

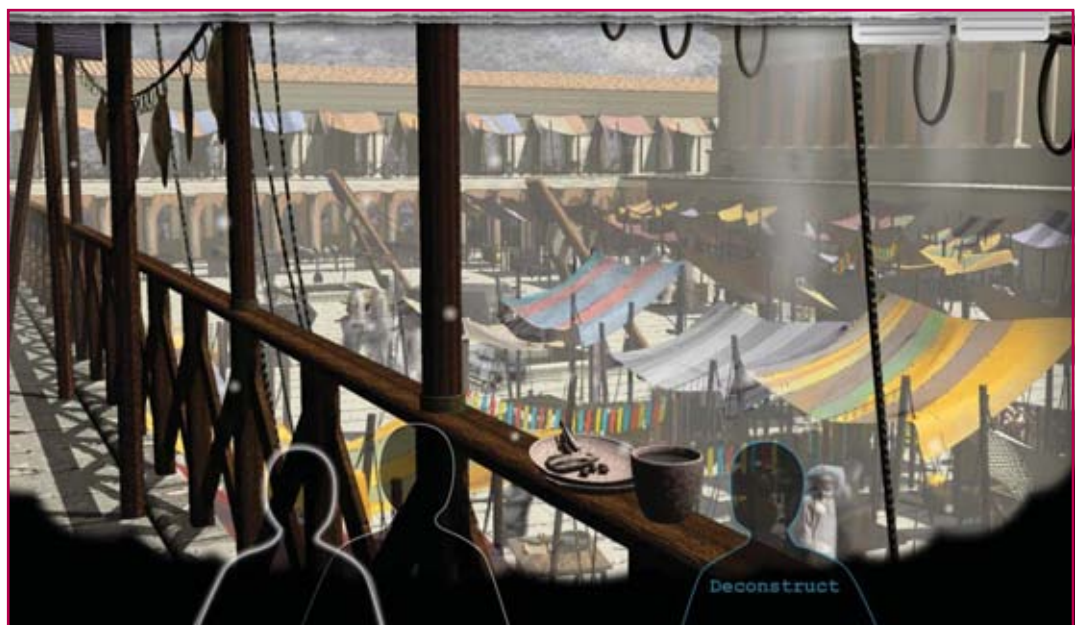
IMAGING THE SANCTUARY OF HERCULES VICTOR

di Jonathan Westin e Thommy Eriksson

The rapid progress of both information technology and digital media allows for an increasing amount of effective and exciting ways of documenting and communicating our common cultural heritage. Three dimensional scanning through photometry and laser, as well as augmented reality, photorealistic computer graphics and interactive displays; all these are technologies that in days to come will shape the profession of both archaeology and museology.

This exploratory article describe the design and production process of a visualization of the Sanctuary of Hercules Victor in Tivoli, part of the interdisciplinary research project Via Tiburtina – Space, Movement and Artefacts in the Urban Landscape at the Swedish Institute in Rome. We address both the philosophical and practical ramifications of communicating the past using technology which allows us to create representations that not only mimic reality but also shape society's idea about reality through photorealistic visualizations. A pedagogical approach is presented and discussed in a context where the visualization is tested as a communicative device that encourage questions rather than acceptance. Further, we discuss how a communicative exchange through the visual language can be adapted to let the audience de-construct the re-construction and track different layers of certainty in a visualization. In the process we propose and test a set of core guidelines when creating historical representations, with the aim to enhance the pedagogical quality of the scientific visual language.

Figure 1 - Overview of the visualization's interface. The two tabs in the upper right corner are filter curtains that can be pulled down, while the stylized outlines at the bottom switches between two different researchers' interpretations, as well as the deconstruction mode where the user can re-build the reconstruction herself.



PROBLEMATIZING THE PERSUASIVENESS OF REALISTIC VISUAL RECONSTRUCTIONS

"In a short while most archaeologists will be able to create startlingly realistic pictures of their site and sit on it looking in any direction of their choice [...]. What untruths could they unwittingly be telling in their thousand words?" (Spicer 1987).

