



# Desperate Whispers

EMPATHY IN THE CONTEXT OF AN ECOLOGICAL CRISIS

QUANTA GAULD

## *Desperate Whispers*

*Empathy in the context of an ecological crisis*

Quanta Gauld

*Desperate Whispers: Empathy in the context of an ecological crisis*

Quanta Gauld  
2015

Submitted in compliance with the requirements of the MFA degree  
Michaelis School of Fine Art  
University of Cape Town

Supervision: Associate Professors Virginia MacKenny and Johann van der Schijff  
Photography: Quanta Gauld  
Design: Quanta Gauld  
Proofreading: Shelley Wood Gauld  
Printing and Binding: Hansa Print  
All rights reserved 2015

Official Declaration

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution and quotation from the work, or works, of others, has been attributed, cited and referenced.

Signature:

Date:

## Contents

*List of Figures*

*Acknowledgements*

Fragility, Entropy and Disconnection	11
Nature, Technology and Humanity	
Defining 'Nature' and 'Technology'	19
A Note on Gender	20
On the Subject of Empathy	
Empathy in Contemporary Theory	25
Empathy and Affect in Early Aesthetic Theory	30
Empathy, Mortality and the Body	
Trauma in Contemporary Art Theory	35
Abstraction and the Body	36
Kineticism, Interactivity and Materiality	
Violence, Vulnerability and Complicity	45
Contentious Matter	59
Conclusion	73
<i>References</i>	77
<i>Disk of Video Documentation</i>	

## List of Figures

- Fig. 1. *On quiet breathing*. Jelutong, thread, electronics. Pages 9, 44.  
Fig. 2. *Grief water*. Chinese seed beads, thread, wood, rope, electronics. Pages 10, 48, 51.  
Fig. 3. *Desperate Whispers* (installation view). Page 13.  
Fig. 4. *Stirring of ground and sky*. Paper, meranti, electronics. Page 15.  
Fig. 5. Process documentation. Cotton thread on ivy leaf. Page 21.  
Fig. 6. *Broken dance* (video stills). Rose. Page 22.  
Fig. 7. *Sigh of fossils*. Plastic, electronics. Pages 27, 66.  
Fig. 8. *Song of lightness and sorrow*. Cotton thread. Pages 31, 61, 76.  
Fig. 9. *On death and this material earth*. Fabric, thread. Pages 32, 33, 57.  
Fig. 10. *Silence breathed into being*. Skeleton leaf, electronics. Pages 36, 55.  
Fig. 11. Lucio Fontana (1957). *Sphere*. Ceramic. Page 39.  
Fig. 12. Ugo Mulas (1965). Lucio Fontana in his studio. Page 39.  
Fig. 13. *An immensity sounded on the emptiness*. Wallpaper, thread, electronics. Pages 24, 40, 43.  
Fig. 14. Ken and Julia Yonetani (2003). *Fumie Tiles*. Ceramic. Page 47.  
Fig. 15. Ai Wei Wei (2010). *Sunflower Seeds*. Porcelain. Page 47.  
Fig. 16. El Anatsui (2010). *Ozone Layer* (detail). Waste metal. Page 48.  
Fig. 17. El Anatsui (2007). *Earth's Skin*. Waste Metal. Page 48.  
Fig. 18. *Prayers for home: a meditation* (detail). Chinese seed beads, thread. Page 50.  
Fig. 19. Theo Jansen (1990-2014). *Strandbeest*. PVC, electronics. Page 52.  
Fig. 20. Alan Rath (2012). *Forever*. Feathers, electronics. Page 53.  
Fig. 21. Rebecca Horn (2006). *Schmetterling-Skulptur/Butterfly Sculpture: Happy Life in Blue*. Butterfly wings, motor. Page 54.  
Fig. 22. Lygia Clark (1963). *Caminhando/Walking*. Performance documentation. Page 56.  
Fig. 23. Bright Ugochukwu Eke (2006). *Acid Rain*. Rain water, plastic. Page 63.  
Fig. 24. Sokari Douglas Camp (1998). *Close to My Heart*. Steel, photograph, oil. Page 63.  
Fig. 25. *On the descent into absense*. Rice paper, cotton thread, electronics. Pages 18, 65, 67.  
Fig. 26. *The hour when earth's foundations fled*. Cotton thread, cottonseed oil, meranti, electronics. Pages 69, 70, 71.  
Fig. 27. *On the hemming of soil and skin*. Empisal sewing machine, cotton thread, electronics. Page 73.  
Fig. 28. Cornelia Parker (1991). *Cold Dark Matter: An Exploded View*. Page 74.

## Acknowledgements

This project would not have been possible were it not for the involvement of numerous people and institutions. I am most grateful for this support and, as such, would like to thank:

My supervisors, Associate Professors Virginia MacKenny and Johann van der Schijff, for guiding my research with such care and interest. Virginia, for being willing to be involved with this project and for nurturing its conceptual development. And Johann, for sharing sculptural expertise and continually guiding my vision towards the end-product and the bigger picture.

The University of Cape Town and Michaelis School of Fine Art academic staff, particularly the current and former directors of the school, Professor Fritha Langerman and Professor Stephen Inggs.

Administrative and technical staff, Stanley Amon, Charlie van Rooyen, Shannon Brand, Thomas Pienaar, Ray du Toit, Moeneeb Dalwai, Josephine Higgins, Afiefah Rajap and Sharon Werthen. Special thanks is extended to Stanley Amon for assistance with woodworking and construction, and for providing a peaceful space of constant support throughout this project.

Daan de Beer for software design, electrical engineering expertise and for his generosity and consistent support of the project.

Professor Derrick de Kerckhove for seeing value in this research and generously sharing

his excitement and knowledge about the subject matter.

My fellow master's group: Hanien Conradie, Sepideh Mehraban, Alexandra Karakashian, Francois Knoetze, Suzanne Duncan, James MacDonald, Maurice Mbikayi and Marc Barben for inspiring conversations and helping this project to find its feet.

My beloved studio partners, Hanien Conradie, Sepideh Mehraban and Alexandra Karakashian for being the most wonderful friends, my pillars.

My mother Shelley Wood Gauld, for steering me towards the light and helping me to find myself in my work. My sister Zoë Gauld, for being my other half and inspiring me daily. Guido Angelucci, Matteo Angelucci, Mia Couvaras and Hannah Smith for unwavering support, love and encouragement. And the members of the Cape Town Youth Choir for providing friendship and musical nourishment for my soul during difficult times.

Lastly, this research would not have been possible were it not for the generous financial support of the Harry Crossley Research Foundation, the National Research Foundation, the Jules Kramer Music and Fine Arts Scholarship and the UCT Postgraduate Funding Centre.



*For my mother and sister*

*“After a seven days’ march through woodland, the traveller directed toward Baucis cannot see the city and yet he has arrived. The slender stilts that rise from the ground at a great distance from one another and are lost above the clouds support the city. You climb them with ladders. On the ground the inhabitants rarely show themselves: having already everything they need up there, they prefer not to come down. Nothing of the city touches the earth except those long flamingo legs on which it rests and, when the days are sunny, a pierced, angular shadow that falls on the foliage.”*

*“There are three hypotheses about the inhabitants of Baucis: that they hate the earth; that they respect it so much they avoid all contact; that they love it as it was before they existed and with spyglasses and telescopes aimed downward they never tire of examining it, leaf by leaf, stone by stone, ant by ant, contemplating with fascination their own absence.”*  
(Calvino, 1974: 77)



Fig. 1. *On quiet breathing* (detail). Jelutong, cotton thread, electronics.



## Fragility, Entropy and Disconnection

In his text *Invisible Cities*, Italo Calvino (1974) describes the fictional city of Baucis, a land suspended in the clouds, in which humans maintain a purposeful and mysterious physical detachment from the earth. Calvino's imagining of Baucis visualises a conceptualisation of humans as divorced from nature<sup>1</sup>; a lingering residue of the post-Enlightenment obsession with reason and progress that casts nature as separate from and inferior to humans. In the context of the current ecological crisis, in which the perpetual abuse of human and natural resources threatens the sustainability of the planet and all earthly life, reconsideration of the relationship between humans and the non-human natural world becomes profoundly relevant.

An overview of contemporary environmental theory, undertaken in the first section of this text, suggests that the widespread understanding of nature as an inferior realm that lacks the full degree of human rationality or culture, is giving way to conceptualisations of the relationship

between humans and nature that highlight the interdependence and interrelatedness of all living organisms and systems. Sustainability scholar Stacy Alaimo (2010: 15-16) states:

At this point in time, with global climate change proceeding even more rapidly than was projected, we hardly have the luxury of imagining any expanse of land or sea as beyond the reach of humanly-induced harm. Matters of environmental concern and wonder are always "here," as well as "there," simultaneously local and global, personal and political, practical and philosophical.

This concept of the interrelatedness of global economic, technological, social, cultural and ecological systems, is significant in conceptualising the role that humans play in ecological degradation and exploitation. The precarious edge on which the planet seems to sit between preservation and complete entropy, calls to mind French philosopher Gilbert Simondon's notion of 'metastability', according to

which there are no “stable systems, nor even [...] systems [in] search [of] equilibrium,” but rather a situation in which everything is “stable on the verge of instability” (Altena, 2007: 50). It was in this precarious sense of stability on the verge of collapse, my own felt experience of the current ecological crisis, that this project found its roots.

In his 2008 novel, *Hell and High Water: Climate Change, Hope and the Human Condition*, human ecologist<sup>2</sup> Alastair McIntosh (210) argues that one’s capability to commit ecocide – or the collective, often deliberate, destruction of the non-human natural world – is only enabled by their first becoming dead to it through systematic and internalised cultural violence. Deflating cultural hubris, he proposes, is the primary challenge for artists faced with the accelerated disintegration of the planet’s life systems under the pressure of human civilisation (219). In a compelling argument, he suggests that navigating this escape route out of the planet’s seemingly downward spiral relies on a single essential component: empathy. Defined and discussed in more depth in the following chapters, empathy – in this context, the human potential for addressing ecological and social collapse through empathic engagement – occupies significant space in my conceptualisation of this project.

It is based on a need to establish a sense of connection beyond the human and a belief in the

transformative potential of empathy, that I seek ways to engender felt experiences of fragility, tension and interconnection in *Desperate Whispers*. By constructing interactive sculptures that enact small tragedies, pain, conflict and loss, I aim to foster empathic concern for the artworks as nonhuman, inanimate objects and, by extension, encourage a contemplation of human connection with others; both human and nonhuman. Using materials which are manufactured and sourced from sites of current human and environmental exploitation – such as cotton, glass beads, cut flowers, paper, wood and electronics – the exhibition consists of sculptures and installations, most of which function as participatory interactions and self-destruct when activated by the viewer’s presence. By referencing the human body as a relatable site of physical experience, the material duress of the sculptures – their forced disintegration and loss over time – serves as a proxy for human and environmental duress elsewhere. As the sculptures self-destruct on contact with the viewer, an uncomfortable relationship is established between the participant and the work, in which proximity to the piece confirms complicity in its destruction.

German philosopher Friedrich Schiller’s (1759-1805) concept of the ‘pathetic sublime’ suggests that witness to tragedy calls the viewer to, at the very least, “suffer sympathetically” with the victim; that it is because we sense our moral



elves to be free of the causality associated with the damaging event, that witness to it remains sublime (Kirwain, 2005: 72). This project aims to generate an awareness of circumstances in which our witness and relation to another’s distress is the causality. Such is the case in which we currently find ourselves; in a destructive system of human and environmental exploitation and tragedy that we are complicit – albeit perhaps unaware – in causing. Through this project I aim to give physical form to human and ecological trauma that often feels distant, abstract and difficult

to emotionally engage. The slow destruction of the sculptures demands not only affective engagement from the viewer, but also physical response, or response-ability; be it walking away to save the work, or maintaining proximity to view it. This complex interaction invoked by the participant’s implication in the disintegration of the works serves to prompt a consideration of the interconnectedness of organisms and systems and the possibility of extending empathy to and beyond the human as an effort towards global sustainability.

