Collaboration and development of an Artist's Toolkit

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Introduction

Jo Fairfax is a successful sculptor who has an established international reputation for his public artwork and in particular his holography work. He was awarded a Nesta fellowship to advance his aspiration of creating an increasingly emotional response to his artworks through the use of VR technology. A key attraction to Fairfax was the appeal of being immersed within an artwork. Fairfax did not want to make a virtual sculpture but rather an art environment that was the work itself, he referred to it as 'being inside a 3D moving Pollock or Rothko' (Fairfax 2007).

Working practices

Fairfax spent the first month of the project visiting VR centres and talking to as many experts as possible. From this initial research Fairfax was acutely aware that he needed a mentor to guide him through the numerous VR technologies and, more importantly, to provide him a way of mastering the tools as one of his main goals was to work autonomously. This desire to be autonomous was a unique challenge and different from other well known VR artists who use specialist programmers, sonic architects and animators to help create their VR environments. In his search for a mentor Fairfax contacted Pera, a Leicestershire based company that had the first commercial VR centre in the UK. Pera had a number of experienced VR designers that were willing to act as mentors. However their approach was based on a highly technical programming foundation. Their proposal for progressing the project involved a substantial amount of programming work, as well as the need to educate Fairfax about the significant number of constraints that exist within the construction of VR applications. Even though Fairfax was prepared to put in the time and effort to learn how to create a VR application, the highly constrained and formulaic nature proposed did not fill him with confidence or, more importantly, excitement which he originally had at the outset of the project idea. Fairfax (2007) reflected on these meetings saying that he found it both inspiring and daunting, where it seemed a long way away for him to be able to make anything in VR.

This reflection raises the question of how artists' working practices differ from those of VR designers?

VR designers have to work within very constrained environments due to the nature of the graphics and processing hardware. They also work to specifications determined before a project has begun. As a sculptor Fairfax liked to work in a much more open and unrestricted way. The whole idea of the project was to create a 'dreamlike' state, having all the proposed restrictions in place did not lie comfortably with this ethos. He also had difficulty putting across his vision of what he wanted to create from an aesthetic viewpoint and also just as important was the way he wanted work - in an unrestricted creative manor. These issues of communication, and different working practice between artists and other professionals has been reviewed by Yair, Press and Tomes (2001: 377-394) who state that despite the obvious benefits of collaboration including the flow of knowledge from one discipline to another, it is uncommon due to the differences in cultural and working practices causing complications. For collaboration to work it is dependent on the artist and the professional's willingness to both accept new working and thinking processes.

Continuing his search, Fairfax was put in contact with the author who had previously managed the VR department at Pera and was experienced in VR application designing. At the first meeting it became clear that Fairfax's knowledge of VR was purely from a visual context, it also became clear that Fairfax desired to work intuitively with the VR software rather than be slave to it. The author questioned Fairfax about his usual working practices and he described his creative process as being very free and random, when working with digital art. There was no single working process that he undertook, as most projects were different in their nature, however all his projects did involve a lot of experimentation before honing the final product.

After much discussion it was proposed that the most agreeable route was for Fairfax to capitalise on his existing skillset of aesthetic sensibilities and avoid the constraining programming route as much as possible, so as not to stifle his creative energies. The new proposal was to use a 3D graphical modelling package (which Fairfax was familiar with) and then import these models into a virtual world. This is not the usual approach of VR modellers, when a 3D model is created, adding complexity increases the levels of realism. Unfortunately increasing the complexity has a negative affect on the ability of the computer to render frames in real-time,

resulting in a negative effect on the visual performance which is essential within a VR environment and crucial to the dreamlike effect required by Fairfax. When this process was put into practice the fluidity became very important, so an aesthetic judgment by Fairfax was required to reduce the model complexity to an acceptable level using a trial and error process. The trial and error process has been shown by Dorst (2003) and Lawson (1997) to be used frequently to solve design problems where a gradual approach of trial and error is required, with emphasis switching from precision and calculation to ambiguity and imagination. During this trial and error process the 3D models had to be transferred and displayed within a VR environment. To reduce the cognitive load on Fairfax a simple visual VR authoring programme was chosen, where models could be simply imported and manoeuvred using simple controls. This software facilitated model positioning in a 3D space, but did not allow Fairfax to add features such as movement, sound, direction controls, or subtle aesthetic modifications. Ideally Fairfax wanted a bespoke package to be created that allowed him to be artistically free whilst making it simple enough for him to use without understanding the code behind the application.

