

LAB MEETING

Considering Killability: Experiments in Unsettling Life and Death

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In February of 2015 we held a workshop at the University of Exeter with the goal of creating a conversation among marine biologists, social scientist, and artists around the relationship between life and death. As STS scholars, we had both worked on the study of marine invertebrates [Astrid has written on algae blooms (Schrader 2012) and Elizabeth has worked with scientists researching jellyfish (Johnson 2016)]. We found ourselves similarly interested in how these organisms trouble conventional narratives of life and its linear progression into death. Together with the scientists and other scholars at our workshop, we struggled to articulate the patterns of life and death witnessed in marine invertebrates. In the scientific literature, these narratives conformed to human experience and expectations. Jellyfish with cyclical life patterns became “immortal” the mass death of microbial colonies is labeled “suicide” (Schrader forthcoming). The workshop introduced us to other narratives of life and death that in addition to the im/mortality of invertebrates included the killability of farm animals, life and death on display in an aquarium exhibits, and life after death in human burials.

Our discussions from the workshop sought to express the relationships between life and death in less anthropocentric terms, but attended to the entanglements of human and animals agencies in the laboratory and in artistic practice. Continuing that conversation, we

prompted our workshop participant to articulate the relationships between life and death of their research subjects in relationship to what Donna Haraway has called their “killability.” Morally distinct from killing-- which, according to Haraway, is an integral part of life--killability pertains to the categorization of nonhuman animals in such a way that makes their killing automatically permissible. This is in contrast to what Haraway would call taking responsibility for necessary killing. For example laboratory mice and livestock are killable while, for many in the West, dogs and cats are not. The resulting reflections take insights from feminism (Haraway’s in this case) to re-articulate scientific practices, reversing the more common traffic between feminism and science that take scientific contributions as a resource for feminist theory. Thinking with this notion of killability allows for a more reflective account of laboratory practices, calling on our participants to articulate their own response-ability in relation to their research subjects.

With this in mind, we asked our participants: What are we to make of “killability” with regards to organisms whose deaths are not so easily pinpointed? How do we make sense of our relationship to the deaths not of individuals, but masses, such as populations of phytoplankton? And what are we to make of the deaths that have already passed, whose killings either haunt or animate our present? What might come to matter if our attention shifts from killability to the circulation of many forms of death and dying?

The contributions problematize the categorization of animals as killable as a solely human activity based on an easy distinguishability of life and death. Not all animals can be killed with the same ease as John Spicer points out; other lives - i.e. that of livestock - are dependent on their very killability. In both of these cases human capacities to categorize have been limited. In other cases their killability changes with the setting, so-called justifiable sacrifices in the laboratory become matters of concern in museum settings for the same kinds of animals.

Simon Rundle considers how our responsibility to the world seems

to necessitate the killing of animals as a means of developing knowledge about the effects of ecological degradation. Rundle's research subjects snail embryos to different conditions of life to test the viability of development amid conditions that humans have imposed. Reporting on the 'hidden effects' of anthropogenic environmental changes on life stages before birth in snails as model species, he reflects on the lack of responsibility for killing in his own laboratory practice. In this way, he is making visible not only what needs special cameras and microscopes but also a different mode of attention in the laboratory, namely that killing comes with an obligation to respond (see Haraway 2008, 80). Why are we reluctant to reveal how we make use of these organisms and render some automatically killable, he asks.

Visual artist Deborah Robinson further explores the theme of making visible in relation to killability. Robinson uses Rundle's work to create "the sensation of being connected to" the world. But, as she writes, the techniques of seeing that she and Rundle both use simultaneously engender a sense of intimacy with and distance from their nonhuman subjects of art and research. Rather than highlighting the hidden effects of anthropogenic pollution on snail embryo development, Robinson pays attention to the disappeared human subject.

Her visualizations allow for embodied seeing, a becoming present through looking; however as Rundle notes, knowledge of embryo deaths is often deferred--realized only through a viewing of recordings weeks later.

Susanne Schmitt draws our attention to the management and making of the undead. Schmitt provides us with a sense of the choreography of death that accompanies attempts to represent the living through the dead. In making forms of life more visible through taxonomy, the lively processes that take place on bodies post-mortem must be managed and mitigated through the active killing of bacteria and insects.

John Spicer opens his account with the paradox of loving and killing that are threaded through each of these texts. Being response-able to the earth's other organisms seems, for Spicer, to necessitate knowing

through killing. But he also provides us with organisms to think with that, while killable in Haraway's sense, are not actually killable. The jellyfish, flatworms, and sponges that make up his research are often either indifferent to our (violent) manipulations or, like the flatworms, respond by producing an excess of life.

