Radiant Ecologies: The Biopolitics of Animal Photography in Exclusion Zones

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Abstract: This article wishes to examine photographic representations of animal life in the post-disaster landscapes of Chernobyl and Fukushima. It seeks to articulate how documentary and investigative modes employed by a visual repertoire developed in relation to these disaster zones, intersect with a biopolitical imaginary, which, by creating an ontological collapse and interchangeability between radioactive spaces and nonhuman materialities – including the matter of animal lives– enacts an exclusionary paradigm that is rooted in speciesist violence. A common trope used to frame animals in these sites of nuclear disaster is that of resilience and rewilding. This framing has been deployed in recent times by scientific analyses (James Smith, Nick Beresford et. al., 2019, 2005; Lyons et. al., 2020) as well as popular discourses to depict animals, particularly wildlife, as prolific and invasive, governed by an inhuman excess that allows them to thrive in environments otherwise hostile to humans. This narrative of an alien affinity towards forms of toxicity, while positioning animals on a common spectrum of danger and alterity in which they share attributes of anarchic and uncontained growth, dispersal, and mutation with nuclear waste and the action of radioactivity, simultaneously obscures other narratives of precarity and harm accruing to nonhuman lives and habitats through their proximity to nuclear pollution, and pollution's ties with anthropogenic, military-industrial regimes. (Sohtome et. al., 2014; Itoh 2018). Drawing on recent work by Elaine Gan, Anna Tsing, and Kate Brown, my paper explores the figuration of animals in disaster zone imagery in relation to questions of ruination, haunting, decay, and waste as constituting what Tsing calls "disturbance regimes." (2015) The nexus of toxic exposures and ecocidal effects of nuclearization of environments not only impinges on existing ecological relations, altering and corroding these, but also enforces new and saturated chemical ecologies. Through a close reading of the works of Julia Oldham, Yasusuke Ota, and Pierpaolo Mittica, my article engages with the implicit dialogue between such radioactive ecologies in post-disaster sites in the wake of evacuation and abandonment, and the ways in which visual media, particularly photography, participate in these ecological (dis)arrangements by encoding animal life and its survival in the post-human aftermath of human departure, within various symbolic and semantic codes, codes whose stability is further challenged and complicated by what Daniel Burkner (2015) identifies as the material politics of photographing radioactive spaces.

Keywords: Nuclear toxicity; ecophotography; disaster ecologies; biopolitics; multispecies encounters; speciesism; precarity.

> The photograph is literally an emanation of the referent. From a real body which was there, proceed radiations which ultimately touch me, who am here, the duration of the transmission is insignificant; the photograph of the missing being, as Sontag says, will touch me like the delayed rays of a star. A sort of umbilical cord links the body of the

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> photographed thing to my gaze: light, though impalpable, is here a carnal medium, a skin I share with anyone who has been photographed.
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> Roland Barthes, *Camera Lucida*, 80-81[1]

In Darmon Richter's photo (Richter, 2020) an apparently tame fox occupies centre stage.[2] Its relaxed yet alert posture and outward, anticipatory gaze alluding to its feral field of vision literally and figuratively beyond the frame, is the subject of the camera's focus. Behind the seated animal and shot at an angle to illustrate its monumental size, is a now decaying concrete sign in Russian that reads "Pripyat 1970" the date referring to the year of the Ukrainian city's founding, while all around the canid presence teems lush vegetation. The latter's fecund green hue seemingly radiating out of the ground and suffusing the scene with a spectral light that is characteristic of several of Richter's Chernobyl photos, offers a rich palette of contrasts with the warm tones of fox fur while offsetting the muted lithic grey of the vestigial semiotics of a long evacuated human presence. Fresh flowers thronging the sign in the background indicate the ruined city's memorialized status, suggestively pointing to an embedded melancholic history while self-reflexively underscoring the active and continuing participation in the present of cohorts of stakeholders from security personnel and small groups of returning locals, to scientists, journalists, artists, photographers, and occasional tourists and adventuring or opportunistic trespassers– stalkers, sepulking 'patriots' and scrap collectors, who comprise the region's hybrid and shifting demographic.[3] The sign points West towards the atomic city, directing our gaze to its short but tragic urban history of decline from planned and manicured Soviet technoscientific utopia of clean and economical nuclear energy to a dystopian site of catastrophe and loss, while in the foreground, the sign's navigational gesture is undercut and deflected at a right angle by the animal's gaze mobilizing the visual field towards an unseen frontal horizon. In the open space to the right the camera inserts its own optical logos both engaging in dialogue with and framing the competing visual indices of nature and culture without subsuming these into a totalizing perspective.

The camera's triangulating locution invitingly appropriates and draws the viewer's gaze inwards towards an elusive meeting point at the image's centre where culture and nature, human and animal, past and future, are suspended in a state of what Isabelle Stengers calls "reciprocal capture." (Stengers, 36)[4] This interplay of visual indices is not merely a decorative or aestheticizing impulse; rather, Richter's carefully orchestrated image deploys pictorial codes to construct a symbolically charged figurative language, one that charts via a richly allegorical use of light, colour, angles and placement, a synoptic narrative of the gradual but steady erosion of anthropogenic markers and their replacement by nonhuman agents and materialities. Richter describes Chernobyl's wild ecology, and its inherently plural and contradictory landscape as an Edenic space that speaks to a larger mythopoeic imaginary. What this dense visual field both conceals and reveals also however is a historical and ontological entwinement and folding of the human and nonhuman, lively and inorganic, renewal and decay, culture and nature, meaning and matter, absence and presence, phantasm and real, an entwinement that is the temporally layered and epistemologically complicated legacy of nuclear modernity.