What untruths, indeed. Our cultural heritage is increasingly experienced as a virtual heritage, a space, or *realm* as Kalay puts it (Kalay 2008), consisting of representations. Three-dimensional scanning through photometry and laser, virtual reality, augmented reality, photorealistic computer graphics and interactive displays; all these are technologies that in days to come will shape the profession of both archaeology and museology (See Frischer et al. 2002; Cameron 2007; Flynn 2007; Kenderdine 2007; Roussou 2008). When our cultural heritage is visualized with a reconstruction, it is shifted both farther away *and* closer to its primary sources. Farther away since a representation is the result of an interpretation — one or several steps removed from the sources — and it is by many scholars perceived to lose the inherent validity of the material remains it is based on (Roussou 2008, Cameron 2007), and closer since a representation can bring the primary sources to life and put them in a context where further theories of the represented culture can be explored (See Klynne 1998; Favro 2006, 327; Frischer & Stinson 2007, 77). As one of our students aptly put it in defense of reconstructions: "we may never be sure that the reconstructions we are making are correct, but we *can* be sure that the daily life of the cultures we study didn't take place in the ruins of our primary sources".

This sentiment is echoed in much of the contemporary heritage practice which has experienced a shift from the strong focus on material artifacts to a preservation that concerns itself also with narratives and socio-cultural contexts (Malpas 2008). The polemics of this shift is not between the material and immaterial, but between modernism and post-modernism since even immaterial culture is tied to materiality. The way we interpret our material artifacts — and how we give those interpretations strength through narrations and socio-cultural connections — shape us. Likewise, a reconstruction is best viewed as a contextualization of material remains that visualize an interpretation; lost materiality is added in the reconstruction to create a whole and a scene is composed that communicate a social context. It is therefore not a visual representation of the original artifact, but instead a visualization of one of many interpretations of the original artifact and is as such as much a construction as a re-construction. Archaeologists have always wrestled this very issue, but the emerging photorealistic digital representations of the past two decades have brought new problems; through their use of realistic looking shadows, textures and perspective they lend the interpretation a convincing physical materiality that convey a deceiving feeling of certainty and kinship to the material remains (Shapiro & McDonald 1995, 334). This demands a greater responsibility on behalf of museums and scholars to actively rethink the way they utilize images in their communication, since unchallenged interpretations have a tendency to become hard facts (Klynne 1998).

The aim of this paper is to discuss how the visual scientific language can be formulated as to include uncertainty as part of its vocabulary. As representations become photorealistic and the lines between the real and virtual are softening through both virtual and augmented reality, there is a need to create a sound foundation of common visual signifiers that clearly communicate different levels of relation to a source material. The focus of our study is not the

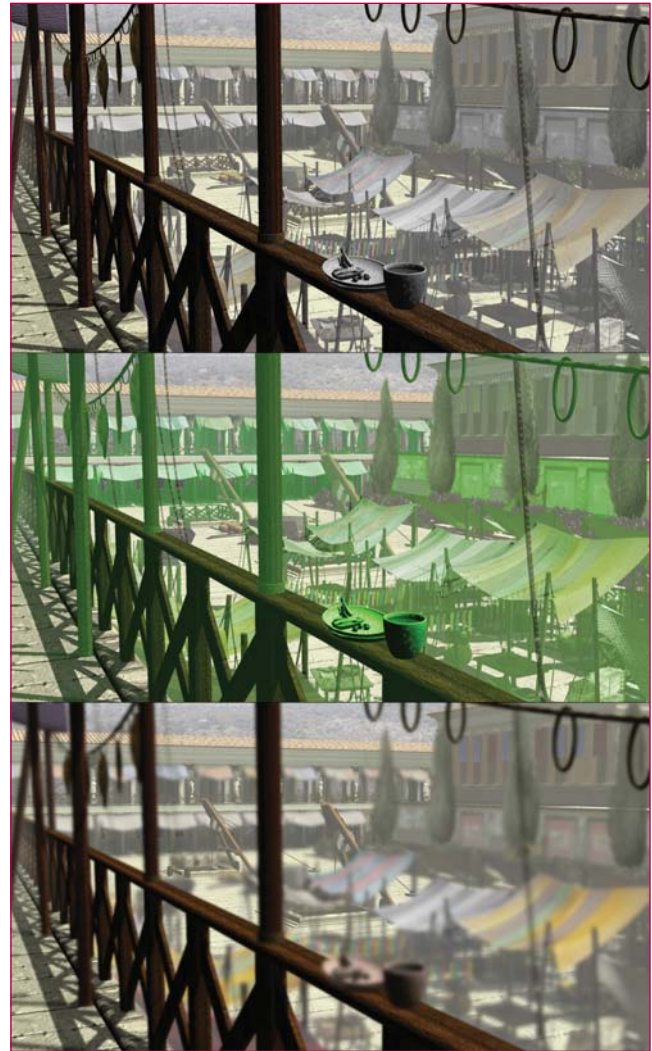


Figure 2 - Searching for signs that signify levels of uncertainty; early sketches experimenting with desaturation, green tint, and out of focus.

technology behind the process we are describing — although we recognise it as an actor in its own right that limits the range of possible expressions — but the pedagogical use of visual signifiers. Our hope is that this explorative study can be an aid in future projects within the field of cultural heritage communication.

