

***Bellows*: bringing digital animation into the physical world**

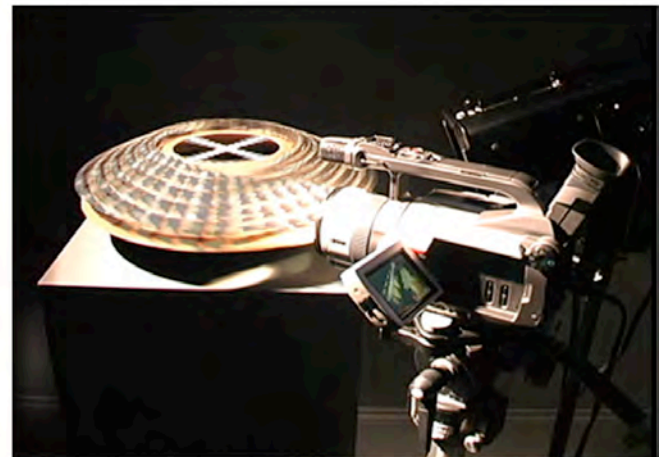
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a pre-cinema zoetrope, circa 1845
(Albin O. Kuhn Library collection, UMBC)



Bellows March (2007): cinetropes animation
is "seen" by live video

Introduction

Bellows is an art installation and cinema project that uses a new animation process. I have combined the concept of the zoetrope, a pre-cinema optical toy, with rapid-prototype 3D printing and fast-shutter digital video to tell a story suggesting the destructive and expressive potential of humans. In *Bellows*, anthropomorphized concertinas take the place of people. Concertinas serve as the metaphor for humans because both breathe and both have great expressive potential.

Exposition

Procedurally, *Bellows* creates a much needed bridge between digital and tactile processes in animation and filmmaking. The *Bellows* animated sequences and resultant 'cinetropes' (my term for this variation on the zoetrope) are created in a three dimensional animation software application, then printed in ceramic or plastic

on a rapid-prototyping (3D) printer. The cinetropes are then hand-painted and manually altered, spun using a variable-speed motor, and shot with a fast-shutter progressive scan video camera. Progressive scan shoots full frames of video instead of interlaced fields. The fast shutter removes the motion blur from the spinning cinetropes. The variable speed motor allows the proper number of sequence 'frames' to move past the camera lens. This combination allows the animations to be 'seen' by the camera, while the human eye can only see a blur. The ability to print out three dimensional animated sequences, alter them in the real world, and shoot them in real time is lush, unexplored territory.

The process rethinks the status quo of digital animation, blurring the line between virtual and real, and introducing the human hand, and the serendipity it enables, to digital time-based creations.

The original inspiration for the *Bellows* narrative came from a visit to Berlin, Germany during my Fulbright Fellowship in 2005. Berlin has made a determined attempt to reverse the horrors of Germany's actions in World War II, taking great strides to rub out tragedy and a dark past by elevating itself into an inventive, inspired, artistic, prosperous, 'green' city. Berlin exemplifies the human potential for both murderous destruction and inspired, optimistic creation. Current worldwide political situations, many tragic and dark, make the production of *Bellows* topical.

Conclusion

The *Bellows* film and installation explore topical matters of the human condition and create a new means of expression through a melding of rapid-prototyped sculpture, animation, digital video, and pre-cinema technology. A total of eighteen cinetropes have been created for the final film and installation.