Virtual Drawing: A review from the perspective of a Fine Artist.

A trip into your drawing;

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Introduction*:*

As a Fine artist, I was given the opportunity to explore drawing in virtual reality for the very first time. This prospect certainly intrigued me as drawing is embedded into my artistic practice and here follows a reflective account of my encounter inside the virtual world. For me, virtual reality was unfamiliar territory and I paid little attention to its possibilities therefore my starting point was practically zero.

In this paper, I aim to reveal my thoughts and considerations of what virtual drawing may entail. The paper splits into two themes, firstly a primary visceral account of my initial experiences using the HCT Vive equipment; and secondly a reflective examination of how this experience has altered my thinking as a fine artist. The following issues were considered. The issue of flatness and depth and how depth could be drawn in a virtual space, as opposed to creating the illusion of depth on a flat surface? How would the drawing plane be determined when there would be so many? Issues of the drawing process were considered in terms of mark making and construction and these were compared to those employed in two-dimensional drawing. Also, how would I view the work from a distance to evaluate composition and plan for refinements? Finally, issues of display and gallery/viewer interaction were considered. How would virtual drawings be displayed to good effect? Could this challenge the traditional gallery space and how could this new form of viewing be managed? Would disorienting motion sickness develop and become menacing? Each issue will be examined and discussed further. It seems that the boundaries of drawing and display are clearly being challenged and expanded into a liquid realm of sculpture and space.

(1) THE PRIMARY EXPERIENCE; *Entering the virtual space: a visceral first-time account of using VR from a fine artist's perspective*

The first experience of VR took place at LearnPlay Foundation in an open plan office space at the Boot Factory. I recall feeling a little apprehensive knowing that motion sickness could be a problem in a virtual world. Two sensors mounted on tripods set out the virtual space boundary and I was attached to a computer monitor by a cable. The head set was fitted and I stood in the space feeling lost……. Here follows a visceral account of my experience.

"I step into the space adorned with head gear goggles and behold a totally new experience…… I find myself uttering the words …. "Oh wow……"

Image taken at LearnPlay Foundation

My response was child-like magical transcendent, spiritual all wrapped up in one! Just as though stepping through the wardrobe in LWW. I feasted upon a fantasy space of lilacs and pinks with a three-dimensional lion, a flying dragon with lines and gestures seeming to brush past my face. I see a fish just in front of me …I scoop it up and it becomes fresh air. I walk forwards straight through the lion and peer behind to see a dragon. I take off the headset goggles and instant disappointment! I see the dimmed office and people working at their desks.

Time and space seemed confusing and destabilising.

Creating my own VR doodle: I am now facing a black void and I hold the controls. A tool kit presents a three-dimensional display in my left hand and a pointing device in my right hand. I select a colour from the pallet and thickness of line and using the trigger in my right control

LearnPlay Foundation – primary experience 'Perform a self-choreographed virtual dance'

I sweep a gesture in the air. I pick up a different colour and thickness of line and add to the composition …I follow on with a series of lines, sweeps and gestures to create a virtual colourful doodle. With abandoned self-consciousness, I perform a 'self-choreographed drawing dance'.   I walk forwards and I am inside the doodle. I step back and the virtual doodle becomes a distant floating entity amidst the black void. I attempt to walk around the virtual doodle and check its composition but I'm tethered to a cable connecting me to the computer monitor …my intuitive artist eye feels a balancing up is required … I modify and refine the composition …instead of physically walking around the space I pick up the footstep icon and point to a space on the floor and I am teleported to a new standing position to view my work. I was transported to other side in a moment with a new view. All movements were slow and deliberate and I felt no motion sickness. I take off the headset and again …disappointment a feeling of loss. My doodle is visible on the computer monitor but the flatness of display is not what I recollected in three dimensions.

'For me, being able to enter and walk around your creation is overwhelming and primary.'

One lasting thought resided in my mind…. how exciting it would be to create a drawing from within and even more exciting to be able to walk about inside it …to be able to observe from any point and see new angles and perspectives.
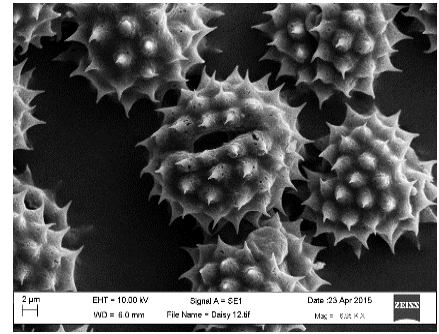
The second experience; Drawing a Virtual Daisy Pollen Grain

Fab Lab Sandwell

Daisy

The second VR experience took place at Fab Lab, Sandwell. My own artistic practice sits at the boundary between art and science and recently, I collaborated with a scientist to observe and image pollen grains at high magnifications using a scanning electron microscope.

