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Digital eco-art: transformative possibilities

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Abstract

Cave paintings bear witness that, early in human cultural development, art and the means to create it (technology) became a method of expression and translation of human interconnectedness with nature defined as the non-human-made world. Contemporary new media artists interacting with nature through the medium of digital technologies in situ continue this exploration within the genre referred to as “digital eco-art”. LocoMotoArt, an independently powered creative field system, was used as a vehicle for conducting media arts practice in natural settings during a three-year qualitative field research project. Findings indicate that human–technology–nature interconnectedness is a possible conduit for establishing a role for digital technology beyond social networking, computing, information gathering and gaming to engage with nature. We argue that digital eco-artists are at the vanguard of creating a new sense of aesthetic and environmental engagement, proportions of which emerge as transformative possibilities. The art experience of digital eco-art can change from being a contemplative one to a living experience.

Keywords: LocoMotoArt, digital eco-art, natural setting, digital technology, HTN Triad Relationship

1 Introduction

Archaeologists consider that early Paleolithic and Neolithic humans had a sensitive awareness of nature as life giving and interconnected. Humans, once deeply embedded within a sustenance relationship, lived with a sense of reciprocity with the natural world. We were corporeally connected to landscape and our current sense of this connection hearkens back millennia to a time when the knowledge of interconnectedness was synonymous with survival and our deeper understanding of the world. Despite the difficulties of tracing early human–nature interconnectedness, there are indigenous cultures that continue ancient practices of shamanism and nature-related ritual (Mithen 1996).

However, most humans have lost the human–nature symbiotic connection and this is commonly believed to be a result of the effects of industrialised culture (Abram 1996; Suzuki 1997)¹. Eco-philosopher David Abram claims that this estrangement is rooted in our intensive use of technology (Abram 1996). Canadian eco-philosopher David Suzuki opines that we are now disconnected from the natural realm and living “chiefly by the mind,” because we no longer “see ourselves as physically and spiritually connected to family, clan or land” (Suzuki 1997, 191).

Currently, humans have a fascination with digital technology and have established intense relationships with such devices (Kandell 1998).² This human–technology relationship borders on

a form of symbiosis—in psychiatric terms, a dependence upon an artefact where the person receives some kind of reinforcement, whether beneficial or detrimental. While not all human–technology relationships are symbiotic, the human relationship to digital technology is deeply embedded in Western society and culture (Gleninning 1995; Szerszynski 2005; Prensky 2011; Small and Vorgan 2011). Peter H. Kahn, Jr., who investigates human interaction with nature and technology, confirms through his collaborative research that the pervasiveness of computational technologies has “changed our species’ long-standing experiences with nature” (Kahn, Severson, and Ruckert. 2009, 37). These technologies, “mediate, augment or simulate our natural world” (Kahn 2011, xiii).

While such studies do not confirm that most digital information technologies cause human disconnection from the natural environment, most people consider such technologies as incompatible with nature, and many believe that nature and technology are separate. We submit that the human–technology–nature relationship may be a conduit or provide a sensorial pathway to establishing a reconnection to natural realm through the use of digital technologies *in situ*. While challenged as a stretch of rationale due to the apparent incongruities associated with such a proposition, that is, that technology has disengaged us from the natural realm, so using it to re-engage is a *prima facie* contradiction, we argue that digital technologies are particularly suited for the exploration of the proposition of reconnection. To explore these notions, a three-year research study was initiated within two streams of enquiry: one grounded in human–nature interaction and the other exploring human–technology relationships in natural settings. The LocoMotoArt field studies took place on the Big Island of Hawai’i in the USA, in Vancouver, British Columbia, Canada, and in the Amazon River region of Colombia, South America.

2 LocoMotoArt research

A qualitative research methodology was used to meet the demands of our complex enquiry,

drawing extensively on interpretive arts-based research (Sullivan 2010) and phenomenological observation (Booth, Colomb, and Williams [1995, 2003] 2008; Butler-Kisber 2010), interviews and questionnaires (Bouchard 1976). It is within a qualitative methodology that an understanding of subjective meaning becomes a form of knowledge building, where no single truth is sought (Nagy Hesse-Biber and Leavy 2011), and incorporates multiple events as sources of information (Creswell 2007; Nagy Hesse-Biber and Leavy 2011). We questioned artists and spectators whether it is possible for an individual to experience an awareness of interconnectedness with the natural world by way of digital technologies (Coles, Pasquier, and Gromala 2012).