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[1] Roland Barthes, *Camera Lucida,* New York: Hill and Wang

[2] Darmon Richter, *Chernobyl: A Stalker's Guide*. FUEL Publishing, 2020

[3] See Kate Brown's discussion of spelunking expeditions in her essay "Marie Curie's Fingerprint: Nuclear Spelunking in the Chernobyl Zone." Spelunking refers to what has become a regular activity, laden with political and ideological meaning, where Soviet loyalists visit the sarcophagus and the remains of the exploded reactor for close encounters with radiation. These trespassers attempt to capture the radioactivity in the reactor using photography and infrared light, even as they expose their bodies to hazardous levels of toxicity. In her ethnographic interviews Brown talks to Aleksandr Kupny and Sergei Koshelev, regular visitors to the ruined reactor who see these ritualistic returns to the radioactive core as a form of nationalist engagement with histories that the community as such wishes to bury. Kupny's photographs of radiation are testimonies and reclamations of an endangered yet living archive, one that he seeks to preserve against amnesia.

[4] Stengers describes this phenomenon as forms of multispecies relationships in which the modes of existence of one entity, its behavioural patterns, meaning making processes, bodily functions, habits and dispositions become relevant to those of another as part of the latter's environment and more specifically its particular habitat, informing its referential horizon and the ways in which it makes sense of the world. This way of understanding interactions across species and ontological difference not only brings the fact of constitutive relationality rather than bounded singularity, the always already mutually interlocked nature of existence which may or may not always be symbiotic but is a

In 2011, a few weeks after the meltdown of the reactor core at the Fukushima Daiichi nuclear power plant led to the release of fatally high doses of radioactive substances into the atmosphere, Shimpei Takeda performed a camera-less photographic experiment. Earlier he had toured the devastated sites of Okuma in the vicinity of the Tepco power plant and collected soil samples. Placed on photosensitive paper and left in darkness, these samples created their personal photographic prints-- the high doses of ionizing radiation absorbed by exposed particles acting at once as a source of internal illumination and an inscriptional mechanism. Called "radioautographs," and collated as the Trace series, these automatic 'images' formed without the mediation of a recording or capturing device, testify to the paradox at the heart of the relationship between photography and radiation.[5] Akira Mizuta Lippit in his book *Atomic Light* (2005) discusses how the introduction and popularisation of nuclear energy as the apotheosis of military-industrial modernity in the twentieth century brought about a radicalisation of the field of visuality and visual practices, including artistic practices, through the capacity of radioactive phenomena to overturn dominant metaphysical conceptions of visible and invisible, outside and inside, transparent and opaque, presence and absence, as well as probe the limits of perceptual and cognitive abilities and habits. The irradiated sites left in the wake of nuclear disasters and the subsequent ecological reconfiguration of toxified lands through the protracted effects of radioactive fallout, frame the crises of species extinction, habitat loss, terraforming and the erosion of vernacular practices and cultural memories in new ways that exceed established conservationist and ethico-juridical imaginaries.

This paper wishes to examine photographic representations of animal life in the post-disaster landscapes of Chernobyl and Fukushima. By examining the work of photographers working with multiple media and at the intersection of art photography, photojournalism, animal, environmental, and anti-nuclear activism, species rescue, fostering, and caregiving, in these radioactive sites, my analysis aims to understand how specific modes of visual engagement with and interpretation of nonhuman life in places affected by anthropogenic and climatic disasters interacts with scientific and popular cultural imaginaries of nonhuman flourishings and endangerments in disaster ecologies. In particular, I wish to examine the tropes that posit animal life in depopulated sites of nuclear disaster as both miraculously immune to the biological damage caused to humans by radiation exposure, as well as thriving

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constantly dynamic and plural field that precludes the imposition of any single, homogenous or totalizing model of ecological coexistence that is based in attempts at classification, polarization, hierarchization and ultimately subsumption of difference.

[5] Shimpei Takeda, the *Trace* series, 2012, gelatin silver print. For a detailed study of Takeda's work see Davre (2019)

in the wake of human evacuation, particularly in the absence of farming, industrial, and commercial activity. This approach to resurgent flora and fauna in emergent radioecological sites has been deployed in recent times by scientific analyses (James Smith, Nick Beresford et. al 2019, 2005; Lyons et. al 2020) as well as popular discourses to depict animals, particularly wildlife, as prolific and invasive, governed by an inhuman excess that allows them to thrive in environments otherwise hostile to humans.

