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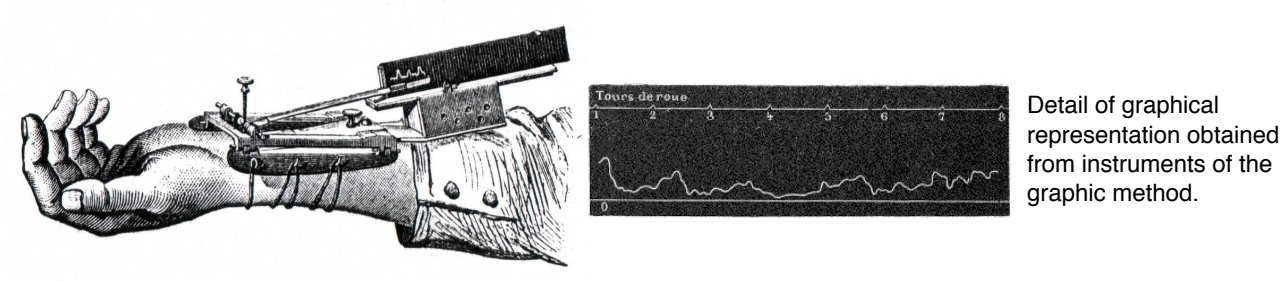
The sound of the shutter: indexicality and the utterance of the image

The image speaks to us; it leaves its trace, its mark – its index. In this paper we will look to artwork that demonstrates synaesthetic potential; *Musical Stairs* is an optical sound film by Guy Sherwin where we listen with our eyes and see with our ears[1]. In this film the image is not constrained to visuality – but utters it's own existence. This paper draws connections between the graphic trace as an indexical method for visualising the body's invisible conditions; the visual arts, in particular, the surrealist's interest in the graphic method as a form of automatism; and the history of visualising sound[2]. The graphic trace shares a similar visual representation (diagrammatic) as that of optical sound, which is a recording process that came into circulation in the 1920's to synchronise sound in film production. Connecting the mechanical line of the graphic trace to an experimental optical sound film (where sound is produced directly by the image) by the filmmaker Guy Sherwin will provide us with an alternative articulation of the notion of the index, that, while still grounded in the visual, moves trace to being manifested in a sonic form. By utilising the index as both material trace and deictic 'shifter'[3] (where the index acts to point), the sonic index can be read as an utterance of the image, that both functions to announce its presence, and as unconscious inner speech akin to the surrealist automatic message.

Centrally to any discussion of indexicality is Charles Sanders Peirce semiotic analysis of the sign as a triad: icon–index–symbol. Peirce identified photographs as having a particular indexical quality as they demonstrate a nearness of the object – occurring by something of the object being conveyed by light and preserved by photochemical process onto film. This type of index functions primarily on the idea of trace and led Roland Bathes to assert that 'every photograph is a certificate of presence' (2000, p87). However, there is another type of index that Peirce talks of which is commonly referred to as a 'shifter'[4]. As Mary Anne Doane explains: '[t]he index as shifter (or deixis) forces language to adhere to

the spatiotemporal frame of its articulation' (2007a, p2). These are the types of utterances in language ('this', 'I', 'now', for example) which function as signs that indicate the existence of an 'other', such as a speaker or object; in other words, the shifter announces the other – by pointing to it. Unlike Barthes, who considered the photographic index as a 'certification of presence' by the fact of it 'having been' as a trace of a previous event, Peirce, conversely, states that: '[t]he index has the being of *present experience*'[5] (1933, p 447). In other words, the index acts to signify an event is taking place, and that 'meaning is inseparable from the physical context of the speaker's utterance.' (Green & Lowry, 2002, p 57). It is the coexistence of these conflicting temporalities that enables us to consider the index in art practices that extend past the photographic.

The development of new mechanical technologies in the mid-nineteenth century provided a way for invisible bodily and psychic processes to be tracked and recorded in ways that became interesting and significant for both science and the visual arts alike. For the surrealists this was to offer a visual expression of automatism – a subject that intrigued them greatly – and the 'graphic method' was one such way that offered the possibility to view the previously unseen or unnoticed actions of the body. Étienne-Jules Marey, who was one of the main proponents of this new technology, devised a number of automatic recording instruments that were capable of registering the smallest of movements, such as his sphygmograph (fig. 1), for example.



Detail of graphical representation obtained from instruments of the graphic method.

