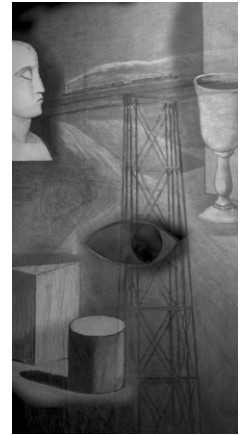


Truth and credibility as a double ambition: reconstruction of the built past experiences and dilemmas

By Geeske Bakker*, Frans Meulenberg and Jan de Rode



The reconstruction of our historical heritage involves a few fundamental problems. We mention only two. There can be many interpretations of scientific data which can result in different reconstructions: however, the appearance of an image or animation in a digital format out of context is nearly always misleading. Therefore, the verisimilitude of the computer-based image should be questioned in the same manner as a picture in a journal, but the digital medium seldom facilitates this questioning. Furthermore, the diffusion of visualizations raises concerns; currently there is no established ontology to moderate the process. This article is based on our own experiences and attempts to contribute to this ontology. In this, scientific 'truth' will go hand in hand with artistic credibility, which to many may come as a surprise. Copyright © 2003 John Wiley & Sons, Ltd.

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First a short excursion into the—never to be written—biography of the 3-D designer Jan de Rode, in which the cathedral of Cluny plays a prominent role. As a student at the art academy he made a special study of Cluny cathedral, which was destroyed during the French Revolution. For educational purposes he made a number of A1 format floor plans, cross-sections and perspectives which, together, had to convey an image of what the church may have looked like. Years later, in the early 1990s he saw in Cluny the reconstruction made with the help of computers and commissioned by IBM France.¹ For him it was truly sensational: to walk around in a non-existing building, to have views or cross-sections from any random point of view, the possibilities seemed to be unlimited. In those days a whole team of programmers was needed to write the special software for this application. But now we have ready-made 3D programs, so, in principle, we do not have to worry about the technical feasibility of the reconstruction. Making a 3-D model no longer seems to be a goal in itself. For the scientist it is a means to show the results of the archaeological and architectural–historical research.

For the public it is a way to see and experience what things were like before.

Box I: Virtual reality as a presentation tool

- Quick and easy overview of the building's history.
- Presentation can follow new results of research.
- Physical structure of the site stays as it is.
- Presentation doesn't depend on time or place.
- Possibility of personalization.
- Possibility of repurposing.

The content of the 3-D model stresses the justification of the scientific validity. From the 'maker's' perspective we cannot escape this point, but the crux of our text will be the 3-D model as a means of presentation. We will plead for artistic quality and integrity, which are as relevant as the scientific tenability. Besides 'truth' 'credibility' deserves our full attention.

Interpretation and Validity

The first question is: how do we realize a scientifically justified reconstruction? Cooperation with specialists in