This narrative of an alien affinity towards forms of toxicity, while positioning animals on a common spectrum of danger and alterity in which they share attributes of anarchic and uncontained growth, dispersal, and mutation with nuclear waste and the action of radioactivity, simultaneously obscures other narratives of precarity and harm accruing to nonhuman lives and habitats through their proximity to nuclear pollution, and pollution's ties with anthropogenic, military-industrial regimes. (Sohtome et. al 2014; Itoh 2018) My comparative analysis is cognizant of the fact of the comparative scales at which the respective disasters unfold– the ways in which time and temporality operate differently in each case. The specific dynamics of the respective crises in Chernobyl and Fukushima present differential scales for understanding disaster and alert us to the coexistence of both, the more palpable spectacularity of accidents as well as their intangible but enduring dimensions. This play of multiple scales, which is in some ways integral to how nuclear disasters operate, also leads to new ways of conceiving time beyond the strictly historical time of the anthropos as an expanded concept that includes more than human and material temporalities.

1 Radioactive Visualities

From Wilhelm Röntgen and Antoine Henri Becquerel’s deployment of radiation as a form of image making process that could permeate, render porous and ultimately overturn the epidermally bounded and enclosed body, to the cultural phobias, anticipations, and anxieties around the twin tropes of technological progress and planetary annihilation engendered by atomic power and explored in particular through an affectively charged and ideologically inflected nuclear imaginary in the postwar period– nuclearity emerges in the 20th century as a complex conceptual, epistemological, material and geopolitical field constellated around questions of militarisation, nationalism, and economic development, structured by the norms of capitalist production on the one hand, and the requirements of emergent biopolitical surveillance and security regimes on the other. According to Claudette Lauzon, “Cold war imagery presented both the official positive image of nuclear power and military supremacy translating the propagandist vision promoted by governments into an iconic visual rhetoric that still resonates today while at the same time contributing to larger existential and physical fear of unknown risk.”[6] (293)

The relationship between the field of modern nuclear energy and practices and epistemologies of visuality extend beyond the formation of a specific imaginary of the atom’s unprecedented power as well as its constitutive alienness, articulated in particular through a repertoire of images of mutant monstrosity and transhumanist heroism in speculative genres of Cold war era science fiction, gothic and horror literature and cinema: “[R]adioactive monsters, utopian atom-powered cities, exploding planets, weird ray devices, and many other images [have] crept into the way everyone thinks about nuclear energy, whether that energy is used in weapons or in civilian reactors. The images, by connecting up with major social and psychological forces, [have] exerted a strange and powerful pressure within history. (Weart, xi)[7] The material action of atomic energy upon time, space, and bodies itself evinces a visual dimension, one that both registers through as well as confounds biological and cultural limits of vision: "the flash so bright, the heat so hot, nearly every surface becomes a photographic plate." (Brown, 106) The most telling example of this is the hibakusha body– those instances of instantaneously incinerated flesh produced by atomic heat at Hiroshima and Nagasaki, which when subjected to radiation's exposure turned into photosensitive surfaces and thus dissipated while leaving behind photographic traces in the form of their own dark negatives.

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[6] John O’ Brian and Claudette Lauzon (eds.) *Through Post-Atomic Eyes* John , McGill-Queen's Press, 2020.

As Brown's study of the visual aspects of nuclear power demonstrates, when it comes to nuclear toxicity, the question of visuality is no longer confined to the politics of representation. Instead, it indexes nuclearity's production of certain new forms of visualisation and materialisation. These new visualities reinforce the close proximity between modernity's technoscientific regime of violence and its framing of the visible and sensible order of reality:

> [I]f the atomic blasts and blackened skies can be thought of as massive cameras, then the victims of this dark atomic room can be seen as photographic effects. Seared organic and nonorganic matter left dark stains, opaque artifacts of once vital bodies, on the pavements and other surfaces of this grotesque theater. The "shadows," as they were called, are actually photograms, images formed by the direct exposure of objects on photographic surfaces. Photographic sculptures. True photographs, more photographic than photographic images. (Lippit, 44-45)[8]

The presence of radioactivity thus not only destabilizes metaphysical and phenomenal binaries between presence and absence, visible and invisible, the real and the spectral, it also re-signifies the realm of the unseen and phantasmatic as specific ontologies animated by forms of matter and modes of existence cohabiting in relational assemblages with human and nonhuman bodies. Nuclear phenomena including irradiated places and contaminated landscapes, as my article will demonstrate, dramatize what Karen Barad calls the intra-activity of quantum dynamics.

As physical phenomena that intervene into those conceptions of time and space which divide these into discrete and autonomous units, radioactivity institutes new orders of spatio-temporality that highlight the always already entangled nature of all phenomena, including cultural phenomena. The latter are shown to exist not as predetermined entities that then enter into relationships along a subject-object axis, but rather as immanent forces and vectors that are diacritically constituted into stable entities through and in the process of interacting with other iterations of matter and their specific manner of engaging and calibrating time and space. Nuclear phenomena, as the example of radioactive decay indicates, establishes a particular temporal paradigm that is based in delayed, generationally distended effects that disrupt our compartmentalized understanding of time as a set of coherent periods: "Radioactive decay elongates, disperses, and exponentially frays time's coherence. Time is unstable, continually leaking away from itself." (Barad, 63)[9] This in turn makes the work of nuclearity be it as a source of energy in industrial capitalist and military nationalist contexts or a form of multiscalar chemical toxicity either impinging upon ecosystems through slow seepages or catastrophic disasters – an archaeology of the unseen and invisible as sites and processes of violence, ecocide, loss, and ruination.