The LocoMotoArt independent power system provided artists the capacity to use electronics to create and display in various natural settings such as caves, beaches, urban forests and woodlands. The system incorporates portable, sustainable and independent energy practices, including solar power. The system is broken into three modules for portability. Module 1 fits into a standard backpack system and weighs approximately twenty pounds. The full backpack module weighs forty pounds when users choose to include the portable 12 V battery pack for field use; Module 2, an intermediate system, offers the option to use higher powered projection systems and a large battery-operated amplifier for sound playback. This module includes large deep cycle batteries and power inverters, which provide up to 1,200 W of clean inverted power suitable for electronics that require a greater energy draw; Module 3 is an expanded power system that responds to higher watt power requirements and includes lightweight solar panels. Within the three modules there are four distinct field capacities: (1) POWER to provide an independent energy source while on the field and to operate and extend the battery life of the laptop; (2) CAPTURE, devices for capture of visual and sound; (3) PRODUCTION, a laptop with software for producing media and converting it for playback while on the field; and (4) DISPLAY, devices for playback of sound and visuals for



Figure 1. Installations “Living” by Sebnem Ozpeta and “Sun” by Rob Scharein during LocoMotoArt at Queen Elizabeth Park. Photography by Michael Moster.

exhibition (Coles, Pasquier, and Gromala 2012; Coles, 2015b; LocoMotoArt research 2014; LocoMotoArt residency 2014).

Events were organised to study six artists and twenty-four spectators. Sound, visual and performance works were created and experienced in a variety of natural settings. Findings indicate that human, technology, nature interconnectedness (HTN), or the HTN Triad Relationship is a possible conduit for establishing a role for digital technology beyond social networking, computing, information gathering and gaming (Coles, Pasquier, and Gromala 2012) (Figure 1).³

3 The human, technology, nature— HTN Triad Relationship hypothesis

We must consider that there are many interactional experiences and relationships that exist in both natural settings and digital technology. Our ability to connect with nature is generally understood to be accomplished by way of direct experience through sensuous engagement. Because digital devices and sensor technologies provide enhanced experience by augmenting human sensorial awareness within auditory, visual and haptic experiences, we can also be sensuously and immediately engaged through such technologies. By combining these multisensory

augmentations with the experience of a natural setting, the two can blend, resurrecting our culturally desensitised connection to the natural realm, as reminded by Abram and Suzuki. In this way, we may also nurture, or centre a new awareness or sense of interconnectedness, proposed here as the human–technology–nature, HTN Triad Relationship (Coles, Pasquier, and Gromala 2012; Coles 2015b).

The HTN Triad Relationship is in contrast to the culturally perceived separation of the three. We must first recognise that mobile digital technologies (such as computers, cameras, smart phones, iPods, iPads, pico-projectors, GPS hand-held and sound devices including generative software and apps to date) can provide multiple sensory and interactive experiences, which augment the human senses in ways that could be considered to heighten the sensory engagement one experiences in natural settings. With our human predispositions, biophilia (Wilson 1984), topophilia (Tuan 1974; Kahn 2011; Sampson 2012), and the neologism *artamovement* (Bohm 1996),⁴ we argue that perceived incompatibilities of digital technology and nature begin to be dispelled.

In *LocoMotoArt: Digital Art in Natural Settings* (Coles 2015b), the HTN Triad Relationship is proposed as an awareness of the interconnected state of humans, technology and nature that

reawakens such a pre-disposition. Yet, with digital mediation, there is also a characteristic attribute, that is, a perceived separation between technology and sensuality of what is the natural realm. HTN is a catalyst towards bridging the perceived gap between digital-mediated experiences in nature. HTN then acts as a conduit, a potential sensorial pathway for the sense of reconnection to natural realm. There is no space to bring forth a full discussion of HTN here, and it deserves a much larger research study, yet briefly:

The notion of HTN Triad Relationship functions as an intermediary between the digital device, with its capacity for interactivity and spatial and temporal shifts (instrumentality), the momentary feeling of interconnection (transmission), which “fills,” (indirect causation), the gap among the three. In doing so, the HTN Triad Relationship defines the moment of sensed awareness of the instance a person feels that there is no longer a separation of the three, rather one that is “absorbed into the landscape”, because it “fits”. (Coles 2015b)

4 Connecting and bonding—social constructs

It is worth acknowledging how our present sense of the natural realm has been shaped by past practices. Instead of possessing our former survival instincts as a deep sense of connectedness with the natural realm, we humans tend to experience occasional fleeting moments where we feel a sense of deep bonding with nature. Researchers have related this sense of bonding as a genetically predisposed “living” connection to the natural realm (Wilson 1984, 1). In 1974 in his book, *Topophilia: A Study of Environmental Perception, Attitudes, and Value*, Yi-Fu Tuan defines “topophilia” as the affective bond between people and place or setting (4). He goes on to say that:

Topophilia is the strongest of human emotions. When it is compelling we can be sure that the place or environment has become the carrier of emotionally charged events or perceived symbol. (93)