<sup>1</sup> A discussion of what is meant by the term ‘nature’ is presented in the following section, with particular focus given to the intersecting relationships between nature, technology and humans; as well as the problematic ideological understanding of humans as separate from the natural world.

<sup>2</sup> Human ecology is an approach to the study of human behavior marked by the belief that, while unique as a species, humans are “subject to similar ecological and evolutionary processes as any other species” and, as such, should be studied as “living systems operating in complex environments” (Richardson, n.d.).

Fig. 3. *Desperate Whispers* (installation view).



Fig. 4. *Stirring of ground and sky*. Paper, meranti, electronics.

*“This irreversibly modified world . . . is all the nature we have.”*  
(Schama, 1995: 7)



## Nature, Technology and Humanity

### *Defining 'Nature' and 'Technology'*

The Oxford Dictionary (2015) defines 'nature' as "the phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations." However, in the contemporary moment, as the concept of nature is eclipsed by seemingly autonomous and increasingly pervasive human technologies, it is necessary to more deeply consider what is meant when one refers to 'nature' and, perhaps more importantly, consider the historical exclusion of humans from the realm of the natural. As environmental historian James Williams (2010: 13) observes, nature may be defined in both abstract and physical terms: as both the "controlling force that directs the world" and the "entire external [physical] world." However, when nature is referred to, it is most often an Arcadian image that is conjured; an imagined paradisaical, Edenic landscape that is marked by either peaceful co-habitation of humans and the natural world, or by

the distinct absence of humans altogether (Grove, 1997). According to environmental scholar Peter Coates (1998: 9), it is through the association of nature with "purity, simplicity and goodness" that the term becomes a "byword for authenticity." The idea of an authentic nature denotes a type of pre-human nature that exists outside of the influence of human civilisation and informs conceptualisations of natural spaces such as 'wilderness' or 'the wild'; spaces that are imagined to exist as spheres unspoiled by and distinct from the realm of the human. But considering the influence of human technology on the natural world in an historical and contemporary sense, this idea of nature as a sphere distinct from and untrammelled by human civilisation, becomes increasingly difficult to entertain.

Carolyn Merchant (1989) writes that pre-human nature, the only nature that can truly be conceived of as entirely untouched by humans, and pre-modern nature, in which humans largely held

Fig. 25. *On the descent into absence* (detail). Cotton thread, rice paper, electronics.

animistic beliefs marked by ecocentric ethics in relation to the non-human world, no longer exist. With the Enlightenment re-conceptualisation of nature as a machine and the obsession with understanding and controlling the natural world through human reason and scientific discovery, human consciousness with regards to nature shifted dramatically. As a result, the tendency to define human culture as distinct from, and superior to, non-human nature became firmly rooted in the Western psyche (Williams, 2010: 13). Physically speaking, nature became a raw material for scientific investigation and technological development, and as a concept it served as the antithesis of advanced civilisation. As Williams (2010: 14) notes, “nature became, at best, the quarry, at worst, the enemy of all that is modern.”

Although technology may be defined as a driving force in our species’ trajectory towards modernity and resultant environmental decline, some scholars suggest a more nuanced definition of the term as it relates to humans and nature in a contemporary context. The word ‘technology’ stems from the Greek ‘technē’, referring to art, craft, skills or practical knowledge; and ‘logos’, referring to systematic comprehension. Thus ‘technology’, in its earliest linguistic use, is said to convey the technical knowledge concerning an art or skill (Williams, 2010: 15; McNamee,

2006). With this early definition in mind, some philosophers of technology maintain that in discussing the history and contemporary possibilities of technology in the context of the ecological crisis, a distinction must be made between technology and the intention behind its use. Biotechnology and transhumanism scholar Dr Michael McNamee (2006) considers technology as a means to an end, stating:

Technology is the means utilised to pursue chosen ends. It follows from this that technology is, in a sense, neutral. It is neither good nor bad in itself. Rather, its normativity is typically governed by the uses to which it is put.

Based on this insight, it may be argued that while technological advancements have served to propagate the destruction and undermining of ecological systems, they may also be devised in ways that enable connection and serve to narrow the proverbial gulf between humans and nature. Here, German philosopher Walter Benjamin’s (1892-1940) early assertion that “technology is not the mastery of nature but of the relations between nature and man,” comes to mind (Demetz, 1986: 93). The use of interactive technologies, particularly sensors, motors and software in my own work is intended to prompt a reflection on technology as a mediator between people and their environments. By revealing the interconnected nature of the participant



and the art object itself, the digitally interactive aspect of this project serves to visualise and prompt consideration of the technologically mediated dialogue in which humans and nature are constantly engaged; the outcome of which is within human control.

#### *A Note on Gender*

Looking more closely at the relationship between nature, humans and technology, it is important to consider the tendency, arising out of the modernist atmosphere of patriarchal conquest and control, to personify and feminise nature through language. Spoken of as ‘Mother’, ‘goddess’ and ‘virgin’, nature was, and still is, established as distinct from and subservient to a technologically dominated human civilisation that has historically been associated with, and cast as, male (Williams, 2010: 13). The concept that

the exploitation of women and nature is, in fact, mutual and related, is not new. Born of a merging of feminist theory with the ecological concerns of the environmental movement of the 1960s and 1970s, the historical inclusion of women in the sphere of nature and the feminisation of the natural world have been considered tools of domination by those aligned with the ecofeminist and, more recently, the queer ecology and global feminist environmental justice ideologies<sup>1</sup>.

On the subject of the complex intersectionality of nature, race, class and gender, specifically with regard to the mutual domination of women and nature in the name of Western advancement, Plumwood (1993: 4) writes:

The category of nature is a field of multiple exclusion and control, not only of non-humans, but of various groups of humans and aspects of human life which are cast as nature. Thus racism, colonialism and



Fig. 6. *Broken dance* (video stills). Rose.

sexism have drawn their conceptual strength from casting sexual, racial and ethnic difference as closer to the animal and the body construed as a sphere of inferiority, as a lesser form of humanity lacking the full measure of rationality or culture. As Vandana Shiva (1989, 1991) points out, it is not only women's labour which traditionally gets subsumed 'by definition' into nature, but the labour of colonized non-western, non-white people also. The connections between these forms of domination in the West are thus partly the result of chance and of specific historical evolution, and partly formed from a necessity inherent in the dynamic and logic of domination between self and other, reason and nature.

The relationship of both nature and women to systems of global labour in the contemporary moment is particularly relevant to the material choices and processes of making involved in this body of work. Drawing on anthropologist Mary Beth Mill's (2003: 41) *Gender and Inequality in the Global Labor Force*, it is important to note that the current global economy maintains the structure outlined by both Plumwood (1993)

and Shiva (1991): an economy functioning on gendered ideologies and social relations that position female labour on the lowest rungs of a patriarchal and hierarchical system.

The works in *Desperate Whispers* use processes, techniques and technologies typically associated with women's labour – such as hand-sewing, sewing machines, knitting and beadwork – as means by which to engage with the role of female labour in the contemporary global economy, while also prompting a reflection on ideas of ecological and social mending or repair. Such processes become conceptually significant when used in tandem with materials that are produced in conditions in which female labourers bear a multilayered burden of uncertain employment, lower wages than male counterparts, and the threat of gender-based violence and sexual abuse in the workplace (International Trade Council, 2011). It is important to note that the considerable attention given to empathy in the conceptual framing of this project, aims to recast those emotional and caring aspects of humanity that have been typically cast as feminine<sup>2</sup>, as useful tactics by which to grapple with current ecological and social devastation.

<sup>1</sup> Developing out of ecofeminism, queer ecology seeks to bring together queer and ecological theories and politics in order to challenge the power relations of nature and sexuality (Morton, 2010). Similarly, global feminist environmental justice attempts to address the "multilayered predicament of globalized inequity [of humans and nature], which derives its strength and momentum from historically entrenched systems of oppression" (Garvey, 2011: 216).

<sup>2</sup> In order to avoid reinforcing an essentialist view of either gender or nature, it is important to recognise that women, men and nature all have both masculine and feminine qualities, and that, similar to the way femininity has been historically viewed as having lesser value than masculinity, nature has also been cast as subsidiary to culture and technology.



## On the Subject of Empathy

### *Empathy in Contemporary Theory*

Often, erroneously, conflated with sympathy and pity, empathy is understood as “the complex emotional, embodied and cognitive work that is implicated in approximating the objective experience of another from a quasi-first-person perspective” (Hollan & Throop, 2008: 387). In other words, to empathise is to engage one’s ability to imagine, embody and feel another’s experience as if it were one’s own. The past decade has seen significant developments in the study of empathy across academic disciplines; including neuro-cognitive science, evolutionary biology, anthropology, psychology and aesthetics (de Waal, 2012; Hollan & Throop, 2008; Kirmayer, 2008; Koss, 2006). In the early 1990s neuroscientists uncovered the existence of ‘mirror neurons’ in the brains of humans and other mammals. These neurons are activated in identical patterns when one acts as when one observes the same action by another (de Waal, 2012; Kirmayer, 2008). This fundamental insight confirmed that, as ethical scholar Jeremy Rifkin (2010) states:

[...] humans are soft-wired to experience another’s plight as if we are experiencing it ourselves [...] we are soft-wired not for aggression, violence, self-interest and utilitarianism, but we are actually soft-wired for sociability, attachment, affection and companionship. The first drive is to belong. It is an empathic drive.

This scientific validation of empathy as intrinsic to human and animal biology, is a cornerstone around which scholarly enquiry into the nature and limits of empathy has since been structured. However, it is only recently that significant emphasis has been placed on the role that empathy may play in reframing how to approach the critical issues of the contemporary moment; perhaps the most significant being the ever-looming ecological crisis, spurred by the perpetual exploitation of human and non-human natural resources.

Rifkin (2010) states that we are at a pinnacle point in human history, at which our planet “teeters between sustainability and collapse.” He argues that a profound shift must occur in our conceptualisation of empathy if we are to address this crisis. Drawing on theories of interconnectedness and interdependence, he advocates an expansion of human empathy to encompass all other natural life as extended family, and the biosphere as our extended home. Similarly, philosopher Roman Krznaric (2012) proposes that if the twentieth century’s mode of personal discovery was defined by introspection and self-help, then the twenty-first century may be defined by ‘outrospection,’ or the possibility of social, political and economic transformation through the process of forging empathic connections with those “outside of” or distant from oneself. He considers the possibility of empathy as occurring not only between individuals, but as a collective force on a mass scale. Such radical conceptualisations extinguish what Krznaric (2012) refers to as the “soft and fluffy” perception of empathy, and reframe empathy as not only a valid subject of research, but one that is in fact vital in attempting to understand and bridge the disconnect between humans and other life in our contemporary condition.

In keeping with this move in favour of empathy, some contemporary artists and writers, in dealing with ecological concerns, similarly dismiss a

sentimentalised empathy in favour of empathy as a radical act and an important route to recognising and achieving global interconnection. Artist Jeanne van Heeswijk (2007: 99) argues that “empathy should not be seen as an effect, the emotional outcome of an encounter, but an affect, a productive catalyst for sociality.” Similarly, in his essay entitled *Us and Them: Ecocide, Empathy and the Graphic Eco-fable*, literary scholar Mat Osmond (2015: 8) engages with current efforts in eco-literature that aim to foster empathy, not as an end-product, but as a means by which to grapple and live with the “all-pervasive but less graspable set of problems we refer to rather vaguely as ‘the ecological crisis.’” In my own work, interactivity and kineticism provide opportunities for considering the interconnectedness of organisms and the interdependence of biological, social, economic and political systems; particularly in a context in which the continuous exploitation of human and natural resources jeopardises the potential for global sustainability. By engendering a sense of fragile suspension between preservation and collapse, this project, and the works of other artists discussed here, exploit interactive and kinetic technologies and processes in order to incite affective responses which may be argued to be distinctly empathic in nature. While linked to contemporary ecological and social issues, this current turn to a recognition of the role of empathic and affective engagement in visual art practice is historically precedented.



Fig. 7. *Sigh of fossils* (detail). Plastic, electronics.