For an archaeological reconstruction to be meaningful it has to take risks, but still be firmly grounded in established images. It operates according to culturally accepted rules, moving a couple of inches beyond the borders of absolute fact to fill in the blanks and create a whole (Ammerman 2006). A reconstruction is not neutral but occupies the same mind space as the material remains, shaping both how we perceive them and how we expect them to be presented to us. Brought on by the inseparable activities of heritage manufacturing and the consumption of tradition, this creates a reverse flow of cultural capital (Alsayyad 2008). Simply put: we are replacing the ancient world with an image of the ancient world — an image whose stakeholders are numerous and whose socio-cultural ties need to be taken into account when new representations are created.

When it comes to the audience's judgment of credibility, the visual often conveys a sense of certainty much stronger than the spoken or written word. So even if a visualization is introduced with an explicit explanation that the reconstructions are incomplete and uncertain, this knowledge is soon subsumed by the experiential power of the visualization (Favro 2006, 326). When the audience experiences the reconstruction, the visual impact conveys an illusionary au-



thenticity which overwhelms the rational understanding of the incomplete nature of the reconstruction. When opening up a visual communication parallel to that of text, the reconstruction risks being interpreted as reality. Hence, there is a need to find ways in which the representation can speak directly to the audience about its references and provisionality. We believe that this can be achieved through visual signs – modality markers – applied in the presentation of the reconstruction. Such methods have been suggested by a number of scholars (see Klynne 1998; Frischer & Stinson 2007; Haselberger & Humphrey 2006) but are in this paper exhaustively explored and evaluated through a practical approach.

THE SANCTUARY OF HERCULES VICTOR PROJECT

As part of the interdisciplinary research project *Via Tiburtina – Space, Movement and Artefacts in the Urban Landscape* at the Swedish Institute in Rome, we developed what we called ‘an open visualization’. This interactive display – depicting a scene from the sanctuary of Hercules Victor – was presented at a press event at Istituto Svedese di studi classici a Roma in March 24 2009 in occasion of a state visit by the king and queen of Sweden. Present were the Swedish minister of education, Soprintendenza Archeologica di Roma e del Lazio – Umberto Broccoli – as well as members of the press and representatives from the various foreign scientific institutes in Rome. Since then, the display has been demonstrated at various institutes internationally. We demonstrated how a representation shapes our perception of an occurrence, and how the visual language could encourage the audience to understand that there exist many possible interpretations.

The interactive display was created using Strata Studio Pro, Adobe Photoshop CS3 and Adobe Flash CS3. Several 3d models were first created in Strata Studio Pro, each with different versions of the reconstruction. Key elements were selected from each scene and rendered as high resolution PSD documents with alpha channels. These were brought into Adobe Photoshop CS3 and assembled as a multilayer document. This allowed us to combine the various elements into a plethora of interpretations of the same scene. Each layer were exported as a PNG document with the alpha channel intact and imported into Adobe Flash CS3 as unique movie clips which could be interchanged using the ActionScript 3 language.

CONSTRUCTING MODALITY MARKERS TO DE-CONSTRUCT THE RE-CONSTRUCTION

The interface was designed as to communicate uncertainty at several different levels through a series of modality mark-

ers; diverging re-constructions, deconstructions and filters. In semiotic theory *modality markers* are signs in a representation that suggest the modality of the representation. An example of this is how inferior image quality and people talking directly to the camera can signify documentary footage. We attempted to construct successful modality markers for signifying levels of certainty in a visual reconstruction. These are traditionally added *outside* the image, for example as text describing the levels of certainty. However, as mentioned, we are interested in the possibilities of using visual markers – signs – that are part of the image itself. We don’t argue against modality markers outside the image, we see the different modality markers as complementing each other.