Henry Buller's contribution seems to challenge the ethical grounds of Haraway's important distinction between killing and making killable. What's left of life when you are born killable? In the case of farm animals, produced for consumption, it is no longer clear "whether their killing [is] an act of ending or of beginning," like the immortal jellyfish, livestock does not seem to be allowed to die. Their liminal existence reminds us of the ethical importance of letting live responsibly.

Dorion Sagan challenges the anthropocentrism and zoocentrism of killability. Drawing on research on pre-animal life forms (bacteria and protocists) and some animals, Sagan suggests there may be killability before death.

Killability under a microscope and under wraps

Simon Rundle, School of Marine Science and Engineering, Plymouth University, Plymouth, UK

Predicting the biological effects of the Anthropocene is now a pressing research agenda. Hence, many environmental scientists are carrying out laboratory experiments that investigate how 'model' species respond when subjected to increased levels of environmental stressors such as hypoxia or warming, either alone or in combination. These experiments often, and perhaps inevitably, involve killing animals – in fact the terms lethal and sub-lethal for categorising responses juxtapose the use of death versus a change in physiology as endpoints for gauging effects and predicting sensitivity.

My research focuses on the 'hidden' effects of the Anthropocene – those

that affect early life stages of aquatic invertebrates. These effects of environmental stressors such as warmer temperatures, 'dead zones' that lack oxygen and pollutants on embryos have typically been ignored by biologists whose efforts are usually focused on later life stages, which are usually larger and more conspicuous; the killability of fully-grown animals is more obvious compared with that of embryos that can only be viewed using high power microscopy. Responses of microscopic embryos are often captured first as video and then revealed later – their deaths – and corresponding killability – may be unnoticed for several weeks, remaining stored digitally on hard drives to be examined, measured and analysed at a later date.

My interdisciplinary collaborations with artists and social scientists have allowed me to think more deeply about my relationship with the animals on which I work. The bio-imaging technology that has been developed in my laboratory serves to magnify and accentuate the process of development – it brings researchers closer to the tiny embryos that they use for observation. The resulting video recordings have been displayed in several different contexts: art galleries, museums, conferences, web sites. They have also been transposed into sound and displayed as immersive art installations. So far, the videos chosen for display are for healthy embryos. These celebrate the coming into being of life, the ontogeny of the snails which are the objects of scientific investigation – from single cells, through organogenesis to fully functional juveniles. We have not displayed the videos that depict dying and malformed embryos; these have been kept 'under wraps'. Why are we reluctant to reveal how we make use of these organisms' killability? Will the public be hostile to the idea of killing animals to understand their sensitivity – even within the context of protecting the planet from the Anthropocene? The process of decontextualisation of animals used in research was also part of an installation 'wandering snail' at the FIELDS Exhibition and Art+Communication Festival (Riga, 2014). Live snails from the laboratory were transported to a gallery. Some of these animals died in captivity,

revealing their killability within a public space rather than the laboratory.

Visual processes, empathy and the experimental animal

Deborah Robinson, School of Art, Design, and Architecture, University of Plymouth, UK

Killability can be facilitated by rendering an animal invisible, in some sense choosing to overlook the visceral/material/living presence of the animal in the laboratory. Slipping instead into an action associated with research function. I think that an awareness of the part of the self that is brought into being whilst looking outwards is important – we can shift our looking to simultaneously looking outwards and inwards, or at least shifting between modes.

As an artist my training taught me to move beyond a differentiation between background/foreground relationships thus not focusing on the object primarily (ie the model - as in taught in traditional life class drawing exercises, and not without its own problems)

And so I take an interest in how processes of visual engagement are constituted when I work in laboratories. For example, a long term interest in 'embodied seeing' that originated for me with ideas found in Irigaray's late writings.

I am also interested in how we become present to the experience of looking. Becoming present to looking means not screening out my own body, nor negating the deeper sensory atmosphere within which the 'research object' is integrated. Sometimes, whilst in the field, this broader object of which I and my cross disciplinary researchers are a part, is amplified. The scientific goal of looking in the laboratory context enables focus on a discreet area/function within a snail and this (necessarily?) will also operate as a filter that screens out the sensation of being connected to, and a part of the vitality of life. This filtering enables killing for research purposes. Research carried out by Simon's group using highly sophisticated imaging technology depicts the high level of questing, a

kind of quivering hunger for life, within the development of the snail embryo. The lenses and technology that reveal this vitality of life also serve to distance the observer and this is a problem I currently identify within my research through practice.