Citing Kellert (1997), who expanded upon Wilson’s biophilia hypothesis, Nisbet, Zelenski, and Murphy (2011) states that “embracing our connection with nature makes our lives richer and more meaningful”. Kellert opined that the pre-disposition of biophilia is important for “optimal emotional and psychological development”. Therefore, human psychological health seems to be deeply interwoven within the human–nature relationship. Eco-psychologists examine these relationships and point to the cognitive benefits of interacting with nature, in that the peaceful aspects of the natural environment restore directed-attention abilities and increase cognitive control (Berman, Jonides, and Kaplan 2008). The experience of life-like technologies is also considered to provide improvement to health and mood. In coining the term “technological nature” to describe technologies that “in various ways mediate, simulate or augment the human experience to nature”, psychologist Peter Kahn asked if it matters to human well-being “that we are replacing actual nature with technological nature”. He studied the effect of hospital patients who were provided large flat screens to experience “life-like” nature scenes by comparing the physiological and psychological effect of the “patient’s experience”. He concluded “that interacting with technological nature provides some but not all of the enjoyments and benefits of interacting with actual nature”. He posits “that experiencing one kind of technological nature may be better than experiencing no nature at all” (Kahn, Severson, and Ruckert. 2009, 37; Kahn, 2011, xiii; Kahn and Hasbach 2012, 8–9).

Louv, author of “The Nature Principle”, asserts,

The future will belong to the nature-smart—those individuals, families, businesses and political leaders who develop a deeper understanding of the transformative power of the natural world and who balance the virtual with the real. The more high-tech we become, the more nature we need. (2012, 4)

According to the research of Kahn and the findings of LocoMotoArt field studies, the notion that digital technologies are not always perceived as

completely unnatural in contemporary culture reveals transformative possibilities for politics, culture, society, health and education in the twenty-first century.

5 Art, technology and nature

Electronic artists can use a natural setting as a partner in both the creation and display of artwork that is inclusive of technology. Such artists have been at the leading edge of creating a new sense of aesthetic and environmental engagement, or as Berleant informs us are “an aesthetic ecological model” which is deeply experiential (2010, Chapter 7).⁵ The proportions of this eco-systemic model of aesthetics and engagement lead to new forms of social interaction, arts practice and help advancing the development of independent power systems. We submit that the practice of electronic art in natural settings is an emergent genre, which we refer to as digital eco-art. The artists strive to use all attributes of the landscape. This includes screening surfaces found within the contours of the landscape and incorporating existing natural aspects such as steep inclines, uneven ground, sand or rocks. Another attractive aspect is that of existing ecological soundscapes such as falling water, waves and wildlife, for example. Arguably all of these attributes contribute to the artist’s work in ways indoor gallery settings cannot offer because the actual presence and ambiance of nature cannot be found in a gallery, except as a simulation. As *in situ* works, digital eco-art offers intimate experiences in reciprocity⁶ with the largeness of the existing sensorial realm found in nature and typically focuses on interaction, which engages the spectator and community (Coles 2015b). “It is not difficult to apply the three-dimensional arts to environmental aesthetic ecology”, which becomes “experiential; it is an ecology of experience” (Berleant 2010, 125 and 127).

The digital eco-art genre reaffirms the role of the spectators because it socially engages them and “involves an idea of community as self-presence, in contrast to the distance of representation” (Ranciere 2009). Distance of representation is

generally found in traditional indoor settings and large-scale urban screenings such as interactive architectural video mapping installations. Digital eco-art subverts this “distance”, by emphasising the ecological process (Coles 2015a). The augmented sense of intimacy and belonging in relationship to the natural place not only enhances the artistic aesthetic experience, but as Berleant reminds us,

When we experience environment in a manner that is fully aware of its perceptual richness and in which immediate, qualitative perception dominates, we are in an aesthetic realm. We can say, in fact, that environmental perceptions originate as aesthetic perception. (2010, 118)

Further, he notes that “engaging with an object of art or an environment, then, can be thought of as an ecological event, as a cultural ecological occurrence” (Berleant 2010, 120). Because digital eco-art is also situated at the intersection of societal concerns for the environment and new possibilities for the relationship between humans, technology and the environment, new cultural constructs emerge through this sense of engagement. The re-articulation of communication devices re-envision place and space and adds new frameworks for individual and group narrative. In addition, the animated and interactive schema of digital eco-art provides extended platforms for narrative in the context of the local and the global, cultural memories, and historical interchanges.

6 The LocoMotoArt events

Six artist-event projects were initiated to uncover assumptions and pre-conceived notions about nature and technology. Phenomenological reporting, participatory observation and interpretation were used for analysis of the data gathered. Artists participated as practitioners, informers, creators and experts, while spectators participated as informants. Each of the artists was chosen for their professional expertise and knowledge of new media technology. The artists who comprised the three-year research study were Anne F. Bunker (dancer, choreographer and creative director of

OTO Dance) and Gerald Chuck Koesters (musician, photographer, videographer and lighting and media designer), herein referred to as Bunker and Koesters; Dinka Pignon, a video installation artist; Bobbi Kozinuk, a video, radio and interactive artist; Phil Thomson, a digital audio artist and computer music composer; and Dave Leith, a multidisciplinary artist and sound art composer. Artist-event projects culminated in live audio performances or video installations, each in a natural setting chosen by the artist. A total of twenty-four spectators were interviewed for this research. They ranged in age from nineteen to sixty years. They were of various levels of education, cultural backgrounds, economic status and profession. The interview brings nuances of social relationships forward—sometimes spontaneously.

