REDUCTION AND THE TACHISTOSCOPIC FLASH – A MARGINALISED TECHNOLOGY

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Abstract

The subliminal flash has had a long and colourful history in perceptual psychology, from its origins in WWII military and law enforcement training, through use as a tool for market research and by structuralist filmmakers of the 1960s, to more dubious associations with mind control. In more recent times the subliminal flash has been used in television advertising as a gimmick rather than a surreptitious form of brainwashing - though the practice is still officially banned in Australia. This paper explores the history of the tachistocopic flash as a methodology both cultural and technological, and more recently as an outlawed practice in commercial screen culture.

Keywords: tachistoscope, flash frame, subliminal, perceptual psychology, digital Easter egg, mind control

At the first ISEA I ever attended, back in 1995, I presented an artwork on an Amiga 3000 computer. This was primarily because Apple Macintoshes were too expensive, the graphics were still black and white, and the CPU could barely muster a stack of images into a meagre animation. Despite the excitement and enthusiasm regarding the possibilities of new media, computer graphics were about limitation and restrictions: the number of colours used, the size of the image (remember the tiny postage stamp sized QuickTimes) and the frame rate. Reduction was ever present for the 'New Media' artist amidst an ongoing crusade for image fidelity; yet here we are in 2013 with comparatively no restrictions on the use of two-dimensional graphics regarding colour, speed, frame-rate, quality and bandwidth - though for some reason I still find myself seduced by technological minimalism, a self-imposed reduction. I revelled in the challenge of working in only eight colours, and of being able to fit my entire animation on a single sided floppy disk; it is partly for this reason that I have become interested in the tachistoscope as a pre-computer screen apparatus, and the subliminal flash as a comparatively marginalised moving image process. To work with the flash frame is to work with a tiny fragment, a millisecond in duration – the antithesis of the hours and hours of real-time video documentation we can now wade through on YouTube. While this may seem a glib justification or convenient excuse for laziness, I also see the 'tachistoscopic flash' as relevant to the contemporary exploration of moving image language.

The tachistoscope began as a research tool and is more or less a slide projector, but one that has been modified to reveal the images in controlled temporal fragments, usually milliseconds. There is really no one definitive tachistoscope; many versions have been adapted or developed from scratch according to the needs of the researcher. The first one was developed as early as 1859, and the Bubley TS1 Projector Tachistoscope is still sold online today [1]. The tachistoscopic flash frame has its origins in a mixture of historical sources ranging from vision training and testing, B-grade cinema novelty, curative therapy, marketing, market research, conspiratorial hoaxes, anti-narrative materialist cinema, advertising gimmicks and cheap animated special effects. As an artist/practitioner and teacher, my interest lies with not only the history and novelty of the flash frame, but also the simplicity of it. I am compelled by the tiny amount of time and space the single flash frame may occupy compared to the conventional moving image; the flash frame seems to me to be an energy efficient compact moving image solution to excessive temporal visual consumption.