*“Empathy reflects the willingness to meet, engage, and be moved  
by the other – whether that other is an esthetic object or a person.”  
(Kirmayer, 2008: 458)*

### *Empathy and Affect in Early Aesthetic Theory*

Although empathy is most commonly thought of in terms of human-to-human interaction, Kirmayer's notion of empathy as implicated in one's engagement with inanimate objects is not new. Conceived in 1873 by German philosopher Robert Vischer, the concept of 'Einfühlung' – literally translated as the act of 'feeling into' – describes an "embodied response to an image, object, or spacial environment" (Koss, 2006: 139). While Vischer is specifically concerned with "physical response generated by the observation of [bodily] forms within paintings," his notion of embodied aesthetic response provides the foundation upon which new understandings of emotional and empathic engagement with images and architecture have been developed (Freedberg, 2007: 27). Based on this concept, aesthetic perception is to be understood as occurring not only optically, but within the entire body; and is thus temporal, spacial and affective.

Drawing on Vischer's ideas, art historian Heinrich Wölfflin (1864-1945) developed his concerns on bodily response to specific architectural forms. Similarly, art theorist August Schmarsow (1853-1936) writes of visceral responses such as muscular sensation, skin sensitivity and bodily structure in relation to architectural space (Freedberg, 2007: 28, Koss, 2006: 141). Cultural theorist, Aby Warburg (1866-1929) adapts Vischer's concept of

'Einfühlung' into his own theory of 'Pathosformel', in which he argues that the outward movement of a bodily form in Renaissance painting may serve to reveal the inner emotion of the figure depicted (Michaud, 2004). Warburg's theory is echoed and expanded by art scholar Bernard Berenson (1865-1959) as he suggests that the observation of a figure's movements in Renaissance works not only reveals the figure's emotions but enhances the viewers' awareness of comparable muscles within their own bodies (Verstegen, 2001: 9). Similarly, German philosopher Theodor Lipps (1851-1914) writes on the relationship between aesthetic pleasure and bodily engagement with space, both in the context of architecture as well as the visual arts (Freedberg, 2007: 28). For all of these writers, an image, object or space has the capacity to yield a combination of physical and emotional responses in the beholder. Unified in their acknowledgement of the significance of the affective and visceral aspects of aesthetic response, these writings provide insight into the significance which empathy and the emotions were granted in nineteenth century aesthetic discourse.

That such importance was placed on empathy in relation to art during this time period is interesting, considering the dramatic turn away from emotion and the writing out of empathy

from art history and discourse during the twentieth century. As Krznic (2012) states, with the modernist compulsion towards reason and progress came a splitting and ranking of mind over body, and reason over emotion. As such, the value placed on empathy in all areas of Western culture, including the arts, was diminished. Wilhelm Worringer's 1907 doctoral thesis *Abstraction and Empathy* provides an interesting example of this devaluing of empathy and emotion in relation to aesthetic response. While Worringer contends that "we sense ourselves in the form of the work," he establishes empathic response as oppositional and subsidiary to abstraction on the grounds that abstraction is purer and superior for its distance from the emotions. In other words, that work which is void of empathic or embodied response is superior to that which engages the emotions. Contemporary empathy and environmental theorists such as Rifkin (2010) argue that such dismissal of empathy and the emotions was part of the larger disconnect in the modernist mind that has contributed to a global empathy deficit and our current environmental crisis. Drawing on the foundations laid by early aesthetic theorists, contemporary aesthetic and philosophical discourse provides further insight into how the affective quality of art may contribute new understandings of the contemporary moment, specifically in relation to experiences of human and environmental trauma and loss.



Above: Fig. 8. *Song of lightness and sorrow*. Cotton thread.  
Next page: Fig. 9. *On death and this material earth*. Chiffon, cotton thread.



*“Only the flesh is mortal.  
Only in our bodies are we able to share each other’s powerlessness.”  
(Mulder, 2007: 55)*



## Empathy, Mortality and the Body

### *Trauma in Contemporary Art Theory*

It was French intellectual and philosopher Georges Bataille (1897-1962) who posited that the visualisation of trauma leads us to become more human (Horowitz, 2008: 139). Drawing on this idea, art theorist Jill Bennett (2005, 3) encourages a closer consideration of how empathy may be viewed when traumatic experience is understood as “fundamentally owned by someone.” She argues that in order to avoid a type of “colonisation” of the traumatic experience of others or a “metaphoric appropriation of trauma” artists have the particular challenge of engaging with traumatic subject matter in a way that does not usurp the testimony of others, but rather promotes critical inquiry into shared forms of traumatic experience (2005: 3, 11). She states:

“Staging shock [...] must become embedded in a deeper, more extended concept of memory – one that is not confined to a single point in time but that extends temporally and spatially to engage forms of lived experience. Thus,

we shall trace the ways in which post-traumatic memory is felt in the here and now, both internally and externally, as it were” (2005: 11).

Literary scholar Cathy Caruth (1996, 24) presents a similar conceptualisation of trauma as being shared by interconnected individuals, arguing that “history, like trauma, is never simply one’s own, [but] is precisely the way we are implicated in each other’s traumas.” It is important to note that this project does not aim to appropriate the traumatic experience of the human or non-human others that it engages with. Rather, it aims to promote critical inquiry into the self as implicated in the global trauma caused by systematised exploitation of human and natural resources. It is my aim for the works to encourage this critical inquiry by engaging the empathic response of the beholder. As such, it is important to consider the ways by which the representation of trauma in visual art may activate affective and, more specifically, empathic response.

Fig. 10. *Silence breathed into being* (detail). Skeleton leaf, electronics.

### Abstraction and the Body

To empathically respond to the conceptual concerns or subject matter of an artwork is not unusual. For instance, an empathic connection to the anguish, trauma and agony represented in Picasso's *Guernica* (1937) is understandable. However, perhaps most interesting and relevant to a discussion of art responding to the current ecological crisis, are instances in which empathic response is generated by the art object itself, as opposed to its subject matter. In such cases, works which are non-representational may evoke empathy or other strong emotional reactions based purely on their materiality and form. Although not engaged with ecological issues in the same way as the artists discussed later, Lucio Fontana's slashed canvases and lacerated sculptural forms provide interesting examples of non-representational works that engender empathic response [Fig. 11, 12]. Fontana's slits and punctures through the surfaces of canvas and clay evoke intense emotion; not because of their subject matter, but because of the violent action that is evident on the physical surface of each piece. Wasserman (1966: 20) writes:

[There is] an intense emotional reaction experienced in confrontation with Fontana's art. Fission is felt at first contact. The intensity of the experience is further sharpened by an awareness of the disciplined precision and sensitivity with

which the location of each rip or tear was arrived at. Words simply fail to adequately describe what takes place. But, if you are responsive to Fontana's forms there is no question about what happens. You know you have been moved by what his work does to you.

The question is raised as to why one experiences a visceral, and perhaps empathic, reaction to violence or trauma towards that which is known to be unfeeling, lifeless and inanimate.

Susan Best provides a possible answer to this problem. In *Visualising Feeling: Affect and the Feminine Avant-Garde*, Best (2011: 49) considers the abstract work of art as a "quasi-body" that is rendered and approached like a living organism and is experienced in a "body-to-body dialogue." Best draws on Ferreira Gullar's (1959) notion that "we do not conceive of a work of art as a 'machine' or as an 'object' but as a 'quasi-corpus'" – a quasi-body that justifies an affective response. In this sense, a display of violence or trauma towards an object is experienced by the beholder as a dialogue between two feeling bodies, and therefore has the capacity to evoke a similar visceral and affective response as the witness of violence towards a living body. Here Schmarsow's early claim of a "psychological parallel between the viewer's body and that of the work of art" seems to resonate

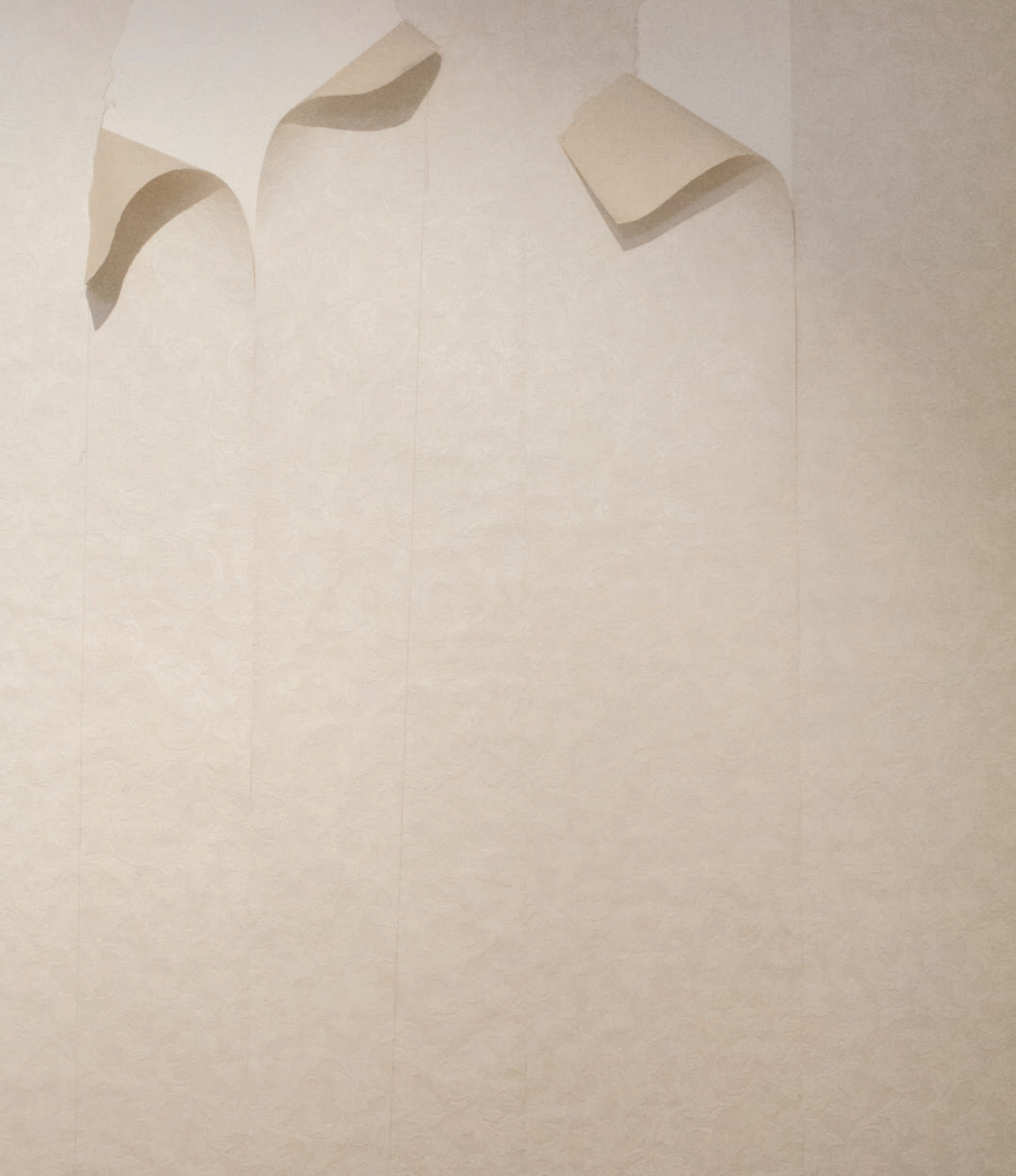
(Koss, 2006: 141). This psychological parallel, what Juliet Koss (2006: 140) terms "embodied vision," relies on the very human knowledge of the body as a relatable site of experience; particularly pain and trauma.

