

Minds in the Cave: Insect Imagery as Metaphors for Place and Loss

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1. The Australian Alps

In 1987 I authored a photographic book celebrating the Australian Alps. Its opening paragraph read, in part:

Cool, rolling and serene, the High Country . . . is an assemblage of landforms and living things unlike any other. This crumpled arc of upland, the southeastern elbow of the continent . . . contains . . . the only extensive alpine and sub-alpine environments on the Australian mainland . . . ‘One climbs . . . and finds, not revelation, but simply range upon range upon range stretching . . . into distance, a single motif repeating itself to infinity . . . Climax? . . . Calm . . .’ (Nankin, *Range* 11).



Fig. 1 Mount Bogong, Victoria from *Range Upon Range: The Australian Alps* by Harry Nankin, Algonia Publications / Notogaea Press, 1987

A quarter century after these words were published the regions’ serried topography remains unchanged but it no longer connotes serenity or calm. During the summers of 2003 and 2006-7 bushfires of unprecedented ferocity and scale destroyed much of the region’s distinctive old growth sub-alpine snow gum *Eucalyptus Pauciflora* woodland, a species, which unlike most lowland eucalypts, recovers very slowly and sometimes not at all from fire [Fig. 2]. The extent to which the rising average temperatures and declining snow falls of the last few decades or the more recent drought and heat waves precipitating

these fires were linked to anthropogenic climate change is uncertain. The impending impact of global warming, however, is predicted to be more immediate and severe in the High Country than almost anywhere else in Australia. Climate modeling indicates that the length of the snow season and the area of sub-alpine and alpine vegetation could be cut to a quarter of what it is today by mid-century (Slatyer 84). Heat sensitive upland plants such as alpine heath and feldmark and animals like the mountain pygmy possum *Barramys parvus* and two corroboree frog species *Pseudophryne corroboree* and *pengilleyi* will face almost certain extinction in the wild (Slatyer 88, 90). Aside from obvious impacts such as reduced water runoff (Worboys and Good 1) and more frequent wildfire the outstanding consequence of climate change in the Australian Alps will be a collapse of biodiversity and landscape character: its defining archipelago of alpine and sub-alpine flora, endemic cold climate wildlife and winter snows will be all be but a memory [Fig. 3]. The country will still be high but it will no longer be an alps.



Fig. 2 Burnt sub-alpine woodland, Mount Buffalo, Victoria. Source: Harry Nankin, 2012

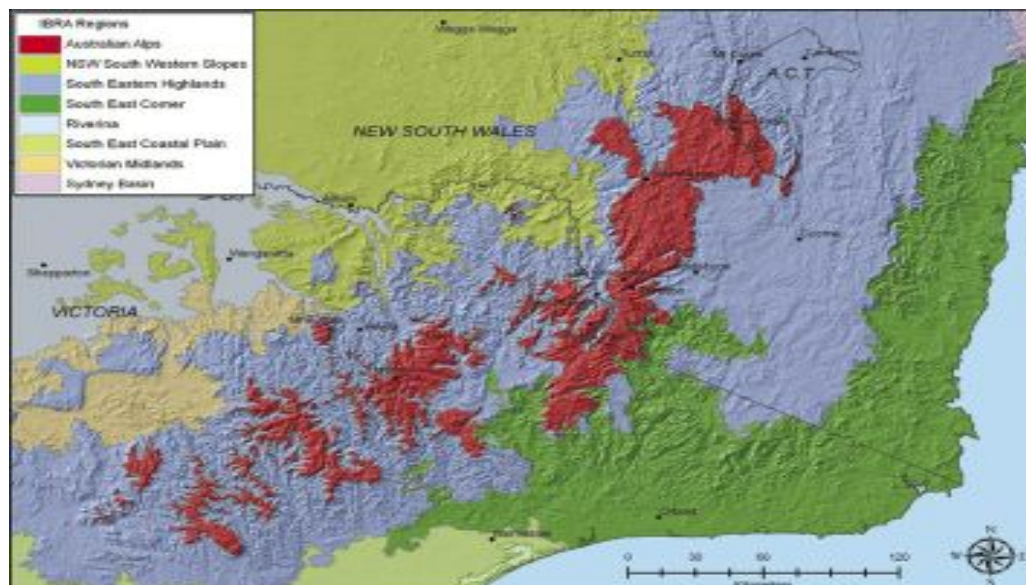


Fig. 3 SE Australian bioregions identified by the 'Interim Biogeographic Regionalisation' including the Australian Alps. Source: NSW DECCW, 2010 (from Warboys and Good 2011)

2. The ecological gaze

In constructing a photomedia-based art response to the place and its predicament my interest has been exploration of what I call an ‘ecological gaze’. The ecological gaze is a speculative aesthetic stance expressive of a self-reflexive response to our generic ecological condition mediated through attention to the *non*-human ‘other’. The non-human ‘other’ potentially includes everything from bacteria to black holes but it is principally through the representation of ‘place’ and more particularly ‘place-as region’ (Casey 305) that an aesthetic of terrestrial inhabitation and the full-scale gestalt of non-human otherness can be foregrounded against a background of the global ecological imaginary. It is an approach consistent with Ursula Heise’s ‘reterritorialization’ (Heise 210) and the emerging constellation of globally re-framed approaches to place she dubs ‘eco-cosmopolitanism’ (Heise 10). The delineation of the Australian Alps as a distinctive ‘place’ is informed by science (Land Conservation Council, Victoria, 1977 and 1982; (Worboys and Good 2011), history (Johnson 1974; Flood 1980) and aesthetics (Nankin 1983 and 1987).

