Rock-Art and the Digital Difference

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Abstract: The digital difference. What does the move to working digitally bring for the methodology of archaeologists working with animators and digital designers? What are the dangers of digital for storytelling and visualization when it comes to preserving the potential otherness of past societies and artists? A discussion based on the concrete case study of the exhibition "Pitoti" and the research that went into turning Alpine prehistoric rock-art into digital heritage.

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Pitoti- the case study

The Copper, Bronze and Iron Age rock engravings of Valcamonica in the Lombard Alps are the largest concentration of their kind in Europe, with 150,000 images of humans, ploughing, houses, animals and abstract shapes. They are known as „pitoti" or little puppets in the local dialect. (1)

These art works were researched by a team from the Universities of Cambridge, St Pölten, Bauhaus Weimar, the Centro Cammuno Studi Prehistorici and Archaeocammuni (2). An Ambient Cinema, multi-touch serious games, 3D printing and interactive panorama photography drew over 20,000 visitors to the Triennale, Milan (2012) and the Museum of Archaeology and Anthropology at Cambridge University (2013). Central to the research is the observation that digital pictures are based on single points (Pixels), just as rock engravings are based on single hammer blows (Pexels). This bridge between the graphic languages of the past and present provided the base line for the digital rock-art research.

The positive digital difference can be summarised as 3 R's: recording, re-creation and recreation. As the film footage taken at both shows makes clear, this was a transition for digital heritage research from a focus on the image to a focus on interaction.

Recording

The high density of digital data provided the digital bonus. In terms of recording High definition flash and natural light photography by Hamish Park and Marcel Karnapke's 3 D structured light scanning produced the clearest images of the engravings, since they were first discovered 100 years ago. (1)

Re-creation

The manipulability of digital data proved the key when it came to re-creating the rock-art in digital form. Markus Seidl and team used photo shop to stitch together a patchwork of hundreds of HD photos to produce a composite image of the rock panel known as Seradina 12. This is the second largest rock panel in Valcamonica and is too large to be captured in detail from the air.(3)

The 3D scans allowed Marcel Karnapke's 3D printer to create sculptures of the engravings. In so doing he re-created the engravings as solid upstanding sculptural forms for the first time ever.

Movement was another attribute that digital gave the project. The prowess of animator Mike Kren was able to bring to the rock engravings to life. (4) He was able to re-create the images as if they were frames from prehistoric animated movies. Both proved very popular with audiences and a rich source of research insights, as will later be explained.

Recreation

Multiplicity and repetition, with no quality loss, are the main qualities offered by digital work for digital heritage and audience interaction.

For Pitoti - the public where able to directly interact with the digital rock surface of Seradina 12, by means of a multi-touch table. This was fitted with specially designed multi-user serious games for all levels: from children to parents and also archaeologists. The public were able to construct rock-art like a jigsaw and then push the rock-art dogs, to chase rock-art oxen, back into their yokes. Finally rock-art houses where built, after gaining points from ploughing rock-art fields and building up a prehistoric economy. (5)

3D plastic prints of the engraved rock surfaces allowed the public to touch the art and feel the indentations with their fingertips. This facilitated a playful tactile encounter with the work of the anonymous artists of Valcamonica. An encounter that was especially useful for blind visitors. The lightness and durability of the plastic prints also made it possible to let children explore the engravings, without fear of destruction.

The digital danger

Yet what we also found was that there is also a danger with working on cultural heritage with digital tools. The problem put simply is that the technology available to animators, designers, programmers and game designers is so powerful that it can take control and produce a past more „real" than the archaeological remains allow. The most extreme forms are some historically based computer games with CGI visuals, but the problem can also extend to many fly-through architectural reconstructions, which form a kind of hyper-real past that demonstrates very well the technical prowess of the designer and the software used, but goes well beyond the archaeological base upon which these reconstructions should be based.

The problem is, who is the author of an exhibition or a video- the researcher or the designer? One is the expert for the data, the other for the software? To take sporting analogy is the archaeologist a player manager, a trainer or the referee? I would say the core function is one of referee. Someone who keeps an eye on the rules of academic research and looks out for fair play towards the powerless prehistoric creators of the material record.

The key value to be guarded is the potential „otherness" of the past. That which is known, but diverges from the expectations of today. The paradoxical otherness of the Pitoti and the past in general is neatly summed up in, the co-director of the Pitoti exhibition Christopher Chippindale's observation that the Pitoti are:

> Aliens, but aliens like ourselves.

Pitoti rules for film

One evening after the first field season, the animator Mike Kren called me and asked:

> *„Can I put some knees in the legs of the ancient deer? The prehistoric artists have not included*
> *them. They have just engraved straight lines for legs"*.

I must admit I had not really noticed this kneelessness of the prehistoric deer before, as it just seemed part of the minimalist charm of the work. I answered:

> *„No. Let's see how the deer move the original artists saw it, that is according to their skeletal and*
> *kinetic understanding of movement"*.

