

Cross-Being: Dancer (The Spinning Screen)

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The Spinning Screen

In screen-based experiences, the screen itself can become the physical device used for interaction. The “move-ability” of the screen affords interactivity between the screen artifact and the viewer and between the virtual space and the physical space. As a movable screen interface, I have created the *spinning screen*, a two-sided monitor mounted on a revolving base. This interface invites user interaction through the action of spinning the screen. User interactions with the spinning screen can support diverse temporal and spatial responses, thereby enriching users’ experiences. The spinning screen enables the viewer to grasp the interplay between visibility and invisibility, creating an aesthetic experience. The angle and direction of rotation affects the displayed visuals and audio output.

Cross-Being: Dancer

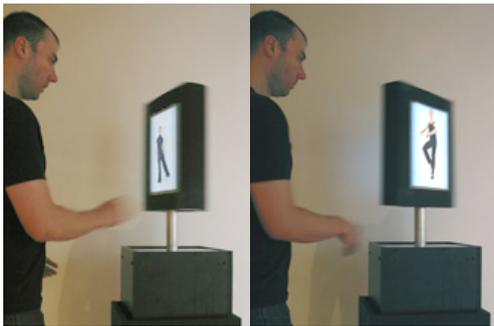


Figure 1. *Cross-being: Dancer* (The Spinning Screen).

Cross-being: Dancer is an interactive audio and video installation based on the spinning screen idea (Figure 1). Inspired by a toy for young girls – a ballerina figure on a spinning plate – a virtual dancer on-screen spins along with the physical screen as the user spins it. *Cross-being: Dancer* aims to explore the “doubling effect” of visual illusion that takes place in between the physical and virtual worlds and between visibility and invisibility. Examining a human being’s perceptive consciousness, the philosopher Merleau-Ponty says that the relationship between the visible and the invisible is not opposite. Rather, it is more the interrelationship between the “boundaries” of the inner and outer that shapes the indeterminate senses of touching and being touched, of seeing and being seen.¹ This effect of visibility and invisibility has long been used to create optical illusions, e.g. in the devices invented for moving images in

the 17-18th centuries such as zoetropes, thaumatropes, and phenakistoscopes. Each device explored the limitations of static image representation, providing a unique physical interface structure and manual mechanical operation to create the illusion of moving imagery. In *Cross-being: Dancer*, this “doubling effect” is now newly explored through two separate but corresponding layers between the physical and virtual worlds using tangible screen interfaces with real-time digital video processing technology. In contrast to 2-D fixed static view screens, the spinning screen enhances the user’s ability to engage with spatial aspects of the visible and also the temporal. The temporal invisibility is controlled through the representation of the slow motion dancer, and spatial invisibility is subdued by the screen’s spinning. As the viewer spins the screen, the back-to-back set of images affords possibilities to represent the front-side of the dancer on one side, and the backside of the dancer on the other – in order to realize this, the dancer’s spinning performance was captured from two opposite directions. Thus, depending on where they stand, viewers can have multiple perspectives on the same event, which retains a greater part of the original spatial context of the event. In this way, the spinning screen enables people to grasp aesthetic and philosophical interpretation between the gap of visibility and invisibility and physical and virtual. Since this doubling effect is highly based on perceptual experience, it is best achieved through actual observation of the experience.

Innovation in the Physical Structure

Mechanically, the spinning screen is a revolving structure of two TFT-LCD monitors placed back-to-back. The base part is composed of two gears and two revolving shafts; the main shaft is connected to two monitors, while the second shaft is connected to a 360-degree potentiometer that calculates the direction and the spinning speed of the main shaft (Figure 2). The values of the potentiometer are delivered to a computer via serial/MIDI communication from a PIC micro-controller. To prevent the wire entangling while the screens spin, a rotary connector is used in the main shaft. The original idea was to realize the doubling effect on this two sided screen. However, the first version of the two back-to-back screens only showed one image due to a limitation in the number of conductors available in rotary connectors. By integrating wireless VGA technology in this system, the new version of the spinning screen now enables the display of different images on each monitor, allowing us to finally explore the real doubling effect of the spinning screen. *Cross-being: Dancer* uses the MAX/Jitter application to manipulate the video image and sound.

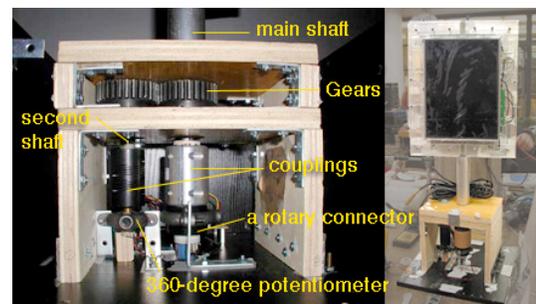


Figure 2. The physical structure of the spinning screen.

¹ Merleau-Ponty, M. *The Visible and the Invisible*. Northwestern University Press, Chicago, IL, USA (1969).