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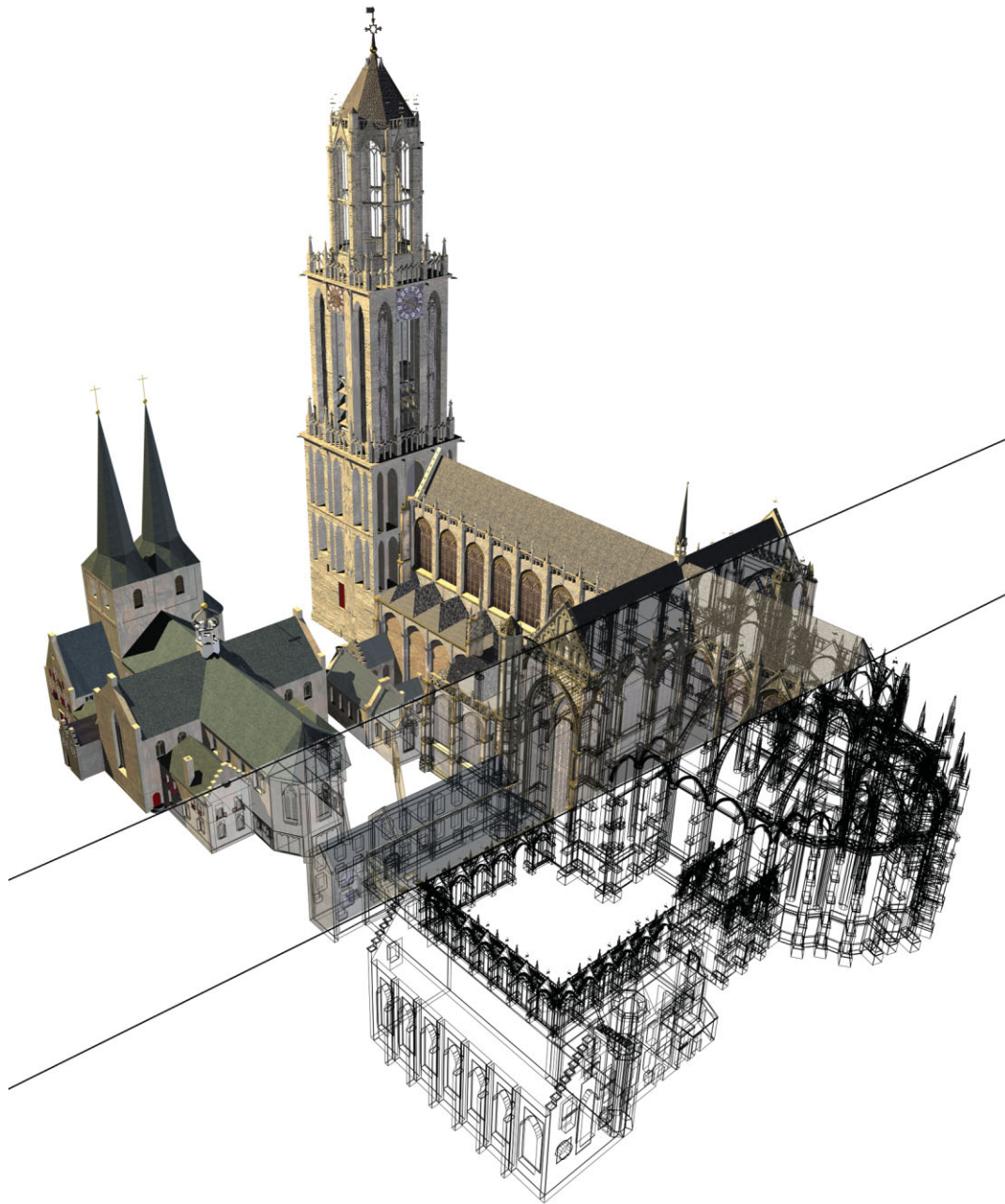


Figure 1. Utrecht, Cathedral Square 1517, DeroDe3D 2002.

various fields is vital: archaeologists, historians, building historians, art historians, engineers, architects and 3-D designers. The composition of the project group will depend on the project. The archaeologist will play an important role in the reconstruction of a vanished building of which virtually no written sources or pictures exist. On the other hand, the restoration architect

will be very important in the reconstruction of an earlier building phase of an existing building, and the art historian, of course, for the reconstruction of a building with a lot of paintings. The members of the project group must work together to try and interpret the available information in the best possible, well-considered way. During these discussions visualization already

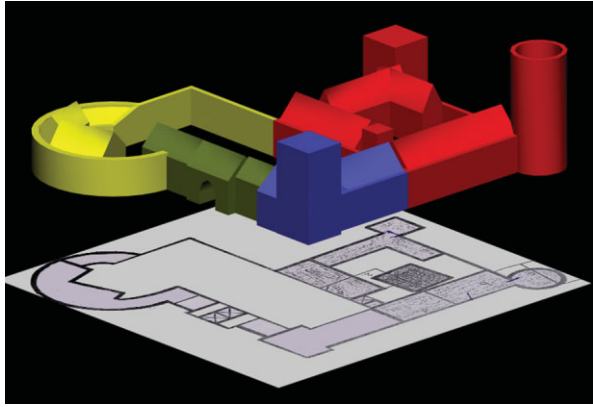


Figure 2. Stevensweert Castle, DeroDe3D, 2000: analysis of building volumes.