Fig. 1. An illustration of Étienne-Jules Marey's sphygmograph and its resulting trace.

This instrument was able to produce previously unseen traces of transient events, such as the pressure of the blood's flow around the body. Marey was not only interested in tracing the actions of the human body, but he also developed an instrument that inscribed the rhythm of the gaits (paces) of a horse. This information was recorded as a bar drawing, which he referred to as 'synoptical notations' (fig. 2). The drawing gave a graphic interpretation of how long each hoof had been on the ground and the relative position of the animal's legs during the movement. Marey described these notations as a 'sort of

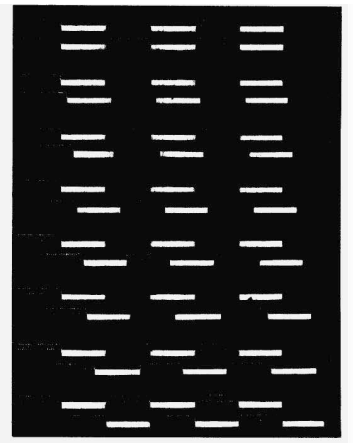


Fig. 2. Illustration of Marey's synoptic table, indicating the different paces of a horse.

music … written by the horse himself'[6], where each of the four hoofs produced different tones depending on the pace of walk, trot, gallop etc. David Lomas has suggested that the graphic method was of particular interest to the surrealist, because it offered a visible trace of the invisible, and this was in parallel with Breton's thoughts concerning automatism. As Lomas points out Breton considered automatic writing and the 'drawn or painted automatist line' as 'the indexical trace of unconscious psychic forces' (2004, p627). The 'automatic message'[7] that arose from such practices offered, in Breton's mind, a excellent discourse with the unconscious.

At the same time that automatism was first mentioned by Breton in the *Manifesto of Surrealism*[8] a different form of graphic trace was taking hold across Europe and America, one that offered the production of sound by a visual means. The birth of synchronized sound in film became possible by a optical recording process developed in the 1920's by Tri-Ergon[9]; the process referred to as optical sound, 'translated sound waves via the microphone and a photosensitive selenium cell into patterns of light that were captured photochemically as tiny graphic traces on a small strip that ran parallel to the celluloid film images' (Levin, 2003, p34). Optical sound was the invention of an indexical trace that both availed of a photographical process (that is, light imprinting marks on photosensitive surface) and shared a similar visual representation to the graphic trace (fig. 3), but without a tangible object as its referent.

Fig. 3. Examples of various types of optical sound for sound-on-film.

Interestingly, the history of producing visual indexes of sound – which we could refer to as acoustic writing[10] – can be charted further back to 1785. At this time Ernst Florens Friedrich Chladni found a graphical transcription for recording acoustic phenomena in the

form of *Klangfiguren* (tone figures). Placing a layer of fine sand on a plate of glass or metal, the plates would be set in vibration by running a violin bow against the surface edge; this lead to the displacement of sand from the quivering areas and reformed it in distinct patterns that correspond to the tones played (fig. 4).

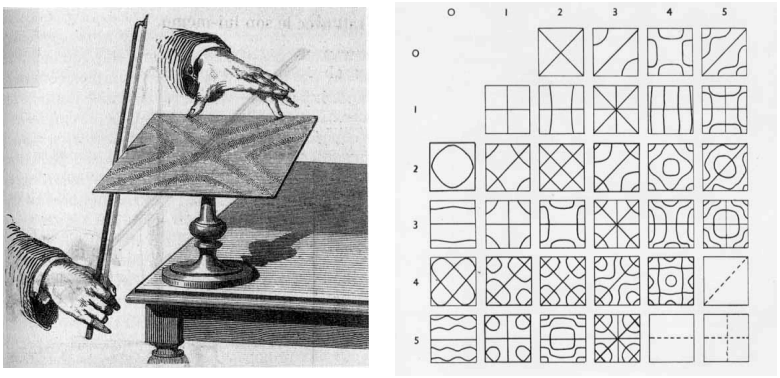


Fig. 4. Illustration of *Klangfiguren* (tone figures) in practice and resulting patterns formed.

In a strikingly similar fashion to Marey's reference to the graphical notations of the rhythm of the gaits been written by the horse himself – Thomas Y. Levin writes what is so 'exiting about these acoustic "ur-images" (as a contemporary of Chladni called them) was that they seemed to arise from the sounds themselves' (2003, p39). In these cases we are obtaining graphic representation, that is, sound rendered visible, which can be equated with Marey's graphic method as recording something beyond the comprehension of human ability.

