

The waving torch draws unbelievable pictures

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This article is like a self-titled album. Its heading is also the name of its subject: an interactive digital drawing tool I have been developing over the last eighteen months.¹ The point of the project was to enable people of all abilities to access technology and develop new modes of creative expression through this engagement. In fact, early development of the tool involved the input of the Back to Back Theatre, an organisation comprising an ensemble of actors “perceived to have a disability.”² The concept behind the tool was to create a means of using computers that didn’t require a keyboard, drawing tablet,³ touch pad or similar interface—that didn’t, in fact, require the mastering of any additional apparatus whatsoever other than a stick or wand—that most primitive and ubiquitous of all tools.

In July 2006, I launched the tool at Experimedia at the State Library of Victoria.⁴ This event required a publicity image and, obviously, a title. The image was easy, the title a little tougher. Already, I had found the tool difficult to describe or explain in lay terms. The title needed to somehow bridge this gap and provide a point of entry for the non-technologically minded.

With so much riding on it, the title was proving particularly elusive. After some initial online research into projects using similar technologies, I came up with a number of unsatisfactory attempts: “Motion Draw 3D”, “Three Draw Version 1.0” and “Light Track 3D”. At a loss, I called Back to Back Theatre. Ensemble member Simon Laherty answered the telephone. I explained my dilemma. The phone went silent. Then Laherty suddenly announced: “The waving torch draws unbelievable pictures”. It was perfect—functional, humourous and highly creative, managing to convey the tool’s technological complexity, purpose and process in one simple, descriptive phrase.

Laherty’s first-hand experience of the tool, combined with his distance from the technology involved, produced a title that is about as lo-tech as one could ask for—

¹ The “I” in this article refers to Rhian Hinkley.

² As stated on their website, Back to Back Theatre “was founded in Geelong in 1987 to create theatre with people who are perceived to have a disability. It has gone on to become one of Australia’s leading creative voices, focusing on moral, philosophical and political questions about the value of individual lives.” <<http://www.backtobacktheatre.com/>>. Accessed 18 December 2006.

³ Wacom drawing tablets are a means by which freehand drawings can be rendered within a digital environment. For further information, visit the Wacom website <<http://www.wacom.com/>>.

⁴ Experimedia at the State Library of Victoria also assisted in the development of the project through their artist-in-residence program, which provided hardware and office space for a ten-month period beginning in September 2005. The tool was then showcased over the 24th, 25th and 28th July 2006.

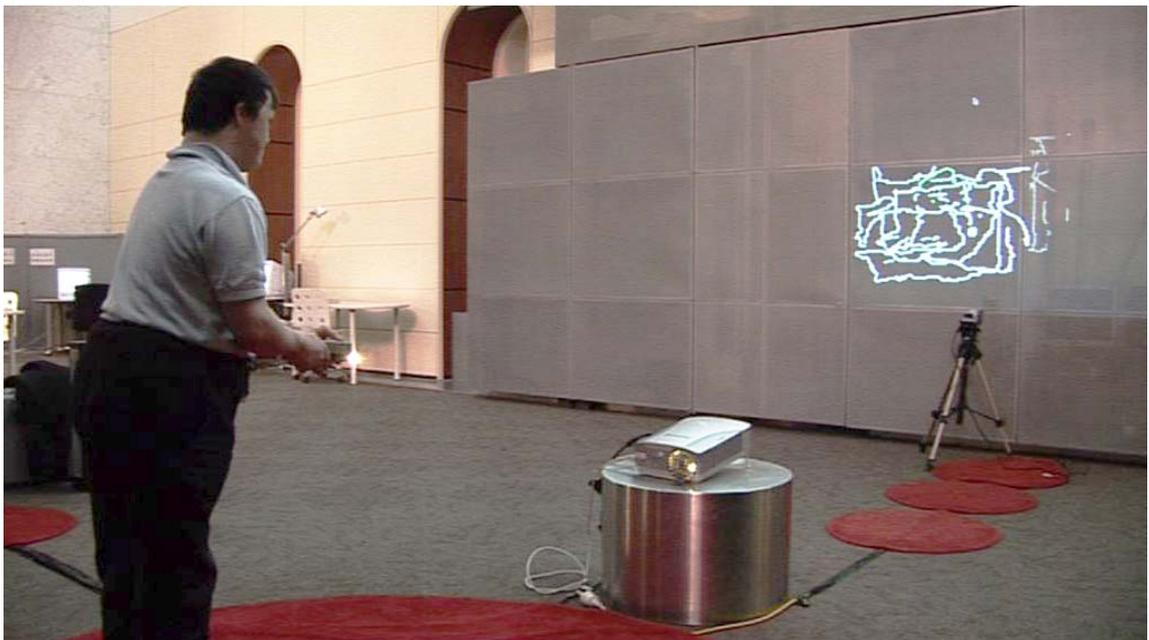
a particularly fitting response to the deliberate simplicity of the “primitive” drawing tool.