plays a (service) role. The first visualization of the Romanesque Cathedral of Adelbold in Utrecht (consecrated in 1023), for example, showed² that the staircase tower could never have been where the researcher had put it: in the 3-D model the staircase appeared to lead directly to heaven and not to the next floor, which was probably what it did. The overall 3-D sketch turned out to be most enlightening in the discussion about the correct position of the staircase tower. One thing has to be emphasized: the designer models in 3-D on the material the researchers provide him with. Nothing less, but certainly nothing more. If the researcher decides that the staircase tower that led to heaven, on second thoughts, must have been shorter, the designer will make it shorter. If the researcher decides that the tower (as in this case) was located elsewhere and could have led to another floor, the designer will move the tower.³

This stage, which eventually leads to a 'standing' building, has to be specified in a sort of 'scenario', in which every important aspect is dealt with successively, for example the archaeological or architectural-historical research results, ideas about building volumes, the arrangement of the wall space, the materials used, the paintings, the leaded windows, the sculptures. Every building will have its own accents and different important aspects, but the numerous and various elements will all be linked. The final stage of the reconstruction is the 'authorization phase', in which an authority (preferably a building historian or archaeologist of (inter)national renown) puts his or her name to the project: this is what the building would have been like. Putting their 'name' to the project is essential for acceptance in professional circles and implementation with the public.

Box 2: Data

- Sufficient data have to be available for the designer to base his 3-D simulation on.
- An authoritative expert has to cooperate on the development of the 3-D simulation to bring together the data from the various disciplines in one unambiguous entity and to make decisions when data can be interpreted differently. If this is not possible the alternatives must be clearly separated. It is clear: the expert deals with the contents, not the 3-D designer.
- The 3-D designer bears no responsibility for the ultimate content of the simulation. Still, experience shows that the 3-D designer has to be familiar with the discipline. For example, he has to be able to interpret floor plans, and he has to know about the characteristics of a style and historical building materials.
- The designer and the expert have to consult regularly on the content of the simulation during the production process. The reconstruction is the 'translation' into a 3-D model of the image the expert has of the building. Constant checks have to make certain that the 'translation' corresponds to the image of the researcher. Practice shows that, during the process, the 3-D designer as well as the researcher adapt the image they have or generate.

The discussion regarding content faces a number of dilemmas, such as:

- How do you deal with contrasting visions? Do you choose one option or do you give alternatives?
- How do you cope with lack of knowledge or missing data?
- Do you show the difference between what is 'certain' and what is 'doubtful' or even extremely dubious? What about acknowledgements? To what extent does a reconstruction have to be verifiable? How detailed do you have to be?

We take as an example a reconstruction of the castle in Stevensweert (Nederlands Limburg, sixteenth- and seventeenth-century phases). A seventeenth-century floor plan shows a certain building surface in the south-eastern corner. The local researcher, Mr Rutten, supposed this was a turret. It was consequently reconstructed.

In a consultation Mr Janssen, professor in the study of castles at the University of Utrecht, expressed a totally

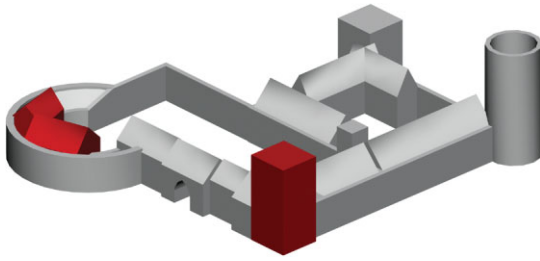


Figure 3. Stevensweert Castle, sixteenth century, DeroDe3D, 2000 (certain = grey, doubtful = red).

different opinion about this building volume; a turret would certainly not have fitted in the building type that was common then—a clearly different view.