Testing and Training – the early years

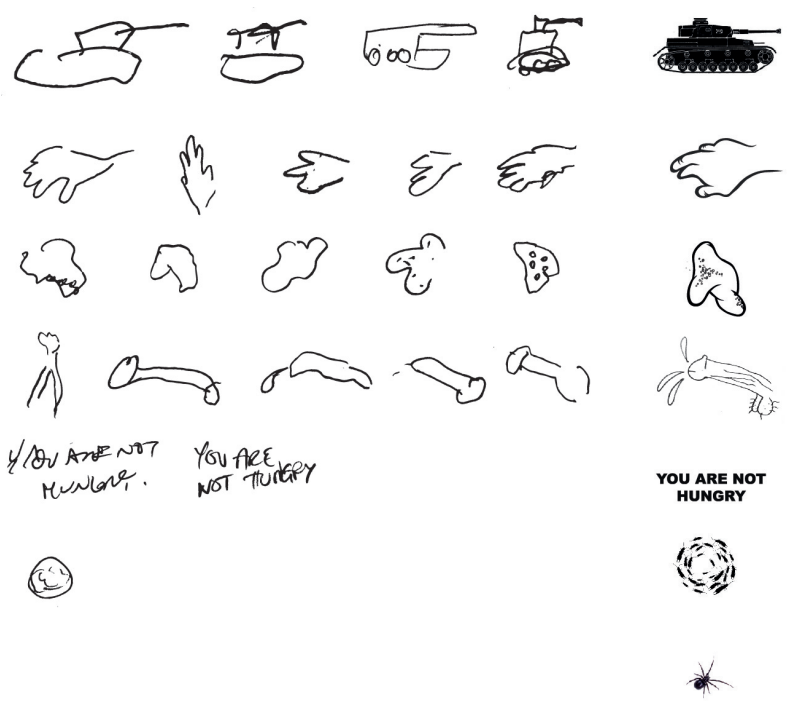
One of the most interesting examples of the tachistoscopic flash that I have come upon was an experiment regarding the use of caricature in 1956 by Ryan and Schwartz called 'Speed of perception as a function of mode of representation' [2]. By and large this study was typical of many such studies conducted throughout the 1940s and 50s that used the tachistocope for vision training or vision testing for the purposes of visual proficiency. This experiment set out to test and measure which type of pictorial representation could be perceived in the shortest amount of time, to improve efficiency of wartime and industrial training manuals. Air Force pre-flight training schools had already been using tachistocopic flash training since 1942 under the instruction of Samuel Renshaw; Renshaw's training techniques enabled pilots in WWII to accurately and quickly distinguish between enemy and allied aircraft within milliseconds. Flash recognition training (FRT) was believed to be effective as it prevented the viewer from saccadic sampling of an image; in other words, there was no time to glance at sections of the image, but instead the image must be perceived as a total form – a gestalt. Remarkably, shorter amounts of time were found to be more effective than longer ones.

In the 1956 experiment the flash frame was used not to train vision, but instead to test it in relation to the efficiency of the image. If an image were to be quickly perceived as a whole, what type of representation would be most effective, mimetic or caricature? The conclusions indicated that it was actually the cartoon representations that were perceived in the shortest amount of time, and line drawings needed the longest amount of time to be perceived accurately.

If we consider the outcomes of these two experiments, what does this tell us about how cartoon animation (which is made up of separate stylised drawings) was perceived at that time? If, like the fighter pilots, we can perceive the whole more accurately in a fraction of a second rather than a long duration, and, as in the second experiment, we also perceive more accurately if the form is cartoony rather than photographic, does that mean that cartoon animation was the most efficient pictorial moving image system of the time? So much so that it could have even been reduced to a series of discreet flash frames instead of continuous movement, saving the animators and studios considerable time and money? This kind of moving image system could perhaps have been seen to bypass the illusion of continuous movement in favour of concentrated modernist efficiency. It was not until the 1960s that this idea was actually tested as a form of creative expression by experimental filmmakers such as Robert Breer, Paul Sharits and Tony Conrad.

Another example of the use of tachistoscopic training, from the late 1940s, occurred in the area of perception and drawing, in Hoyt Sherman's Flashlab at Ohio State University. Sherman was a professor in the department of Fine Art, and like Renshaw had been involved in the training of Naval and fighter pilots in WWII. The Flashlab was a course designed to teach students to draw more efficiently (faster and more accurately). Sherman also shared Renshaw's view about 'perceiving the whole,' further describing how the lack of dimensional depth in flash frame perception enables the silhouette or outline of the shape to become more apparent, assisting in the translation of three-dimensional form into two. Using this technique the students are actually drawing from the afterimage rather than from any direct pictorial reference. Interestingly, Sherman is best known

Fig. 1. Results of audience participation experiment in which Sherman's Flashlab techniques were tested on a panel audience at 100th of a second. *ISEA2013* (© artist)



for his contribution to modern art rather than his wartime contribution, as Roy Lichtenstein was his most famous student. Regarding the benefits of the flash frame as a learning tool, David Deitcher, in his chapter 'Unsentimental Education,' draws a connection between Lichtenstein's art school education in the Flashlab and his later comic book style paintings as the 'mastery of form and contradiction' [3]. Sherman's Flashlab is an early example of the transition in education from the page to the screen, and the use of technology in the classroom as an expression of the romantic conviction of the benefits of scientific methodologies.