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[7] Spencer *Weart, Nuclear Fear: A History of Images,* Harvard University Press, 1988

[8] Akira Mizuta Lippit, *Atomic Light (Shadow Optics)*, University of Minnesota Press, 2005

Nuclear disasters are informed by the very hauntological structure of radioactivity, by the capacity of radioactivity to underscore by drawing critical attention to the domain of potentiality, immateriality, and spectrality the significance of the unrepresentable and unseeable. Nuclearity's encoding of the invisible as a vital part of its representational structure, exposes these disaster zones as politicized sites in which power structures and social inequities both inhere and can be interrogated. This new iteration of visuality thus serves as a deconstructive tool emphasizing the need to retrain our focus on the question of invisibility and the metaphysical devaluation of unrepresentability and of that which is excluded from the field of representation only to be reappropriated as the inferior and abject other. The nuclear disaster is thus not an isolated environmental concern; rather it is a complex cultural topography involving histories of displacement and relocation, relationships with land and questions of cultural identity, belonging and exile.

Daniel Burkner (2014) explores the tantalizing spectrality of radioactivity that is at once invisible to the human eye yet profoundly and lethally reactive and invasive. He argues how radiation produces its own bifurcated visual schema: an iconographic model that involves tangential representations of symbolic landscapes where radioactive impact is recorded indirectly through figurations of absence, loss, decay, mutation and debility; and a material model where photochemical media are used to directly capture actual particles of radiation.[10] In both cases however, the quantum dynamics of radioactive matter as at once a tangible material substance and a set of protracted, dispersed, intangible, and indirect effects that mediate and transform our corporeal experience of time and space challenging in turn perceptual habits and cognitive limits, intersects with visual epistemologies and representational practices, to generate new ways of looking. To update Walter Benjamin's concept of the optical unconscious, that otherwise invisible domain inaccessible to the human eye, opened up by modern visual and cinematic media's technologies of close-up, enlargement, and slow-motion– irradiated environments as subjects of photographic capture enable the formation of a *nuclear unconscious* that generate idioms and imaginaries of what Lippit calls "avisuality": forms of visualizing the invisible which destabilize hierarchical binaries between the seen and unseen that structures much of western thought:

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[9] Karen Barad, "Troubling time/s and ecologies of nothingness: re-turning, re-membering, and facing the incalculable," *New Formations*, Number 92, September 2017, pp. 56-86. See also Haraway on intra-activity as the basic relational currency of ecosystems. Ecosystems are composed not of materially and speciestically discrete forms as modern taxonomic discourse deems; rather entities exist as relationally entangled assemblages or what Haraway calls sympoietic "knots of diverse intra-active relatings in dynamic complex systems." Haraway's term for these complex patternings or co-involutions of existence allows us to rethink ontological boundaries and distinctions, including those between humans and nonhumans, nature and culture, organic and inorganic, living and dead, as unstable formations where identity is not a transcendent category based on a system of distinctions and groups in symmetrical sets but a constantly mutating field comprising interactions between disparate holobionts across space time and scales with no pre existing paradigm of association except the contingent and processual situated demands of living together and sharing common existential grounds.

[10] Daniel Bürkner, "The Chernobyl Landscape and the Aesthetics of Invisibility." *Photography & Culture* 7.1, pp. 21–40, 2014

> Avisuality is the possibility of the spaceless image, the impossible figure of that which cannot be figured, an image of the very facelessness of the image. It opens onto a site of the atomic spectacle that is irreducibly ecstatic, other—archival. Avisuality is, perhaps, the only true semiotic of the archive. Its only figure, or sugata. In the archive of atomic destruction, at its center, in the place where it takes place, inside and out, transparent and invisible, the spectacle of the impossible signifier burns, cinefied: radiant, specular, avisual. (102-03)[11]

As scholarship by Weart (1988), Lauzon (2020), and O'Brian (2015, 2020) suggest, nuclear photography be it the state sponsored visual repertoire idealizing atomic energy's peaceful and prophylactic uses, circulated during the cold war period, or the rise of hybrid multimedia practices from documentary photojournalism to art and experimental photography, emerges as a generative site for articulating visual culture's links in the late capitalist period with technoscientific geopolitical regimes, particularly in the ways in which the specific concerns that are intrinsic to visualizing atomic power and nuclear cultures are concerns that inform and are pertinent to the Anthropocene as a nuclear formation. These include the dialectics of the visible and invisible, the question of absences, elisions, suppressions, and their illicit or violent returns to the cultural or psychic scene, the modern recalibration and politicization of life as an increasingly permeable site subject to constantly shifting standards of legibility, legitimacy and control, and the omnipresence of forms of death that acquire necropolitical dimensions in modernity, shifting from private and individual domains to becoming associated with capitalism's colonial, extractive and carceral practices, and extended thus to forms of species wide and planetary extinctions.