DIVERGING RE-CONSTRUCTIONS AND PLAYFUL DECONSTRUCTIONS

A single unquestioned reconstruction holds a lot of authority and it is easy to think that it is the definite one. By introducing a conflicting reconstruction of the same space we show that different researchers interpret material remains differently which underline that there is a lack of certainty and that the reconstruction represents nothing more than an interpretation. These conflicting reconstructions can in our model be interchanged by clicking on an icon in the shape of a silhouetted person. In connecting the reconstruction to a person, and frame the diverging interpretations with the visual metaphor of a thought bubble, we stress that these interpretations are subjective and lack materiality. We reckon this to be a strong sign of uncertainty. Further, we let the audience deconstruct the reconstruction and build their own version. By putting the audience in the position of the constructor, we emphasize that it is allowed to question the interpretations of the experts. The audience is free to choose from a set of building parts, and adjoining pop-up texts describe the reasoning behind each variant. These texts both signify that the reconstruction is not completely arbitrary, and that much of it is uncertain. The original idea for this part of the display – a semi-physical interface – was simplified into a minimalistic interface mimicking a heads-up-display sliding down as a glass plate. The display and its minimalistic graphics referenced immateriality – and thus un-certainty – with its thin lines and semi-transparency. The wireframe outlines we chose to use on the glass plate was an intentional reference both to computer 3d graphics and architectural sketches, hopefully invoking a sense of construction area and of virtuality. We reasoned that there is a conceptual connection between virtuality and uncertainty, even though the connection is not entirely logical.



Figure 3 - Filter curtain revealing the present day look of the environment. Our intention was to highlight the scarcity of the material remains, and thus suggest that much of the reconstruction is uncertain.

Figure 4 - Filter curtain signifying levels of uncertainty through different levels of out of focus and semi-transparency. In order to avoid a confusing image, we had to strike a careful balance between these two effects.

Figure 5 - The interactive deconstruction of the reconstruction, where the user can switch between different versions of the structures. This emphasizes the uncertainty that is inherent in the researchers' reconstruction. The pop-up texts also contain the reasoning behind each version.

DESIGNING THE FILTER CURTAINS

We tried many different signs related to the look-and-feel of the image, thinking of them as “filters” brought down over the reconstruction, thus revealing levels of certainty. We worked with two approaches; the static and the interactive filter.

For the static filter we first envisioned that the user could drag it across the image, revealing the effect. Deciding on an appropriate size for the filter was challenging, therefore we came up with the solution of a pull-down filter, which slid down across the image like a blind. This was actually a filter that's *resizable* at its vertical axis, and it proved intuitive and tactile. We designed two static filters; the first applied different levels of focus and transparency across the image, where certain objects appeared sharp while uncertain objects were blurred. The level of focus communicates certainty at a glance since it establishes an easy-to-interpret correlation between visible detail and the information in support of it, but the effect often made the image muddled and hard to read. The other filter concerned itself with context, revealing the present-day landscape through a photograph which included sketched-out outlines of the reconstructed buildings. This would reveal to what extent materiality had been added in the reconstruction.

For the interactive filter, we made use of the hover effect; when placing – hovering – the mouse pointer on top of an area, the certainty of that area was revealed. This allowed the user to explore the reconstruction, while avoiding the confusion that was often the result when the static filter effect was applied across the image. Many of the tried signs – such as semi-transparency, out-of-focus and color tint – gave severe problems since they interfered with the inherent complexity of the image. The image had much visual detail, and it became almost incomprehensible when some effects were added. This was especially problematic with transparency since it let layers behind the element shine through; causing the combined image of the merged layers to become highly complex. We nevertheless managed to use transparency by carefully balancing it in combination with out-of-focus. We deemed it to be a highly relevant sign since transparency give the impression of immateriality, connoting uncertainty.

COLOR AND FLICKERING FAILED AS SIGNS

We attempted to use color coupled with the filter curtain. The degree of tint, saturation, or hue would signify levels of certainty. Green proved most interesting because of its strong connotation to the virtual. Eventually we decided to not use color since we were not sure how the user would interpret them.

We also attempted to use flickering and time as indicator of uncertainty. The idea originated from the use of flickering in fictional movies to indicate immateriality, for example the static flickering of a TV screen. The basic idea was that more flickering meant a higher degree of uncertainty. We experimented with the speed of flickering, the strength of it, and whether it was random or regular. It was difficult to strike a balance between drawing attention and giving the feeling of not-being-there. The flickering was too imposing and might also have been difficult to interpret. Another time-based effect was how long time a particular effect took to “wear off”. This was dominantly tested with flickering, but also with other signs such as out-of-focus. The idea was that the user could cause the image to come to life with a specific effect, for example flickering or out-of-focus. Then, gradually, this would die away, letting the image return to normal again. The time it took for the effect to disappear would indicate levels of certainty. As a final attempt to make comprehensible use of flickering, we tried to emulate the look-and-feel of a flickering candle, thus communicating uncertainty through the connotations of an un-nurtured flame. Eventually we abandoned both colors and flickering.