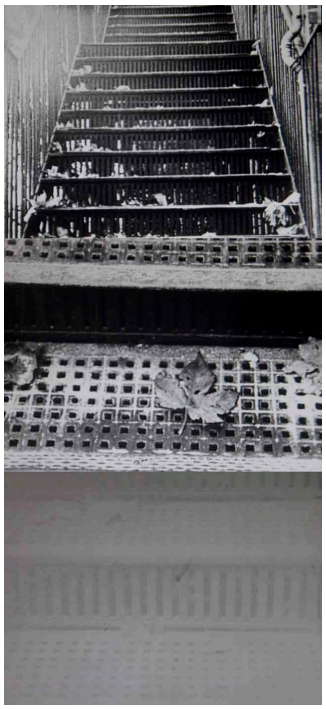
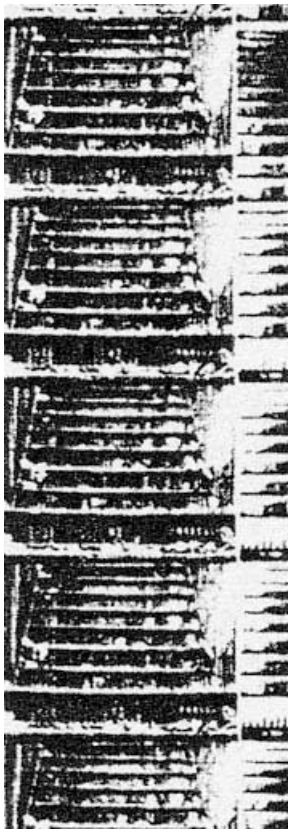


Fig. 5. Stills from *Musical Stairs* (1977), Guy Sherwin, 16mm.

Both in body and sound notation – be it graphic line, imprinted light, or patterns of sand – the graphic trace records rhythm and incantation that is both interpreted as data and facilitates its function as an indexical sign. In the case of optical sound, it is light imprinted on the filmstrip and read by a film projector that enables the translation of this data into an audible sound that we are able to recognise. Guy Sherwin is an experimental filmmaker who has particularly made use of this process in an unconventional way. *Musical Stairs* (1977) is one of a series of 16mm films[11] that Sherwin made using soundtracks that are generated from their own imagery. The footage in *Musical Stairs* is of an iron staircase leading to the London Film-Makers' Co-operative (fig. 5 & 6), where he was a member at the time. The film was printed so the picture appears both in the image and optical sound track concurrently; the result being that the photosensitive selenium cell in the projector translates the imagery of the iron steps as a variable density soundtrack –



enabling a sensory conflux where we hear what we see. As the film runs through the projector the changing images affect the tone and volume produced; Sherwin reports that volume is controlled by varying the image exposure and that '[b]y tilting the camera up and down I made an approximate musical scale in eleven tones – the more stairs in the frame, the higher the pitch'(2007, p50). What is significant about optical sound films, such as *Musical Stairs*, is that, it is the image itself that becomes the mark for translation.

Fig. 6. Detail of how the image is aligned in the optical sound track of *Musical Stairs*.

In *Musical Stairs* what we hear is indicative of what we see, but not in the traditional sense. Rather than an acoustic representation of what we see, like a musical soundtrack, there is instead a direct coloration between the marks printed on the emulsion of the film and the sound that emanates from them. This sound indexes or utters the existence of its referent – the black and white graphical traces of the image appearing on the soundtrack of the film. This is suggestive of Peirce's index as 'being of present experience', like the weathervane that moves indicating the wind is blowing, the sound which is heard in *Musical Stairs* is signifying the event of the image running past the microphone in the projector. However, there is another temporality of index present in *Musical Stairs*. This is the mark of something that has passed, a material relation to an object now absent. In other words, the black and white photographic traces that appear in the film's soundtrack are indexical signs of the object that once stood before the camera – the staircase. However, perhaps, most significantly the marks are also a transcript of Sherwin's physical action in filming the stairs to enable them to be musical. As previously noted, Marey used the graphic method to record movement, taking a physical action, and translating it into a graphical line on a page. In a similar way, here the movement of the camera panning up and down the stairs is transcribed onto the optical sound track of the film where it becomes sonic information and changes in light and shape are reproduced as differing tones.

