16 The Video Window: My life with a ludic system

William W. Gaver

Interaction Researh Studio

Design Department

Goldsmiths, University of London

London SE14 6NW U.K.

w.gaver@gold.ac.uk

14.0 Abstract

The Video Window is a video screen hanging next to a window on my bed-room wall, showing the image from a camera mounted to show the skyline from outside that same window. This paper describes the appeal of living with such a system, and the intermingled aesthetic, utilitarian and practical issues involved in its creation and the experience it offers.

14.1 Introduction

About six months ago[1], I mounted a small video camera on a mast outside our bedroom window, oriented to pick up a view of the skyline down the hill from our house (see Figure 1). The camera output is wired directly to a small flat-screen display hung on our bedroom wall, across from our bed, and is always left on.

--- insert Figure 1 about here ---

The result is a "Video Window" hanging close to the real window of our bed-room (see Figure 2). It's a very simple configuration of technology, and isn't really "for" anything. Instead, it encourages a ludic experience (Gaver 2002) of

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[1] This originally appeared under the same title at the 3AD International Conference of Appliance Design in 2005, and in 2006 in Personal and Ubiquitous Computing 10(2-3): 60-65. I have chosen not to update the experiences described here, but am happy to report that the Video Window is still in place in our bedroom, more than three years after I rote this original account.

curiosity, exploration, and aesthetic enjoyment that my wife, child and I have found surprisingly compelling. And though the system was not designed as a part of my research, living with it has taught me both about the value of this sort of device, and issues in its design. In this paper, I reflect on our experience of living with the Video Window to uncover factors in its appeal, and lessons for designing everyday technologies more generally.

--- insert Figure 2 about here ---

14.1.1 Origins of the Video Window

This is actually our second Video Window. I built the first one a number of years ago, by leaning a pole with a small camera attached to it out our bedroom window, and displaying the image on a monitor that I propped on a chair. It was a jerry-rigged, precarious and inconvenient system, but my wife and I enjoyed it for a few weeks before I dismantled it to use the camera for another project.

Playing with video in this way was influenced by my previous experience with mediaspaces, computer-controlled networks of audio and video equipment used to support collaboration amongst remote colleagues (Bly et al. 1993; Gaver et al. 1992). Though usually justified along utilitarian lines, mediaspace systems were often used in more playful ways as well—for instance to view a nearby public green, or to watch a birds nest being built outside an office. Such activities were never taken very seriously, but were a continual feature of mediaspaces I experienced.

I never took the first Video Window very seriously either, and though we missed it when we took it down, my wife and I never seriously considered replacing it. Then in 2003, one of our students, Sebastian Irrgang, attached a video camera to a weather balloon and tethered it to his roof, displaying the image in his home to alleviate the claustrophobia of living in a basement flat. His configuration was quite different from ours—most notably, the image spun and swayed wildly as the balloon was buffeted by the wind—but seeing his project reawakened my interest in making a new Video Window for our own home.

It took another year before I finally installed our current Video Window, however, and when I did it was because of a fishing pole. Tobie Kerridge, a researcher in our studio, found a source for long (6.7 metre), light-weight (800 gm), telescopic fishing poles while looking for a way to mount a weather station outside the home (http://www.sotabeams.co.uk/sotapole.htm). As soon as he unpacked the pole and we started playing with it, I knew it would be perfect for a Video Win-

dow. I ordered my own later that day, and when it arrived set about collecting the equipment for a new installation.

14.2 Living with the Video Window

Because the Video Window is in our bedroom, we usually encounter the view in the mornings and evenings. This makes the experience very different from similar systems found in workplaces or even other areas of the home. For instance, the view "out" the Video Window is one of the first things we see in the morning (see Figure 3). While we drink coffee and read the paper (or children's stories), we find ourselves staring at the skyline, admiring a pretty sunrise, assessing the weather, or simply enjoying the view.

--- insert Figure 3 about here ---

At night, most of the interest is in seeing our urban neighbourhood, rather than the sky—particularly the lights of nearby office buildings and glimpses of moving traffic we catch on the corners of the screen (see Figure 4). Sometimes we see the moon or particularly bright stars, the lights of a passing plane, or even, on one occasion, fireworks in a nearby park, but these are special events and greeted as such. Usually the scene is much less dramatic: a view of the city slowly settling for the night.