6.1 Artists: Anne F. Bunker and Gerald “Chuck” Koesters

From 9 to 19 December 2010, the first study of LocoMotoArt was conducted with Bunker and Koesters on the Big Island of Hawai’i. Two technologically mediated studies happened at the end of a ten-day period of fieldwork. The artists chose to stage a live technologically mediated performance in a forested area at the end of a road near the coastline of South Hilo, a route commonly used by local fishermen. Natural ambient sound such as the pulse of ocean waves crashing upon

the lava rocks and the *Coqui* frogs’ robust chorus of chirp song was incorporated into the soundscape. A series of small pico-projection experiments were conducted in Kaumana Cave, which is situated in the foothills above Hilo, Hawai’i. The cave is a lava tube that was created when the volcano Mauna Loa erupted in 1880. This site was chosen for a brief exploration of sound and video using pico-projectors because it is a dense and dark environment. During the cave experiments, the digital devices (3 Aaxa P1 Jr. LCoS pico-projectors) were used as theatrical apparatus. Further, the artists each explored new ways of seeing and understanding their art practices both temporally and corporeally.

6.2 Artist: Dinka Pignon

On 29 July 2011, artist Dinka Pignon presented her video installation, *Water Words*, in an urban natural setting at Kitsilano Beach, Vancouver, British Columbia (Figure 2). She chose an area that “felt somewhat isolated and secluded” in relationship to the rest of the primary public area of the beach. Pignon chose to use large to mid-sized boulders that were partially submerged in the water as projection surfaces. Although framed by a cityscape, Pignon indicated that she chose this particular area because of several natural characteristics that appealed to her interest in manipulating perceptions and reality by projecting on unusual



Figure 2. “Water Words” by Dinka Pignon. Installed on Kitsilano Beach, Vancouver, British Columbia. Photo: Andrew Hawryshkewich.



Figure 3. Sound artist Dave Leith performing at Iona Beach, Richmond, British Columbia. Photo: Wynne Palmer.

surfaces. Pignon used three Aaxa P1 Jr. LCoS pico-projectors, which each have a 10 lumen projection capacity. *Water Words* was accompanied by an original music composition by sound artist Dave Leith, who recorded waves splashing upon a location along Kitsilano Beach and reimposed this sound by layering it within his composition (Figures 3 and 4).

6.3 Artist: Bobbi Kozinuk

On the same evening that Pignon displayed *Water Words* at Kitsilano Beach, artist Bobbi Kozinuk presented a single channel video installation, entitled *Come Here* (Figure 5). *Come Here* was installed at the top of a steep sandy cliff, surrounded by trees and other indigenous vegetation, such as tall grasses and blackberry vines. At the installation site there were groupings of boulders strewn and piled about at the foot of the embankment. The spectators were confronted by several boulders at the foot of the installation, which obstructed any attempt to respond to the calls of the projected woman in a white dress who was seen floating, dangling, hanging, twirling from her body weight and motioning with her arms as she called and beckoned the viewer to “come here, come on! What are you waiting for? I have something to show you!” To respond or follow the woman’s calls meant the spectator had to confront the obstacles of the boulders or perhaps even internal fears. The spectator would have to climb over the rocks, which may have been perilous or compromising. Kozinuk used LocoMotoArt’s 300 W Nautilus battery and one Samlex America Pure Power inverter, but used her own Epson 3,500 lumen high-resolution projector and the iPod feature of her iPhone for sound and visual



Figure 4. Dave Leith at Iona Beach. Photo: Laura Lee Coles.



Figure 5. “Come Here”, by Bobbi Kozinuk, installed at Kitsilano Beach, Vancouver, British Columbia. Photo: Andrew Hawryshkewich.

playback. She ran sound through LocoMotoArt’s Roland KC 100 battery-powered amplifier. Kozinuk specifically positioned the amplifier, the projector and electric cords from the Nautilus Marine deep cycle battery and power inverter in such a way so that the equipment was hidden from view. Field notes indicate this action was deliberate. The artists created an audio experience that seemed “just to happen” and not one that was interrupted by “the knowing” the equipment was there. This work was originally designed and presented in an indoor exhibition setting and repositioned into natural landscape and several of the participants had experienced the work indoors.

6.4 Artist: Phil Thomson

Sound art composition is not traditionally performed outdoors—it is generally presented within a gallery or concert stage environment adhering to a traditional exhibition-style or concert hall paradigm (Burtner 2011, 235). The sound artists of this study were asked to revert from the “traditional” method and reposition the sound composition performance back into the actual sound environment from which they created the work.