But what exactly is it and what does it do?

In a nutshell, the Waving Torch is an interactive, computer-based tool that enables a type of freehand drawing. A computer tracks the position of a torch light held in the hand of the user. The path traced by this light is then recreated as a line based drawing within a virtual, three-dimensional canvas. This process is projected life-size in front of the user who is then able to immediately connect the motion of the torch with the resulting image.

The most exciting and novel aspect of this technology is that people with limited motor capacity who have difficulty manipulating a pen, paintbrush or mouse, for instance, are provided an opportunity to both experience and transform the act of drawing, thereby opening up entirely new avenues of creative expression. As the Waving Torch does not need to be accurately guided across a flat surface, the user is free to move in any direction and to focus exclusively on expression rather than physical coordination.

Figure 1: Mark Deans draws with the “waving torch” at Experimedia, State Library of Victoria 2006



The torch uses custom-built motion-tracking technology that I wrote in “Processing”—a piece of Java-based software currently still in development.⁵ This software provides a means of developing graphical applications without having to learn the language of Java.

⁵ According to the Processing website, “Processing is an open source programming language and environment for people who want to program images, animation, and sound. . . . Processing is developed by artists and designers as an alternative to proprietary software tools in the same domain.” The language has been designed to “facilitate the creation of sophisticated visual and conceptual structures” without requiring the user to understand more advanced concepts (while still making them accessible for users who desire them). See <<http://www.processing.org>>. Accessed 18 December 2006.

Twists and turns ...

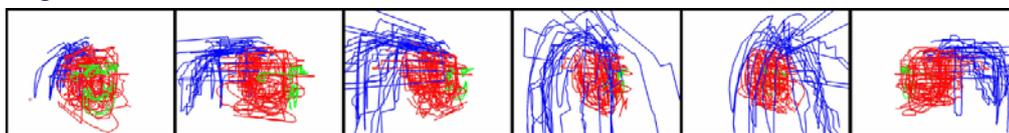
So far, the tool has mainly been used amongst all-ability adult groups, although it has tremendous potential for child-based play and learning. It has been limited to adult groups because the tool was specifically developed in response to a need I perceived while facilitating an ongoing series of *pod* theatre workshops that began in 2003. Developed and co-ordinated by Back to Back Theatre, these community-focused workshops have thus far taken place in regional Victoria (Ballarat, Colac, Geelong, Horsham, Warnambool), Hobart and Hanover, Germany.

The *pods* involve an intensive workshop (usually of about a week) that culminates in a performance. The participants have the opportunity to work in three areas—performance, set/theatre design and digital media production. More uniquely, as its name suggests, the *pod* concept revolves around a soft, inflatable, tent-like structure. Participants design an inflatable space which houses the entire show, including the audience. All works are performed or projected in and around this space.

As is characteristic of Back to Back, these workshops include a significant technological and animation element—which is where I come in, being an animator by trade. Another important part of the *pod* model is the emphasis upon collaboration and interactivity between disciplines. These factors were crucial in the development of the Waving Torch. Encouraging participant control over outcomes, I find the pod environment particularly conducive to the exploration of novel and challenging ideas. Discussions with the other main workshop facilitators (Marcia Ferguson, Mark Cuthbertson and Bruce Gladwin) were instrumental in the original conception of the drawing tool.