Artist's Toolkit

Creating a brand new piece of software was impossible in the time allocated for the project. The proposed solution was to develop a bespoke Artist's Toolkit, which would act as a conduit between Fairfax's work/desires and the VR software, allowing different elements to be brought together. For the next six months regular meetings were arranged where the author introduced Fairfax to the different aspects of creating virtual reality applications. These regular meetings directed the progressive development of the Artist's Toolkit. The Toolkit developed into a number of discreet options, with adjustable variables that Fairfax could experiment with and then import into his virtual worlds.
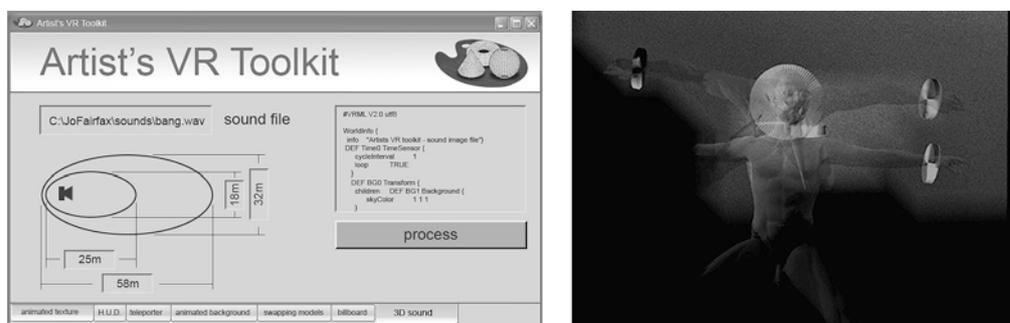
Figure 1. Artist's Toolkit and example of one of Fairfax's virtual worlds

After each meeting Fairfax would experiment with what had been covered in the meeting. In parallel to this he would frequently take what had been presented and explore new avenues he wanted to exploit and then return to the next meeting with a list of questions and requests as to what he wanted to create. The requests were often accompanied with sketches, imagery, video clips or models to help explain the desired goals. This working practice supports the findings of Getzels' and Csikzentmihalyi's (1976) study on how artists develop and solve problems. They stated that there were three ways artists explored problems; manipulation, unusualness and experimentation. Manipulation is where the artist wishes to find new problems or uncover the core of the problem rather than settle for ones presented to them. Unusualness describes their drive to source unusual perspectives from which to work; often the riskier options are more innovative. Experimentation is where the artist, through play or experimentation with the problem, idea or media, can identify new perspectives that may have gone unnoticed.

During these question and answer meetings the author frequently could not answer Fairfax's requests straight away, needing time to solve the problems. The author's working practices to solve these problems would not always be undertaken in a prescribed manor however, on reflection, the majority of time the working process initially started with was a few days of reflection which allowed time to go back to Fairfax if clarification was required. The design process would then involve three stages, firstly looking to see if there were any solutions already available. Frequently this avenue of research was unproductive, but could lead to new ways of approaching the problems. Secondly there would be long periods of experimentation, and testing, with a final stage of honing a proposed solution. Jones (1992) also models the design process in three phases: divergence, transformation and convergence, where the designer begins by undertaking a broad search for information, followed by a period of ideation and finally concludes with a more detailed focused activity to provide a realistic solution.

Even though the designer's process may have stages, both the designer's working processes and artist's working processes can both be imprecise in their nature. Lawson (1997) noted that the designer's process is complex and ill-defined, Lawson does not see designing or problem solving as being an exact process that can be broken down into specific areas, his theory is that design is a process in which the problem and solution emerge together.

The working practice of questions and answers allowed Fairfax to be unrestricted in what he wanted to create, negating any concerns about technical issues and only having restrictions applied if the author could not find a satisfactory solution. There are many restrictions or considerations to be undertaken when creating a VR world (Badni 2005: 215-225), however reflecting on the process Fairfax commented that presenting these restrictions at the beginning of the project would have been detrimental in affecting the freedom he felt, and would have had an adverse affect on the design of his worlds. Through the Q&A sessions a number of templates were created building up the Artist's Toolkit. These templates were developed along with Fairfax so his understanding of their application was relatively straightforward and allowing him to develop his worlds at his own pace without the constant intervention of the author.