In the era of nuclear energopolitics, the geologic record created by human activity becomes inseparable from the wastelands of radioactive decay set into motion by atomic practices. It is in these two senses– firstly, the avisual representational possibilities opened up by radioecological imaging, and secondly, nuclear energy's encoding of the vital significance of the invisible, imperceptible, and intangible as dominant phenomenologies in the Anthropocene– either in the form of such planetary hyperobjects as climate change and global warming, or through neoliberalism's technologies of exclusion, ellison and erasure of populations and ecosystems– that nuclear photography both as a critical methodological anchor, and a practice of environmental intervention, what Karla McManus calls "ecophotography" (McManus, 2014)[12] becomes pertinent to the question of the nonhuman. It is in this vein, also, that photography in the context of nuclear disasters addresses the crisis of representation that Rob Nixon (2011) in his important work on emergent forms of contemporary global violence identifies as central to the disparities and damages of our times.[13]

2 Photographing Animals: Some Methodological Provocations

The photography of animals in sites irradiated by nuclear disasters thus serve as critical explorations of the specific form of precarization that accompanies neoliberal capitalism's military-industrial mobilization of planetary resources. Beyond their ethical and political import as archives of and commentary on the question of nonhuman victimhood, erasure, exploitation, commodification and invisibilization, these photographs also underscore the hidden subtext of the ecological implications of rampant nuclearization and the anthropocentric hubris that underlies these new regimes of energy and resource mobilization.

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[11] Ibid.

[12] Karla McManus, *Eco-Photography: Picturing the Global Environmental Imaginary in Space and Time.* (PhD Thesis) Concordia University. Supervisor: Martha Langford, 2014

[13] Rob Nixon, *Slow Violence and the Environmentalism of the Poor*, Harvard University Press, 2011

The snapshot of fauna and flora in landscapes devastated or rendered inhospitable to humans in the wake of radioactive fallout are not mere documents of singular events; rather these images point to the permanent state of risk that is the constitutive condition of life that humans and nonhumans are forced to inhabit, the omnipresent horizon of disaster and accident that is a structural feature of the Anthropocene. By foregrounding animals and the fate of nonhuman subjects in anthropogenic disasters, these images shift the focus of suffering and precarity to forms of life, death, survival, impairment, sentience, and sociality under conditions of duress that do not posit the human as their protagonist, while simultaneously dissociating this anthropological centrality from the domain of visual representation itself. Likewise, the field of animal photography in post-disaster sites is implicated in a broader set of concerns regarding different kinds of visual and visualizing practices that have emerged in the context of natural and anthropogenic disasters– documentary photography and cinema, scientific image making practices like statistical data charts and maps, specimen photography, x-rays and other laboratory imaging modes, ethnographic and archival representational formats like onsite and live action photography, and visual genres and modalities associated with the proliferating domains of artistic and touristic interest in radioactive sites.

These multiple modes of visualizing disaster and its aftermath are implicated in the ethics and politics of image making practices: the role of the photographer (and her apparatuses of capture, mediation, representation and framing of 'reality') vis-a-vis disaster topographies and the contentious questions of intervention, neutrality, involvement, and critical distance that the photographer's proximity to instances of violence, injustice, and extinction, on the one hand, and the medium's own historical association, as a purportedly objective technological witness, with idioms of documentary truth telling and journalistic reportage, occasion; the issue of viewership including the politics of location and subject position that are underscored by particular stylistic choices as well as modes of consumption mobilized by practices and forms of dissemination– exhibition, publication, display, and circulation of images; and finally, the participation of photographic images in consolidating and/or challenging an existing discursive field of knowledge, policy, geopolitical mandates, and claims over these contested sites. The figure of the animal, particularly the Anthropocene animal, as both victim of industrial-capitalist disasters and subject of photographic intervention thus amplifies this pre-existing ethico-political field while also foregrounding debates about nonhuman sentience, suffering, agency, voice, and freedom that have been at the heart of animal ethics and animal studies as political and disciplinary formations.

Animal photography as a multifaceted genre spanning wildlife photography, scientific research, naturalist visual rhetoric and their complex histories within Western enlightenment modernity, documentary modes especially in relation to ecocritical and climate justice movements, and various hybrid and multimedia art photography practices also references the issue of the animal's double marginality and displacement in relation to human social, political, and ecological affairs– first as the othered occupant of the hierarchically arranged polarity with the human as the centre and apotheosis of the world order, and second as the passive and instrumentalizable object of various anthropocentric framings of this order, including representational modalities of which photography is a part. The animal as an inhabitant of disaster ecologies in general and nuclear environments in particular is thus subject to double exposures– the toxic effects of disasters, specifically radioactive toxicity and its direct and pervasive contamination of animal bodies through permeation of the porous ecosystem, and the photographic gaze ramifying in turn into larger spectatorial scenarios of witnessing and/or consumption of the animal-as-image.

The nexus of toxic exposures and ecocidal effects of nuclearization of environments not only impinges on existing ecological relations, altering and corroding these, but also enforces new and saturated chemical or what Eben Kirksey (2018) calls "chemosocial" ecologies.[14] Through a close reading of the works of Julia Oldham, Yasusuke Ota, and Pierpaolo Mittica, and placing their photographic work in dialogue with a recent turn in biopolitical inquiry that seeks to reconfigure Foucault's analysis of biopower in relation to the current reinscriptions of life, liveability, and politics within the structures and infrastructures set in place by neoliberal geopolitical regimes of extractive and planet-burning consumption and control in the Anthropocene, my paper wishes to engage with the implicit dialogue between such radioactive ecologies in post-disaster sites in the wake of evacuation and abandonment. It further seeks to explore the ways in which visual media, particularly photography, participate in these ecological (dis)arrangements by encoding animal life and its survival in the post-human aftermath of human departure, within various symbolic and semantic codes, while also performing ecocritical interventions into late capitalism's ecocidal and speciesist apparatuses of capture.