Although the ‘ecological’ may be regarded as a kind of metanarrative, its ‘gaze’ is not intended to be prescriptive but rather a poetic engagement with the non-human ‘other’ as ontology, phenomena, ethics and affect. In the face of the emerging global ecological crisis of which the situation in the Australian Alps is symptomatic, such an approach implicates an unsettling, post-humanist aesthetic not unlike what eco-critical theorist Timothy Morton calls ‘dark ecology’: neither an escape into sentimentalising nature nor an aestheticising of crisis but a *noir* mode of thinking and art that ‘preserves the dark, depressive quality of life in the shadow of ecological catastrophe’ (Morton 187).

A vision sensitised to our connection to the non-human and the ‘dark’ character of that connection is one conceptualisation of an ecological gaze. A guide to the kind of artistic production that might express an ecological gaze’s response to place is indicated by what Morton calls *ecomimesis*: an evocation of the ecological subject pursued through an ‘intersubjectivity’ involving an attempted ‘collapse of aesthetic distance’ (Morton 164) between world and artist. Through the invocation of what he calls *ambience* such art would inspire ‘a sense of circumambient or surrounding world . . . something material and physical, though somewhat intangible, as if space itself had a material aspect . . .’ (Morton 33, 34). For Morton, *literary* ecomimesis tends to naïve naturalism and romantic kitsch (Morton 132). Yet an ecological gaze utilising a suitably ‘noir’ *visual* ecomimetics could signify non-human ‘presence’ (Elkins 82), pry meaningful specificities out of an amorphous ambience like ‘region’, and convey relevant emotion or cognition. In attempting to foreground just such an approach in this and prior projects executed over the last two decades my photomedia-based visual strategy has been two-fold. First, to replace the distancing objectivity of monocular optics with the indexical poetics of camera-less shadows; and second, to aver from the reifying visual language, ‘trite epiphanies’ (Solnit 2007) and suspect ontology of the ‘landscape’ genre and adopt an indicative symbolic order constructed of ecological phenomena presented as indices of place. Past subjects have included wild country vegetation and the inanimate: woodland (Nankin 1994), rainforest and desert plants, the ocean (Nankin 2002) and rain. In *Gathering Shadows* attention turns to the diminutive world of insects. It is in two parts. The first at Victoria’s largest salt pan Lake Tyrrell focused on relict invertebrate fauna distinctive to the Mallee: that project, *Syzygy* was the subject of an earlier paper (Nankin

2010). In this second phase of research, *Minds in the Cave* concerning the Australian Alps, the indice is one species: the native bogong moth *Agrotis Infusa*.

3. Bogong moths

Invertebrates have scant cultural presence, unlike the many vertebrates—from Arctic polar bears and the Himalayan snow leopard to Andean condors, Madagascan lemurs, New Zealand kiwis or the Tasmanian devil, for example—as indices of place. Some insects are locationally associated—the tsetse fly of tropical Africa, locusts in the Sahel, the Jerusalem cricket of California (Dery 2007), giant leeches in the Amazon and New Zealand ‘sandflies’—but the links are geographically vague and unequivocally negative. Others, such as dragonflies in Japan (Waldbauer 12-14), the monarch butterfly in North America, New Zealand wetas, the scarab beetle of ancient Egypt (Cambefort 39-40) are more positive but hardly unequivocal indices of place. The bogong moth is a special case.

Bogong moths begin life in winter as cutworms secreted in burrows at the base of plants far from the Alps on the dry inland lowlands of Victoria, NSW and southern Queensland [Fig. 4]. After the larvae have pupated the adult moths emerge in spring in vast numbers where they begin migrating south and east, feeding on nectar at dusk and flying at night en route to their destination, the caves, rock overhangs and dark crevices of the highest summits of the Australian Alps (Common 1954). Individual moths are small: an average adult has a wingspan of about three and a half centimetres and weighs a third of a gram (Green 30). Sheltered in those dark upland recesses, the tawny lepidoptera spend the summer aestivating (resting), pressed head under tail against each other like ‘roof tiles’ (CSIRO 2011) covering every suitable rock surface.

In autumn the proportion that have survived weather, disease and predation over the summer leave the mountains to make the long return journey to their lowland breeding areas where they mate, lay eggs and die. The next generation repeats the cycle. The annual migration is believed to facilitate escape from the desiccating dry heat of the inland in summer, a cycle that probably began at the end of the last Ice Age (Flood, 1980: 79).

Ecologically, bogong moths are a ‘keystone’ species in the high country (Green, *Transport* 2011: 26). Numbering at least two billion in an average year (Green, *Aestivation*: 93) they are a major warm-season food for native marsupials (Broome 286-7), bats, birds and fish as well as the introduced fox (Green, *Transport* 31). A naturally high concentration of arsenic harbored in their bodies (Green, *Migratory* 2008; Williams 2009) does not appear to adversely affect them or their predators (Lawler 2011). The annual contribution of bogong moth biomass to the local environment, effectively a net annual transfer of concentrated nutrient from temperate lowlands to alpine tops is so large that in terms of usable energy, it is probably exceeded only by the sun (Green 2012: pers. com.).