Looking back, I can see that formative in my practice and thinking was an experience when I first worked in a laboratory where fish were used in pigment cell experimentation. I was invited to pop a fish out of its embryo sack (a very delicate operation) and to view this under the microscope. After doing this I was told that, to be in line with lab ethics, I needed to kill the baby fish. The PhD student made me very aware of the killing as a ritual: I was required to put the fish into a glass container, and then administer an overdose of anaesthetic. I actually found this experience quite profound, resting as it did in the peculiar intimacy of visual scrutiny under the microscope followed by killing as an affect on both organism and self. The PhD student told me he had never lost his sense of feeling--of respect and closeness to the organism--when in engaged in everyday lab actions, that he tried to bring the newness of experience to each encounter whilst experimenting. I wonder if this is describable as intra-action where ethical thinking can take place (Barad 2007).

Taxidermy specimens never really stop dying – or living

*Susanne Schmitt, Rachel Carson Center for Environment and Society,
Ludwig-Maximilians University, Germany*

Much care goes into the process of keeping other forms of life, usually insect and microbial life, at bay, away from them.

Within the framework of our project *How to Not Be a Stuffed Animal*, choreographer and dancer Laurie Young and I discover the lives and deaths of taxidermy animals in Museums of Natural History across the globe and translate our findings into choreographic, participatory audiowalks.

Today's shared fieldwork introduced us to the central storage for

museum objects of the city of Freiburg. It is a large, state of the art complex in the industrial outskirts that has been constructed to guarantee two things: that nothing is stolen, and that nothing is rotting. To guard against the latter, we wear blue disposable plastic shoebooties. Today's experimental task consists of exploring smell across the taxidermy storage rooms. Smells of old wood, fur, animal glands become present once we have attuned to being guided by our noses. The air is cold, and the whole building is painted bright white and in a very light grey. This is, of course, so that no bug may escape the scrutiny of the staff's gaze. A bug here would be a catastrophe for the collection, at least from human-centred view. The building is cold to slow down potential organic processes. Its breathing, beating heart is a large nitrogen chamber, the closed off and deadly quarantine unit. Museum specimens (momentarily including a row of *Galliformes* for the taxidermy collection) stay in quarantine here for months to ensure no trace of outside life travels along to the inside.

Taxidermy captures organisms, mostly birds and mammals, in the moment. Killable insect and microbial life is kept at bay so taxidermy animals can animate our present. During the preparation process, the muscular body with all its intestines is discharged, all traces of grease carefully removed, the remaining skin carefully washed and mounted on a handmade mannequin according to the desired shape. Life, now, becomes a question of lifelike movement. In the diorama, the taxidermy animals are shown as if the nitrogen chamber had never happened: stretching, patiently waiting, sniffing, climbing and presented as charged with happy affects (Ahmed 2010).

The exhibition space itself again entangles different histories of killability, even if taxidermy animals that carry them moved through the nitrogen chamber together: some animals are rarer than others, some bred for human consumption, some utterly protected by international conventions.

Waiting for Podo

John Spicer, School of Marine Science and Engineering, University of Plymouth, UK

Those, like myself, who love marine life and are also interested in how marine animals work (their physiology) have long grappled with the paradox that is killability. Often to investigate physiology one has to use invasive techniques or even sacrifice animals, to obtain measurements, but at the same time it is the love for, and fascination with, these creatures that drives the investigation. Many of the techniques I use now are non-invasive. But I still have to remove animals from their natural habitat and expose them to different environmental conditions (albeit non-lethal) so the paradox, while not so stark, still exists. This paradox is complicated by the fact that the lives and deaths of what many would consider the most 'primitive' marine animals, the sponges, the jellyfish, the flatworms – major players in making marine ecosystems work, but barely thought of as animals by the general public (ie no backbone) – are so 'other'. 'Cut me do I not bleed' is far removed from a flatworm which receiving six cuts to the head will produce six new heads, or a sea anemone which will divide, or produce buds, to create another sea anemone, or a sponge which even after being sieved can reconstitute themselves into a viable animal. And indeed 'death' for the immortal jellyfish is an 'accident' or a predation event – there is no 'natural' end to the life 'cycle'. More common jellyfish species have the ability to enter a dormant state, a time of suspended animation. Their life cycles often involve starting off as a polyp, a miniature sea anemone like form, stuck to a solid surface on or near the sea bottom. When the conditions are right they bud off lots of, what looks like, tiny little dinner plates that grow into adult jellyfish. But if the conditions are not right they can stay as polyps for many months and under extreme conditions they can encyst, become podocysts, which can stay in that dormant state for many tens of years. In our lab at the moment 'Waiting for Podo'--and even knowing whether or not your immortal or long-lived species is alive at any

particular time-- is intellectually challenging as much as it is frustrating. These are fascinating research subjects that may outlive the researcher.

