

## Extended Moments

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**Abstract:** Interactive art provides an excellent way to continue the work of the chronophotographers. They aimed to produce photographic images that would increase our understanding of time and movement. This paper describes a project that uses interactive art to extend these aims. There are a number of cameras. Each is directed at the same scene, capturing a sequence of images over time from a different point of view. The viewer can move from a particular combination of camera and point in time to another combination by means of an innovative input device. Previous technologies required the original chronophotographers to focus on either the temporal or the spatial aspects of the scene. The new system allows the viewer to interact simultaneously with both the temporal and the spatial aspects of the scene.

**Keywords:** Chronophotography, interactive art, sequences of images.

At the end of the nineteenth century there were many inventions that were designed to produce images and ways of viewing images that would increase our understanding of time and movement. This group of inventions is now called pre-cinema. Many of the later pre-cinematic inventions used photography to record and to reveal more about time and movement. This group of inventions is called chronophotography and includes devices that were developed by Le Prince, Marey, Baron, Grimoin-Sanson, Louis and Auguste Lumiere, Muybridge and Reynaud. I consider it teleological to call these devices pre-cinema as the evidence shows that their inventors were not intending to invent or precede cinema. The Patent application of Louis and Auguste Lumiere filed on 13 February 1895 claims that their cinematograph is a "(...) device used for obtaining and viewing chronophotographic proofs". So, the cinematograph was invented to make and view chronophotographs rather than cinema.

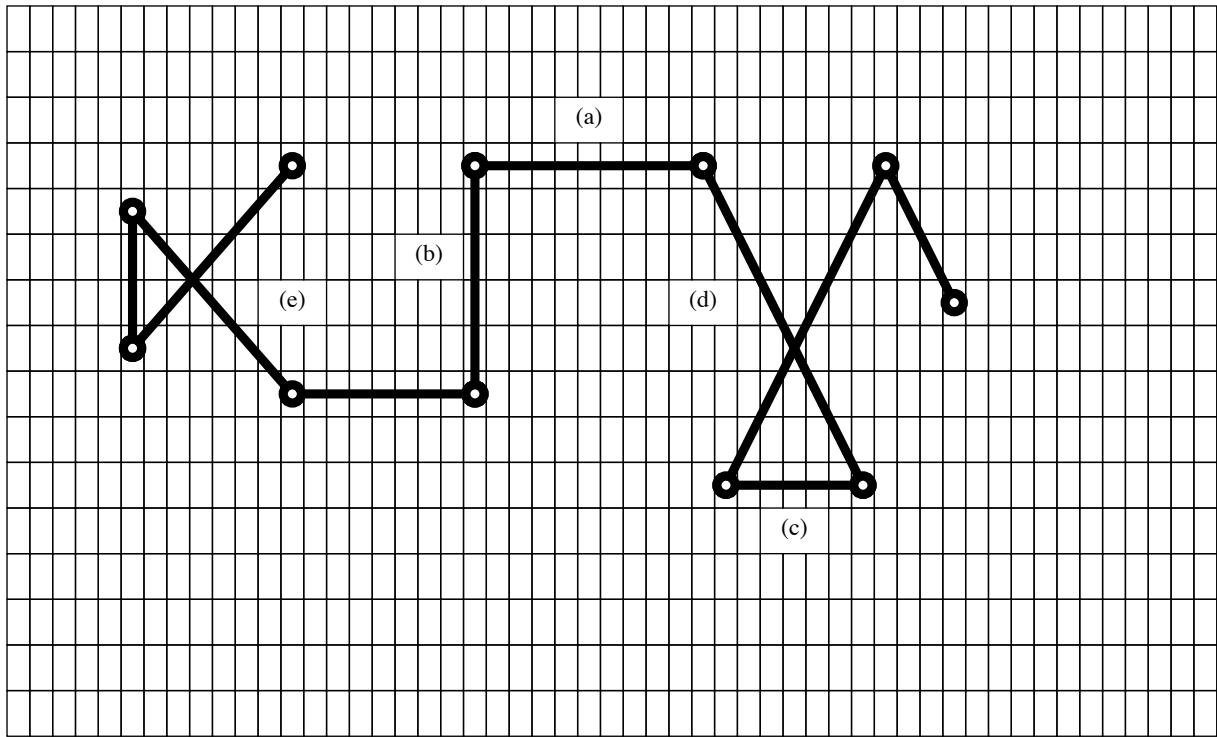
The chronophotographers were trying to invent devices that would help them to see movement as a sequence of independent or layered still views. Cinema is very different and exploits the persistence of vision to show successive views very quickly so that the individual frames are not seen but the series of views is seen as one continuously moving scene. By doing this, cinema simulates natural movement and hides its facture. Interactive art provides an excellent way to continue the work of the chronophotographers as if the development of their devices had continued to follow their intended aims.