3 Companion Species as Witnesses in Julia Oldham's Chernobyl Photographs

Julia Oldham's visual projects, photographs of dogs living in the exclusion zone and an accompanying documentary *Fallout Dogs* (2019) frame the companion species as a figure of the quintessential survivor of a nuclear apocalypse. The stray animal is the series' unexpected hero. Survivors of ecocide and inheritors of a destroyed habitat, the dogs of Pripyat are atypical candidates for heroic or messianic roles. Oldham's work undertaken in collaboration with guides and local residents of the Exclusion Zone, particularly Ludmilla Jurascho, who has been committed to caring for the stray animals of the area, dwells in the rich interpretive possibilities of this dissonance toying with a visual worldbuilding inspired by Chernobyl's resurgent animal populations. In these photographs, liminal figures of homeless dogs, occupying a fuzzy hybrid threshold between wild and tame, feral and domestic, outside and inside, stray and pet, ask us to rethink what concepts of heroism, salvation, survival, and resurrected life might look like removed from their moorings in grand eschatological narratives, and reconfigured in relation to the minor, quotidian, unglamorous, and monotonous registers of the animal's daily, even habitual negotiations with its *umwelt*. Oldham's Chernobyl triptych using resources of multiple mediums and genres– still photography, documentary cinema, stylized digital photo collages that make up the *Dogs of Future Earth* (2018) series depart from conventions of doomsday scenarios and carefully steer clear of the imposition of an overtly didactic point of view, even as they subversively and playfully mobilize generic tropes, most commonly those of science fiction and fantasy.

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[14] Eben Kirksey, "Chemosociality in Multispecies Worlds: Endangered Frogs and Toxic Possibilities in Sydney," *Environmental Humanities* 12 (1): 23–50, 2020

Thus, in an opposite move from the visual templates of wild profusion popularized by photographers like David McMillan and Robert Polidori, Oldham's focus is not so much on the purported reclamation and dissolution of human structures by floral and faunal flourishings. Instead, her photography unpacks questions of sympoietic coexistence, co-constitution and caregiving as valid ethical responses, practices, and modes of collectively witnessing damaged ecosystems, by following and documenting modes of adaptation, occupation, and use by which animals establish new relations with old topographies, without necessarily displacing or usurping these. The idea of nonhuman salvage of human spaces is central to Oldham's tongue-in-cheek collages where dogs are shown as awkwardly and creatively repurposing the material universe left behind by extinct humans: Electronic monitors, satellite dishes, furniture and toys. While performing a gesture of decentering the human, these images also allusively dramatize and memorialize the tragic suffering of the pets that were left behind during Chernobyl's evacuation, using a futuristic set up to illustrate those disaster histories involving animal suffering that risk being erased from public memory. One image in particular, of different canine breeds wearing gas masks looking out from what appears to be a ruined assembly area offer multiple interpretive possibilities.

In terms of its fictional content, the image's strategic anthropomorphism creates an alternative speculative planetary order that is dominated by hitherto marginalized species; however placed in the context of the nuclear disaster the canine assembly also testifies to those ancestors of Oldham's subjects in her Chernobyl documentaries, who were consigned to interminable waiting and dying in abandonment, and for whom the evacuation that was itself premised on a speceistic arbitration claiming human lives as more valuable than animal ones, presented an extinction scenario. The title of the photocollage coupled with the military accoutrements also hints at the animals' existence in relation to a pervasive cultural norm of speciesist violence, what Dinesh Wadiwel in his provocative book calls "the war against animals," (2015) of which nuclear toxicity and abuse and abandonment in the wake of disasters, as well as technoscientific exploitation of docile animal bodies for furthering human knowledge, are interconnected strands. Oldham's futuristic settings, while celebrating canine ingenuity and resourcefulness, continually index the close links that these so-called future earth settings: landfills, toxic ruins and e waste dumps-- share with current landscapes of environmental degradation. In these techno-dystopias, radiation's invisible and spectral presence haunts these photos in their extended commentary on the politics of planetary toxification and critique of modernity's instrumental reason, of which the nuclear fallout serves as at once allegory and catalyst.

Oldham's photos in *Fallout Dogs* taken during her stay in the Exclusion Zone are intimate portraits of a form of multispecies coexistence that has emerged in the abandoned topographies, and what Jonathon Turnbull in relation to his own visual ethnography of human canine relationships in the zone calls "new forms of living, dying, and caring in relation to toxic exposures." (21)[15] In these images, we see dogs, all of them named and identified, juxtaposed with depopulated urban structures-- either ruins of the defunct power plant or abandoned buildings-- their lively and playful postures contrasted with the sombre starkness of monumental constructions. The animal's ludic absorption in and attunement to its immediate environment is placed in an ironic contrast with the now empty symbolism of Pripyat's decrepit Soviet era iconography. Low angle, decentered shots of dogs lounging in front of memorial statuary, exploring the ramparts of derelict buildings, or using abandoned structures as sites of frolic, rest, and exploration, offer modes of recontextualizing the disaster by offering a dog's eye view of ruins. These images that are in turn products of the photographer's intimate, laborious, and ruins do not serve a heavily overdetermined and static indexical function of eliciting nostalgia for a reified anthropocentric history, but instead become vital, lively and contingent material components of the animal's immediate environment and meaning system. However, Oldham's photos are not oblivious to the permeation of this material environment by radioactive toxicity. In a set of closeups of feeding dogs, the presence of the animal bone at the focal centre of the photograph not only alludes to questions of survival, violence, particularly threats from wolves and foxes with whom the dogs share a common habitat, and kinds of exposures to harm and danger that are embedded in the very ecosystem, entering the dog's body in the form of radionuclides in the highly saturated soil or genetic mutations undergone by birds and insects that enter the food chain; the feral memento mori also foregrounds the spectral omnipresence of death and disease as integral to irradiated sites like Chernobyl.