On 19 August 2011 artist Phil Thomson presented a sound event at Stanley Park, Vancouver, British Columbia, for twelve spectators. Thomson chose to emphasise both the urban and woodland park soundscape in his performance event: a 20-minute soundwalk⁷ leading up to a semi-secluded woodland area. The artist chose the woodland site, because it was a “natural” space existing within an urban one. Thomson had an interest in balancing or harmonising human-made sounds with the natural. He recorded sounds from the woodland site and then reoriented the composition in the original environment. The site was a small open space surrounded by large cedar trees, creating a sense of an alcove, within which a large tree had fallen and formed a natural bench for sitting. The many tall saplings and bushes, and the lush forest floor underbrush, which included ferns, and the decaying trunks of old-growth trees, created a sense of privacy. Thomson used the 300 W Nautilus Marine deep cycle battery and one Samlex America Pure Power inverter from the enhanced independent power system Module 2 of LocoMotoArt. The soundtrack consisted of a mixture of sounds that exist in this space such as sea gulls, wind in the trees as well as sounds from the sea plane terminal, tankers travelling into the shipping port, horns, sirens, automobiles, including horses hooves clomping on the asphalt, and conversations of passing hikers.

6.5 Artist: Dave Leith

On 28 August 2011, sound and visual artist Dave Leith performed a 20-minute live sound composition at Iona Beach in Richmond, British Columbia. Leith indicated he chose Iona Beach because the site provided a sense of spatial expanse, and the sounds of the commercial jets departing from the Vancouver International Airport were of interest to him. Leith conveyed that he was also attracted to the vast openness of Iona Beach, which offers a visually stimulating scene. Depending on the focal point of the spectator, the water appears parallel to the sky across the horizon, which is often interrupted by clouds and sunsets, or distant mountains and open blue sky. Leith chose to use an array of equipment and

manipulated pre-recorded sounds from the Iona Beach environment into his composition as well as existing sounds from the environment of the site. He incorporated much of his own equipment, some of which is custom designed and built. The artist used his own high-performance microphones and recording unit, but utilised LocoMotoArt 300 W Nautilus battery and one Simplex America Pure Power inverter to run his Apex 620 Amplifier with 8-inch JBL speakers and other analogue electronics.

7 Synopsis of LocoMotoArt study findings and conclusions

Despite the initial biases and scepticism of some of the artists and spectators during pre-event interviews, results of the research indicate a new appreciation of digital technology as a mean of sensing our interconnectivity with nature and natural settings (Coles and Pasquier 2011b, 4). Our review of the various artist-projects indicates the following: first, out of the twenty-four spectators, there were four who began the study as highly sceptical. These four individuals conveyed definitions of nature and technology indicating that they considered digital artefacts to be separate from humans. Further, they described these artefacts as not a part of nature. One of the four had expressed during the pre-event interview that the computer was a tool, an object. She emphasised that digital technologies are nothing without power, that is, electrical energy, requiring human intervention for their functionality. Of the four, during the post-event interview, she alone maintained her bias that digital technologies were objects and “dead” without the activity of human intervention. However, she agreed that the artist had expertly used digital artefacts in natural setting. The other three sceptical spectators indicated they had changed their perspective from the denial of the possibility of the HTN Triad Relationship to acknowledgement of it.

Although providing negative statements earlier, after their experience of the artist events, three spectators stated that their technology-mediated experience in a natural setting “felt

nice”, “symbiotic”, “peaceful” or “pleasant”. Within these three responses, there were two dramatic changes in perspective. These are worth noting because they may be taken as primary evidence supporting the HTN Triad Relationship. We turn first to the responses of the non-digital spectator⁸ from the Bunker and Koesters project. The nineteen-year-old male previously expressed anger towards digital technology and complained of the dehumanising effects such technology has on society. He was educated in a private school, which purposefully did not introduce children to the use of digital technology. We suggest that by being in an educational environment that voids the use of and prevents the relationship to digital technology, he was influenced against accepting the benefits associated with such technologies. After his experience of the Bunker and Koesters *Coastal Forest* performance, he expressed the opinion that his experience “felt nice” and was “pleasant”. Now that he has had a positive technologically mediated experience, perhaps overtime his early negative notions about technology will continue to change. It would be interesting to follow up ten years from now to discover if he will have introduced digital artefacts into his life, and whether he will have fully integrated with them.

The second dramatic change occurred during the Leith project. One of the Leith project spectators eagerly defended her changed notion during a post-interview. Another spectator said he did not feel a sense of interconnection, but rather he experienced an awareness of separation of the human-built from nature. He explained that this occurred because he thought the analogue technology positioned was artificial. He further stated that he did not believe that the overall experience “would work with digital technology”.⁹ Ironically, this spectator had agreed to the possibility of the HTN Triad Relationship during a pre-interview. Thomson, another sound artist, used digital technology in the natural setting and spectators from that study indicated the sense of interconnectedness.