Daisy pollen imaged SEM 10000X

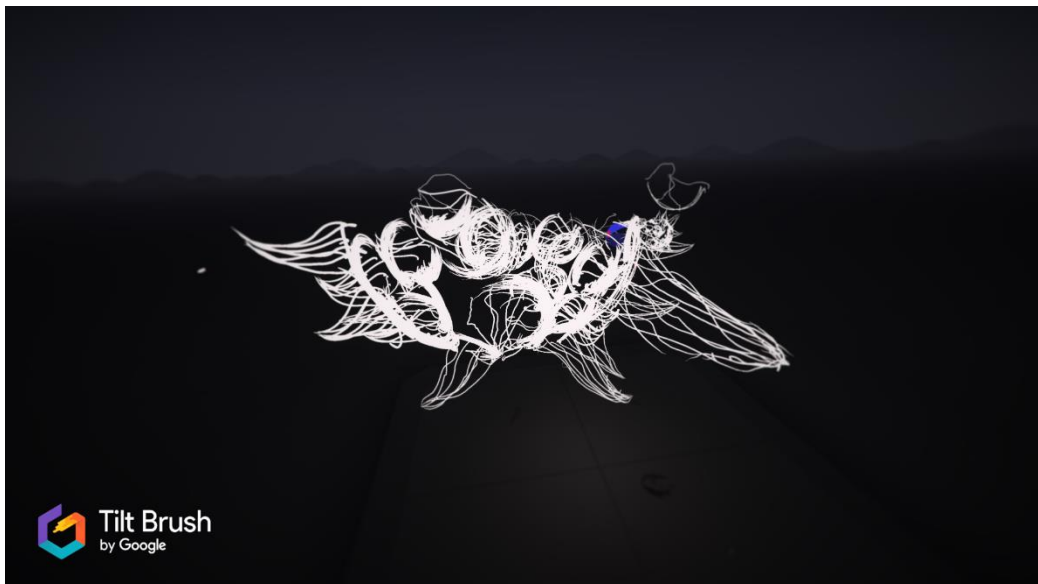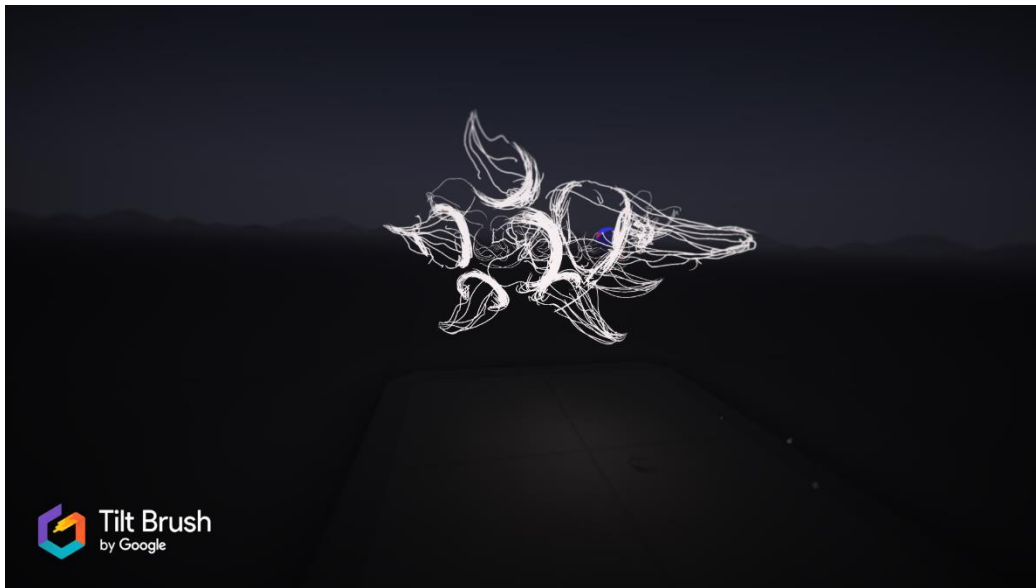**Image taken at Fab Lab, Sandwell**

My aim for this second experience was to draw and create a virtual pollen suspended in a 3D Virtual space. The notion of taking micro landscapes into a virtual three-dimensional landscape became an intriguing concept which conceptually highlights the realisation of what mankind encounters on a day to day basis. Pollen is the powdery substance that contains male reproductive codes and each species of pollen reveals very different structures and forms. Human beings naturally become curious about these pollen entities floating around our environments particularly as many people suffer from the effects of hay fever. Daisy pollen became my focus.