While the experience of the artwork as a 'quasi-body' may yield a visceral or emotional response, it is necessary to consider the relationship between empathy, trauma and the body in order to discern what may garner a specifically empathic response to an inanimate, non-representational art object. Rifkin (2010) states that "there is no empathy in utopia because there is no mortality [...], empathy is grounded in the acknowledgment of death [...] and is based on our frailties and imperfections." In other words, we empathise with another's pain because we acknowledge our own bodily potential to feel the same pain. The notion that empathy is prefigured by loss of and violence towards the physical body, paired with Best's concept of the artwork as 'quasi-body', is imperative in considering empathic responses to abstract works. To return to Fontana's slashed canvas, one may argue that we experience an empathic response because we engage with the artwork, the 'quasi-corpus', in a body-to-body dialogue and feel empathy in relation to the violence enacted upon the surface of the canvas, because we acknowledge the potential to experience the same violence enacted on the surface of our own bodies. As such, although Fontana's works

are non-representational, one may empathise because of a visceral relationship to the trauma enacted upon the physical surface of the objects that inspires a sense of mutual vulnerability and fragility.



Fig. 11. Lucio Fontana (1957). *Sphere*. Ceramic.  
Fig. 12. Ugo Mulas (1965). Lucio Fontana in his studio.



The concept that our humanity, and by extension our empathy, may be somehow developed by viewing violence or trauma, is central to consider in relation to the conceptualisation of my work. By referencing the human body through anthropomorphic scale and visceral materials, I aim to convey a sense of the individual objects as fragile and connected bodies that interact with their surroundings, as if within a type of ecosystem. Based on a sense of shared mortality that is triggered by destructive violence towards quasi-bodies, it is my aim that the viewer may become an involuntary participant in a relationship with the works that calls on their empathic response. The interactive works are not dramatically violent; rather, they rely on a sense of subtle and quiet disintegration that is often not initially perceptible. The unexpectedness of the destruction and relative hiddenness of the motion sensors and mechanics that enable it, are imperative in allowing the possibility for one to consider the artworks more as feeling bodies than inanimate machines; thus directing the participant towards a more empathic response.

For example, in *An immensity sounded on the emptiness* [Fig. 13], the participant's presence triggers motion sensors which, in turn, activate motors that slowly tear wallpaper with a white vine motif, an enculturated image of nature, from the wall. The scale of the wallpaper has an anthropomorphic relationship to the body,

based on its resonance with the familiarity of the domestic space. As long as the participant activates the sensors, the tense ripping and skinning of the paper off the wall echoes the trauma currently ailing our shared biospheric home. A similar tension is imbued in work entitled *On quiet breathing* [Fig. 1] in which a 'forest' of human-height strips of raw wood react to the participant's movement between them by bowing to a point of uncomfortable tension before releasing back to an upright position. The network of thin bodies and linking threads form an interconnected system; the varying movements and degrees of tensile stress of which, is left to the participant to determine. It is important to note that my intention for the works to engage the empathic response may, indeed, result in an entirely different emotional or cognitive experience on the part of the viewer; particularly with regards to a sense of enjoyment or playfulness that may come about by causing and watching the movement of the interactive works. However, by establishing complex interactions in which both the viewer and the work are active and responsive, I aim for the works to engage the humanity of the viewer in such a way as to prompt a consideration of both human complicity in contributing to ecological and social traumas, as well as the extension of empathy as a possible means by which to grapple with such circumstances.

Fig. 13. *An immensity sounded on the emptiness*. Wallpaper, cotton thread, electronics.

Fig. 13. *An immensity sounded on the emptiness* (detail). Wallpaper, cotton thread, electronics.





*“Interactive art makes the realisation flash up that there is actually no “I”. No one is an island: we are produced by others as much as we create them. We are created by objects as much as we create them. Since interaction means changing each other, and only that which interacts with us is alive for us, we are changing everything around us as much as we are being changed by it – nature and technology, loved ones and strangers, room and city, bed and world. Interactive art is the art of globalisation.”*  
(Mulder, 2007: 69)

## Kineticism, Interactivity and Materiality

Loosely defined, interactive art encompasses a broad range of works in which a viewer is expected to take on the role of participant and is required to physically engage with the work in order to 'activate' and reveal its meaning. This interaction, be it technologically mediated or otherwise, is considered to be an integral part of the work, if not the work itself. While the reception of all art can always be argued to be 'active', Huhtamo (2004, 1) notes that the aim of interactive art is to "empower and challenge the visitor to go beyond the modes of usual spectatorship – the contemplating and 'passive' attitude of the art lover." As such, a haptic dimension, in which participants are either explicitly or implicitly encouraged to form a bodily relationship with the art object, constitutes somewhat of a "cornerstone of the aesthetics of interactive art" (Huhtamo, 2004: 2; Brouwer & Mulder, 2007: 5).

In a context of profound disconnection between humans and the 'natural' world, kineticism and interactivity are appealing as modes of representation because of their capacity to reflect and evoke the fragility and interconnectedness

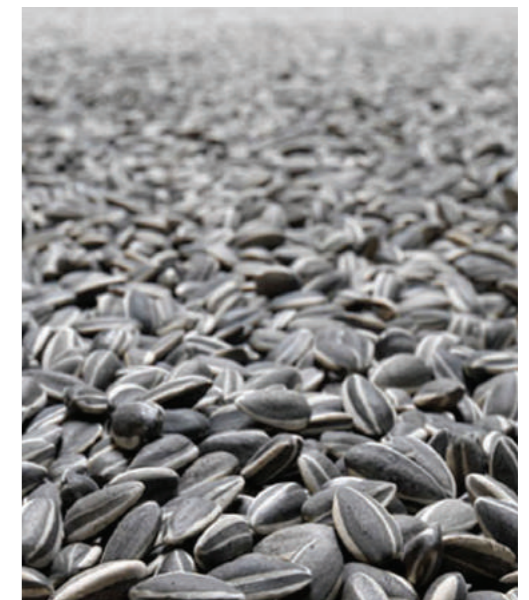
of living entities and systems. Through simple motion and relationships, the kinetic work is imbued with a sense of life that exists in real space and time and, as such, has the potential for physical transformation and interaction with external forces. Guy Brett (2000: 32) states that "as a medium, kinetic sculpture allows greater [conceptual] freedom and depth by being transparently simple; by being both ordinary and cosmic at the same time." As a model for reality, the kinetic sculpture is "an incredible variety of phenomena distilled down to a few simple relationships" and because of this, is "capable of imaginative expansion in the viewers mind" (Brett, 2000: 32). Similarly, Mulder (2007: 69) suggests in his essay *The Exercise of Interactive Art*, that in the interactive kinetic work, the global is made intimate, the distant made near, the abstract made physical, and the inanimate made living. Interactivity and kineticism are interesting to consider as practical tools through which artists encourage an extension of empathic consciousness to that which lies outside of the typical scope of human empathy.

## Violence, Vulnerability and Complicity

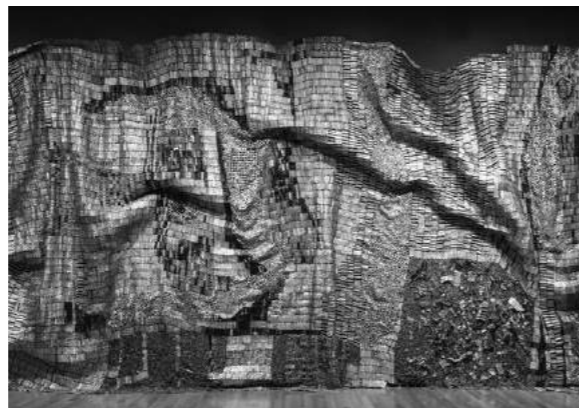
If performing physical harm towards the art object is a significant means by which to engage embodied empathic response, it is necessary to more closely consider the relationship between interactivity and violence. Noted as one of the first interactive artworks, Max Ernst placed an axe beside one of his sculptures in the 1920 Dada exhibition in Cologne which was to be used by visitors "in case they did not like the object" (Dinkla, 1996: 280). Although the axe remained an imaginary possibility – it simply "elicited the trained response of detached contemplation" – the idea of not only physical but violent and

destructive interaction with an artwork, had been set (Dinkla, 1996: 280). The concept of a work made with the intention of being destroyed is significant; particularly in relation to the prevalence of contemporary artists experimenting with ephemerality and the destruction of the art object as means by which to model human complicity in the breaking down of natural and social systems.

For instance, artist duo Ken and Julia Yonetani's *Fumie Tiles* (2003) [Fig. 14], consists of 2200 fragile ceramic tiles imprinted with images of



Left: Fig. 14. Ken and Julia Yonetani (2003). *Fumie Tiles*. Ceramic.  
Right: Fig. 15. Ai Wei Wei (2010). *Sunflower Seeds*. Porcelain.



Top: Fig. 2. *Grief water* (detail). Chinese seed beads, cotton thread, wood, rope, electronics.  
 Left: Fig. 16. El Anatsui (2010). *Ozone Layer* (detail). Waste metal.  
 Right: Fig. 17. El Anatsui (2007). *Earth's Skin*. Waste metal.

endangered Australian butterfly species. When installed, the piece is placed in such a way so as to encourage guests to walk across the tiles; aware of the damaging effect of their weight on the work. The installation hinges on an obligation imposed on the participants, that in order to activate the work, they must be willing to destroy it. Only one hour after the interactive installation opened at CSIRO Discovery Australia in 2003, over 2000 tiles were broken (Yonetani & Yonetani, 2003). Perhaps most the interesting outcome of the interaction were those few unbroken tiles that viewers had placed upright against the wall in an empathic attempt to salvage them from destruction. By guiding participants into an active and destructive physical interaction with the work, the artists aim to grant viewers insight into the weight of European settlement on Australia's indigenous ecology, as well as the heaviness of their own footprints as they tread upon the earth.

Ai Weiwei's *Sunflower Seeds* (2010) [Fig. 15] provides a similar example of the ways in which the vulnerability of the art object, in relation to labour-intensive process, may prompt contemplation of social and ecological issues. The work consists of millions of hand crafted porcelain sunflower seed husks that form a landscape. Because, up until recently, the piece was intended to be walked on by the viewer, it implicates one in the destruction of the painstakingly created work in a similar

way to Yonetani's *Fumie Tiles*. *Sunflower Seeds* urges a reflection on how labour and products are valued within contemporary commodity culture and, as Juliet Bingham (2010) states, "invites us to look more closely at the 'Made in China' phenomenon and the geo-politics of cultural and economic exchange today." Although not involving direct violence or physical interaction, Ghanaian sculptor El Anatsui's intricate waste-metal tapestries may be considered in relation to *Fumie Tiles* and *Sunflower Seeds*. Constructed of innumerable fragments of metal waste products such as bottle caps, cans, and scrap wire, Anatsui's elaborate wall hangings engage with ideas of domination and labour, denigration of the land and environment, consumption, death and memory, as they relate to systems of commodity production. As Cotter (2013) notes, the titles of several works, including *Earth's Skin* (2007) [Fig. 17] and *Ozone Layer* (2010) [Fig. 16], have ecological associations, but "speak in universal terms of decay and regeneration." It is important to note that in a particularly African context, the tapestry-like quality of the sculptures harks back to traditional understandings of women's craft and labour with regards to land, healing and the preservation of memory. In a similar way to the works discussed above, Anatsui's hangings constitute an abundance of individual parts – in his case, humble metal fragments – that are connected into whole, yet fragile, 'bodies'.