More data and other sources could have solved the problem, but none were available. We did not show this uncertainty in the reconstruction. It could have been

possible: one view in blue, for example, the other in red. Eventually, and after careful consideration, we opted for an inconspicuous small building on the building surface shown in the floor plan. What is 'certain' has been developed clearly and in detail in the reconstruction, what is 'doubtful' has been left aside for the moment.⁵

This paragraph focuses on content and dilemmas regarding content: the 3-D reconstruction as a means to show research results, such as the contemporary version of the floor plan, cross-section, perspective or the axonometric projection. If we want to use the 3-D projection to show the public how things were, we also have to concentrate on the presentation or the 'form'. The content and its form of presentation are twins, but fraternal twins. They resemble each other as much as they differ from one another. But they need one another: content without form is like beaten eggs, form without content an empty shell. Time to pan the camera and to focus on 'form' or presentation.



Figure 4. Stevensweert Castle, sixteenth century, DeroDe3D, 2000 (certain = grey, doubtful = red).

The Storyteller Tells a Story

The presentation has to be treated as carefully and as meticulously as the content. For the presentation also experts must cooperate: the scriptwriter, the artist/designer and the researcher.

And once again we are faced with dilemmas, such as:

- What will be shown and what not? Why? And to whom? Does 'content' prevail or are there nuances? In other words: how does one water the scientific wine?
- Narrative aspects: how does one tell a 'thrilling' story? How are the reconstructions set in their historical and social context? How does one negotiate the area of tension between 'amusement' and 'information'?
- The 'image' alone is not always sufficient: what additional possibilities are there (physical remains,

preserved objects, commentator's voice, music, interviews, historical visual material, background noise, film, video, contemporary images)?

- Which picture carrier do you choose? CD-ROM, DVD, Internet, exhibition, illustration in a (specialized) magazine?
- How important are the artistic aspects: colouring, point of view, incidence of light?

The answer to all these partial questions is linked up with one notion: 'the story of the site'. The reconstruction of the lost building plays an important role here. But the 3-D reconstruction itself is fundamentally 'without a story', just like 'history'; only the story brings the building history to life. The story works as a sort of binding agent. Human beings are sensitive to 'stories'. Telling stories is a vital element in the fabric of society: thus identities and communities are built. It cannot be a mere coincidence that, for example, modern advertisers are very much aware of the power of expression of the



Figure 5. Utrecht Cathedral 1517, DeroDe3D, 2002.



Figure 6. *Utrecht Cathedral 1517, DeroDe3D, 2002.*

story: generally speaking, the power of the story lies in the fact that it communicates with the totality of our being—rationally because the story has an explanatory function; emotionally because it raises and releases tension; physically because it has effects on heartbeat, blood pressure and breathing; and psychologically because it can lead to other thoughts and feelings. A good story informs and inspires, eases the mind and encourages, motivates and mobilizes.⁶

Whoever frowns at this must realize how close science and story are. Stories have always been linked to certain sciences, first theology and later historiography. But also philosophy, law, psychology, sociology, anthropology and literature are very much 'storytelling' sciences.⁵ Only a science such as mathematics seems to exclude itself here, as far as it limits itself to its own formal language.

Whoever tells the architectural-historical story as it is under discussion here must first of all believe the facts—not only the scientific data, but the 'facts' in all their complexity. This belief in the facts must be linked to the belief in the story, which is in fact a sort of



Figure 7. *Utrecht, Buurkerk, Pieter Saenredam, 1635.*

extension of the facts. The story is what reconstructs memory, brings order to the past, creates and links up meanings. The story also involves the reader/spectator in the facts and with the protagonists and keeps them involved. And someone who tells the architectural-historical story may (just like a writer of fiction and non-fiction) use every available art-historical, artistic and even literary technique (such as the choice of a point of view, structure and plot). And because the story in which the 3-D reconstruction plays an important role is by definition many-voiced (because it is based on different scientific disciplines) the 'storyteller' has to have what it takes. An arduous task reserved for ... the artist.