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[15] J. Turnbull*, Checkpoint dogs: Photovoicing canine companionship in the Chernobyl Exclusion Zone, Anthropology Today*, Vol. 36 No. 6, 2020, pp. 21-24 doi:10.1111/1467-8322.12620

In his photovoicing project on canine-human companionship in the Chernobyl Exclusion Zone, Turnbull observes that while the specific scientifically measurable and theorizable effects of radiation on animal biology continues to remain a matter of controversial debate and speculation, new kinds of affective bonds and social norms of companionship and reciprocity– distributed ownership and collective care, or detached forms of engagement that are more loosely structured than those with household pets for instance have emerged in the radioecological landscape based in a "potential for shared exposure which reveals a shared animality." (Turnbull, 24) This intersectional space where common threats– from radiation, loneliness, disease, and wild animals like wolves and boars, and shared grounds of resources and labor– guarding checkposts, patrolling desolate spaces, surviving attenuated climatic conditions, foster relationships between working class security personnel and dogs, is neither an apocalyptic wasteland nor a primordial Eden. Rather it is a site that generates new forms of attention, attunement, and interdependence where the centrality of the anthropocentric norm is replaced by posthumanist reconfigurations of concepts of personhood, autonomy, sovereignty and agency, in relation to terminal sites of risk and finitude. "[Va]riously labelled stray, street, feral, wild or homeless by different groups of people – scientists, tourists, NGO workers, publics," (22) the ambivalent and shifting roles and positions that Chernobyl dogs occupy complicate "the notion of dog ownership by blurring the owned/unowned binary," and testify to the zone as a site for "entangled histories" (21)

4 Yasusuke Ota's Photography of Care

The intimate playfulness of Oldhams photos is however missing from Yasusuke Ota's semi-documentary portraits of animal subjects caught in abandoned city spaces in the immediate aftermath of the Fukushima reactor meltdown. A combination of humour and pathos informs Ota's meticulous documentation of the fate of escaped pets and farm animals, abandoned livestock and shelter animals in the days following the triple disasters. We see a solitary ostrich loitering in an abandoned neighbourhood, distressed and fatigued pigs trying to cool themselves in a pothole, traumatized pets wandering through rubble, cattle patiently waiting for the return of humans. As the title of the series, Abandoned Animals of Fukushima indicates abandonment is the central informing theme of Ota's photography where a conscious parallel is constantly suggested between the bodies of the urban animals and the derelict and empty post-evacuation habitats that they find themselves in. However, as an active volunteer who participated in rescue, rehabilitation and care of abandoned pets and farm animals, Ota is careful not to suggest a too-neat and unproblematic symbolic collapse between material ruin and abandoned critters. The question of care is at the heart of Ota's post-disaster animal photography. Entering the Fukushima no-go zone illegally as a volunteer, Ota along with a group of civilian animal activists were among the first responders to cater to the nonhuman victims of the tsunami-nuclear disaster. In the event of the disaster the government's immediate response with regard to animals was that of culling.

Considered to be toxic, animals including livestock and strays were shot as part of the government's clean-up and disaster management efforts. In an essay accompanying an exhibition of his photos held at the Huis Marseille, Ota attributes his documentary impulse to the government's inadequate and callous treatment of suffering animals, including forced secrecy, misinformation, and restricted access to places with trapped and injured animals, and the poor and inhospitable conditions in crowded and inadequately stocked state sponsored shelters where rescued animals suffered from cramping, malnourishment and neglect.[16] A trenchant and ironic illustration of this critique is the image of an ostrich, later found to be the mascot of TEPCO, the company owning the nuclear plant, walking down an empty street. While captured as a documentary vignette of the new ordinary in the aftermath of the disaster, the affective potential of the image lies in its staging of discordances and jarring discrepancies that telescopes the lived experience of the catastrophe by performatively elaborating the cognitive challenge and perceptual disorientation that is shared by human and animal survivors of large-scale calamities like the tsunami and nuclear meltdown.