Fig. 4 Migration routes and aestivation zones of Bogong Moth *Agrotis infusa*.
Source: McCormick 2005: 5 (from Common 1954)

The predicted effects of global warming on the bogong moth mirror those for the landscape it seasonally inhabits: as a heat-averse species for which diapause is essential, suitable aestivation habitat will contract to ever-higher ground with rising temperatures (Green, *Aestivation* 103). It is possible that, like the alpine zone itself, by mid-century the bogong moth will have retreated from the bulk of its current range. As the supportable population falls the species nutrient contribution to alpine ecosystems will also shrink. The survival of many animals such as flame robins, ravens, pied currawongs and especially the rare and endangered mountain pygmy possum which depend almost wholly on the moths during the summer (Smith 1992; Green, *Aestivation* 102) will be jeopardised. The moths' nutrient contribution to alpine soils and vegetation will similarly contract.

For indigenous clans of the pre-colonial high country bogong moths were a nutritious dietary supplement attracting an annual summer transhumance from valleys to the mountains: the insects would be smoked out, roasted, winnowed, consumed intact or mashed into paste (Flood 66, 67). This precedent of the high country 'moth hunters' has inspired ongoing culinary interest (Rigby 2011). The bogong name has been adopted by many localities [Fig. 1], commodified in product branding and celebrated in public art (Traill 2012; Harding 2012) and environmental literature. Recently, the moths' cameo appeared in Anna Funda's semi-fictional historical thriller *All That I Am*:

. . . The ceiling is black—it is moulting and velvety . . . the bogong moths have come in on their migration and lined the place. The room shimmers with brief, misdirected life. *I am a vessel of memory in a world of forgetting*. I sit under the canopy of moths. It is deep dark outside. Everything out there . . . has vanished.

The world has shrunk to a small area of light from the streetlamp. Lines of rain slash through its bright cone. The bogongs are welcome here . . . (Funda 357)

The bogong moth is an ecological indice, a bioregional ‘icon’ (New 2007)—and a metaphor for vulnerability, displacement, mortality and loss.

4. The work itself

The project aim was to record live bogong moth morphology and behaviour in the greatest possible detail, not as photographs but as shadows. In an effort to foreground the significance of elevation as the defining quality of the region and the limiting factor in bogong moth summer habitat, an accessible and commanding site not far above the current local lower altitudinal limit of bogong moth aestivation, a cave on The Horn (1723m), highest point on the sub-alpine Mount Buffalo plateau in Victoria was selected as the source of moths [Fig. 5]. On each of three multi-day field trips to the mountain over the summer of 2011-12, aided by an assistant, hundreds of live bogong moths were gently dislodged from the cave walls, collected and stored in aerated containers during daylight [Fig. 7]. An imaging setup was installed outside or, on nights when cold could have rendered the moths inert, in the milder conditions of forest clearings lower down the mountain. The photographic hardware comprised a holder for A2 sized sheets of pre-cut orthochromatic gelatin silver photographic film at one end and an electronic flash apparatus facing it one point eight metres away, at the other.

After dark, the trapped moths were released into the gap between the film-holder and flash, a sheet of film was clipped into position and, at the chosen moment of lepidoptera ‘performance’, a single pre-calibrated flash pulse was triggered [Fig. 8]. Portable safe lights and moonlight facilitated close observation of the moths without fogging the film. Techniques ranged from an open setting in which moths were free to escape to a closed rigid pyramidal net suspended between trees that could be pivoted into any position. Several films were exposed each night. Following exposure the moths were released, presumably returning to their rocky haunts. Exposed films were tray processed by hand in my Melbourne studio. No camera was used, except to document proceedings.

The resulting film images reveal the cast shadows of their subjects in negative with a haptic record in the form of moth wing scales and a reactive defensive fluid released by the moths when they were captured often overlaying the optical image. Far from being crude silhouettes, perspectival depth is suggested by differing sharpness produced by objects’ varied distance from the film. Bodily interiors are revealed where flashlight passed, x-ray-like, through thin and translucent parts and the hint of surface form is found in the imprint of secondary reflections bounced between moths and film. Unlike normal monocular photography analogic shadow-gram resolution is not constrained by glass optics or pixel depth but the microscopic grain of photographic silver. Consequently, information per unit area exceeds that of most camera capture or that detectable by the unaided human eye. In prior shadow-gram projects this detail remained unseen because the original life-scale recordings constituted the final artwork or were analogically replicated without enlargement. By contrast, these bogong moth films were created with the intention of digitiation and enlargement. The resulting digital files have been subtly colourised and are now being manipulated on-screen for future outputting as inkjet enlargements on paper [Fig. 10]. The scans and enlargements reveal a hitherto unseen world that is at once orderly and chaotic, alien and familiar, oppressive and playful,

repulsive and beautiful. Such readings are not unique to the species at hand let alone the abstract ecological facts for which they are indices. Rather, these pictures elicit a range of cultural meanings connected to the tangled semiotics of insects and shadows.