We could ask are the sounds we hear, in fact, always present as sonic, yet invisible, traces of the objects filmed? In taking this trajectory, then the photosensitive cell in the projector uncovers these traces so they no longer escape or elude detection, making an interesting link with the instruments of the graphic method that made visible the invisible traces of the body. Lomas describes the graphical method as uncovering the 'infra-visible', writing: 'What is at stake in the graphic method is not merely a process of making visible something that lies beneath the human perceptual threshold but rather the production of a visual analogue with the aid of a technological apparatus for the forces and phenomena that do not of themselves belong to a visual order of things.' (2004, p641). This is pertinent to our discussion, as on the spectrum located below the infra-visible under the radar of vision, so to speak – is the frequency of sound[12]. In *Musical Stairs* we see the dividing line between the visual and the sonic dissolve into a continuous free flowing stream. A further description of what is heard in *Musical Stairs*, could be as inner speech or even an unconscious expression of the image itself. We know for Breton, 'inner speech was synonymous … with the discourse of the unconscious' (Lomas p630). Walter Benjamin spoke of the 'optical unconscious' as 'another nature which speaks to the camera rather than to the eye: other above all in the sense that a space informed by human consciousness gives way to a space informed by the unconscious' (1931, p510-12). In other words, he is speaking of the camera's ability to show phenomena otherwise invisible to the eye, if we extend the ability of rendering the unconscious knowable – passed ocularcentrism (the privileging of sight over other modes of perception) – then it is entirely possible to consider Benjamin's statement in a different way and situate this use of optical sound among the automatic writing practices favoured by the surrealists.

So what is the utterance of the image in Sherwin's optical sound films? Simply put, it is the image announcing its presence – the claim of hear me, 'I' am 'here' 'now' in the present moment of experience – in other words, it takes the function of Peirce's shifter – both in an act of self-reference and in self-enunciation. The utterance, as material trace between sign and object, on the other hand, is the graphic inscription of the image running through the projector to external speakers. Where invisible frequencies enter our ear and set off a chain reaction of tiny vibrations that trigger electro-chemical signals so to enable human audition. In this journey the sound goes from visible, to invisible, to the physical offering a tangible trace and a material connection between object and sign. In this process, no longer satisfied to appear before the eyes, the image translates its being to the sonic realm where it presents itself in a new form of perception, one which looks to conquer the historic

dominance of visuality which as Douglas Khan (1999, p158) points out 'overwhelms aurality in the cultural balance of the senses'.

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Musical Stairs, (1977). [Film] Directed by Guy Sherwin, 16mm, 10 mins, B&W, Sound (Optical).

Endnotes:

1 I was first introduced to the notion of listening with our eyes and seeing with our ears by reading Sebastiane Hegarty excellent essay ‘Aftersight: Lets Hear What We Can See’ (Hegarty, S. (2007)); this essay is also the inspiration for much of the thinking in this paper.

2 See David Lomas’ (2004) examination of the connection between the graphic trace and surrealist imagery.

3 Rosaline Krauss explores the implications of the index as ‘shifter’ for contemporary art in her essay Notes on the Index, see: Krauss (1986).

4 Rosalind Krauss (1986, p197) points out that the ‘shifter is [Roman] Jakonson’s term for that category of linguistic sign which is “filled with signification” only because its “empty”. The word ‘this’ is such a sign, waiting each time it is invoked for its referent to be supplied’. See, Jakobson, R. (1957) ‘Shifters, verbal categories, and the Russian verb’ in Russian Language Project, Cambridge, MA: Harvard University Press.

5 My emphasis.

6 Braun (1992) quotes from: “Moteurs animés: Expériences de physiologie graphique”, La Nature, 28 September, 1879, pp273-78

7 One of Breton’s most detailed discussions on the automatic message can be found in ‘The Automatic Message’, reproduced in: Breton, A. (1978, pp132-148).

8 Breton wrote the first Manifesto of Surrealism in 1924.

9 There were a number of different sound-on-film systems in development at this time, however the system produced by Tri-Ergon was optical recording process, which is relevant to this discussion.

10 I deliberately use the term ‘acoustic writing’ to draw reference to the surrealist practice of automatic writing.

11 Sherwin has made a large number of optical sound films that use a variety of methods to produce a correspondence between sound and image, these include: Night Train (1979); Interval #2 (1974/2007); Optical Sound (2007).

12 The use of this example is mainly rhetorical, however, the visible spectrum perceptible to the human eye is situated between 400-790 THz. Human audition is situated below this, between 20 Hz and 20 kHz.