--- insert Figure 4 about here ---

Because we are usually out of the house, or at least not in our bedroom, we see the Video Window much less often during the day. Sometimes when we do see it, the view seems flatter and more prosaic than during the mornings or evenings—though this could be a function of our being occupied with other activities. But other times, it can suddenly bring moments of new appreciation, as when the buildings are painted red by sunset, lights come on before the evening sun has faded from the sky, or the moon slowly rises over the cityscape (see Figure 5).

--- insert Figure 5 about here ---

Often the view from the Video Window is apparently static and unremarkable. Still, it is almost always interesting. The clouds and lights change slowly but continuously, punctuated by the small drama of a bird flying past or a plane on its decent into Heathrow. The Video Window is not distracting or entertaining, but it is

endlessly fascinating, and we often find ourselves watching it rather than looking out the real window directly beside it.

A central value of the Video Window is in increasing the view from our bedroom. This might seem odd, as the display hangs next to a much larger, physical window. But the view through our real window is relatively constrained, not least because we hang a shade over its lower half for privacy. Moreover, the outlook it affords is unequal from the two sides of our bed. My wife's view is dominated by a modern university building, while from my side one can see between this building and a neighbouring Victorian hospital down towards our neighbourhood's shopping district. The Video Window has equalised our outlook from the bedroom, and allows us to see a much larger panorama as well. My wife likes to compare it to a room with an ocean view, in which the sheer scope of the scene seems to extend one's feeling of living space to include the landscape and its subtle changes.

14.3 Constructing the Video Window

The Video Window is a very simple arrangement of technology, but it took a surprising amount of work to "get it right". In retrospect, "getting it right" involved both practical and aesthetic issues. But at the time I didn't differentiate the two. Instead, they were intertwined in creating an experience we wanted to live with.

14.3.1 Choosing a camera

The most notable issue in crafting the Video Window was finding an appropriate video camera (see Figure 6). The camera I am using currently is my fourth, and I am considering trying yet another one.

The first camera was a relatively small "bullet camera". It gave a very acceptable image, but wasn't completely waterproof. Moisture condensed inside the lens at night, blurring the image completely in the morning. Next I tried a domestic security camera that enclosed a bullet camera surrounded by infrared LEDs (for night-time illumination) in a waterproof housing. The image was crisp and impervious to moisture, but the viewing angle was only about 50° and seemed too similar to the existing outlook to be interesting. It became apparent that one of the aesthetic values of the Video Window was in offering an enhanced view rather than a

realistic one. The 100° field of view of the third camera, however, seemed too wide, producing a distorted image that emphasised technical mediation. In addition, the infrared lighting used by both the second and third cameras produced interesting effects at night—for instance, bright streaks across the screen as individual raindrops were illuminated—but ultimately these we too unnatural and even eerie to live with.

Our current camera is a waterproof camera, without infrared lighting, sourced via the web (www.rfconcepts.co.uk/). This has withstood rain- and snowstorms extremely well, and has what appears to be an optimal field of view (about 70°). In addition, it is designed for low-light conditions, and can show the surrounding scenery even in the middle of the night (the city's ambient light no doubt helps with this) without the distracting effects of infrared lighting. Nonetheless, the image is somewhat blurry, and at night there is a great deal of visual noise obscuring the image. This may be because the last metre of the video cable is unshielded, or may simply reflect the camera's struggle to cope with low light conditions, but in any case I am considering trying yet another camera.

Weatherproofing, night vision and field of view were among the most important issues in finding an acceptable camera. Some of these seem to reflect clearly practical concerns (e.g. waterproofing), while others are aesthetic (e.g. field of view). Some (e.g., night vision), however, seem to involve both. In the end, distinctions between practicality and aesthetics are difficult to make for this system—an issue I will return to later.

14.3.2 A view of our own

Deciding what to look at was another issue in configuring the Video Window. The camera's field of view is important here—in our situation, we value seeing a wider-angle view than seems realistic, without using such a wide-angle lens that the image is obviously distorted. Beyond how much we can see, however, where the camera is pointed also matters, and adjusting that view has been an important factor in configuring our system.