Similarly, *Grief water* [Fig. 2] constitutes my own engagement with delicately connected, conceptually significant materials, as well as the aspect of destructive interaction. The piece invites a conscious physical interaction with a rope and pulley system that, when activated, causes a body-sized veil of glass seed bead strands, to tighten and snap one by one. Like *Fumie Tiles* and *Sunflower Seeds*, the work relies on conscious activation and participation by the viewer. Although in the South African context the beads are more closely associated with African, particularly Zulu, beadwork they originate from the Venetian tradition of glasswork and have since been manufactured in Czechoslovakia, Japan and, most recently, China (Dublin, 1987; QYResearch Group, 2014). As a material, the beads act as carriers of a global history of exploitation and trauma. Used as currency during colonial expansion and integrated into the beadwork traditions of colonised peoples – including Native American, Aboriginal and indigenous Southern African tribes – glass seed beads carry with them a history of exploitation that continues in their manufacturing processes today (Wood, 2000). This is not to suggest that the beads have not come to hold significant cultural meaning for those who employ them in a traditional or contemporary sense<sup>1</sup>, but rather, that as a commodity they allow one to trace a historical trajectory of social and environmental

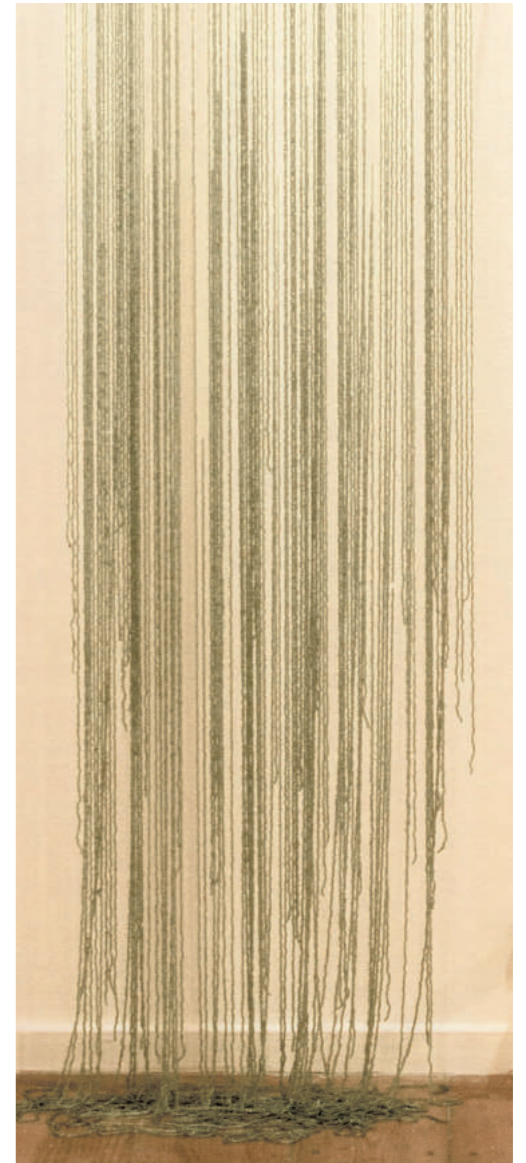


Fig. 18. *Prayers for home: a meditation* (detail). Chinese seed beads, cotton thread.  
Fig. 2. *Grief water*. Chinese seed beads, cotton thread, wood, rope, electronics.

exploitation that continues in their contemporary production. Engaging with this history as a starting point, *Grief water* is an investigation of labour and process; the abundance of the beaded strands speak to the exploitative systems of bead production that include a damaging lack of labour and environmental regulations. The sheer volume of strands reflects a sense of the time and labour invested in the construction of the piece, which in turn serves to trigger an empathic response upon witnessing the fragile strands snap. It is important to note that it is not the beads, but the threads that connect them, that are broken in this work. As such, *Grief water*, like Anatsui's tapestries, may constitute an individual body, an intricate network of interconnected individuals; the fragile transience of which, one is made painfully aware.

The delicate materials and destructive interactions involved in *Fumie Tiles*, *Sunflower Seeds*, Anatsui's tapestries and *Grief water*, stand as proxies and

metaphors for interrelated economic, cultural and ecological systems; underscoring the trauma that is quietly occurring as a result of contemporary commodity production. While works such as these may provoke an extension of empathic engagement to those human and non-human others for which they serve as proxies, other kinetic and interactive works forego a display of marked violence or trauma in favour of a subtler sense of vulnerability and metastability of natural and social systems.

For instance, Theo Jansen's *Strandbeest* (1990-2014) [Fig. 19] sculptures imitate living organisms to the extent that they have been referred to as "new forms of life" and border on the realm of the autonomous and sentient (Jansen, 2014). The large skeletal pseudo-creatures walk and move, based on intricately engineered systems that interact and respond to environmental factors such as wind and waves.

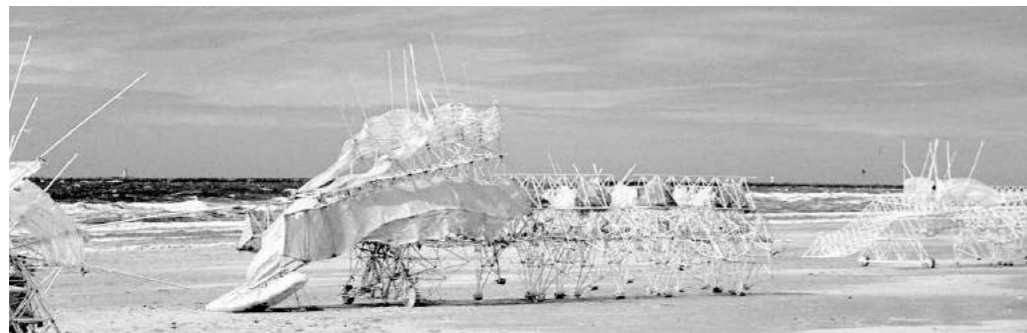


Fig. 19. Theo Jansen (1990-2014). *Strandbeest*. PVC, fabric, electronics.

Released onto beaches to live out an autonomous existence, the man-made animals demand the same empathy and interaction usually reserved for living organisms. It is important to note that the manner in which the creatures maintain a similarity to actual living organisms may activate the empathic response in a more direct manner than the more abstract works discussed earlier. Because these forms evoke creatures, they may be more easily seen as 'living' and deserving of empathy. As such, they prompt reflection on human interaction and interconnectedness with other lifeforms; as well as the fragility, autonomy and sentience of non-human life<sup>2</sup>. In a similar bid to humanise electronics, Alan Rath generates "artificial ecosystems" of delicate kinetic beings that, through their motions, "remind us of living organisms" and, as a result, "we feel the kind of sympathy we would normally extend to a living creature" (Grachos, 1998: 5-18) [Fig. 20].

Natalie Jeremijenko's fusion of art, engineering and biology seeks to establish a similar empathic connection between humans and the rest of the living world, through digital technologies which allow human interaction with organisms and ecosystems. For instance, her *Ooz* (2006) project, "a zoo without cages," functions on reciprocal observations and reactions between humans and urban animals such as fish, birds and bats, by means of interactive technologies

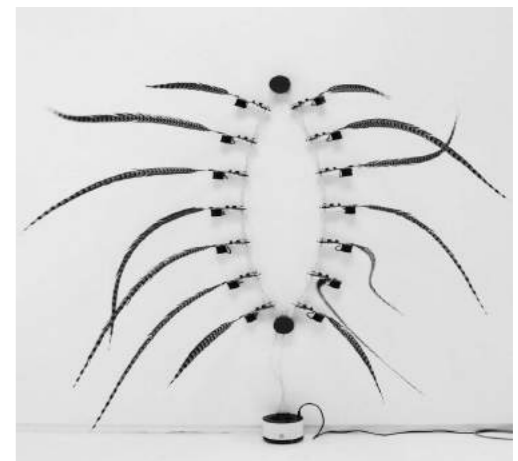
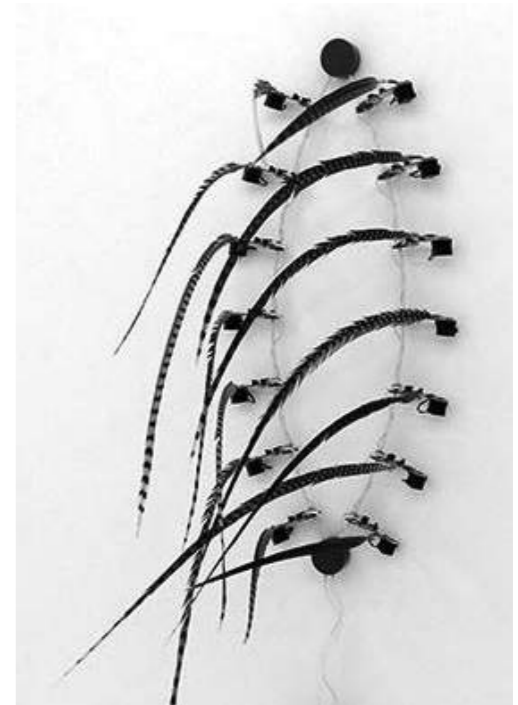
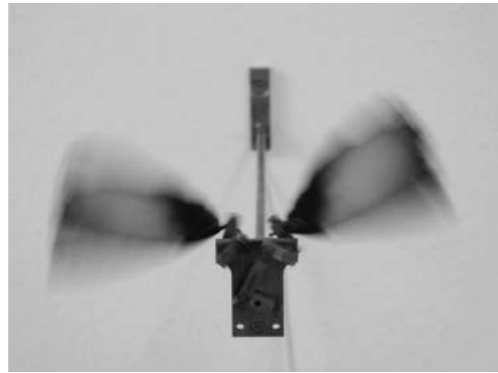


Fig. 20. Alan Rath (2012). *Forever*. Aluminum, polyethylene, feathers, electronics.



(Ooz Projects, n.d). This ‘zoo’ where animals remain by choice, relies on two components: “1) an architecture of reciprocity, i.e. any action you can direct at the animal, they can direct at you and 2) an information architecture of collective observation and interpretation” (Ooz Projects, n.d). Brian Massumi (2007: 80) notes that this type of interaction moves beyond a simple exchange of information, as it slips the participants into a mode of perception in which they experience unforeseen situations because they begin perceiving not as a humans, but as “environmentally aware” fish, geese or bats (Massumi, 2007: 80). In this sense, Jeremijenko’s use of interactive technologies allows her to prompt an extension of empathy beyond the human, based on unexpected shared experiences between human and animal participants.

In a similar vein, Rebecca Horn’s kinetic sculptures merge the human (female) body, the animal or ‘natural’ environment, and the machine in a way that collapses the seemingly natural divisions between these categories and encourages empathic response. *Schmetterling-Skulptur/Butterfly Sculpture: Happy Life in Blue* (2006) [Fig. 21], is composed of found butterfly wings that are reanimated by motors to flap in a desperate imitation of the butterfly’s natural motion. Horn’s poetic activation of the wings merges the mechanical and organic, creating a sense of precarious suspension between life and death, animate and inanimate, human and non-human. Maintaining a certain affinity with Horn’s work, *Silence breathed into being* [Fig. 10] consists of a veiny skeleton leaf in its last stages of decomposition that, when activated by motion sensors, begins vibrating. The vibration

Fig. 21. Rebecca Horn (2006). *Schmetterling-Skulptur/Butterfly Sculpture: Happy Life in Blue*.  
Butterfly wings, motor.

Fig. 10. *Silence breathed into being*. Skeleton leaf, electronics.



of the motor renders the leaf's edges invisible and dislodges looser bits that fall from the body of the leaf, causing the already fragile object to further disintegrate. The visible disintegration of the leaf and the struggle of Horn's butterfly to appear living, act as subtle visualisations of the fragile mortality of all earthly lifeforms and, as such, demand empathic engagement.

Perhaps it is only now that focus is shifting to what Lygia Clark (1920-1988) based her artistic practice on nearly half a century ago: the artwork as interactive action that warrants emotional and bodily engagement and grapples with concepts of transience, mortality and interconnectedness. Clark's *Caminhando/Walking* (1963) [Fig. 22] consists of a Möbius strip: a strip of paper that is twisted and fixed in a loop, that the viewer is invited to cut; starting by making a hole in the middle of the strip and continuing in consecutive circles around the loop until the remaining sliver of paper is so narrow that it is cut through, resulting in the end of the action and the death of the piece (Mulder, 2007: 53). *On death and this material earth* [Fig. 9] maintains a similar sense of a finite life or exhaustible energy and timespan as, upon sensing the viewer's presence, a curiously animated piece of worn fabric tenaciously clings to the rough surface of the wall as it is slowly dragged downwards towards the turning motor.

to mediate between a sense of inner and outer space and promote a heightened awareness of the transience of physical bodily experience as it exists in real time and space relationships with other bodies and systems.