The final step along the Waving Torch’s developmental path was my collaboration with all-abilities theatre group Art Day South (directed by Katrine Gabb and Andrew Tranter) who experimented with and responded to with my initial prototype. A highly creative group with limited technical resources, Art Day South provided invaluable support. Far less media savvy than Back to Back, this group brought a unique perspective to the project, approaching the tool with few technological preconceptions.⁶

Figure 2: Self portrait by Rhian Hinkley 2006 showing image from various angles



Playful possibilities

The Art Day South group tended to approach the Waving Torch as a completely new medium and consequently, employed it in a far less inhibited way than many

⁶ Prior to developing the Waving Torch, I received a research grant from the Australia Council to develop a project called “Going downs” which attempted to develop a “down syndrome effect” or filter, which could then be applied to images. In effect, it sought to treat pixels like chromosomes and to recreate the chromosomal idiosyncrasies of down syndrome through images. This project also sought to create new relations between technology, creativity and people of different abilities. For further information, visit my website <http://www.lowercase.com.au/goingdown>.

others, experimenting in novel ways with speed, distance, and colour while thoroughly enjoying the experience. Having the freedom to really “play” with the tool, when first introduced to it, proved to be the fastest way of learning its strengths and limitations. This became obvious when comparing the Art Day South group to those users who immediately tried to create a “conventional” image as they might have done, for instance, with pen and paper. People with little or no experience with digital technology seemed to master the tool’s basic principles faster than those who had previous experience with other graphic processes.

During the *pod* workshop in Hobart, I was working with an artist who had great difficulty making any connection between his actions on a tablet or with a mouse, and the resulting images displayed before him via a projector. It requires a large mental shift to translate motion on one plane and scale to an altogether different surface (images on a wall) at a much larger scale. Because the drawing tool has a 1:1 scale with the motion of the user, the connection between the object in one’s hand and the lines on the wall is far clearer. This Hobart participant instantly understood how the tool worked and spent hours experimenting with it, spending up to twenty minutes on a single drawing. During the drawing process he often seemed to get lost in the technology, becoming oblivious to the attentive crowd—quite a feat considering that there were up to 200 people watching at times. The other interesting thing about this man was is that he was uninterested in the final outcome, not caring if the drawings were printed or kept in any form. Rather, it was the process of creating the work that he found so absorbing.

The act of drawing with the Waving Torch is very unlike other forms of drawing. There is no friction, no tactile response and a real sense of dislocation from the image. For some, this distance is awkward and hard to navigate. For others, it is very liberating. Indeed, this freedom creates a whole new set of questions: how do I use this; how am I connected to that drawing before me; am I using it properly? The beauty of these questions is that they are uniform for all users. As the tool is new to everyone, it creates a level playing field. There are no benchmarks, no “good” drawings and no people who “can’t draw”!

Figure 3: Aeroplane by Bruce McKenzie of Art Day South, completed at Experimedia, State Library of Victoria 2006



An interesting dynamic emerged during the Experimedia launch when I invited members of the public to participate. The prevailing attitude seemed to be: “Well, that was very nice but now I’ll draw a ‘real’ picture”. But they couldn’t. In fact they found themselves hamstrung by their inability to see the Waving Torch as something new that requires an original approach. This is the most challenging and exciting aspect of the tool. Specifically, it does not simply utilise technology in order to enable people with disabilities to master the act of drawing. Rather, it seeks to reanimate the process of drawing itself, creating entirely new modes of expression and experience. The process is as interesting as the result, transforming the tool from being a means of creating images to being a whole performance—as its full name suggests—that can be viewed with equal interest from any angle.

On the horizon

During the end of my collaboration with Art Day South we discussed the possibility of recreating the drawings as tangible objects. After some research I discovered a business in Melbourne that creates three-dimensional “prints” or sculptures from digitally created files. This process, often known as “rapid prototyping”, is used mainly for the production of one-off or first-run engineering models. As a test run we printed one model and the result was very promising. This avenue of research creates a whole new range of possibilities in relation to sculpture, installation, and model making. Add the prospect of multiple torches, multiple users, editable drawings, interactive landscapes and virtual reality headsets, and the horizons just keep expanding.

Figure 4: Rapid Prototype of a waving torch drawing. Image by Rita Halabarc 2006



When I returned from Hobart I received a card from one of the participants thanking me for the experience and expressing how much fun it had been. She had worked closely with me at the time and had used the tool quite extensively. Her note reminded me of something I often forget about—the fun factor. One of the most rewarding aspects of the entire drawing tool performance is the fact that the users are obviously enjoying themselves. As one observer noted, this enjoyment becomes infectious, leaving others in the audience just itching to have a go. For some reason the barriers often thrown up by new technologies don’t seem to exist

with this tool. Rather, it is approachable and non-threatening. It's hard to know precisely why, but it definitely seems linked to the fact that it resembles both tool and toy, encouraging a lively mix of work and play.