Another similar sign that seemed promising was “graying out” parts of the image by lowering their saturation. But this was problematic in those areas of the image where there were no color from the start; here the desaturation was not visible. We tried to combine desaturation with a compression of the grayscales – in effect lowering the contrast – and this worked for color-less areas with a distinct texture (e.g. wood). But there were also areas with neither color nor structure in them, and these appeared as if being “greyed out” from the start. Thus, the “graying out” was not clear; it simply didn't work well with existing aspects of a varied image.

CONCLUSIONS

WHAT EXACTLY IN THE IMAGE IS CERTAIN AND NOT?

We believe that the signs we used might be quite successful to visually signify levels of certainty. One problem though is their lack of precision. A good example is the railing that is seen close to the viewer. Some aspects of the railing are very certain; since there is a five meter drop, it is quite certain that there once was a railing there. But other aspects are less certain; we do not know if the railing was a solid stone balustrade, or a simple wooden fence. We know it was there, but we have no idea about how it looked. How do we signify this discretion visually? In our reconstruction the railing is affected at the medium level by the modality markers we chose – transparency and out-of-focus. But

what does that mean? It could for example be interpreted that the very existence of a railing is un-certain, but that is in this case not correct. We could have sketched out the railing very roughly and with no details; thus suggesting we don't know how it looked. But in order for it to be readable – recognized – as a railing, it will need some level of detail, and that level of detail runs the risk of making us show things that we do not know. The problem is to say enough to let people know it is a railing, but not say so much that we suggest things we do not know. It is a hard balance to find.

BRINGING INTO FOCUS OR PUSHING BACK

In our visualization we wanted to *highlight* what was uncertain and what was not. The signs doing this needed to draw their attention to them, so they were not missed by the audience. At the same time, if we wanted things to appear uncertain, one seemingly logical way was to make them less "there" – make them immaterial. Here lies a very difficult balance to strike between drawing attention, and fading away. Some signs – such as color hue – actually run the

risk of having the opposite effect; given the impression that they were certain, since they were fore-grounded in the visualization. It is a question about adding or subtracting, about reduction or focusing. This problem was highly challenging through-out the project. One sign that worked well was out-of-focus; this is a true reduction of the information content of the image, it gives the impression of fading away, while at the same time being quite obvious and clear to see.

Finally we must emphasize the importance of continuing these explorations of modality markers in photorealistic archeological reconstructions. We encourage others to continue our work – verifying or denying our attempts – and experimenting with other signs. We also suggests extending the scope to include text and image context, asking questions about how modality markers in and outside the image interact. It is also important that this work eventually meet its audience, because a culturally shared visual language is created in a dialogue between authors and readers.

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ABSTRACT

Immaginare il Santuario di Ercole Vincitore

Il rapido evolversi delle tecnologie dell'informazione e dei media digitali rende possibile una quantità sempre crescente di efficaci ed entusiasmanti metodi di documentazione e comunicazione del patrimonio culturale comune. La scansione tridimensionale attraverso fotometria e laser, così come il maggiore realismo, la grafica computeristica foto realistica e le presentazioni interattive, sono tecnologie che in futuro modificheranno le professioni legate all'archeologia e alla museologia.

Questo articolo investigativo descrive l'idea e il processo di realizzazione di una illustrazione del Santuario di Ercole Vincitore a Tivoli, parte del progetto di ricerca interdisciplinare Via Tiburtina – Space, Movement and Artefacts in the Urban Landscape dell'Istituto Svedese di Studi Classici a Roma. Affrontiamo sia gli aspetti filosofici che pratici dell'interpretazione del passato, utilizzando una tecnologia che ci permette di creare rappresentazioni che non soltanto imitano la realtà, ma che formano la visione sociale della realtà, attraverso illustrazioni foto-realistiche. Viene presentato e discusso un approccio pedagogico che sperimenta la visualizzazione come strumento comunicativo che stimoli interrogativi e discussioni piuttosto che accettazione 'passiva'. Ci occupiamo inoltre di come lo scambio comunicativo possa essere utilizzato, attraverso il linguaggio visivo, per consentire allo spettatore di de-costruire la ricostruzione e individuare differenti livelli di certezza in una illustrazione. Nel procedimento proponiamo e sperimentiamo un insieme di linee guida per la creazione di illustrazioni storiche, con l'obiettivo di accrescere la qualità pedagogica del linguaggio scientifico visivo.

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