In her essay *Viewers as Producers*, Claire Bishop (2006: 12) highlights three agendas that she believes are inherent in participatory art:

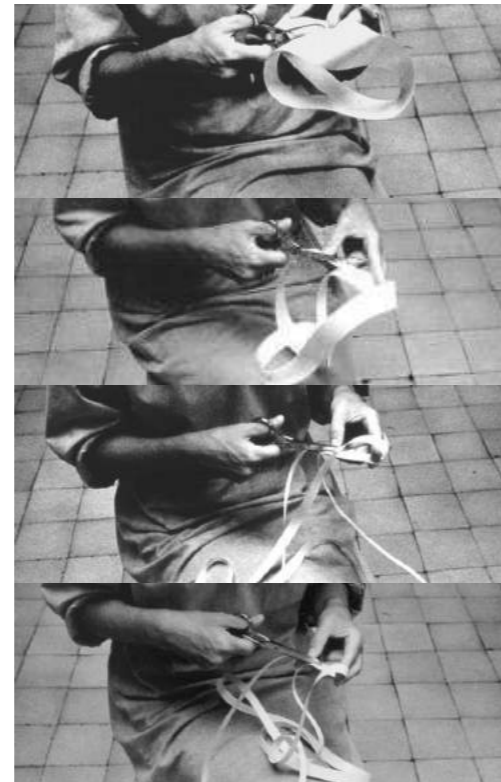


Fig. 22. Lygia Clark (1963). *Caminhando/Walking*. Performance documentation.

1. Activation. The desire to produce an active subject, able to determine their own social and political agency. This aesthetic of participation is based on the viewer's desire to participate.
2. Authorship. The artist relinquishing control as a democratic act. Shared production contains the benefit of risk and unpredictability.
3. Community. The crisis of community and collective responsibility is a main motivation for participatory art, which may function to restore a social bond through a collective understanding of the work.

Interestingly, although the participatory works to which Bishop refers are not exclusively concerned with environmental issues, within the context of entropy and disintegration of ecological and social systems, the ideas of 'activation,' 'authorship' and, particularly, 'community' have profound relevance. What Bishop's summary of the participatory process underscores are the ways in which, while individual action is fostered, autonomous human agency is simultaneously dissolved in favour of a sense of collective responsibility. Perhaps one of the most significant effects of the turn to community discussed by Bishop and explored in the works discussed here, is a consideration of how human subjectivity may be redefined once a world view that hinges on interconnection and empathy is internalised.



Fig. 9. *On death and this material earth*. Chiffon, cotton thread.

*“Why advocate the vitality of matter? Because my hunch is that the image of dead or thoroughly instrumentalised matter feeds human hubris and our earth-destroying fantasies of conquest and consumption [...] the figure of an intrinsically inanimate matter may be one of the impediments to the emergence of more ecological and more materially sustainable modes of production and consumption.”*  
(Bennet, 2010: ix)

*Contentious Matter*

In *Bodily Natures: Science, Environment and the Material Self*, Stacy Alaimo (2010: 20) states:

Understanding the substance of one's self as interconnected with a wider environment marks a profound shift in subjectivity. As the material self cannot be disentangled from networks that are simultaneously economic, political, cultural, scientific, and substantial, what was once the ostensibly bounded human subject finds herself in a swirling landscape of uncertainty where practices and actions that were once not even remotely ethical or political matters suddenly become the very stuff of the crisis at hand.

This idea of a shift in human subjectivity that occurs upon recognising one's own bodily matter as inherently enmeshed with and affected by surrounding nonhuman matter, shares an affinity with Jane Bennett's conceptualisation of 'vital matter'. In her text *Vibrant Matter: A Political Ecology of Things*, she states that her intention behind her theory of matter as vibrant or 'alive' is to "highlight what is typically cast in the shadow: the material agency or effectivity of nonhuman or not-quite-human things" (Bennett, 2010: ix). Bennett's concern with scripting nonhuman materials – such as food, commodities, weather

forces and matter from the earth – as active agents, is critical in terms of redefining the relationship between humans and nature in the context of the ecological crisis. Similarly Alaimo's (2010, 15-16) observation that "[...] tracing a toxic substance from production to consumption often reveals global networks of social injustice, lax regulations, and environmental degradation," prompts a reconsideration of the ecological and social damage involved in the production of everyday materials. Through tracing the production, use and effects of these materials, the seemingly distinct spheres of the local and the global, the personal and universal, become increasingly enmeshed. To recall Alaimo (2010: 15-16): "matters of environmental concern and wonder are always "here," as well as "there," simultaneously local and global." Prior to a discussion on the means by which quotidian materials are employed in my own work, it is interesting to consider artists working with global issues of environmental and social degradation through the lens of their local cultural and geographical experiences of the ecological crisis.

For instance, installation artist Bright Ugochukwu Eke draws on his personal experiences of living in Imo State, Nigeria, an area plagued by particularly high levels of toxic environmental



Fig. 8. *Song of lightness and sorrow* (detail). Cotton thread.

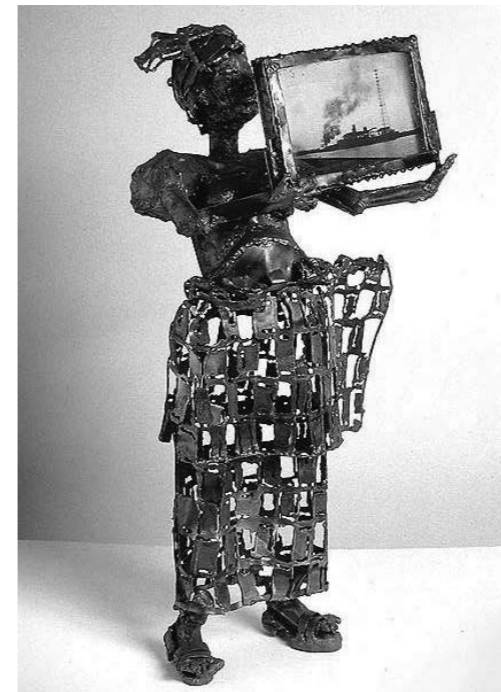
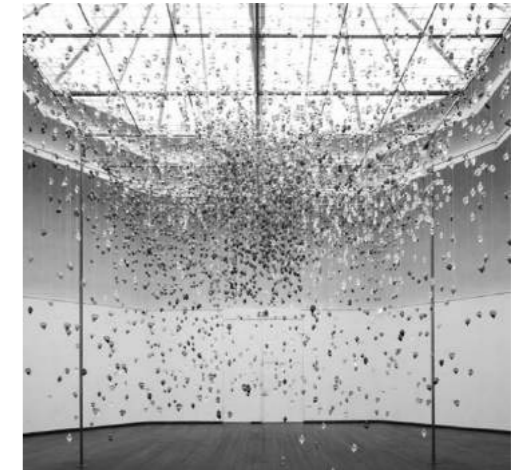
pollution<sup>3</sup>. Eke describes his interest with water as originating from a time in which he developed a skin irritation caused by acid rain from local industrial pollution. The incident spurred a deeper exploration into water as a universally relevant matter and artistic medium. In *Acid Rain* (2006) [Fig. 23], hundreds of clear plastic bags filled with rain water are suspended in a cloud-like installation. In reference to the materiality of this work, he states:

Water is a universal medium. It's common to everybody, no matter who or where you are. Whatever I do with water is what every other person does with it in every part of the world. The most interesting part is that we are bound or connected by [water] [...] having perceived this interconnectedness and interdependence of humans and nature, and having felt the damage, the separateness, and barriers we have created selfishly and egoistically, I thought it pertinent to find ways through which we could ameliorate or proffer some solutions to some of these [...] I thought of a common language in nature. That brought me to the language of water (Green Art, n.d.).

This process of engaging with water as a means of establishing universal points of connection both between people and in relation to nature, is significant in light of Bennett and Alaimo's

concern with the 'aliveness' or contentious nature of matter. Eke's personal experience of the physical effects of invisible toxic matter recalls Alaimo's consideration of the damages caused by the production of everyday materials, as well as Bennett's advocacy for an understanding of nonhuman matter as having the agency to effect unforeseen changes on the human.

In a similar consideration of global ecological concerns in relation to local culture and experience, Nigerian sculptor Sokari Douglas Camp's *Close to My Heart* (1998) [Fig. 24] consists of a small steel statue of a traditionally dressed Nigerian woman displaying an image of a burning oil well. In the artist's Kalabari culture, it is tradition to carry and display an image of a close relation in public when they have died. Camp (1998) notes: "it is the emotional content of holding such a photograph which is also my home (I am Kalabari) which inspired this work. My peoples' health is being damaged and our environment is being polluted by the extraction of oil." Camp's consideration of the emotion implied in displaying a photograph of the landscape as dead or dying is interesting in relation to previous discussions on empathy and ecological trauma. Similar to Eke's engagement with water as universally relatable, Camp's engagement with the ecological and social devastation of oil drilling in the Niger Delta seems to suggest a



Top: Fig. 23. Bright Ugochukwu Eke (2006). *Acid Rain*. Rain water, plastic.

Bottom: Fig. 24. Sokari Douglas Camp (1998). *Close to My Heart*. Steel, photograph, oil.

similar universal point of connection: mortality. By drawing on her cultural practices that engage with the reality of human death, Camp inspires a consideration of human and ecological mortality in a broader, more global, sense. Both Eke and Camp's practice of engaging with universally significant materials, such as water and oil, encourage consideration of the ways in which the production of everyday materials is enmeshed in interconnected cultural, ecological, economic and social systems. It is a similar consideration which I aim to evoke through the material choices in my own practice.

In a effort to bring to light issues of human complicity in unsustainable and exploitative methods of production and consumption, this project presents violence towards quotidian materials; the production of which involves complexly layered instances of social and ecological abuse. To elaborate on the significance of the materials utilised in this body of work, the production of cotton thread and its use in specific works may be considered as an example. Cotton thread is employed throughout the body of work, not only for its metaphorical and visual resonance – as it brings to mind the fabric or web of life and networks of interconnected parts – but because of numerous social and ecological issues involved in its global production. Inadequate labour regulations, lack of environmental protection,

and the recent introduction of genetically modified BT cotton have wreaked havoc, in both an environmental and social sense, in the Indian cotton growing industry – the largest global producer of raw cotton<sup>4</sup>. Due to the soaring costs of BT technology and the low prices actually fetched from cotton sales, farmers have resorted to the employment of child labour, particularly that of young girls, in order to reduce production costs (Global March Against Child Labour [GMACL], 2012). Similarly, in a more local context, cotton production in Zambia, Zimbabwe and Malawi conforms to a trend in Southern African agriculture, wherein the threat of gender-based and sexual violence in the workplace, seasonal or uncertain employment, lack of benefits, and lower wages, constitute a compounded burden for female workers (International Trade Council, 2011). In addition to the exploitation of labourers within the industry, cotton production raises numerous environmental issues.