Exuent

Or, When killability defines a life

Henry Buller, Department of Geography, University of Exeter, UK

Mourning his slain daughter Cordelia, King Lear asks: 'Why should a dog, a horse, a rat have life, and thou no breath at all?' (Lear, V, iii). Only the companion animal, the functional animal and the nuisance animal, each, along with the food animal, is killable. "Thou shall't not kill concerns only man', writes Derrida (2002: 416). Killing is the original ontological act not just because it renders only animals uniquely bare-of-life and thus killable but also because it makes humans uniquely response-able in how we kill non-humans 'with reasons but knowing there will never be sufficient reason' (Haraway, 2009, 81).

Farm animals are defined by killing, both as non-humans and as human property; they are 'killable' through an acts defined as 'necessary' or 'acceptable' by law (Bryant, 2008). Indeed, they exist to be killed, their lives are stage-managed to arrive at a pre-defined killing, usually when a desired level of productivity has been reached or exceeded. We might ask whether their killing an act of ending or of beginning, a state of being or of not being? Farm animals are killable long before they are killed, before even they are born. Engineered, through breeding and, increasingly, genetics, to produce meat or eggs or milk at some somatically enhanced way, their killing is not only assured, it is precipitated, it is definitive. There are two means of escape: to die (though this is uncommon as an ill or injured animal is usually 'put down' to avoid the costs of veterinary care or unnecessary feeding) or to be unborn. Amongst the vast numbers of chickens and dairy cows, male animals and birds are unwanted and are killed soon after birth or hatching. Soon, sexually selective bull sperm and pre-hatching sexing techniques will deny them even that.

Of course, the killing of animals is not the end; farm animals don't die (as subjects of an act), they are killed (as objects of an act) they are not 'grievable.' Their killing is a moment of transition from the vibrant materiality of the living body to the very different silent materiality of the edible product (but also, more prosaically, from cost to profit). This is a transition of different killings; the anticipated killing upon leaving the farm, the (recoverable) killing of sensibility when an animal is stunned, the somatic killing of bleeding out, the corporeal killing of the body during cutting up and processing. Sometimes, when animals are slaughtered using gas or low atmospheric pressure, the heart needs to be electronically started to facilitate bleeding; a further killing. And yet, to be killable is also to be alive, to have lived. If humans must learn to kill responsibly, they must also learn to let live responsibly.

Stalking the Life-Death Continuum

Dorion Sagan, Science Writer

As a writer working in science and art, one who has sequentially apprenticed himself to the scientists Lynn Margulis (symbiotic theory), Eric D. Schneider (nonequilibrium thermodynamics), and Josh Mitteldorf (post-neodarwinian group selection) the continuum which results from a deconstruction of the life-death divide holds for me a special allure. In the second chapter of our *What is Life* (2011) we portray death as life's shadow. Just as objects cast shadows but shadows alone cannot exist without objects, death is a naked concept without life. Immortality in evolutionary terms describes life's "shadowless" baseline state rather than, as the word (and human experience) suggests, a modification of an inevitable tendency toward decline and death. For example, invertebrates with cyclical life patterns such as hydrozoans, or carrion beetles prompted by stress to revert to larval stages of their life cycle, can anthropomorphically be described as "immortal."

Among pre-animal life forms (bacteria and protocists), and even

among some animals today, there was no automatic connection between life and death; yes, organisms could be killed—for example squashed, poisoned, or burnt to death—but they did not inevitably succumb to the processes of entropic degradation or wear and tear we are too quick to use to explain a would-be universal aging. Perhaps surprisingly—or not so, given humanity's anthropomorphocentric tendency that is now writ large as the Anthropocene either to project its individual quirks onto a universal stage, or to hold itself up as extraordinary and unique—not all organisms age. Some, like salmon, called semelparous, age extremely quickly, dying almost immediately after reproduction. Others, arguably with a long phylogenetic heritage, do not seem to age at all. Among these number box turtles and sharks in our own chordate phylum. Other animals that don't age—and even become stronger and more fertile with time—include lobsters (Mitteldorf and Sagan 2016). In the *Unsettling Life-Death* I learned that gas-emitting ocean microbes that help cool and control climate die en masse because of viruses. The virally infected algae appear either to succumb to death directly or kill themselves to prevent the greater death of mass infection. Here they would resemble human immune cells thought to destroy pathogens and nascent cancers. The calcareous exoskeletons of such algae rain through the sea to its bottom where, subducted, they become limestone lubricant implicated in mountain building activity as part of a global physiology that necessarily coopts and integrates death no less than free radicals are deployed by killing immune cells in the human body.

From these frames, “killability” focuses our attention on humanity's self-serving anthropocentric and zoocentric concerns. The bodies of which we are part require our deaths for their lives, even as our lives require the death of microscopic others who may be sensate without our knowledge, but whose triumphs, perceptual gifts and deaths are likely integrated into our own sensorium (Margulis et al, 2011).

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