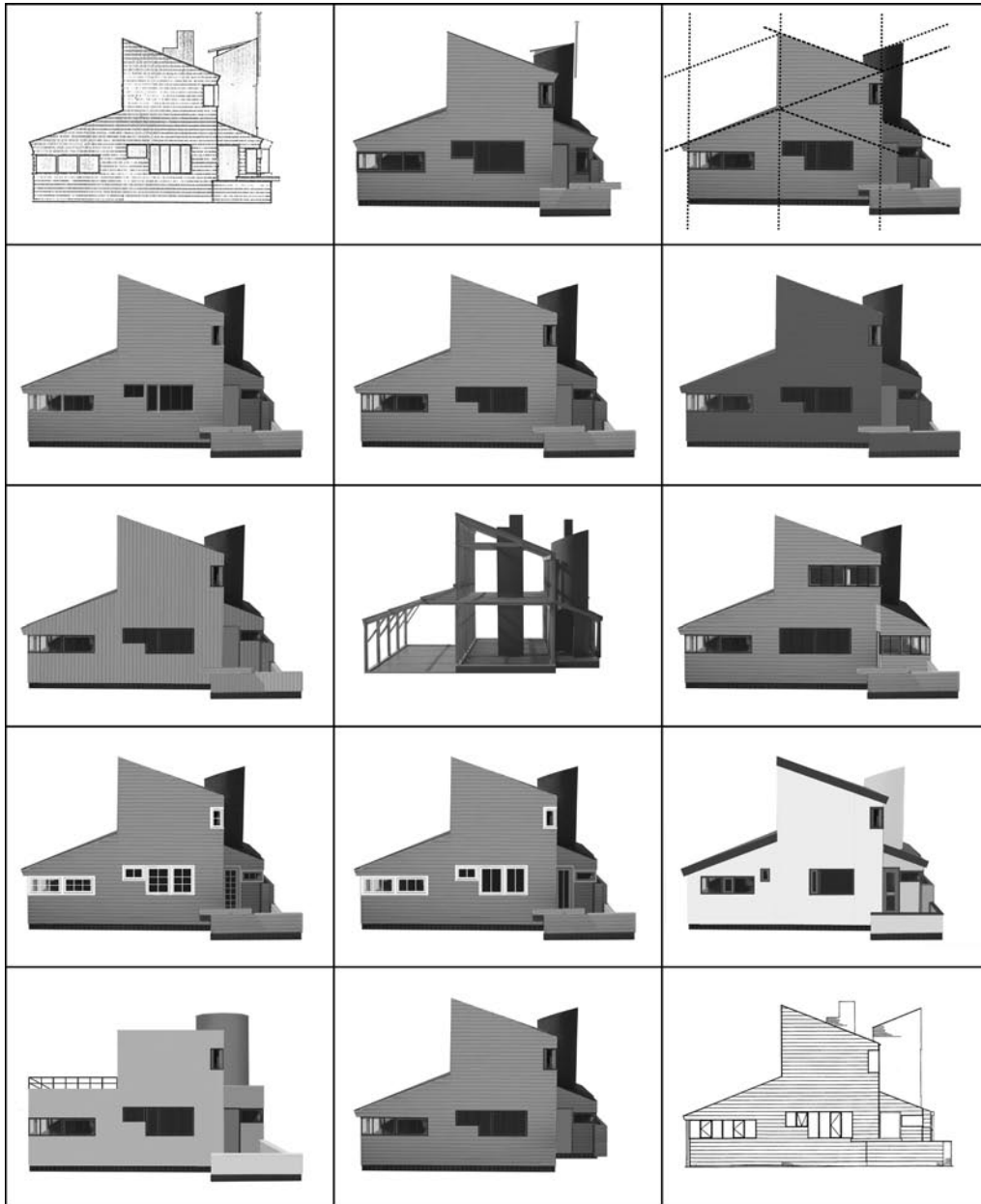
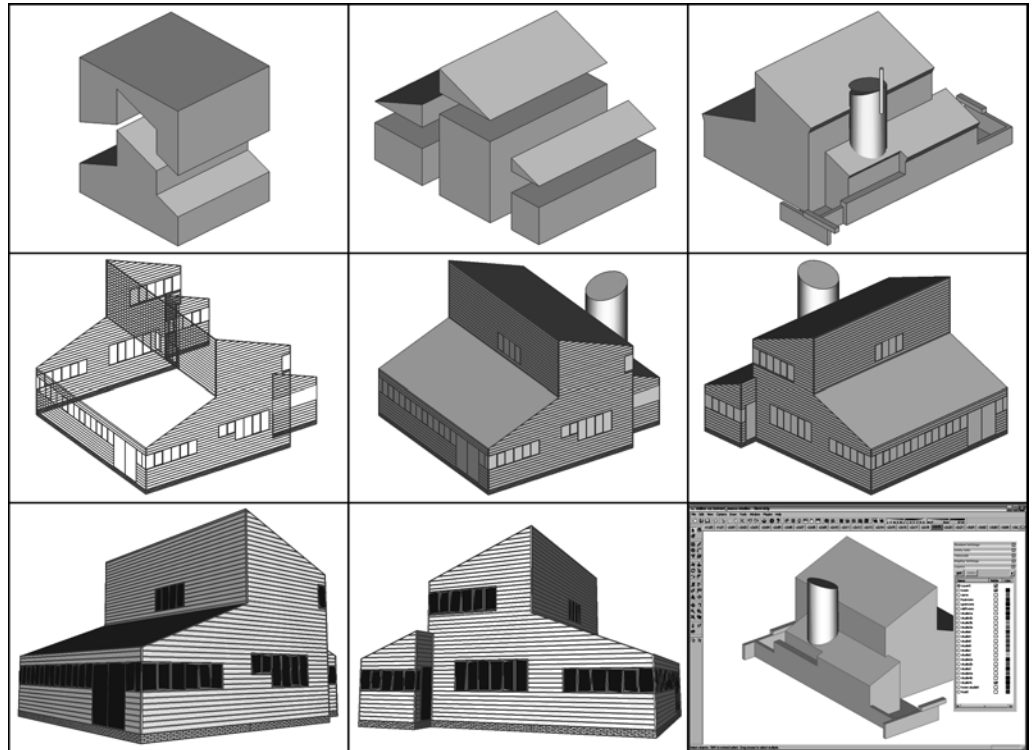