In an ecological context, the damaging effects of BT cotton to the soil chemistry of Indian farms has made reverting to the production of indigenous cotton species difficult and the farming of sub-crops such as millet and cereals nearly impossible (Menasinakai, 2013). The disappearance of honeybees and other pollinators due to chemical poisoning indicates ecological discord in the region and further encourages

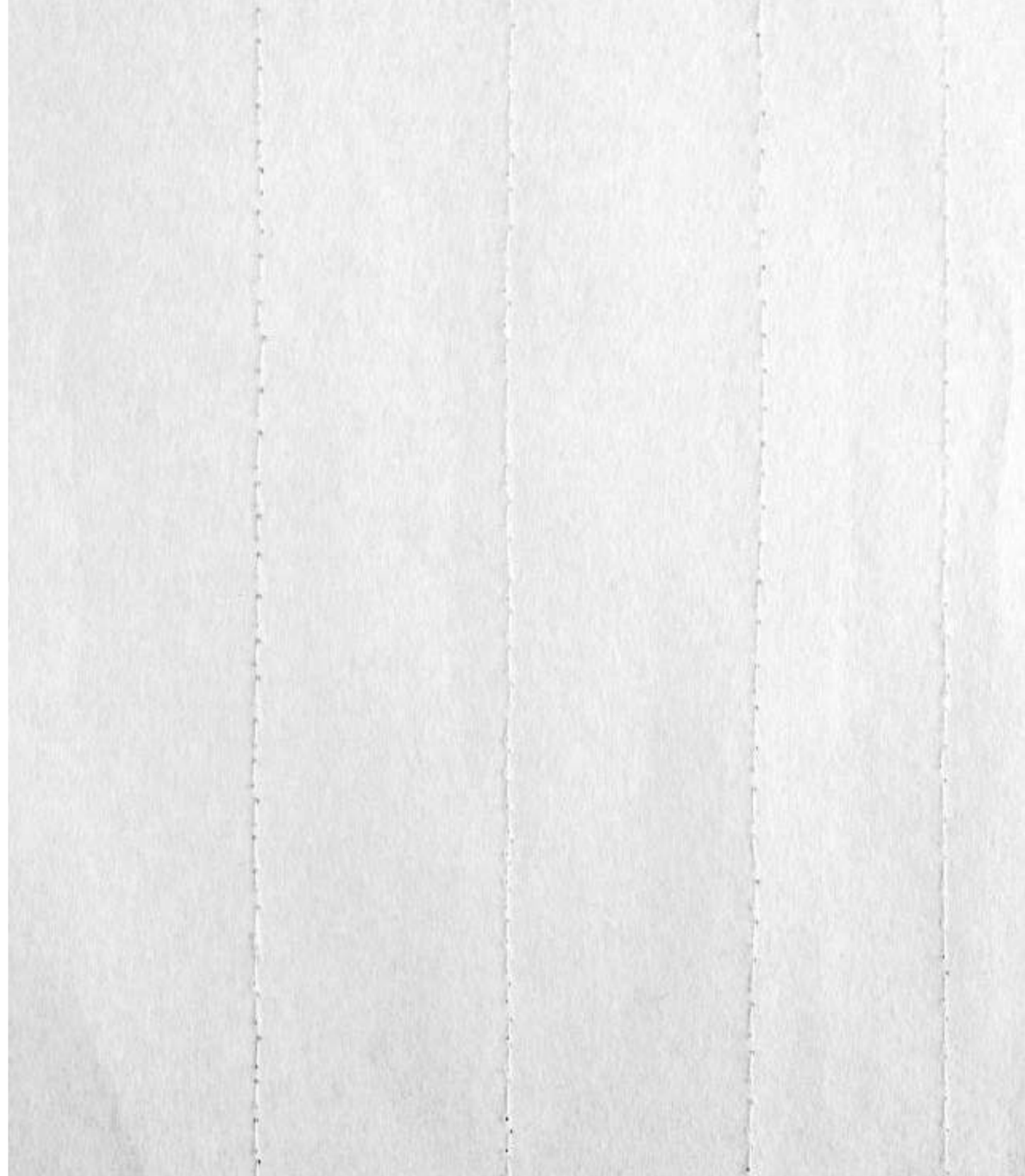


Fig. 25. *On the descent into absence* (detail). Cotton thread, rice paper, electronics.



Fig. 7. *Sigh of fossils*. Plastic, electronics.



Fig. 25. *On the descent into absence*. Cotton thread, rice paper, electronics.

the use of child labour, as the nimble fingers of children are believed to be ideal for cross-pollinating plants (GMACL, 2012). The extent of environmental damage caused by genetically modified cotton production is not limited to cotton growing regions in India. By-products of genetically modified cotton are imported from India and Southern African cotton growing countries for use in South African goods and industry (Department of Agriculture, Forestry and Fisheries [DAFF], 2005). Such by-products include meal used in flour, feed and fertiliser; oil, used in soaps and explosives; hulls, used for animal feed, fertiliser and synthetic rubber; and linters, used in medical appliances and textiles (DAFF, 2005). As by-products of genetically modified plants, these goods contain toxic pesticides that have serious ecological ramifications across the globe as they infect air, food and groundwater. Exposure to the toxins has been found to cause disease and death in animals and humans (Institute of Responsible Technology [IRT], 2009).

To return to Bennet's 'vital matter' and Alaimo's ethical and political significance of nonhuman matter in shaping human subjectivity, cotton and substances involved in its production – chemicals, other organisms, organic processes, inter alia – may be conceptualised as 'vital' as they are not dead or inert, but have agencies that "not

only [...] impede or block the will and designs of humans but also [allow them to] act as quasi agents or forces with trajectories, propensities, or tendencies of their own" (Alaimo, 2010: viii). Bennet argues that so long as the force of this 'vibrant materiality' of nonhuman matter is denied, and the human subject is understood as bounded and free from the effects of surrounding matter, the potential for ultimate ecological collapse and devastation is substantial. By engaging materials that are contentious because of their manufacturing processes, such as cotton thread, in actions that evoke quiet entropy and inconspicuous trauma, the pieces in this body of work constitute proxies for real bodies, both human and otherwise, that are threatened in the material's production.

For example, pieces such as the *The hour when earth's foundations fled* [Fig. 26] and *On the hemming of soil and skin* [Fig. 27] employ significant lengths of dyed cotton thread that are manipulated by motors and machines in order to convey a sense of systems gone awry, becoming undone. *The hour when earth's foundations fled* consists of a solid cotton globe that is slowly unravelled into a pool of dark viscous liquid, upon activation of the motor by means of a motion sensor. In *On the hemming of soil and skin*, a sewing machine senses the presence of the viewer and struggles to sew through a mass of





thread that is causing the mechanism to become increasingly jammed with each stitch. In both works, as in all of the interactive pieces in the exhibition, there is a sense of impending crisis; a recognition that the result of the interaction will be a final moment of complete breakage and loss of the objects.

By means of certain material implications – in this case, of cotton – the works aim to conceptually link the quasi-bodies that are the kinetic sculptures, to actual bodies affected by the adverse social and environmental conditions associated with the material's production. It is important to again note the significance of traditionally female forms of labour that are associated with the cotton thread. In a literal sense, these works involving time-consuming processes of hand-sewing and knitting may serve to emphasise the repetitive physical tasks of labourers such as cotton-pickers, while in a more abstract sense, they may evoke the weaving of global systems and relationships that are in some way slowly unravelling. The

works reference the human body in their form: the cotton ball speaks of skin, bones and internal spaces; the tendrils of thread spew viscerally out of the sewing machine, and the machine itself, is marked with a patina signaling years of human interaction. The violence towards this inert, yet body-like matter of the objects – the unravelling and knotting of the thread, the jamming of the machine – approximates the trauma to those human and nonhuman bodies involved in global cotton manufacturing. What the interactive works may opportune is a metonymic engagement with distant bodies that brings them closer, encourages a connection, and introduces an active proximity to the relationship. The works do not affect an abstract reflection on the environmental waste and sociopolitical devastation wrought on faraway bodies by the harvesting of genetically modified cotton in India, but rather a close and messy personal encounter, in which empathy for the affected art object is complicated by the participant's complicity in its destruction.



<sup>1</sup> It is important to note that in the majority of Southern African indigenous cultural traditions, beadwork is most commonly, if not exclusively, to be completed by women (Wood, 2000).

<sup>2</sup> In 2006, video documentation of Jansen's *Strandbeest* was released in a television campaign for BMW which celebrated the relationship between art and engineering (Jansen, 2014). It is interesting to note that by aligning the work, which may initially be read in an attitude of environmental awareness, with the industries of vehicle manufacturing and, by extension fossil fuels, a ideological discrepancy is encountered.

<sup>3</sup> In an impact study of environmental pollution in Imo, Adimekwe Chinwe (2013: 80) states: "Agricultural and industrial activities have introduced several thousand tons of toxic and hazardous chemicals into the Imo state environment." He notes that the employment of and waste from agro-chemicals such as pesticides, that have been banned elsewhere for their toxicity, have contributed to serious and felt environmental problems such as acid rain.

<sup>4</sup> While South Africa does maintain a cotton industry, the majority of cotton in South Africa is sourced from other African countries – primarily Zambia, Zimbabwe and Malawi – or from one of the four prominent cotton growing states in India: Andhra Pradesh, Gujarat, Karnataka and Maharashtra (Climate and Development Knowledge Network, 2014; DAFF, 2005).

Fig. 27. *On the hemming of soil and skin.* Empisal sewing machine, cotton thread, electronics.



## Conclusion

In her essay *Dramatic Acts of Luxurious Violence*, Iwona Blazwick (2001: 59) writes of Cornelia Parker's mode of rendering overwhelmingly large or abstract concepts manageable by means of violent action towards objects and materials that are relatable in terms of their spacial and physical relationship with the human body [Fig. 28]. She writes:

[...] the protagonists are objects, banal and yet metaphorically loaded: shirts, spoons, shelters, things close to our bodies. They are made to undergo a form of luxurious violence [...]. These sculptures combine a surreal poesy with process or indeed performance – a performance that might be understood as a kind of surrogate murder [...]. And because these acts of violence are materially transposed, they become refined, even exquisite, in a realm of cruel yet glittering abstraction.

Through the tragic yet seductive violence imposed on these relatable objects, Parker engages with the abstract and weighty concepts of trauma, violence and purposeful destruction on a

scale that is relatable. In a similar way, *Desperate Whispers* employs quotidian, yet metaphorically loaded materials that are subjected to traumatic damage that, to use Blazwick's words, act as a kind of 'surrogate murder,' standing in for the trauma of those affected by the materials' production. It is my aim that the added component of viewer participation in this body of work presents ecological and social traumas that are incomprehensible and unrelatable because of their seeming distance, and renders them personal and controllable. Similar to Parker's method of making, the works which comprise this show are intended to speak of the "relation between persons and things" by using violence towards relatable inanimate materials as a proxy by which to speak of violence towards living beings. Both Lajer-Burcharth (2001: 87) and Blazwick (2001: 65) note the significance of metamorphosis and transformation in Parker's work, stating that by freezing her objects in a certain stage of destruction, the artist withholds the comfort of resolution. In my own works, one may argue that a similar discomfort is achieved,

Fig. 28. Cornelia Parker (1991). *Cold Dark Matter: An Exploded View*. Garden shed exploded for the artist by the British Army.



not because of a lack of resolution of the action, but because of a blatant awareness of a swift movement towards a resolution that is inferred to be a moment of complete disappearance or collapse.

In *Sense of Place and Sense of Planet: The Environmental Imagination of the Global*, Ursula Heise (2008: 55) argues that “what is crucial for ecological awareness and environmental ethics is arguably not so much a sense of place as a sense of planet – a sense of how political, economic, technological, social, cultural, and ecological networks shape daily routines.” Her conceptualisation of “eco-cosmopolitanism,” denotes “an attempt to envision individuals and groups as part of planetary ‘imagined

communities’ of both human and nonhuman kinds” (Alaimo, 2010: 15-16).

It is a sense of the fibres of all earthly matter and systems as delicately interwoven and equally vulnerable to unravelling, that this project aims to make visible and felt. If earthly life is indeed at Rifkin’s (2010) pinnacle point of suspension between “sustainability and collapse,” within Alaimo’s (2010) “swirling landscape of uncertainty,” or defined by Calvino’s (1974) mysterious estrangement between humans and nature, perhaps the most vital attempt at negotiating such a precarious condition, is a conceptual expansion of the most human impulse to belong and thrive, an extension of empathy beyond the human.

Fig. 8. *Song of lightness and sorrow* (detail). Cotton thread.