Fig. 5 Granite cliffs of The Horn, Mount Buffalo containing caves from which bogong moths were collected. Source: author



Fig. 6 (Left): Assistant collecting aestivating bogong moths in a butterfly net in a cave at The Horn, Mount Buffalo. **Fig. 7** (Right): Pyramidal net apparatus shaded and wrapped during the day to protect stored moths from heat and light. Source: author



Fig. 8 & Fig. 9 Pyramidal net apparatus containing live bogong moths prior to film insertion and nocturnal flash exposure. Source: Rudy Frank

5. Insect abjection

Arthropods in general but particularly the sub-group of focus in this work, insects, are life forms of almost universal disdain. In the collective cultural imagination they are trivial, lowly, mindless creatures detested as ‘vectors for disease and psychosis’ and ‘pestiferousness’ (Brown x). Our avoidance may in part be hardwired, an ancient evolutionary adaptation to the selection pressures of insect-borne want, pain, injury and pathogens. Perhaps as literary critic Eric Brown observes, the tiny size, segmented bodies, confounding life strategies and inscrutable behaviours of arthropods are so ‘vastly different’ from ours that it is difficult to conceive of them as individuals or imaginatively partake of their worlds (Brown xi). Julia Kristeva’s conception of the *abject* as that which is so horrible, unclean or impure as to be ‘radically excluded’ (Kristeva 10) from the symbolic order well describes the dominant status of the majority of invertebrates for most people in most cultures most of the time. Insects are an instance, it, thing or phenomena, rarely a being, a he or she and never whom. Some may be tasty, useful, pretty or interesting but all remain, at base, alien and decidedly abject in the sense that they possess, in Kristeva’s words, ‘only one quality of the object—that of being opposed to I’ (Kristeva 11). The iconic status of the bogong moth resists but does not eliminate their default abjection: for example, when migrating bogong moths erroneously swarm into brightly lit buildings like Parliament House in Canberra they become targets for extermination (McCormick 2005; Rigby 2011). The abject insect, including the bogong moth, can be seen as a microcosm of our anthropocentric indifference to the plight of the terrestrial non-human ‘other’—from organisms to places to the biosphere itself.

6. Insect *umwelten*

Against the background of their default abjection, looking at these photographic enlargements of bogong moths, particularly viewed up close, our expectations are mollified by a surprising individuality: we are privy to the ‘interpersonal’ minutiae of antennae meeting antennae, thorax and wing, hexapodic ambling, exploration, nestling, flutter, hovering and flight [Fig. 11]. Confronted by portrayals of the individual behaviour, communication and sociality of another species our empathic imagination may

be aroused. Such invertebrate behaviour can also be understood biosemiotically as evolutionarily evolved symbolically coded systems of communication: rather than being autonomic *objects* (meaning-less non-beings), organisms can be understood as sign-making and sign-sensing *subjects* (meaning-directed beings) embedded in and responsive to their peculiar species-specific ecological ‘perceptual life-world’ or *umwelten* (von Uexküll 2). Biosemiotics shifts analytical perspective from the reductionist determinism of traditional biophysiology to the subjective individuality and intentionality of sign production and reception at every level of ecological existence. In addition to enlarging our understanding of ecological processes and the semiotic minutiae of their lives the uncovering of biosemiotic signification among non-humans opens us to the possibility of finding meaning in their idiosyncratic life-worlds. From a biosemiotic perspective, these pictures of patently delicate bogong moths draw our attention to their existence and fragility and, by association, the alpine region for which they are icons as well our own increasingly problematic *umwelten* (von Uexküll 220).