The remaining twenty spectators indicated during a pre-interview that they believed the notion of HTN was possible; however, some

indicated they were not sure how they would come to know it. Yet, after experiencing the artist's work and during a post-interview, a majority of the remaining twenty spectators agreed they had sensed an interconnection with nature within the technology-mediated experience. Some commented that they considered that the artist's skill of incorporating the landscape was expertly interpreted. This was stated emphatically at the conclusion of Pignon's *Water Words* and Kozinuk's *Come Here*. Both of these artists incorporated the contours of the landscape into their installations and positioned the equipment out of view so that the spectator did not sense it being there. Several spectators from Thomson's project remarked that the oscillation between the human-built world and the natural realm influenced their perceptions of the natural landscape, while one spectator indicated he did not think the urban woodland was at all "natural".

Within the artist study group, three out of six participant artists were highly sceptical of the notion of the HTN Triad Relationship during pre-interview. These artists were Anne F. Bunker, Gerald "Chuck" Koesters and Dinka Pignon. However, all three artists indicated a marked change in perspective at the conclusion of participating in the research study. Bunker and Koesters expressed a new sense of embodiment and spatiality, as well as a new sense of how well the elements of performance, digital technology and natural setting can fuse together. Bunker and Koesters believed that they sensed an interconnection and were "surprised" by it. For Pignon, I conclude that her experience of repositioning and reorientating her typical media practice from an indoor setting to a natural setting changed her perspective. She initially exclaimed the projectors to be "mere toys" and humorously scoffed at them. She questioned the technological limitations of the Aaxa P1 Jr. LCoS pico projector. She indicated concerns of whether she would get anything of quality, or that which would meet her artistic standards, much less have display capability for an expansive outdoor setting. Yet, at completion of her project she admitted she experienced a sense that her installation felt as if it was "absorbed" into landscape,

where previously she was uncertain whether this perceptual task would be possible.

While the sense of the existence of HTN Triad Relationship may occur only momentarily, and obviously not everyone senses it at the same moment, there is evidence that this experience is reproducible. Our research and analysis revealed that the testing for the HTN Triad Relationship is reproducible within a variety of situations using technology in natural settings. The first study was conducted on the Big Island of Hawai'i, the second series conducted in urban natural settings of Vancouver, BC. Neither of these two study groups interacted with one another. Further, results from these study groups were measured against independent observations made by art technology group ecoarttech, who upon interview declared their audiences expressed similar responses to those of our participants (L. C. Nadir, e-mail conversation, May 13, 2012 (Laura Lee Coles, interviewer)). However, a larger study is warranted to find deeper meaning within the human capacity to recognise the HTN Triad Relationship, and how changes in the brain, based on the use of digital technology, may be contributing to this sensed relationship.

We have expressed the perceived disconnection between nature and technology—and between the technologised human and the natural world—as a gap, or lacuna, to be bridged. By affirming the existence of the HTN Triad Relationship, the results of our study help dispel concerns of human–nature alienation as a result of technology, altering the perception that nature and technology are incompatible. While it could be argued that an awareness or experience of the HTN Triad Relationship is illusory, or spawned from suggestion, and human imagination, participants reported an actual enhanced sense of connection to, and awareness of, the natural world through experiencing new media art in natural settings and had pleasant feelings. Because the HTN Triad Relationship is not a long-term presence that can be kept in place for lengths of time, but rather appears within an instance of experience, does not discount its existence. Turning to Latour, it defines the moment that it *does appear* (visibly connected) and is sensed and understood by the participant

because it “acts” as an “intermediary”—and the lacuna is closed.

Mithen reminds us that “a re-design of the mind took place”, facilitating the creation of the first wall paintings (151–153). The innovative making of an artefact became an embodied extension of self, while the image created was an extension and externalisation of inner sense and internal representation. The early cave painters experienced the world and then developed in order to express their world experience. These tools and their evolution parallel the development and creative use of contemporary new media tools and digital artefacts as technologies that “fit” when employed by artists within natural settings.

We conclude that the practice of using digital tools to create art representative of a rearticulated human–nature relationship leads to an enhancement of this relationship. Through the blending of the three ingredients to the mediated experience (humans, technology and nature), there is a momentary presence that bridges the lacuna and affirms the HTN Triad Relationship. This provides transformative possibilities in the ever-changing relationship of human–machine interaction. Marshall McLuhan perceived the future cultural effects of technology on art and nature:

I expect to see the coming decades transform the planet into an art form; the new man, linked in a cosmic harmony that transcends time and space, will sensuously caress, and mold and pattern every facet of the terrestrial artefact, as if it were a work of art, and man himself will become an organic art form . . . we have begun the journey . . . the story begins only when the book closes. (McLuhan and Zingrone 1995)

Notes

¹ Deep Ecology presents the belief that humans are an equal and integral part of ecosystems, or nature, rather than as a force, acting upon an external nature and the non-human realm and frown upon exploitive technologies that arise from mechanistic views of nature, and on what ecologist Neil Evernden terms “resourcism” (Evernden 1985). However, Deep

Ecologists look favourably upon technologies that “fit”, insofar as they work within, rather than against, natural systems, are not aggressively exploitive, and enhance the relationship of human to world, or nature to culture (Lomba-Ortiz 2003, 1).