(2) REFLECTION; How has the experience of VR effected my artistic creativity and thinking?

Drawing sculpturally – a different set of rules: Whilst drawing the virtual pollen grain I found my approach and thinking to be quite unfamiliar. I have spent a life time learning how to use line and tone to render apparent three dimensional forms on a two-dimensional surface. This illusion of depth in two-dimensional drawing was created using the rules of perspective and aerial perspective; however, in VR, depth is real and not flat. I was required to think and draw sculpturally in 360 degrees and for this reason, construction of the VR pollen required a different set of rules. The pollen grain was near spherical and so a spherical frame was used as a guide. Using this frame-guide, I could render the spikey protuberances on the curved surface. However, trying to find the exact point of contact presented many errors of drawing in the wrong plane and the rub out feature was frequently employed. Identifying the plane of drawing was challenging and after 'hitting' the wrong plane many times, the skill was eventually learned and accuracy improved.

There became an intuitive, lively action using the whole body to create marks including stretching to reach points, bending low to work at floor level and then stretching high.

The virtual pollen entity seen in fig (1) was based on a daisy pollen grain. This was drawn and existed as a large scale, floating sculptural entity in which I could walk around inside and to explore new interiors, perspectives and angles.

At this point a drawing-dance performance emerged to entertain and amuse onlookers. Images taken at Fab Lab, Sandwell.

In two dimensional drawing the intuitive varying pressure of pencil or charcoal upon the flat surface created a wide range of marks however those created in the virtual space were predicable - akin to that of Photoshop. Once selected, the mark remained the same every time which was a little frustrating. Any variation required a new selection which became disruptive to the drawing process. To ensure continuity and flow of line I found myself using one selection and then drawing over and over to render thicker lines as though shading – an intuitive effect integral of two-dimensional drawing. I learned it was possible to alter the thickness of line by squeezing the drawing tool in my right hand but once adjusted, this thickness and type of line prevailed.

Overall, the three-dimensional drawing experience felt exciting and innovative in the construction and outcomes; however, the constancy of mark making became frustrating.

A single piece of charcoal in 2D drawing could create a multitude of marks depending on how it was used but VR lines would render predictable and constant marks that would frequently need reselecting to create the same type of range.

A view taken from inside the virtual pollen grain.

Does observational drawing become redundant?   A further question emerged; does observational drawing become redundant in the virtual world headset? Drawing from observation has been a skill practiced by many fine artists for hundreds of years and the act of having a live model or set of arranged objects in front of the artist to respond and draw could be challenged in the three-dimensional world. Although technical information suggests that images can be

transported/uploaded into the virtual space for reference this seems odd not to have real objects directly in front to inform you. In my case, drawing from memory and imagination was required and not truly acceptable in observational drawing. YouTube clips released by Tilt Brush show artists drawing freehand as though the subject was well practiced and rehearsed, which seems a pointless exercise to a Fine Artist interested in still life. To keep taking the headset off and on to observe a live model in the real world and then to return to the virtual space seemed like a lot of disruption to the drawing process. Consequently, my virtual pollen drawing evolved from memory which was challenging to my normal process. I relied on memory, chance and accident coupled with the opportunity to view and stand back to refine and modify and of all these processes were conducted in the virtual space.

Overall, I found the random, freehand drawing to be invigorating and exciting as a process although somewhat uncontrollable in outcome.

Inside the VR drawing – the hook   A most exciting feature was to walk inside the drawing and observe an inside-out perspective. As though miniaturised, I became incarcerated and encircled inside a micro world. By teleporting into viewing positions to various locations whether this be inside or outside the virtual drawing I could meander between the lines and gestures at will. Being able to view a VR drawing from inside has tremendous potential as a hook for both viewers and artists alike. Never have I been able to amble inside my drawings and inspect them from an interior perspective and this surely becomes a crucial fascinating 'hook' for VR. This notion of walking around inside a drawing, presents splendid opportunities that could be exploited for viewer interactivity and would need to be embraced at the planning and incubation period of concept. At this juncture, I find art, science and technology interplaying for an exciting intersecting interface.
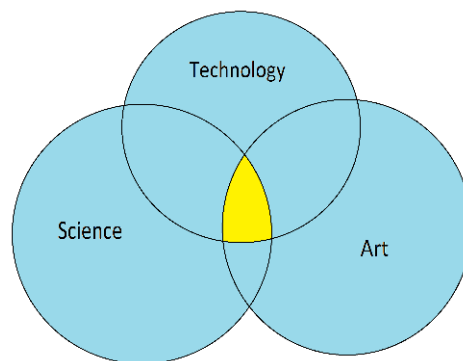
Fine art conceptual framework – Application avoids gimmick!   Virtual drawing could be regarded as gimmicky if not approached with careful thought and embedded within a conceptual fine art framework. Fine artists place high importance on concept and message of their work. Too much reliance on technology would render a work of art lacking. If viewers of fine art wish to see a VR exhibit they would certainly be disappointed if gimmick was the binding feature. A successful work of art would embody appropriate use of all three sets at intersection.