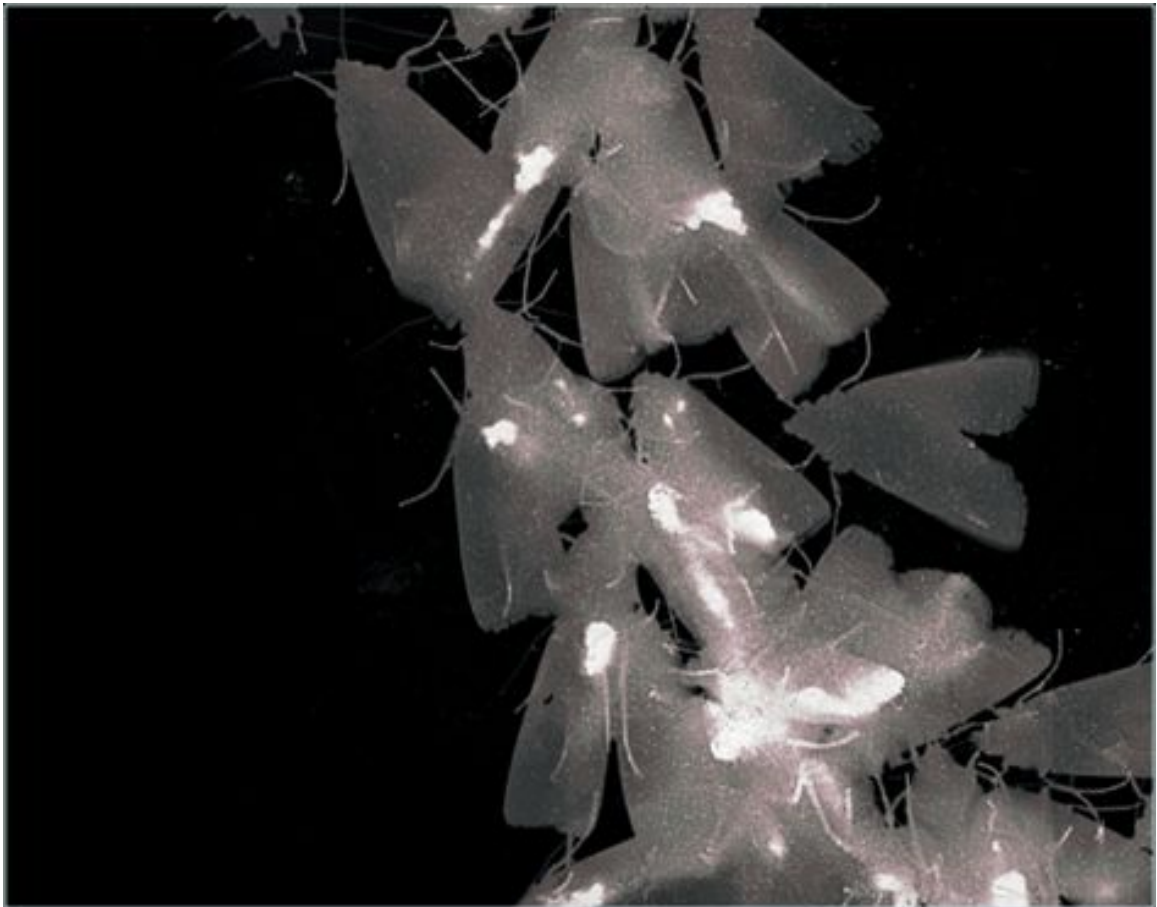


Fig 10: Bogong moths: Segment of scanned film, digitally colourised. Source: author



Fig. 11 Enlarged detail of scanned film. Source: author

7. Shadows in a cave

These artworks employ the shadow as a poetic ‘agent’ (Stoichiță 236). If, as historian Victor Stoichiță argues the ‘motif’ of projection intrinsic to the shadow is a function of its opposite, light, then the visual hermeneutics of the shadow is a ‘light/darkness dialectic’ (Stoichiță 9) more complex and nuanced than the mere absence of ambient luminance. A reflected or painted image is the ‘unreal but corresponding double’ (Stoichiță 26) of its referent. A shadow, seen or recorded, is that double by indexical linkage and semblance. Metaphors of light and darkness have roots deep in human prehistory (Lewis-Williams 221) but in language and tradition the shadow has been associated with memory, danger, evil, the soul, death, atomic explosions (Lippit 94) healing, the uncanny and shamanism. As Stoichiță reminds us, the shadow is also present in two foundational western myths of origin—those of knowledge and art (Stoichiță 7).

In Plato’s fourth century BCE parable reported by Socrates, prisoners trapped in a cave mistake shadows projected on a wall from an unseen fire as reality: their discovery of the truth, overcoming the naïve belief in appearances, is acquired gradually and not without resistance outside in the sunlight. Plato’s ‘negative’ symbolism of shadows (Stoichiță 24-25) has obvious inference for this project in meaning in that shadows cast by fire in a cave and by flash on a mountain each infer unknowing, one existential, the other ecological.

Pliny the Elder's apocryphal first century CE attribution of two-dimensional representation to the traced outline of cast shadows of a beloved by his lover, the Maid of Corinth, purports to explain the historical beginnings of painting. The body and its shadow, its imagined surrogate, are indexically linked: the shadow's outline promises to exorcise the mortal temporality it traces (Stoichiță 16). Yet the shadows trace unavoidably implicates the referents absence. Photography, a technological descendent of the celebrated Corinthian trace, is a recorder *of* shadows but cameraless photographs—photograms or shadow-grams such as these moth pictures—are shadows: they doubly implicate absence. They evidence the lost referent, the 'absent part' (Ramsenthaler 9). More troubling, as indices of place and predicament in the Australian Alps, the moth shadows portend an imminent absence: regional extinction, biodiversity decline and landscape transformation in the face of anthropogenic climate change.

Contra the Plinian myth, anthropologist David Lewis-Williams contends the earliest known art, Upper Palaeolithic cave painting, was ritually created to aid entry into the subterranean spirit world. Lewis-Williams argues the parietal surface was seen as a kind of veil dividing the everyday from the supernatural. In the dark of a cave or night the shaman-artist or later viewer used a lamp or torch to selectively highlight and appear to either coax forth or seemingly allow the man-made creature/creations to hide in the shadows—to 'retreat into the realm behind the membrane' (Lewis-Williams 221). Other investigators suggest animation-like, moving-image effects were intended (Azema 2012). In Lewis-Williams' scenario the origins of two-dimensional representation do not lie in the sober illustration of three-dimensional phenomena but in substance or trance-induced hallucinatory visions of the spirit world transcribed directly onto the stone they were seen to inhabit (Lewis-Williams 193-4). Such pictures report visions not vision. The Plinian myth may be truer than we ever thought if we revise the storied trace to inscribe not the literal shadow of a beloved but a shadow realm, a dream of the non-human *other*. This projects' ghostly shadow-world of moths captured ritual-like *plein air* on site in darkness on 'membranes' of film offers faint echo of the ancient shamanic reverie. Each paper reiteration of those films is presented as an ersatz parietal wall behind and around which the all-enveloping ecological may be imagined and re-imagined.