Conclusion

The working relationship between Fairfax and the author has been very successful. The realisation at an early stage that a creative sculptor was unlikely to work in a pragmatic programming way and the efforts to allow Fairfax to remain creative in his working practices allowed him to produce some unique pieces of art generally unhindered by technical constraints.

Fairfax acknowledges that having a mentor was an essential part of his creative process. Dasgupta (1996) argued that creativity is knowledge driven and based on experiences applied in new ways, so creative methods may facilitate finding alternative ways of thinking but this may only be of use if there is a knowledge base on which to draw. The use of Q&A sessions allowed Fairfax to gain insight into the knowledge base of the author and that fed directly into his creative process. Fairfax (2007) reflected on the one-to-one sessions describing them as being an invaluable teaching aid allowing him to move forward tremendously and which he described as being a very powerful tool.

One reason why Fairfax and the author worked well together may be due to their similar working (creative) processes and despite there being many differences in general between a fine arts sculptor and a VR designer there are definite similarities between the two disciplines. This is backed up by (Dorst 2003; Lawson 1997) who state that artists and designers must work in a similar manner, and that the art

process would have much in common with design process since many similar talents are needed for both.

There have been a large number of different creative processes documented. They all appear to have one main theme in common, that of altering the way people think. This appears to be achieved by providing a safe environment, where ideas will not be criticized, which may go in some way to explaining why the one-to-one working relationship worked so well - allowing both Fairfax and the author space to experiment and move forward together with a good understanding of what the final goals to be achieved were.

The chosen method of working had some restrictions in what could be ultimately achieved. This was due to the working practice being developed to allow Fairfax to work to his strengths and aesthetic sensitivities, compared to developing a bespoke fully programmed VR application. This working practice was different from many artist-technologist collaborations. In general an artist will have some creative ideas. The technologists will then develop a system based on that idea to his best ability and show it to the artist. The artists would only then request some modifications or change some aspect - which the technologist would implement. With the Artist's Toolkit, Fairfax was able to develop and change his implementation without the technologist input thereby facilitating his own discovery and adjustment route and thus speeding up the creative process.

Ultimately the project would not have been successful without the hard work and dedication of Fairfax who was willing to experiment and learn whilst developing his own vision. The hard work required to create a new piece of artwork is recognised by Csikszentmihalyi (1998: 325-339) who comments that being creative is not a simple process since many novel and original solutions require the creator to invest much time and effort. Creativity is a process of trial and error in searching for new solutions by combining the known and discovering elements in many small tentative steps (Weisberg 1986; Wallberg 1988: 340-361).
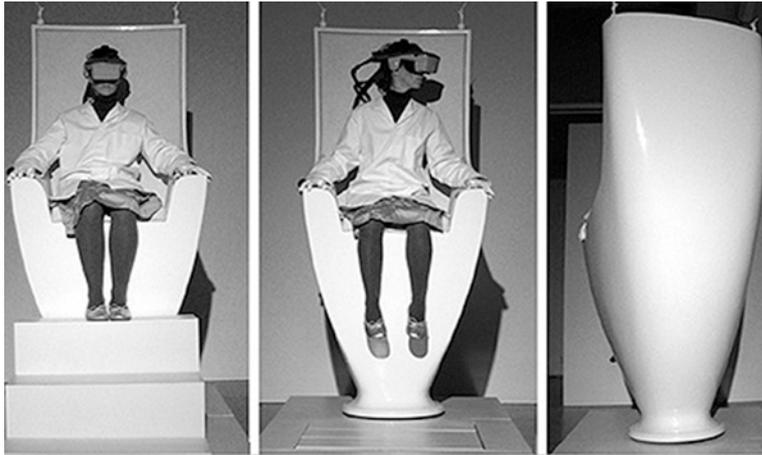
Figure 2. Participant viewing Fairfax's worlds through a tracked headset

The final artwork was displayed in Leicester City's Art Gallery with over 2000 people experiencing Fairfax's vision. There have been positive reviews in local and the national press, with the Guardian describing the work as 'allowing you to explore to the full, in the 3D virtual world of your own susceptible consciousness, his vision of everything as somehow bewilderingly wonderful.'

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