

# User As Explorer: Interaction With the Natural Environment Using Mobile Projection Technology

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## ABSTRACT

Through the use of a creative field utility system we call LocoMotoArt, the artist is positioned as explorer/user of digital artifacts. We focused on the user relationship to digital devices in the natural environment specifically commenting on the Liquid Crystal on Silicon LCoS pico projector used in one of six experiments. The findings of our initial research using LocoMotoArt indicate that there are key characteristics that emerge such as new experiences of embodiment, sense of extension of self and mobile projection as a prosthetic. Also, the material effects of our experiments reveal form becomes content by way of the gestures of user, which also become extenuations of theatrical apparatus.

## Author Keywords

Users, artists, pico projection experimentation, embodiment.

## ACM Classification Keywords

Human factors.

## General Terms

Human Factors, Experimentation, Performance

## INTRODUCTION

Through reflexive ethnographic arts based research [1] two multi-media dance artists were provided a portable creative field system called LocoMotoArt for a 10-day period. The system is transported in a backpack and is comprised of commonly used digital devices such as iPod, cameras, sound recorder, and mobile projectors. LocoMotoArt consists of four distinct capacities: independent energy source; devices for capture of visual and sound media; a laptop with software for producing media and various devices for playback of sound and visuals for exhibition. LocoMotoArt gives the user opportunities to explore and make digital art *from* and *in* a natural environment [2]. The participant artists used three Aaxxa P1 Jr. Liquid Crystal on

Silicon (LCoS) pico projectors from the LocoMotoArt system for a series of experiments which were conducted in the dark, dense, and intimate natural environment of *Kaumana* Cave located on the Big Island of Hawai'i. We briefly discuss the results of one of six small-scale experiments of the user in flux as artist-explorer within the contextual attributes of embodiment, extension of self and mobile projection as a prosthetic.

## USER AS EXPLORER

Anne F. Bunker, director/choreographer of OTO Dance, a multi-media aerial dance company and musician-multi-media designer, Gerald Chuck Koesters were the participant users in our experiments. They have collaborated together over past 25 years [3].

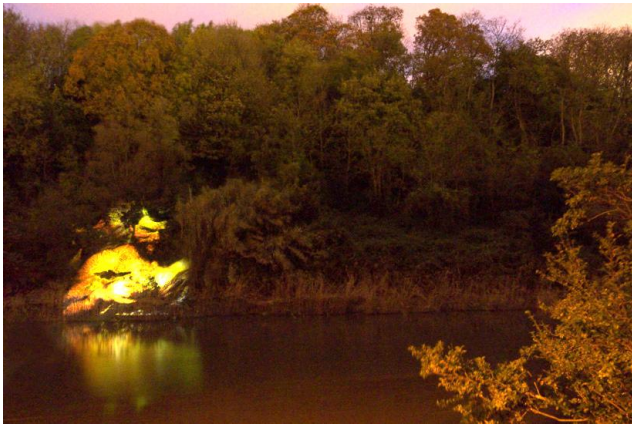
## Embodiment, Extension of Self and Mobile Projection as Prosthetic

Artists are using projection in natural settings as seen in the work of Spanish artist Ibon Mainar who recently utilized high-resolution projectors for creating *Proyecciones en el Exterior* in outdoor landscapes in Figure 1 [4]. However, our research diverges from this form when mini projectors are affixed to the hands or wrists and are used with fluid body movements and gestures. For example, Bunker positioned one of the projectors overhead at an arms-length and pointed it at an angle. She projected High Dynamic Range images and HD video footage onto her hand. The scene was observed as a hand or entity suspended in space, moving, existing otherworldly as seen in Figure 2 and video footage on our research website [www.locomotoart.com](http://www.locomotoart.com). The projected visual content combined with the material visual representations and the environment when Bunker moved the projectors. Content became form. To further her exploration using the projectors in the coldness of the cave, Bunker blew air from her mouth through the stream of light from the projector to further enhance the visual effect as if smoke or mist enveloped the hand momentarily. Like the camera, the relationship of LCoS pico projector to the body operated as a prosthetic extension and provided the user with an enhanced extension of self [5]. In this embodied experience Bunker transformed self as theatrical apparatus. Bunker later indicated she experienced a sensation that she "could carve space." All of these actions epitomize the artist as explorer/user of digital artifacts.

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**Figure 1. Rubens. Excerpt from the work *Proyecciones en el Exterior*, Ibon Mainar.**

#### **ARTIST'S POST-EXPERIMENT COMMENTS**

It is worth noting that both artists had commented during pre-experiment interviews that they felt marked skepticism. They did not believe they would sense interconnectivity in the natural environment through the use of digital artifacts. However, during post-experiment interviews, both artists indicated they experienced unexpected feelings of interconnectivity to the natural surroundings and each other, which they really enjoyed. Through the use of mobile projection Bunker indicated that her sense of space altered compared to the familiar sense of body she experiences on a large scale darkened stage as an aerial dance performer. The sense of movement that she experienced “coming from” her body in the intimate natural environment of the cave was inspired by awareness of using the LCoS projectors in the natural surroundings. Yet, she also commented that the new sensory experience of using visual projection with her body as prosthetic influenced her movement decisions and enhanced expression. Thus, the experience provided her a new sensorial awareness of body movement and gesturing within space and time as multi-dimensional, a new found form of artistic expression for Bunker.

Both artists remarked that pico projectors worked like “mini-gobo stage lighting” effects. Gobos are used in theatre lighting to create some specific textural effects. The gel is placed on the light and illuminates patterns onto stage and the actors. This comment indicates another extenuation of digital device as theatrical apparatus. Further they stated the projectors would be fun to use in costuming within the presidium stage environment that dominates their artistic practice. Additionally, Koesters commented that he felt the high definition video footage filmed during the pico projector experiments in the lava tubes would make for interesting footage to take back to a presidium stage environment to project large-scale during live performance. As a multi-media designer for OTO Dance, Koester’s use of pico projection as extenuated theatrical apparatus may influence his future artistic practice. We look forward to his use of the images from our experiments.



**Figure 2. Hand of Fate. One of several mobile projection experiments in *Kaumana Cave*.**

#### **CONCLUSION**

Through exploration, the human factor of body movement and gesture provided an interesting lighting effect of intermediacy. Also, the artist as explorer is a “user in flux” because the discovery of new functionality of digital tools. The experiments revealed digital artifact as extenuations of theatrical apparatus. Further, the participant artists explored new ways of seeing and understanding their art practice both temporally and corporeally. It is from these new possibilities within artistic practice that emerging characteristics transform knowledge, and thus the artistic aesthetic experience. We opine that within the user in flux and the atypical use of digital devices, refreshed understanding may transition the user within the realm of aesthetic engagement [6]. Finally, these promising results indicate that the hypothesis that digital technology may also serve of a sensorial gate or pathway to interact with nature warrants further research.

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