8. Art in context

In the western art tradition insects have minor pedigree as human allegory. In Baroque *vanitas* painting invertebrates symbolised mortality (Connor 2007; Kleiner 2009) something also discernable in the work of modernists like M.C. Escher (Sear 1993) or Salvador Dali (Berenbaum 323) and contemporary practitioners such as William Kentridge (Stewart 57) and Damien Hirst (Sarsfield, in Brown 36). Whilst the preferred symbols of mortality have been the fly, ant and beetle, artists since ancient Egypt have favoured the butterfly to suggest fragility, beauty and the feminine (Sarsfield, in Brown 37). Other lepidoptera is rarely considered: Doug and Mike Starn's collaged blow-ups of photographs of live and dead moths *Attracted to Light* made between 1996 and 2004 (Starn 2004) present one of few precedents in contemporary photo media art. As indices of place and ecological loss the singular precursor is Cornelia Hesse-Honneger's *Heteroptera*, an ongoing series of meticulously executed watercolours and drawings of radiation-deformed insects found near nuclear power installations at Chernobyl, Three Mile Island, and Sellafield, begun in 1987 (Hesse-Honneger 2001; 2007).

Following a brief revival between the two world wars, cameraless photography re-emerged from the 1970s as one of what James Elkins calls the ‘anti-optical’ strategies: images not made with artificial optics or light-favoured by some art photographers (Elkins 81). Whilst artists such as Garry Fabian Miller (Barnes 2005) have used cameraless methods to record inanimate phenomena, it is the studio-based work of Adam Fuss (Fuss 2004) that presents the key precedent for shadow-grams of living animals. With respect to the representation of ‘landscape’ British artist Susan Derges’ outdoor shadow-grams (Derges 2010) use an equivalent technique but Tasmanian Christl Berg’s (Berg 2003) pictures of found objects collected on-site in remote locations are a more direct parallel. Unlike the output of Fuss, Derges or Berg, the work of *Gathering Shadows* displaces the raw indexicality of the *plein air* films with digital reiteration. Consequently, any sense of the subjects’ ‘aura’ embodied in the original art is supplanted by human artistry: the anthropic hand of the mind in the cave.

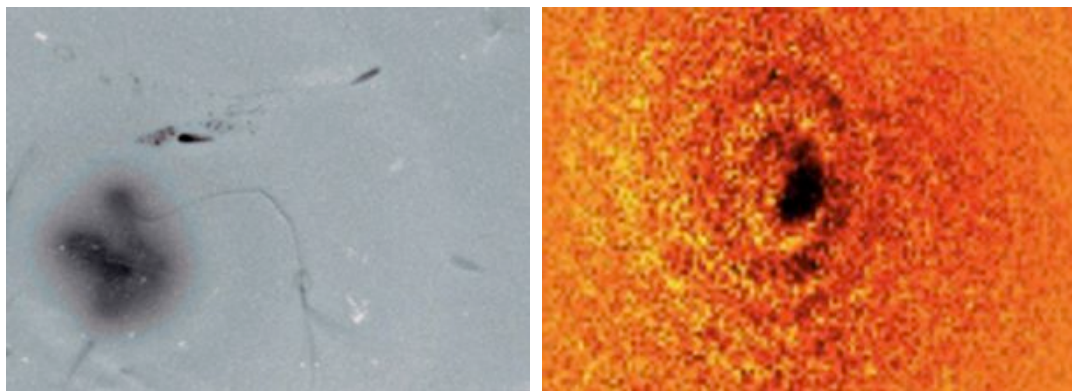


Fig. 12 (Left) Highly enlarged detail of bogong moth ‘shadow-gram’ scan, tonally inverted. Source: author
Fig. 13 (Right) ‘Shadow’ photograph of a single Ytterbium atom. Source: Streed 2012

9. Conclusion

The predicament of abject insect, endangered place and warming planet invokes a dark vision symbolised in this project by an oblique narrative of shadows. In fact it is arguable shadows cast by flash in an *ersatz* mountain cave offer a more affectually convincing rendition of lepidoptera biotics than the crystal seeing of reflected daylight could ever elicit. Other shadow epistemologies lend weight to this claim: the recently announced first successful ‘photograph’ of an atom was not its direct visage but a cast shadow (Streed 2012) [Fig. 13]. Just as the shadow of an otherwise invisible atom infers something particular about the structure of the visible world, the hitherto unseen shadows of bogong moths poetically indicate something tangible and far larger. In a world blinded by anthropic glare the most evocative poetic expression of our dark ecological condition may yet be found among the abject and shadows.