Most of the chronophotographers tried to show views that succeeded each other in time. One or two chronophotographers tried to make devices that

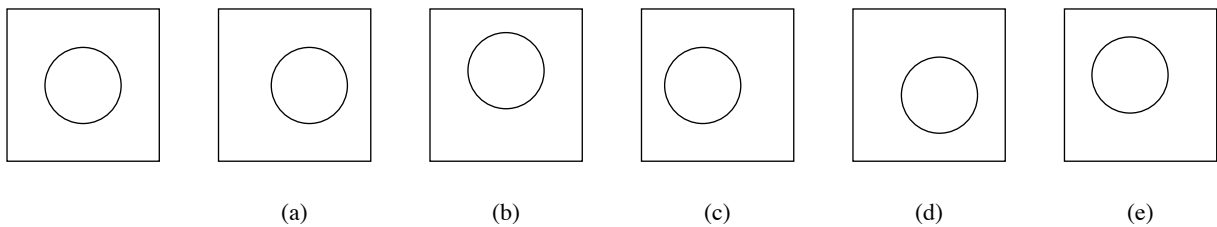
showed successive spatial views. An example of this kind of device is Grimoin-Sanson's Cinéorama (1899). Interactive art provides a transparent way of combining these twin, but until now, separate aims of the chronophotographers.

Here, I will describe how I have used interactive art to continue the work of the chronophotographers as if the development of their devices had continued to follow their intended aims. Firstly, I record an event using many cameras. Then, the frames from these recordings are imported into a digital application and arranged in a 'score' that is similar to figure 1. The table in figure 1 shows the array of images. Each cell of the table represents an image in the score. Horizontal rows contain frames from the same camera. Vertical columns contain frames taken at the same time from different cameras. These images can be displayed on a monitor in different sequences. A number of images that are next to each other in the score can be thought of as a route through the sequences of images. The heavy lines in figure 1 represent some of the possible routes that can be taken through the sequences of images. A viewer selects the routes by using an innovative input device instead of a conventional mouse.

Figure 2 shows a series of plan views of the input device. The input device includes a moveable disc. Each view of the input device in figure 2 shows this moveable disc in a different position. A computer programme links the movement of the disc to the score of images. Different movements of the disc will select different routes through the score and so different sequences of images will be displayed on the monitor.



**Figure 1:** The array of images and some of the possible routes through the sequences of images



**Figure 2:** A series of plan views of the input device. In each view the moveable disc is in a different position.

When a viewer moves the disc to the right as shown in figure 2a the route through the score of images is as shown in segment (a) of figure 1. The sequence of images that will be shown on the monitor will be successive frames from one camera. When a viewer moves the disc upwards as shown in figure 2b the route through the score of images is as shown in segment (b) of figure 1. The sequence of images that will be shown on the monitor will be from the same moment and from contiguous points of view. When a viewer moves the disc to the left as shown in figure 2c the route through the score of images is as shown in segment (c) of figure 1. The sequence of images on the monitor will be successive frames from one camera shown in reversed order. When a viewer moves the disc downwards and to the right as

shown in figure 2d the route through the score of images is as shown in segment (d) of figure 1. The sequence of images that will be shown on the monitor will be successive frames from different points of view. When a viewer moves the disc upwards and to the left as shown in figure 2e the route through the score of images is as shown in segment (e) of figure 1. The sequence of images on the monitor will be successive frames shown in reversed order and they will be from different points of view.

A viewer can move the disc in any direction at any time. This new way of viewing images will enable viewers to interact simultaneously with both the temporal and the spatial aspects of the scene and so increase their understanding of time and movement.