² A research study conducted at the University of Maryland reveals that when students were deprived of their computers, cell phones, iPods, use of the internet and social networking for several hours, symptoms of withdrawal, anxiety and depression occurred. Also see: <http://www.merrill.umd.edu/deadline/index.php/2010/04/22/merrill-studycollegestudentsunable-to-disconnect/> and Seattle Times, Editorials/Opinion (2010), “Are we Becoming Addicted to Technology?” Accessed October 23, 2014. http://seattletimes.com/html/editorials/2011896575_edit19tech.html.

³ Extensive details of the initiating LocoMotoArt study are found in *Utilizing the Natural Environment for the Exhibition of New Media* (Coles, Pasquier, and Gromala 2012); *User as Explorer: Interaction with the Natural Environment Using Mobile Projection Technology* (Coles and Pasquier 2011a, presented at CHI-2011) and *LocoMotoArt: Interacting Within Natural Setting Through Performance Using Pico-projection* (Coles and Pasquier 2011b, presented and part of the proceedings of ISEA—Istanbul).

⁴ Bohm states that the meaning of the word “artifact” (*sic*) means, “That which has been made to fit.” He introduces a “new word—*artamovement*, which means the movement of fitting.”

⁵ Further emphasizing that “Humans are thus both the creative artists, the actors, and the participatory audience in the environmental drama” (125).

⁶ We use the term reciprocity to mean as Abram notes, “Perception, in Merleau-Ponty’s work, is precisely this reciprocity, the ongoing interchange between my body and the entities that surround it” (1996, 52).

⁷ A soundwalk is a directed walk through an environment where the listener is immersed within the relationship of sounds to the environment.

⁸ This spectator is called the “non-digital spectator”, because he was raised and educated in an environment that emphasized a non-digital environment, that is, void of interaction with digital devices and has Neo-Luddite philosophy regarding technology (Coles, Pasquier, and Gromala 2012).

⁹ Leith’s custom built synthesizers are analogue.

References

- Abram, D. 1996. *Spell of the Sensuous: Perception and Language in a More-than-Human World*. New York: Random House.

- Berleant, A. 2010. *Sensibility and Sense: The Aesthetic Transformation of the Human World*. Exeter: Imprint Academic Philosophy Documentation Center.
- Berman, M. G., J. Jonides, and S. Kaplan. 2008. "Research Report: The Cognitive Benefits of Interacting with Nature." *Psychological Science* 19: 1207–1212.
- Bohm, D. 1996. *On Creativity*. London: Routledge Classics.
- Booth, W. C., G. G. Colomb, and J. M. Williams. [1995, 2003] 2008. *The Craft of Research*. 3rd ed. Chicago, IL: The University of Chicago Press.
- Bouchard, T. J. 1976. "Field Research Methods: Interviewing, Questionnaires, Participant Observation, Systemic Observation, Unobtrusive Measures." In *Handbook of Industrial and Organizational Psychology*, 363–413. Chicago, IL: Rand McNally College.
- Burtner, M. 2011. "EcoSono: Adventures in Interactive Ecoacoustics in the World." *Organized Sound* 16: 234–244.
- Butler-Kisber, L. 2010. *Qualitative inquiry: Thematic, Narrative and Arts Informed Perspectives*. Thousand Oaks, CA: Sage Publications.
- Coles, L. 2015a. "Technologically Mediated Space and Place: Re-visioning Urban Natural Environments." Presented at the conference Arts In Society Rome, Italy.
- Coles, L. 2015b. "LocoMotoArt: Digital Art Practices in Natural Settings." *The International Journal of New Media, Technology and the Arts*. Presented at Arts In Society, Budapest, Hungary. Proceedings publication, 10 (1): 1–10. Champaign, IL: Common Grounds.
- Coles, L. L., and P. Pasquier. 2011a. "User as Explorer: Interaction with the Natural Environment Using Mobile Projection Technology." Presented at CHI 2011, Vancouver, BC, Canada. Accessed April 3, 2012. http://side-creative.ncl.ac.uk/userflux/wp-content/uploads/2010/12/LLColes_UserExplorer.pdf
- Coles, L. L., and P. Pasquier. 2011b. "LocoMotoArt: Interacting Within Natural Setting Through Performance Using Pico-projection." Proceedings of the International Symposium of Electronic Artists, ISEA—Istanbul. Accessed April 3, 2012. <http://isea2011.sabanciuniv.edu/ma-candidate.coles>
- Coles, L. L., P. Pasquier, and D. Gromala. 2012. "Utilizing the Natural Environment for the Exhibition of New Media." Master thesis. Available from Simon Fraser University Theses Database.
- Creswell, J. W. 2007. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage Publications.
- Evernden, N. 1985. *The Natural Alien*. Toronto: University of Toronto Press.
- Glendinning, C. 1995. "Technology, Trauma and the Wild." In *Ecopsychology: Restoring the Earth and Healing the Mind*, edited by T. G. Rozak, M. E. Gomes, and A. D. Kanne, 41–54. San Francisco, CA: Sierra Club Books.
- Kahn, P. H. 2011. *Technological Nature: Adaptation and the Future of Human Life*, xiii. Cambridge, MA: MIT Press.
- Kahn, P. H., and P. H. Hasbach. 2012. "Introduction to Ecopsychology: Science, Totems, and the Technological Species." In *Ecopsychology: Science, Totems, and the Technological Species*, edited by P. H. Kahn and P. H. Hasbach, 1–21. Cambridge MA: MIT Press.
- Kahn, P. H., R. L. Severson, and J. H. Ruckert. 2009. "The Human Relation with Nature and Technological Nature." *Current Directions in Psychological Science* 18: 37–42.
- Kandell, J. J. 1998. "Internet Addiction on Campus: The Vulnerability of Collage Students." *CyberPsychology & Behavior* 1: 1–17.
- Kellert, S. R. 1997. *Kinship To Mastery: Biophilia In Human Evolution and Development*. Washington, DC: Island Press.
- LocoMotoArt research site. Accessed April 29, 2014. <http://www.locomotoart.com/> and http://www.locomotoart.com/locomotoart_field_system
- LocoMotoArt residency blog. Accessed April 29, 2014. <http://locomotoart.weebly.com/>
- Lomba-Ortiz, E. A. 2003. "Questioning Ecological Design: A Deep Ecology Perspective." Accessed May 9, 2012 from *Ecotecture: The Journal of Ecological Design*. http://www.ecotecture.com/library_eco/appropriate_tech/Lomba-Ortiz_questioningEco.html
- Louv, R. 2012. *The Nature Principle: Reconnecting with Life in a Virtual Age*, 4. Chapel Hill, NC: Algonquin Books.
- McLuhan, E., and F. Zingrone, eds. 1995. "The Playboy Interview: Marshall McLuhan—A Candid Conversation with the High Priest of Popcult and Metaphysician of Media." In *The Essential McLuhan*, 233–269. New York: BasicBooks.
- Mithen, S. 1996. *The Prehistory of the Mind: A Search for the Origins of Art, Religion and Science*. London: Thames and Hudson.