The Video Window's camera mast is mounted just outside our bedroom window, attached to our exterior wall with a couple of spring clips on a bracket. This affords easy removal for maintenance, and also allows the view to be panned 360° around our house (the camera is high enough to look over our roof). Despite the flexibility of our view, however, I tend to strongly prefer a very particular angle of view down the hill from our home (my wife is less adamant about this). This preference is unexpected and difficult to explain. One factor is that the camera extends the line of sight from our bed so that we look in the "right" direction, rather than,

for instance, seeing a landscape that is actually behind our backs. But my preference is more exact than this explanation suggests: I am sensitive to swings of as little as 1° or so from my preferred angle. On reflection, it seems that I frame the image to achieve a visual balance, much as photographers or painters compose their images. Thus the view on the Window is determined both by its correspondence with our physical situation and the desire to compose it aesthetically.

Adjusting the pan of the Video Window is easy—sometimes too easy, as it tends to be perturbed by wind. More difficult is changing the tilt and vertical orientation of the camera, and I have spent long sessions readjusting these through in a laborious process of bringing the camera inside, adjusting the angles, remounting it outside and checking the results. This has made clear the importance both of precisely tuning the view, and of having the camera mounted in a way that is easily accessible—if it were mounted on the roof, for example, finding and maintaining a desirable view would be much more difficult.

14.3.3 Tinkering, maintenance and simple use

Evolving the current arrangement of the Video Window was pursued in odd moments over a number of months. The many tasks involved in configuring the equipment both as a technical system and one of the home's fittings combined the pleasures of design research and DIY home-improvement projects. They accounted for the majority of time I spent with the system for the first couple of months, and assessing the effects of recent changes was an integral part of my involvement with the view. For a while, it seemed that crafting the system was perhaps the most fundamental part of the pleasure it offered.

I stopped working on the system when I finally decided the arrangement was good enough and that I'd spend enough time on it. This was a fairly sudden shift from regular tinkering to almost no modifications: I simply gave up working on the Video Window as a hobby. At this point, I started to engage with the Video Window as a background amenity in our home, and found to my relief that I enjoyed it just as much as when I was continually trying to improve it. But the Window still requires periodic maintenance—particularly to readjust the viewing angle every few days when the wind shifts the camera slightly. This has become a chore, however, that has little intrinsic interest.

The differences among these forms of engagement—tinkering, maintenance, and simple use—are likely to appear for many systems, and particularly those developed for the home. Tinkering is enjoyable, maintenance is not. On the one hand, this means that systems should be robust and require little adjustment once they have been tuned. On the other hand, requiring some work to achieve a desir-

able configuration may be intrinsically rewarding, and even a means to encourage initial engagement with a new system.

14.4. Aesthetics, utility and practicality

The Video Window is a good reminder that aesthetics, utility and practicality are conceptual distinctions that may be difficult to isolate in practice. Practical concerns often have aesthetic implications. As I have discussed, some of the system's most beautiful features are also its most useful. But, conversely, some come from what might be considered flaws in the system.

14.4.1 Watching the weather

If the Video Window has any clear utility, for instance, it is in making us aware of the weather. This goes beyond a visual assessment of cloud cover to incorporate unexpected attributes of the system. On windy days, for instance, the image bucks and sways because the camera mast is relatively flexible and only secured at its base. This could be fixed, but we enjoy the visual effect both for what it tells us about the weather and for the giddy effect of seeing the landscape heaving onscreen like a ship on a stormy sea—an exciting counterpoint to the Window's normally peaceful view.

On rainy days, drops of water on the exterior of the camera lens create abstract shapes of pure colour that overwhelm the image. Snow, in contrast, tends to cause ugly grey shadows when it lands on the camera, but the sight of hundreds of flakes swirling in the sky is striking. In each case, it is difficult to say which we value more, the information or the visual effect.