That was the birth of ‚Pitoti rules' for film and it was that the exhibited animations of deer move in a stiff manner with unbent knees. The effect is slightly comical, but has the advantage that is does not allow the public to think in the safe categories of Walt Disney's Bambi. Instead Mike Kren rose to the challenge of working with the Pitoti film rules as creative restrictions and the potential otherness of the Pitoti has been preserved.

Brecht & Alienation Techniques

In terms of narrative methodologies, the creative restrictions „Pitoti rules" strategy, overlaps with the play write Bertolt Brecht's distancing strategy (*Verfremdungseffekt*). Brecht says that actors should be:

> "*Playing in such a way that the audience was hindered from simply identifying itself with the*
> *characters in the play. Acceptance or rejection of their actions and utterances was meant to take*
> *place on a conscious plane, instead of, as hitherto, in the audience's subconscious*" (6).

Brecht was worried that too much naturalism can make the audience switch off its critical faculties towards a historical narrative being depicted.

In terms of archaeological interpretation Pitoti rules has meant no one interpretation of the rock art figures has been settled on. Instead work with dancers in the Bauhaus studio has led to expanding the range of interpretations of one Pitoti figure to 27 possible graphic explanations.

The banning of the use of flash photography is a similar strategy. The photos the research analyses use only natural shadow and fall of light. The point is that since the art has not moved since it was created it is only right to record natural shadow that prehistoric people could also have seen. In order to record the depth of the figures 3D laser scanning is a far better tool, and this is the reason the new research project "3D Pitoti is developing one such scanner.

Para-Olympics and Prosthetics

The immersive power of digital media with all their amazing effects offer many temptations to dope the archaeological record to produce mind blowing performances, that blur one fact above all others. Archaeology is the science of ruins. Historic data is hardly ever complete. This is the Para-Olympics, not the main Olympics. Heritage professionals are almost always working with prosthetics, theories and ideas that are drawn from and then added onto the shattered bones of the past.

The power of the „digital difference" is the re-creation of those ruins, digital heritage is prosthetics for the past, but it is not the same as the full data set we have when studying events in the present. Just as the

Para-Olympics celebrate their difference to the Olympics, so my approach to digital heritage it to celebrate the otherness of the past lives that for example the Pitoti artists describe.

The digital difference is there to help us differentiate and not destroy 'otherness'. Digital alienation techniques are useful in achieving this. My immersive film experience known as Ambient Cinema (8), broke with the rules of naturalistic continuity editing, to produce a fractured surround film about the Pitoti, that mixed documentary footage with kinect film animations and deliberately chaotic morphing (1). No one aesthetic was allowed to dominate the depiction of the rock-art.

Werner Herzog & "The chasm of time"

Together with Christopher Chippindale, my fellow co-director of the Cambridge Prehistoric Picture Project, a seminar was held with Werner Herzog, the director of a 3D film, which explores Paleolithic cave art in Southern France (7). While the use of digital 3D gave the audience the illusion of being inside the cave, Herzog told us that he deliberately included the strange images of the albino crocodiles in a nearby nuclear plant at the end of the film, to break the feeling of the 100% knowability of the art. In a move Brecht would have approved of Herzog pointed out: how do we know we have a better understanding of the Paleolithic artist's mind than an Albino crocodile? It is a question to make one think about what Herzog called „the great chasm of time" that separates us from the Paleolithic painters.

This is of course an extreme example by a great independent filmmaker, but the point is the same for much digital heritage. How do we keep our critical distance and stop to reducing the art of the past simply to the categories of our present day? One method is digital simulation.

Digital simulation

Digital simulation is a researcher led methodology where-by the power of the digital difference can be harnessed to explore the potential otherness of the past. The method is one of simulation as a process of open-ended questioning, rather than an immersive simulation of hyper real battle scenes. Rather than collecting points in ego shooter fashion, our simulation strategy is to collect alternative models in the spirit of Ludwig Wittgenstein's dialogical methodology of thought experiments, practiced in his aptly named book „Philosophical Investigations"(9)

In the Pitoti project we worked with dancers to test body positions and then a whole series of investigative animations were used to model the different theses that the team generated to explain visual puzzles. What, for example had the prehistoric artists intended to depict, when they chiseled out the minimalistic abstract forms known as „Orante", so called praying figures (1). Other simulations with Andreas Wappel used digital animation to test the thesis that the some images are birds, and showed them in flight, rather than being stationary. The similarity in the graphic structure of the engravings and the digital model's animated movement of a beating wing proved to be very visually credible.

In digital simulation, the diversity, visual power and multiplicity of digital techniques is unleashed in a controlled and openly creative manner. The digital difference is that the computer provides a laboratory for simulating ideas of how ‚other' the past could have been, without destroying the original material culture.

Rock-art remains are analog and singular by nature. This is often an obstacle to methodological diversity when it comes to investigations. The digital has no original and is endlessly reproducible. This multiplicity is a key digital advantage. Digital heritage can therefore accommodate a multiplicity of methodological approaches. They are only limited by the size of the processor and the invention of the human mind. An important digital advantage when building bridges across the „chasm of time".

Acknowledgments

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