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WORKS CITED

- Azema, Marc, and Florent Revere. 'Animation in Palaeolithic art: a pre-echo of cinema'. *Antiquity* 86. 332 (2012): 316-324. Print.
- Barnes, Martin and Gary Fabian Miller. *Illumine: Photographs By Garry Fabian Miller: A Retrospective*. London: Merrell Publishers, 2005. Print.
- Berenbaum, May R. *Bugs In The System: Insects And Their Impact On Human Affairs*. New York, NY: Basic Books, 1996. Print.
- Berg, Christl. 'Tracings: a photographic investigation into being in the land'. Unpublished Ph.D. University of Tasmania (2004).
- Broome, Linda S. 'Density, home range, seasonal movements and habitat use of the mountain pygmy-possum *Burramys parvus* (*Marsupialia: Burramyidae*) at Mount Blue Cow, Kosciuszko National Park'. *Austral Ecology* 26. 3 (2001): 275-292. Print.
- Brown, Eric C. *Insect poetics*. Minneapolis: U. of Minnesota P., 2006. Print.
- Cambefort, Yves. 'A Sacred Insect at the Margins'. *Antennae* 1 (2007): 39-49. Accessed 30 July 2013. http://www.antennae.org.uk/ANTENNAE_ISSUE_3_V1.doc.pdf.
- Casey, Edward S. *The Fate of Place: A Philosophical History*. Berkeley: U. of California P., 1998. Print.
- Common, I.F.B. 'A study of the ecology of the adult bogong moth, *Agrotis Infusa* (*Lepidoptera: Noctuidae*), with special reference to its behaviour during migration and aestivation'. *Australian Journal of Zoology* 2 (1954): 223-263. Accessed 29 July 2012. <http://dx.doi.org/10.1071/ZO9540223>.
- Connor, Steven. 'Flysight'. *Cabinet* 25 (2007). Accessed 15 August 2012. www.cabinetmagazine.org/issues/25/connor.php.
- CSIRO. 'Bogong moths'. *Explore*. CSIRO (2011). On-line journal. Accessed 19 July 2012. <http://www.csiro.au/Outcomes/Environment/Biodiversity/BogongMoths.aspx>.
- Dery, Mark. 'Armies of the Night'. *Cabinet* 25 (2007). Accessed 15 August 2012. <http://cabinetmagazine.org/issues/25/dery.php>.
- Derges, Susan and Martin Barnes, eds. *Elemental*. Gottingen, Germany: Steidl Gerhard Verlag, 2010. Print.
- Elkins, James. *Six stories from the end of representation: images in painting, photography, astronomy, microscopy, particle physics, and quantum mechanics 1980-2000*. Stanford, CA: Stanford UP., 2008. Print.
- Flood, Josephine. *The Moth Hunters: Aboriginal prehistory of the Australian Alps*. Canberra, ACT: Australian Institute of Aboriginal Studies, 1980. Print.
- Funda, Anna. *All that I Am*. Camberwell, Victoria: Penguin, 2012. Print.
- Fuss, Adam, Eugenia Parry, and Rainer Crone. *Adam Fuss*. Sante Fe, NM: Arena Editions. 2004. Print.
- Green, Ken. 'Migratory Bogong Moths (*Agrotis infusa*) Transport Arsenic and Concentrate It to Lethal Effect by Estivating Gregariously in Alpine Regions of the Snowy Mountains of Australia'. *Arctic, Antarctic, and Alpine Research* 40.1 (2008): 74-80. Print.
- . 'The aestivation sites of bogong moths *Agrotis infusa* in the Snowy Mountains and the projected effects of climate change'. *Australian Entomology* 37.3 (2010): 93-104. Print.
- . "The transport of nutrients and energy into the Australian Snowy Mountains by migrating bogong moths *Agrotis infusa*". *Austral Ecology* 36.1 (2011): 25-34. Print.
- . Personal correspondence. 16 July 2012.
- Harding, Mathew. 'National Museum of Australia: Bogong moths'. Webpage, 2012. Accessed 15 August 2012. <http://matthewharding.com.au/work/national-museum-australia-bogong-moths>.

