Written by Guilherme Maranhão

Very likely you already seen a photofinish image, either of a horse track or from the Olympic Games. They all look alike, the background is usually of a single color and seems stretched with a bunch of athletes or horses as they cross the finish line of a race. There's a timeline either at the bottom or at the top of the image, numbers that represent elapsed seconds from the beginning of the race. These images were generated by a camera equipped with a slit instead of a regular shutter and 35mm film moving behind this slit. Nowadays the linear CCD substituted the slit and made this cameras very similar to most scanners we have (or maybe scanners are similar to those cameras).

Late 19th century the Ermanox camera introduced the focal plane shutter, at that point the shutter was basically a moving slit. Later there's a report about the British Museum using a fixed slit with glass plates to record the entire surface of ceramic pots in one picture. Kodak made the slit static and moved flexible film for the first time in Circut panoramic cameras. In the 1930's, Lorenzo del Riccio, italian immigrant living in California, invented the photofinish camera. At that time he was working for the Paramount Pictures photo lab, probably with access to lots of 35mm film and equipment (this part is very badly documented) but those who hired him to develop this idea apparetly were the Hollywood horse track. He tried many approaches with regular cameras and flash exposures but without sucess. With a flash you document who wins the race, but unless you fire a camera for each horse passing the finish line, you cannot get the entire result of a race on images.

Lorenzo opted for moving the film in the opposite direction of the running horses, behind a slit. He placed this contraption in front of the finish line on a high spot. From there all the camera saw was the finish line itself. This is the reason why on the Olympic Games although the race tracks are terracota colored the photofinish images have white background, because all the camera sees is the finish line.

Lorenzo would turn the camera on just before the winner finished the race and turn it off after the last one had crossed the line. Finding out the speed the film has to move to record a good image was the trick that made Lorenzo famous. Written by Guilherme Maranhão

Slit photography isn't a kind of high speed photography. Instead of registering a range in space for a fraction of time, the slit records a range of time in a fraction of space. All the results of a single race could fit into one image this way. And even though the resulting image has a rectangular shape, the area that the camera sees is just a line.

Most photographers never did get close to this kind of technology because it was so complicated and demanded so much film to make things work. This knowlodge ended up kept inside the photofinish photography industry. Digital photography brought some of it closer to us in the form of the flatbed scanner which is basically a slit camera inside a box.

Professor Andrew Davidhazy from RIT in Rochester, published in the web many articles showing how to experiment with the linear CCD from hand held scanners by making a digital slit camera. The whole idea is very simple, all you have to do is free your scanner from its box and maybe make a few modifications to it if you must. If you're curious enough, I'm pretty sure you can do it, but having the guts to take it apart and risk loosing it helps.

Photofinish and a home-brew digital camera

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