Does virtual drawing put into question the boundaries of the art gallery   Fine artists persistently consider how the public will view and interact with their works of art. A virtual space presents an exciting but complex opportunity for viewers to enter into an immersive VR installation. Clearly the most dramatic way would be to put on a headset to explore and experience the VR drawing in isolation just as the artist experienced in creating it. This however, challenges the notions of technologies and computers within the gallery whereby each viewer requires his or her own headset. Many questions arise…. would this present the need to book a viewing time or slot? Would this limit the numbers allowed at any one time? Would this require specially trained invigilators or technicians to oversee a virtual drawing exhibition? Such immersive experiences would need to be managed,

together with risks of motion sickness and destabilizing stumbles. The effects of motion sickness are considerably reduced due to adjusted computer frame rates and thus I didn't experience any nausea or giddiness. A perfect solution for VR display avoiding such risks would be holograms. Viewers could observe the three-dimensional spaces safely; however, this technology is not yet available.

A Virtual Drawing exhibition could involve many facets. The main feature would be of course the virtual drawing outcome as seen through the headset where viewers could be given opportunity to wander at will through the virtual spaces of the drawing or composition. Creative use of sound could also enhance and enrich virtual meanderings and immersive experiences to good effect.

The act of drawing becomes performative and so too is the act of viewers wandering inside and this voyeuristic stance could indeed be explored further as the viewing audience view themselves and each other. Culturally we enjoy watching others experiencing and interacting with new situations and at times find this amusing; therefore, this performative aspect should be an opportunity not to be missed.

Time spent in the virtual world felt isolating. Image taken at Fab Lab, Sandwell.

The replaying of film footage showing the artist performing a VR drawing presents a narrative of construction akin to the filming of any type of artistic process and could well be featured in a VR exhibition. As well as the artist's performance of a choreographed 'virtual dance' it is possible to replay all histories of mark making as a journey from beginning to end as a film projection. These aspects put the whole process of construction and viewer interactivity into liquid realms of the possible.

Conclusion

The 3D virtual pollen entity existed and floated in space awaiting the public's entrance and exploration. It seems yet again the expanded field is widening into the virtual world of three dimensions, where drawing is now thought of in the 'sculptural' realms. Taking drawing into an immersive sculptural plane that could be entered and walked around becomes a tremendous hook to capture the viewing public's attention and interest. Motion sickness was not a problem to me provided I moved gently and turned my head slowly. It seems the computer frame rate was optimised to avoid any mismatch in perception that could have induced motion sickness. The actual time spent immersed in the virtual world would certainly need to be raised and suitably managed by the gallery establishment for potential viewers in a gallery setting. I noticed that after a period of wearing the headset there were spells where I began to question what was real and what was virtual. The boundaries became indistinct. For this reason, timed viewing and timed drawing sessions should be imposed. Risk assessment and known health concerns such as epilepsy would need to be addressed and viewers who wanted to enter the virtual world should be

well informed. It may be necessary to have a buddy watching out for potential slips or trips due to disorientations.

 Drawing sculpturally presented a new complex set of skills to master and process intellectually as my previous experiences were only extended to drawing on a flat surface. Adjusting to the varying depths of drawing planes and establishing the exact point of contact had to be learned. My Daisy pollen, self-choreographed dance became a feature I was unaware of performing but certainly observed this in others using the headset, providing a voyeuristic amusing and entertaining opportunity for viewers to witness. This' virtual dance' could be filmed and played as an additional feature for the viewing public.   Accompanying soundscapes could be developed to create dialogues within conceptual frameworks and this would surely enrich and enhance viewer interactivity and immersive experiences.   Conceptually, the idea of creating a three-dimensional pollen grain as a large-scale entity floating in space was deemed an appropriate use of this medium however this had to be drawn from memory as any form of observational referencing was not available. It seems that artists demonstrating the use of this medium routinely draw from memory and imagination which excludes forms of direct observational drawing from still life or of the nude figure.

The advances of technologies are constantly presenting human kind with new challenges and concepts which renders us a flexible, accommodating and forever curious race. We are happy to trial new ideas furthermore, artists are traditionally known as agents of their time sampling, testing and pushing limits. I feel the Virtual Space is going to be an immense way forward in many fields including fine art and is surely expanding the boundary of drawing with its unique hook…. take a trip inside your drawing and meander at will within.

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