The Artist as a Storyteller

As far as 'the story of the site' is concerned, there is more than just the reconstruction—it is about telling a multi-layered story of a particular site to a specific public, using all the possibilities the old and new media offer.⁷ The story is aimed at an audience and wants to learn something from the site and to teach something about the site; it wants the spectator to experience the site in all its magic. And magic begs for stylizing. A 3-D simulation, the protagonist of the story, is no more than the most recent means of representation of the site: drawing, painting, engraving, photograph, film, scale model and now a virtual model. The protagonist in 'the story of the site' is therefore a representation of the site and is thus by definition the object of interpretation. We convey an impression: it will have been like this. We cannot claim anything more. What is shown is not 'the truth', but an 'interpretation'. The objectivity of a computer model is relative, just like the objectivity of a reconstruction on paper. And we must watch out for a beatification of the medium as such. A 3-D model will be an appropriate means for specific goals, but a drawing, a floor plan—the well-tried methods of representation—will also remain valuable. The most appropriate method will have to be chosen for a specific target group, for a specific objective. And—just as with the well-tried methods—what the spectator sees is to a large extent determined by what is shown (see Box 1 for the possibilities offered by virtual reality as a method of representation). The protagonist in the story, the site itself, gets a certain form, but also a certain character and generates a certain atmosphere. Therefore, it is of the utmost importance that the person responsible for the



Figure 8. 'House by the railroad', Edward Hopper, 1925.

final image of the protagonist is someone who is used to working with images for a specific public, such as an artist. Ideally the 3-D designer knows about 3-D technique, archaeology, art history, architecture, the art of painting. He is the contemporary Saenredam whose images are all about light (light that falls on, for example, a floor, which absorbs part of that light and reflects another part, after which this reflected light is reflected on, for example, a wall, and so on). He realizes that light tells its own story.

In other words: objective light does not exist. It varies, from the sacral light in the interiors of Saenredam⁸ to the effusive and ruthless light of Edward Hopper.⁹ Or take cinematography: Stanley Kubrick is one of the prominent film-makers of the twentieth century. To achieve an authentic representation of the eighteenth century in the film *Barry Lyndon* he did not use artificial light: he shot the scenes by daylight, and some interior scenes by candlelight. A large part of the film budget was spent



Figure 9. *Barry Lyndon*, Stanley Kubrick, 1975.



Figure 10. Horn Castle 1600, DeroDe3D, 2002.

on the development of special lenses, used exclusively for this film.

Famous stage directors such as Pierre Audi and Peter Greenaway 'work magic' with light.¹⁰ This is no name-dropping: we honestly believe that the 3-D designer has to be a painter, a film director and a stage designer, all in one. He wants to deliver artistic integrity (besides scientific integrity). The maximally achievable scientific foundation is in fact the starting point for the designer/artist who strives for the maximum artistic credibility.

Consequently, we believe that in the presentation of the historical heritage two forms of authority are of equal importance: the scientific and the artistic. The scientific authority prevails in the 3-D reconstruction itself, the artistic authority especially in the presentation thereof. The one is aimed at 'truth', the other at 'credibility'. Here, history, architecture and art amalgamate. A quote from the poet—Nobel prize winner Derek Walcott—to end: 'Art is the nostalgia of history'.¹¹

Box 3: The storyteller: the artist

- The 3D reconstruction plays an important role in the multi-layered story of the place.
- The story informs and inspires, eases the mind and encourages, motivates and mobilizes.
- The story of the place is aimed to an audience and wants to learn something from the site and to teach something about the site.
- The storyteller—the artist—uses all the possibilities the old and the new media offer.

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Jan de Rode is an artist by profession. He has held exhibitions of his work in Amsterdam, Brussels and Paris. He bought his first computer in 1997, in order to try to build a bridge between his artistic expression and his interest in cultural heritage. His latest projects in this field are presentations on DVD in which 3D visualisations are integrated with video images and historical material. On the other hand he made the design for the large-scale Christmas exhibition of 2002 in the Museum Catharijneconvent in Utrecht, and he executed a complete cycle of wallpaintings in an 18th century mansion in France.
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Frans Meulenberg studied Dutch language and literature. Now he is working as a freelance science-writer and he is also parttime researcher at the Department of Philosophy, medical ethics and history, Erasmus University Rotterdam. Currently he is working on the EC Project Science, fiction and science fiction—The role of literature in public debates on medical ethical issues and in the medical education. He has a keen interest in the boundaries between science and culture.
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