Subliminal images and mind control

It would not be possible to follow the historical trajectory of the flash frame without mentioning James Vicary and the subliminal message. Vicary's infamous stunt/prank staged in 1957 in Fort Lee, New Jersey in which he claimed to have exposed an unwitting movie theatre audience to subliminal flash frames to increase sales of popcorn, has been well documented. Charles Acland, in his book *Swift Viewing* [4], chronicles the rise of the subliminal image and the hysteria associated with it as a development from the post war use of the tachistoscope, and extensively covers historical examples in popular culture. Vicary's rise to fame eclipsed any rational analysis of whether the technique actually worked, and despite Vicary's numerous refusals to recreate the experiment, as well as a later confession that the results had been fabricated, the idea of subliminal persuasion was well and truly cemented in the popular and academic imagination. Within the sphere of academic psychology experiments of flash frame testing continue to this day, although focus has shifted from subliminal mind control to implicit perception - that is, perception beyond our awareness; recent research findings in social psychology suggest that individuals can, in fact, process information of which they are apparently not consciously aware [5].

Interestingly, in Australia we still have laws in place to prevent the use of subliminal images described in the Commercial Television Industry Code of Practice July 2004 [6]. As stated in the code:

1.8 A licensee may not broadcast a program, program promotion, station identification or community service announcement which is likely, in all the circumstances, to:

1.8.2 depict the actual process of putting a subject into a hypnotic state;

1.8.3 be designed to induce a hypnotic state in viewers;

1.8.4 use or involve any technique which attempts to convey information to the viewer by transmitting messages below or near the threshold of normal awareness;

While the idea of the subliminal message as an effective means of persuasion had begun to lose credibility around the late 1950s, and instead became the subject of many spoofs and jokes, the idea of the flash frame as a method of intrusion or surprise used within the moving image had much more traction. Throughout the 1950s and 60s there were many examples of the subliminal frame used within television or cinema for its novelty, humour and spoof value; again, these have been described by Acland [4]. Many examples played on the theme of mind control, continuing the popular mythology of the surprise flash frame suggesting the presence of an external authority, a 'big brother' seeking to infiltrate the audience even while at leisure. In this way the flash frame became parasitic, feeding off the host narrative and infiltrating its micro-narrative. Other examples played on the association of mind control and sex, sneaking in suggestive or sometimes explicit images as a way of seducing our minds into submission, and perhaps even leaving us wondering whether we had just imagined it.

Flashing

In this way the flash frame may also be considered as a form of 'flashing' - flashing the forbidden, such as the single frame of the penis in the opening sequence of Bergman's *Persona*, the end section in *Fight Club*, and even the saucy single frame of Jessica Rabbit's uncovered crotch in *Who Framed Roger Rabbit?* – where, like the trench-coated flasher in the park, a single frame appears out of nowhere, and we are left stupefied and incredulous as to what we just saw.

Flashing the un-seeable may also be viewed within the familiar horror trope of the lightning flash revealing the monster's transformation, the killer in the window, or the dead body in the dirt. This type of flash frame is more suggestive of the phantasmagorical rather than the forbidden. Lightning could be considered the original progenitor of the tachistoscopic flash frame, the electrical life-giving spark of the cinematic apparatus. Here all the qualities of the flash frame come together: the surprise, the extreme contrast in light and dark, and the afterimage which both psychologically and physiologically leaves its silhouetted remains on the retina.

The flash as a source of power is a familiar trope within super-hero animation, and there is no better example of the powers of the flash

frame than in 1997 the episode of Pokémon, Denno Senshi Porygon (or 'Computer Soldier Porygon'). The superhero power flash is the offspring of the phantasmagorical lightning flash combined with the electronically saturated RGB colour cycling of 8-bit computer games. For those who are old enough to remember, this episode contained a particular combination of frenetic flashing coloured frames which sent hundreds of children across Japan into spontaneous seizure [7]. This event, while inadvertent, was probably the closest any moving image sequence has come to what might be considered mind control.