- Heise, Ursula K. *Sense of place and sense of planet: the environmental imagination of the global*. New York: OUP, 2008. Print.
- Hesse-Honegger, Cornelia. *Heteroptera: the beautiful and the other, or images of a mutating world*. Zurich: Scalo Verlag, 2001. Print.
- . ‘Artist Project/Mutations’ *Cabinet* 25 (2007). Accessed 25 September 2012. <http://cabinetmagazine.org/issues/25/Hesse-Honegger.php>.
- Johnson, Dick. ‘The alps at the crossroads: the quest for an alpine national park in Victoria’. Melbourne: Victorian National Parks Association, 1974. Print.
- Kleiner, Fred S. *Gardner's Art Through the Ages: The Western Perspective*. Boston: Wadsworth Cengage Learning, 2009. Print.
- Kristeva, Julia. *Powers of Horror: An Essay on Abjection*. New York: Columbia UP., 1982. Print.
- Land Conservation Council of Victoria. *The Alpine Study Area: Comments on Report of Land Conservation Council of Victoria, and Recommendations for Use, Management and Administration of Public Lands*. Canberra: Australian Academy of Science (1977). Print.
- . *Report on the Alpine Study Area*. Victoria: Land Conservation Council, 1982. Print.
- Lawler, Susan. ‘Bogong Moth gets the “all clear”’. *LaTrobe University News*, 2011. Accessed 28 July 2012. <http://www.latrobe.edu.au/news/articles/2011/article/bogong-moth-gets-the-all-clear>.
- Lewis-Williams, J. David. *The Mind in the Cave: Consciousness and the Origins of Art*. London: Thames & Hudson, 2002. Print.
- Lippit, Akira Mizuta. *Atomic light (shadow optics)*. Minnesota: U. of Minnesota P., 2005. Print.
- McCormick, Bill. ‘Bogong moths and parliament house’. *Research Brief*, 15. Government of Australia, 2005. Accessed 8 July 2012. <http://apo.org.au/research/bogong-moths-and-parliament-house>
- Morton, Timothy. *Ecology without nature: rethinking environmental aesthetics*. Boston: Harvard UP., 2007. Print.
- Nankin, Harry. *Victoria's Alps: An Australian Endangered Heritage*. Melbourne: Australian Conservation Foundation, and William Collins Publishers, 1983. Print.
- . *Range upon Range: the Australian Alps*. Melbourne: Algona Publications and Notogaea Press, 1987. Print.
- . ‘Cathexis: a hermeneutic interpretation of place’. Melbourne: Royal Melbourne Institute of Technology, 1994. Unpublished MA document. Print.
- . ‘Syzygy: gazing at shadows, darkly’. *The first International Conference on Transdisciplinary Imaging at the Intersections between Art, Science and Culture*. Eds. Su Baker, and Paul Thomas. Sydney, 2010: 91-102. Accessed 12 July 2012. <http://blogs.unsw.edu.au/tiic/>.
- . ‘Towards a biocentric photography’. Conference on the Environment, Culture and Community Faculty of Arts. St Lucia: U. of Queensland (2002). Accessed 13 April 2012. http://rmit.academia.edu/Author/Papers/1832719/Towards_a_biocentric_photography. Unpublished paper.
- New, T.R. ‘Politicians, poisons and moths: ambiguity over the icon status of the Bogong moth (*Agrotis Infusa*) (*Noctuidae*) in Australia’. *Journal of Insect Conservation* 11.3 (2007): 219-220. Print.
- Ramsenthaler, Susanne. ‘Playing at a Distance: Photographic Perception and Close Contact’. Visual Knowledges Conference. Scotland: U. of Edinburgh (2003). Accessed 28 September 2009. <http://www.iash.ed.ac.uk/vkabstracts2.html>. Unpublished paper.

- Rigby, Kate. 'Getting a Taste for the Bogong Moth'. *Australian Humanities Review* 50 (2011). Accessed 2 June 2012.
<http://www.australianhumanitiesreview.org/archive/Issue-May-2011/rigby.html>.
- Sarsfield, Rachel. 'Putting a Pin through Beauty'. *Antennae* 1.3 (2007): 33-38. Accessed 1 November 2011. www.antennae.org.uk.
- Sear, Dexter. 'The Insects of M.C. Escher'. *insects.org*. Cultural Entomology Digest 1 (1993). Accessed 27 July 2012. http://www.insects.org/ced1/mc_esh.html.
- Slatyer, Rachel. 'Climate change impacts on Australia's alpine ecosystems'. *The ANU Undergraduate Research Journal* 2 (2010): 17. Accessed 6 July 2012.
http://eview.anu.edu.au/anuj/vol2_10/index.php.
- Smith, Andrew, and Linda Broome. 'The effects of season, sex and habitat on the diet of the mountain pygmy-possum (*Burramys parvus*)'. Collingwood, Victoria: *Wildlife Research* 19 (1992): 755-768. Accessed 6 July 2012.
<http://www.publish.csiro.au.ezproxy.lib.rmit.edu.au/paper/WR9920755.htm>.
- Solnit, Rebecca. 'The Limits of Landscape'. *Orion*, November/December, 2007: 452. Accessed 10 September 2011. <http://www.orionmagazine.org/index.php/articles/article/465>.
- Starn, Doug, and Mike Starn. *Attracted to light*. Brooklyn, NY: PowerHouse Books, 2004. Print.
- Stewart, Susan. *The Open Studio: Essays on Art and Aesthetics*. Chicago: U. of Chicago P., 2005. Print.
- Stoichita, Victor I. *A Short History of the Shadow: Essays in Art & Culture*. London: Reaktion Books, 1997. Print.
- Streed, Erik W., Andreas Jechow, Benjamin G. Norton, and David Kielpinski. 'Absorption imaging of a single atom'. London: *Nature Communications* 3 (2012): 933. Print.
- Trill, Jim. 'New sculpture takes flight over Tuggeranong'. 666 ABC Canberra, 2012.
<http://www.abc.net.au/local/photos/2012/04/17/3479562.htm>. On-line record of radio broadcast.
- Uexkuell Jakob von, Marina von Uexkuell, and Joseph D. O'Neill. *A Foray Into the Worlds of Animals and Humans: With a Theory of Meaning*. Minneapolis: U. of Minnesota P., 2010. Print.
- Waldbauer, Gilbert. and James B. Nardi. *Fireflies, Honey, and Silk*. Berkeley & Los Angeles: U. of California P., 2010. Print.
- Williams, Robyn. 'Bogong Moths: Interview with Susan Lawler'. *The Science Show*. 15 August 2009. ABC Radio National, Australia.
<http://www.abc.net.au/radionational/programs/scienceshow/bogong-moths/3052578>. On-line record of radio broadcast.
- Worboys, Graeme L. and Roger B. Good. *Caring for our Australian Alps Catchments: Summary Report for Policy Makers*. Commonwealth of Australia: Department of Climate Change and Energy Efficiency, Canberra (2011). Accessed 6 July 2012.
<http://www.climatechange.gov.au/en/publications/water/australian-alps/natural-values.aspx>.