- Nagy Hesse-Biber, S., and P. Leavy. 2011. "Designing Qualitative Approaches to Research." In *The Practice of Qualitative Research Second Edition*, edited by S. L. Nagy Hesse-Biber, 31–57. Thousand Oaks, CA: Sage Publications.
- Nisbet, E. K., J. M. Zelenski, and S. A. Murphy. 2011. Happiness Is in Our Nature: Exploring Nature Relatedness as a Contributor to Subjective Well Being. *Journal of Happiness Studies* 12 (2): 303–322.
- Prensky, M. 2011. "Digital Natives, Digital Immigrants." In *The Digital Divide—Arguments Against Facebook, Google, Texting, and the Age of Social Networking*, edited by M. E. Bauerlein, 3–25. New York: Jeremy P. Tarcher/Penguin.
- Ranciere, J. 2009. *Emancipated Spectator*. London: Verso.
- Sampson, S. D. 2012. "The Topophilia Hypothesis: Ecopsychology Meets Evolutionary Psychology." In *Ecopsychology: Science, Totems, and the Technological Species*, edited by P. H. Kahn and P. H. Hasbach, 23–53. Cambridge, MA: MIT Press.
- Seattle Times, Editorials/Opinion. 2010. "Are we Becoming Addicted to Technology?" May 10. Accessed October 23, 2014. http://seattletimes.com/html/editorials/2011896575_edit19tech.html
- Small, G. A., and G. Vorgan. 2011. "Your Brain Is Evolving Right Now." In *The Digital Divide: Arguments for and Against Facebook, Google, Texting, and the Age of Social Networking*, edited by M. E. Bauerlein, 76–96. New York: Jeremy P. Tarcher/Penguin.
- Sullivan, G. 2010. *Art Practice as Research: Inquiry in Visual Arts*. Thousand Oaks, CA: Sage Publications.
- Suzuki, D., with A. McConnell. 1997. *The Sacred Balance: Rediscovering Our Place in Nature*. Vancouver: Greystone Books.
- Szszynski, B. 2005. *Nature, Technology and the Sacred*. Malden, MA: Blackwell.
- Tuan, Yi-Fu. 1974. *Topophilia: A Study of Environmental Perception, Attitudes, and Values*. Englewood Cliffs, NJ: Prentice-Hall.
- University of Maryland. April, 2010. "Merrill Study: College Students Unable to Disconnect." <http://www.merrill.umd.edu/deadline/index.php/2010/04/22/merrill-study-college-students-unable-to-disconnect/>
- Wilson, E. O. 1984. *Biophilia*. Boston, MA: Harvard University Press.
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