## References

- Alaimo, S. 2010. *Bodily natures: science, environment, and the material self*. Indiana University Press: Bloomington.
- Altena, A. 2007. Growing networks. In *Interact or die!* A. Mulder & J. Brouwer, Eds. Nai Publishers: Rotterdam. 44-51.
- Anatsui, E. 2007. *Earth's skin*. Available: <http://www.nytimes.com/2013/02/10/arts/design/a-million-pieces-of-home-el-anatsui-at-brooklyn-museum.htmlpagewanted=all&r=0> [2013 January 12].
- Anatsui, E. 2010. *Ozone layer*. Available: <http://www.nytimes.com/2013/02/10/arts/design/a-million-pieces-of-home-el-anatsui-at-brooklyn-museum.htmlpagewanted=all&r=0> [2013 January 12].
- Bennet, J. 2005. *Empathic vision: affect, trauma, and contemporary art*. Stanford University Press: Stanford.
- Bennet, J. 2010. *Vibrant matter: a political ecology of things*. Duke University Press: London.
- Best, S. 2011. *Visualising feeling: affect and the feminine avant-garde*. I.B. Tauris: London.
- Bigham, J. 2010. *The Unilever series: Ai Weiwei: sunflower seeds*. Available: <http://www.tate.org.uk/whats-on/tate-modern/exhibition/unilever-series-ai-weiwei-sunflower-seeds> [2014, March 05].
- Bishop, C. Ed. 2006. Viewers as producers: introduction. In *Participation*. MIT Press: Massachusetts.
- Blazwik, I. 2001. Dramatic acts of luxurious violence. In *Cornelia Parker*. Ages Arti Grafiche: Torino. 59-65.
- Brett, G. 2000. The century of kinesthesia. In *Force fields: phases of the kinetic*. ACTAR: Barcelona.
- Brouwer, J. & Mulder, A. 2007. *Interact or die!* Nai Publishers: Rotterdam. 4-5.
- Calvino, I. 1974. *Invisible cities*. Random House: London.
- Camp, S. 1998. *Close to my heart*. Available: <http://www.sokari.co.uk/projects/close-to-my-heart/> [2015, January 18].
- Caruth, C. 1996. *Unclaimed experience: trauma, narrative, and history*. Johns Hopkins University Press: Baltimore.
- Chinwe, A. 2013. The impact of environmental pollution in Imo State: a case study of Okigwe local government area. *Journal of Educational and Social Research*. 3(5).79-85. Available: [mcsr.org/journal/index.php/jesr/article/download/642/664](http://mcsr.org/journal/index.php/jesr/article/download/642/664) [2015, January 18].
- Clark, L. 1963. *Caminhando/Walking*. Available: <http://www.moma.org/interactives/exhibitions/2010/online/#works/02/63> [2014, August 10].
- Climate and Development Knowledge Network, 2014. *Dirty cotton*. Available: <http://cdkn.org/resource/dirty-cotton-a-research-on-child-labour-slavery-trafficking-and-exploitation-in-cotton-and-cotton-seed-farming-in-india/> [2014, February 15].
- Coates, P. 1998. *Nature: western attitudes since ancient times*. University of California Press: Berkeley.
- Cotter, H. 2013. *A million pieces of home*. Available: <http://www.nytimes.com/2013/02/10/arts/design/a-million-pieces-of-home-el-anatsui-at-brooklyn-museum.htmlpagewanted=all&r=0> [2013 January 12].
- Demetz, P. 1986. *Reflections: essays, aphorisms, autobiographical writings*. Schocken: New York. 93.
- Department of Agriculture, Forestry, and Fisheries. 2005. *Cotton*. Available: <http://www.daff.gov.za/docs/FactSheet/cotton06.pdf> [2014, February 15].
- de Waal, F. 2012. The antiquity of empathy. *Science*. 336(6083). 874-876. Available: <http://www.jstor.org/stable/41584854> [2013, December 28].
- Dinkla, S. 1996. From participation to interaction: Toward the origins of interactive art. In *Clicking in: hot links to a digital culture*. L. Leeson, Ed. Bay Press: Seattle. 279-357.
- Dublin, L. S. 1987. *The history of beads from 30 000 BC to the present*. Thames and Hudson: London.
- Eke, B. 2006. *Acid rain*. Available: <http://www.environmentandsociety.org/mml/bright-ugochukwu-eke-imo-nigeria> [2015, January 18].
- Fontana, L. 1957. *Sphere*. Available: <http://www.equipoco.it/tag/angelo-biancini/> [2014, November 25].
- Freedberg, D. 2007. Empathy, motion and emotion. *Wie sich Gefühle Ausdruck verschaffen: Emotionen in Nahsicht*. 17-51. Available: [academiccommons.columbia.edu](http://academiccommons.columbia.edu) [2014, June 10].
- Garvey, M. 2011. Toward "global feminist environmental justice". *Feminist Formations*. 23(2). 216-223. Available: [http://muse.jhu.edu/journals/feminist\\_formations/summary/v023/23.2.garvey.html](http://muse.jhu.edu/journals/feminist_formations/summary/v023/23.2.garvey.html) [2014, December 18].
- Global March Against Child Labour. 2012. *Dirty cotton: a research on child labour, slavery, trafficking and exploitation in cotton and cotton seed farming in India*. Available: <http://www.globalmarch.org/content/dirty-cotton-research-child-labour-slavery-trafficking-and-exploitation-cotton-and-cotton> [2014, August 13].
- Grachos, L. 1998. *Alan rath robotics*. Site Santa Fe: New Mexico.
- Green Art. n.d. *Bright Ugochukwu Eke, Imo, Nigeria*. Available: <http://www.environmentandsociety.org/mml/bright-ugochukwu-eke-imo-nigeria> [2015, January 18].
- Grove, R. 1995. Green imperialism: colonial expansion, tropical island Edens and the origins of environmentalism, 1600-1860. *Utopian Studies*. 8(2). 145-148. Available: <http://www.jstor.org/stable/20719709> [01 October 2014].
- Gullar, F. 1959. *The neo-concrete manifesto*. Available: <http://arteonline.arq.br/museu/ensaios/ensaiosantigos/neoconcrete.htm> [2014, September 20].
- Heise, U. 2008. *Sense of place and sense of planet: the environmental imagination of the global*. New York: Oxford University Press.
- Hollan, D. & Throop, C. J. 2008. Whatever happened to empathy? *ETHOS*. 36(4). 385-401. Available: <http://www.jstor.org/stable/20486588> [2014, January 10].
- Horn, R. 2006. *Schmetterling-skulptur/Butterfly sculpture: happy life in blue*. Available: [www.artnet.com](http://www.artnet.com) [2014, November 10].
- Horowitz, G. 2008. *Bringing bataille to justice*. York

- University. Available: [pi.library.yorku.ca/ojs/index](http://pi.library.yorku.ca/ojs/index) [2014, February 10].
- Huhtamo, E. 2004. *Trouble at the interface, or the identity crisis of interactive art*. Available: <http://www.mediaarthistory.org/refresh/Programmatic%20key%20texts/pdfs/Huhtamo.pdf> [2014, December 16].
- Institute of Responsible Technology. 2009. Available: <http://foodmatters.tv/articles-1/the-truth-is-out-on-genetically-modified-foods-and-its-not-pretty> [2014, February 20].
- International Trade Council. 2011. *Women in cotton: results of an international survey*. Available: <http://www.intracen.org/> [2014, February 10].
- Jansen, T. 2014. *Strandbeest*. Available: <http://www.strandbeest.com/> [2014, July 02].
- Kirmayer, L. 2008. Empathy and alterity in cultural psychiatry. *ETHOS*. 36(4). 457-474. Available: <http://www.jstor.org/stable/20486592> [2014, January 10].
- Kirwan, J. 2005. *Sublimity: the non-rational and the irrational in the history of aesthetics*. Routledge: New York.
- Krzaric, R. 2012. *Outrospection*. Available: <http://www.thersa.org/events/rसानimate/animate/power-of-outrospection> [2014, February 13].
- Koss, J. 2006. On the limits of empathy. *The Art Bulletin*. 88(1). 139-157. Available: <http://www.jstor.org/stable/25067229> [2014, January 28].
- Lajer-Burcharth, E. 2001. Metamorphoses. In *Cornelia Parker*. Ages Arti Grafiche: Torino. 59-65.
- Massumi, B. 2007. The thinking-feeling of what happens. In *Interact or die!* A. Mulder & J. Brouwer, Eds. Nai Publishers: Rotterdam. 70-91.
- McIntosh, A. 2008. *Hell and high water: climate change, hope and the human condition*. Birlinn: U.K.
- McNamee, M. 2006. *Transhumanism, biotechnology and slippery slopes*. Available: <http://thomasmoreinstitute.org.uk/papers/transhumanism-biotechnology-and-slippery-slopes/> [2014, December 17].
- Menasinakai, S. 2013. *Underwhelmed farmers snubbing BT cotton*. Available: <http://www.dnaindia.com/bangalore/report-underwhelmed-farmers-snubbing-bt-cotton-1910088> [2014, March 02].
- Michaud, P. 2004. *Aby Warburg and the image in motion*. Translated by Sophie Hawkes. 2007. Zone Books: Cambridge.
- Mills, M. 2003. Gender and inequality in the global labor force. *Annual Review of Anthropology*. 32. 41-62. Available: <http://www.jstor.org/stable/25064820> [2014, March 02].
- Morton, T. 2010. Queer ecology. *PMLA: Modern Language Association of America*. 125(2). 273-282. Available: [https://www.academia.edu/1050754/Queer\\_Ecology](https://www.academia.edu/1050754/Queer_Ecology)[2014, December 18].
- Mulas, U. 1965. Lucio Fontana in his studio. Available: [www.culturaeculture.it](http://www.culturaeculture.it) [2014, November 25].
- Mulder, A. 2007. The exercise of interactive art. In *Interact or die!* A. Mulder & J. Brouwer, Eds. Nai Publishers: Rotterdam. 92-101.
- Ooz projects*. n.d. Available: <http://www.nyu.edu/projects/xdesign/ooz/> [2014, September 20].
- Parker, C. 1991. *Cold dark matter: an exploded view*. Available: <http://www.tate.org.uk/learn/online-resources/cold-dark-matter> [2014, November 02].
- QYResearch Group. 2014. *Deep research report on global and China glass beads industry*. Available: [http://www.academia.edu/6310094/Global\\_and\\_China\\_Glass\\_Beads\\_Industry\\_2014\\_In-Depth\\_Research\\_and\\_Analysis](http://www.academia.edu/6310094/Global_and_China_Glass_Beads_Industry_2014_In-Depth_Research_and_Analysis) [2014, March 20].
- Rath, A. 2012. *Forever*. Available: [www.artltdmag.com](http://www.artltdmag.com) [2014, September 13].
- Richardson, P. n.d. *What is human ecology?* Available: <http://www.des.ucdavis.edu/faculty/Richerson/BooksOnline/He1-95.pdf> [2015, January 18].
- Rifkin, J. 2010. *The empathic civilisation: the race to global consciousness in a world in crisis* [Video file]. Available: <http://www.thersa.org/events/video/archive/jeremy-rifkin-the-empathic-civilisation> [2014, February 13].
- Schama, S. 1995. *Landscape and memory*. Vintage Books: New York.
- Shiva, V. 1991. *The violence of the green revolution: third world agriculture, ecology and politics*. Zed Books: London.
- The Oxford Dictionary. 2015. 'nature'. Available: <http://www.oxforddictionaries.com/definition/english/nature>.
- van Heeswijk, J. 2007. Empathy as a radical act: An argument for re-scripting the city. In *Interact or die!* A. Mulder & J. Brouwer, Eds. Nai Publishers: Rotterdam. 92-101.
- Vergesten, I. 2001. Bernard Berenson and the science of anti-modernism. *Art Criticism*. 15(2) 9-22. Available: [http://www.academia.edu/869463/Bernard\\_Berenson\\_and\\_the\\_Science\\_of\\_Anti-Modernism](http://www.academia.edu/869463/Bernard_Berenson_and_the_Science_of_Anti-Modernism)[2014, September 20].
- Wasserman, B. 1966. Giacometti & Fontana: art pierced by space. *Art Education*. 19(1). Available: <http://www.jstor.org/stable/3190760> [2014, March 05].
- Wei Wei, A. 2010. *Sunflower seeds*. Available: <http://www.tate.org.uk/whats-on/tate-modern/exhibition/unilever-series-ai-weiwei-sunflower-seeds> [2014, October 20].
- Williams, J. 2010. Understanding the place of humans in nature. In *Illusory boundary: technology and the environment*. M. Reuss & S. Cutcliffe, Eds. University of Virginia Press: Charlottesville. 9-25.
- Wood, M. 2000. Making connections: relationships between international trade and glass beads from the Shashe-Limpopo area. *South African Archeology Society*. Available: <http://www.jstor.org/stable/3858049> [2014, February 10].
- Worringer, W. 1907. *Abstraction and empathy: a contribution to the psychology of style*. Translated by Michael Bullock. 1948. International Universities Press: New York.
- Yonetani, K & Yonetani, J. 2003. *Fumie tiles*. Available: <http://www.kenandjuliayonetani.com/fumie.html> [2014, October 18].