In many senses one of the functions of the flash frame within the moving image is to disrupt illusionary space (where the flash frame contains a different representational space to the host sequence). A consequence of this disruption of illusionary space is also a disruption of what Laura Mulvey refers to as voyeuristic separation [8], the disembodiment of the spectator gazing into the hermetic illusionary world of the cinema. When voyeuristic separation is disrupted by a flash frame, we are no longer merely a spectator, we are now being looked back at and addressed directly. The historical use of the tachistoscope as an art school vision training tool, as well as a psychological tool, coalesced nicely with the development of structuralist cinema, where, as mentioned earlier, illusionistic space was no longer a motivating force. Acland identifies a pertinent point of difference, regarding the tachistocope and the cinema as being similar but also the inverse of each other: 'In its pre-digital form, film is an arranged series of still images that move at a constant rate, separated by imperceptible black fields. The tachistoscope is an arrangement of a still black field interrupted by nearly imperceptible images exposed at a variable rate' [9]. From the late 1950s the moving image in the hands of experimental filmmakers rejected many aspects of cinematic illusion, such as the lack of continuous movement, pictorial space and narrative, in favour of the emphasis of intervals, of the negative black space normally imperceptible. Even the presence of the projector/apparatus in the same space as the audience, while an obvious necessity for laboratory and training purposes, was a critical shift and point of difference in cinema, creating a self-awareness and physicality that is now a familiar structure within contemporary installation. Works such as *Fist Fight* by Robert Breer (1964), *N.O.T.H.I.N.G.* by Paul Sharits (1968) and *Flicker* by Tony Conrad (1965) are key examples of this alternative style of filmmaking, and led to the more general aesthetic of the barrage shock edit montage that we still see today.

Digital Treasure Hunts

In an era when successful advertising can be distributed socially as well as through conventional broadcast channels, the flash frame may be embedded for the purposes of a digital treasure hunt, rather than subconscious brainwashing. The treasure hunt or 'digital Easter egg' is only successful through the use of personalised media such as YouTube, Apple TV, as the user must hunt through the sequence and be able to locate the frame to collect the 'treasure'. Two well documented Australian examples are the 2007 ARIA awards [10], and the iiNET advertisement in 2010; in the former, brand logos were flashed on the screen for one frame at a time, embedded within fast paced motion graphic montages, while the latter made use of a two frame hidden message linking to a URL and free gift. There was also the single frame McDonalds logo that appeared in 2007 during Iron Chef America, which was later explained as an inadvertent editing glitch. These incidents, which were deemed in breach of the Australian media's code of practice, naturally caused a stir for the broadcasters and a lot of welcome attention for the sponsors, as despite their withdrawal from broadcast TV, all the sequences were then disseminated on YouTube. While the popular mythology, as well as the Australian industry code of practice, suggest that this type of advertising is a form of hypnotism, the more plausible explanation of the success of the process is actually the appeal of detection, whether it be in real-time from the live broadcast or later played back from a download. Either way, the marketing succeeds.

It is now possible to have a maximal electronic media presence with the minimum amount of effort, as smartphones allow the seamless production and display of digital video without the 'techy' nuisance of capturing, editing and exporting. The digital revolution is a revolution of infinite real-time video and the lazy producer, with no aspect of our lives left undocumented. In comparison, the flash frame is, for me, therapeutic – the intervals of space and the rarity of the fleeting image are comparatively secretive. The tachistoscopic flash frame is a technology marginalised not necessarily by its own technological obsolescence, but by its prohibition as a potential tool for infiltration. From the mechanical spark, through the electronic flash to the digital glitch, the flash frame makes manifest the apparatus, disrupting the comforting trance of moving image narrative and momentarily breaking the spell. Where the original impetus for the tachistoscopic flash frame was the modernist drive for speed and efficiency (in perception, learning, or influencing the mind), the contemporary notion of efficiency has now become one of reduction, of cutting back on time, space and money. For me this standpoint is by no means one of ethics. I am not necessarily interested in the morals of media consumption, but merely regard the tachistoscopic flash frame as an opportunity to take pleasure in a possible alternative and cut back on moving image pollution!

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