Figure 3  
3D analytical variations using  
3D Sketch-software.



low- and colour configurations.

### 3D digital sketching and analysis

The third approach was intended to develop and communicate more fundamental issues of composition concerning the case-study projects. By combining sketching and virtual modelling, an attempt was made to unravel characteristic formal qualities of the buildings. To develop a consistent, insightful imaging 'vocabulary' for the analysis of the AA series as a whole, the Duiker and Bijvoet project was used as a pilot study. In this approach, 3D computer 'sketching' software proved to be most rewarding, due to the relative directness of operation and the graphic qualities of the imaging output. Important issues that arose – clarity, layering and sequencing – are

discussed briefly in the next paragraph.

### Reflections on Clarity, Layering and Sequencing

The 3D analytical approach in this study is reminiscent of the 'Creativity through Clarity' discussion, initiated some ten years ago in Białystok, Poland (Breen, Stellingwerff, 1996), whereby we argued that visual clarity should be considered as a prerequisite for the controlled generation and precise evaluation of formal variants in design research.

In this exploration of for analytical representation methods, several CAD methods were used and compared. On the basis of insights and findings, resulting from the ongoing AA Variations study, we

would like to put forward the following reflections concerning the potentials of 3D Sketching software in the context of the scholarly exploration of aesthetic paradigms in architecture.

### Clarity

In recent discussions with faculty colleagues, CAD modelling and rendering programs (like Maya and 3D-Studio) were compared to the capabilities of 3D Sketch software (such as SketchUp). Some experts hold that that digital Sketch-style platforms, with their specific pre-sets (in terms of visual representation types), do not offer the freedom of expression afforded by the more 'sophisticated' modelling and rendering programs and thereby limit students and researchers in the development of their own personalized presentation styles.

However, it is our considered opinion that it is precisely the *clarity* and *directness* which is afforded by Sketch-style representation software, notably: the balance between AutoCAD-like exactness and render software image quality, that makes them particularly promising for the evolution of design evaluation models in which the formal and structural aspects of a design may be unravelled and demonstrated objectively.

### Layering

In the 3D Sketch studies, *layering* options were used in two distinct ways. For the structural analyses and building deconstructions, layers were applied in their original role: to distinguish *different aspects* within a complex whole in order to develop and view them as separate entities. Different layering configurations were utilised to identify gridlines, construction parts and façade elements.

An alternative, less typical use of layering was to classify and catalogue complete composite models, each representing a design variant *as a whole* (Figure 3).

All in all, determining a systematic layering approach proved to be a study in itself. Various

(re)combination styles were tested, before a dynamic layering format was chosen for further study.

### Sequencing

Another useful 'structural' concept in a program like SketchUp, which allows for interaction between different sets of layers and viewpoints, is known as *pages*. Such 'pages' can be used to make a presentation in which a *sequence* of layers can be run and switched on and off, creating different perceptions of the case-study project. The aspect layers can be combined in different sets in order to reveal specific spatial and/or structural relations in the design, leading to insights concerning the compositional elements on the level of space, structure and matter. A full range of pages can be exported as an illustrative animation file or as a collection of analytical illustrations.

The study also showed the strength of working with an object library of groups / blocks / components with basic elements and their 'descendants', whereby section of combinations and presentation sequences can be used to underscore the research arguments imaginatively and convincingly.

### Conclusions

What did the study try to achieve and to what extent did it yield new insights and perspectives?

Firstly, the study was intended to bridge the gap between the 'act' of designing on the one hand and the scrutiny of the outcomes of design in a scientific context, by infusing the more analytical procedures with the working methods – and particularly the representational instrumentation – of the design practitioner. Thereby the study became less detached from the subject matter. The way designers develop intermediate design variations, which may be compared and evaluated, became an essential aspect of the *research* method.

Secondly, the initiative was a concerted attempt to bypass the supposed schism between the more traditional 'eye-hand' techniques of physical representation and the 'choice-based' virtual modelling

techniques of CAAD. This was achieved by using different approaches not only in conjunction, but particularly in *combination*.

Thirdly, the project attempted to give an impulse towards creating a renewed interest concerning the 'fundamentals' of architectural expression and composition theory, through active – but systematic – representation-driven enquiry. Rather than focusing on the results of the 'international elite' of renowned designers, who tend to dominate architectural publications and arguably achieve fame precisely by *twisting* traditional aesthetic conventions, a conscious choice was made for more modest 'vernacular' examples. In this way, the workings of compositional convention and invention may be made recognizable in such a way that they can contribute to a more objective understanding of what it might be that makes architecture 'tick', in the perception of the designers themselves as well as that of the public at large.

Lastly, the study appears to justify the notion that the active and creative use of imaging platforms such as 3D modelling, 2D image-based variation and 2 and 3D sketching – computer-based as well as tangible – may be prove increasingly beneficial in research aimed at the 'decoding' of architecture...

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