Idiosyncrasies of the camera combine with monitor settings to create an image that is unrealistic but enhanced. For instance, the camera is sensitive in low-light situations, so the scene very early in the morning is usually much lighter than what we see out our window. Waking in the middle of the night, for instance to attend to a distressed three-year-old, I have often seen the Video Window show the first glow of dawn despite the sky appearing black outside our window, and realised that I would have to get up sooner than I thought. We also have the colour and contrast on the monitor turned fairly high, which tends to make the sky appear quite dramatic. Only on the gloomiest of days do we see a uniformly grey sky on the Window, and such a sight can be depressing as it emphasises how unremitting the cloud cover must be. The Video Monitor usually reveals contours of cloud

density that are quite lovely, buoying our mood even on overcast days, and having lasting effects on how we look at the sky on leaving home.

The Video Window could be seen as an ambient weather display. The fact that seeing the weather is a side effect of looking out of our room, however, and that features of the weather appear as unanticipated side-effects of its configuration, makes seeing the weather through the Video Window particularly uncontrived and aesthetically pleasing. Moreover, the potentially utilitarian information we get from the window is completely interwoven with its psychological and aesthetic effects—there are no artificial boundaries between the various ways of engaging with the view it offers.

14.4.2 The aesthetics of technology

Other characteristics of the technology can also have surprising and aesthetically pleasing effects. For instance, when the sun rises over the hospital building below our house, it causes a vertical white line to appear as it overloads the camera. Sometimes lens flare causes translucent, pastel coloured circles to radiate diagonally from the sun, another effect that we find enjoy (see Figure 7).

In general, the aesthetics of the experience offered by the Video Window depend in part on characteristics of the technology as well as the scene. Many of these characteristics could be seen as limitations, insofar as they interfere with a veridical representation of the actual view. Some—for instance, the shadows caused by snow, or the blue static that appears in low-light situations—are genuinely irritating. Many, however, are integral to the appeal of the Video Window. This experience, that technological limitations can be resources for aesthetic appreciation, chimes with similar observations we[2] have made of people interacting with purposefully constrained research prototypes (e.g. Gaver et al. 2004): the very features that frustrate users at first can become the source of aesthetic appreciation with experience.

14.5 Lessons from the Video Window

The Video Window is a simple system. Considered merely as a concept, it seems hardly worth discussing as a design at all. Its value, and the variety of experiences it has offered, has only become clear because my wife, child and I have lived with it continuously over a period of time.

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[2] I am indebted to John Bowers for articulating this phenomenon.

In describing the Video Window, I have tried to articulate some of the factors that appear to make it so compelling. To summarise these lessons:

- Technology can offer ludic pleasure during all our waking hours, (even early in the morning!).
- New views on the existing environment can be fascinating.
- Slight distortion can augment experience without distracting from the "natural" view.
- One's own, non-arbitrary view may engender strong feelings of engagement.
- Physical causation can convey information (e.g. about the weather) in uncontrived and aesthetically pleasing ways.
- (Some) technological artefacts and constraints can be aesthetically pleasing.
- Systems can seamlessly mix resources for task-based pursuits, ludic engagement, and aesthetic pleasure.
- Tinkering is enjoyable, but maintenance is a chore.

In sum, the Video Window is a simple system offering a rich experience. Perhaps the best evidence for this comes from the degree of attachment we have formed to it. For instance, when the mast blew down in a windstorm, I remounted it within a day. I accidentally cut the video cable while trying attach it more neatly to our wall, and shared a mild panic with my wife on realising that, because I was about to travel for a few days, it would remain broken unless I fixed it that evening (which I did manage to do). It is a compelling indication of the value we find in the Video Window that I probably attend to such problems more quickly than I would to other broken fixtures in our home—including burnt-out lightbulbs—and that my wife concurs with this sense of urgency. Unlike many modern technologies, the Video Window is more than a luxury or delightful plaything: it has become an integral part of our experience of home.

14.6 Acknowledgements.

14.7 References

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Figure Captions

Figure 1:   Camera on a mast extending above our roof.

Figure 2:   Video Window in our bedrroom.

Figure 3.   Sunrise on the Video Window.

Figure 4.   The Video Window by night.

Figure 5.   A pretty twilight.

Figure 6.   Cameras: Left, security camera with infrared LEDs. Right: current bul-
letcam.

Figure 7.   Visual artefacts can be aesthetically pleasing.