The outlandish spatial tableau created by the presence of an exotic wild animal in the symmetrical layout of a modern urban neighbourhood, walking alongside parked vehicles, road signs and neatly arranged residential blocks while serving as an absurdist allegory of the excesses of the capitalocene, also comments on the animal's vulnerability under capitalism's sacrificial conditions. Eschewing the dangers however, of emptying the animal of critical potential by sublimating it to the status of iconicity, what Lippit calls the animal's "animetaphoricty" (195) in contemporary representational parlance, Ota's photo suggestively refuses the frontal and confrontational position, choosing to shoot the animal from the rear as it recedes and is subsumed into an uncertain but claustrophobic horizon. Here Ota subverts representational conventions and their categorical and taxonomic epistemes, by refusing the human spectator access to the animal's gaze which is diverted towards its own exploratory activity as it examines an object in its own field of vision and attention. If as John Berger laments that modern forms of visuality augmented by technological media like photography and cinema have in conjunction with extinction cascades and institutions of animal carceration like laboratories and zoos, by appropriating the animal's gaze and decimating its natural habitats, have rendered it empty, Ota's photos of animals in post-disaster spaces, challenge visual media's appropriative gesture by highlighting forms of nonhuman adjustment and negotiations with altered or destroyed ecologies, and transforming the photographic surface into a shared affective space of mutual participation in what Jean Luc-Nancy calls the “equivalence of catastrophes.”[17]

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[16] https://we-make-money-not-art.com/yasusuke_ota_the_abandoned_ani/ Accessed 2 December, 2022

Thus images of pigs trying to cool off in a small puddle on a street, bulls occupying an empty parking lot outside a mall, abandoned pets in the midst of rubble and wreckage are not just melancholic evocations of pathos where spectatorial empathy occurs from a detached vantage of species difference and cognitive and linguistic advantage; rather the displacement and estrangement captured by these photographs perform the function of a Barthesian punctum– the accidental element in an image that stands out of its immediate denotative or referential context to assault and interlocute the viewer through the forceful transmission of a disorienting affect that brings to a crisis the viewer’s cognitive limits, perceptual habits, and epistemological assumptions. (Barthes, 43) The anthropogenic accident of nuclear meltdown is transcribed in the photograph as a visually encoded figuration of the accidental as a form of dislocation and discrepancy that illuminates with urgent affective pressure the impossibility of a sanitized spectatorial vantage in an increasingly toxified and enmeshed world.

In the wake of the Fukushima disaster several animal advocacy groups like JEARS, ARK, KANSAI and Japan Cat Network volunteered to participate in rescue and care operations, often crossing into the radioactive zone illicitly carrying food, water and medical supplies for animals in distress. One such volunteer is Matsumura Naoto who has now returned to the evacuated area and has turned his home into a sanctuary for abandoned pets and livestock animals. In Ota’s photographic series documenting the intimate relationship of caregiving and multispecies entangled inhabitation that has developed in Naoto's sanctuary that now houses not only rescued pets but also offers shelter and veterinary care to rehabilitated ostriches and cows, this question of enmeshment is visually dramatized. As in the case of Oldham’s fallout dogs, human-animal relationships in these novel radioecologies are not constructed on old lines of proprietorial and possessive humanism– the dogs of Chernobyl or the cats and cattle of Fukushima are not pets or farm animals. The multispecies relationships that emerge in shared contexts of risk and exposure are characterised by unstable, contingent, mutating forms of encounter and cohabitation. The species divide that sustains the metaphysics of human exceptionalism at the core of capitalist will to mastery is no longer tenable under nuclear conditions where the scope of disaster cannot be entirely local or bounded by national borders but is symptomatic of the anthropocene’s planetary inscription calling in turn for new post nuclear disaster imaginaries based in a recognition of the scalar dispersion and magnitude of exposures to risk.

5 Interrogating The Concept of Rewilding in Exclusion Zones

In Chernobyl Record, physicist R.F Mould describes the natural ecology of the exclusion zone as follows:

> The zone around the NPP, having minimal disturbance by humans, compared with former times, has now become, in effect, a wildlife

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[17] Nancy, Jean-Luc, and Charlotte Mandell (ed.) *After Fukushima: The Equivalence of Catastrophes*. New York: Fordham University Press, 2014

> reserve with the wildlife populations increasing by 1998 by as much as a factor ten compared to the levels of 1986. Even a family of lynxes have been observed. The current population in what is a very ancient forest, is estimated to be 3000 foxes, 600 moose, 450 deer, 40 wolves and perhaps upwards of 3000 boars, which in the 1980s had been hunted almost to extinction because they were regarded as such a delicacy. (Mould, 184)[18]

The incidence of the flourishing of previously endangered animal populations in the depopulated radioactive zone has been observed across many studies leading to Chernobyl's iconic stature as one of the world's largest biodiversity sanctuaries. This trope of rewilding and reclamation of spaces by flora and fauna is further supported by studies on radiation hormesis that suggest that rather than causing cellular damage and chromosomal mutations, long term exposure to low doses of toxicity, including radioactive nuclides can build resistance to damage and disease. This theory has been challenged in recent times in studies that demonstrate the incremental and long-term effects of radiation exposure on animals. The most influential among these is the work of Timothy Mousseau and Anders Moller who have spent the past two decades studying ornithological records of radiation levels in the Exclusion Zone.[19] According to their ground-breaking findings, categories of health and normalcy when applied to animals living in radioactive territories need to be considered along expanded temporal scales since mutations and deformities have an intergenerational gestation period endangering the animal at a species rather than individual level. Their studies have identified barn swallows suffering from albinism and depigmentation as a result of the damage of melanocytes under the effect of radiation. The same swallows are found with deformed feet and toes, abnormally shaped feathers and multiple tumours sometimes measuring up to 0.5 inches in diameter, and cataracts or impaired vision that affect their flight behaviour leading to premature deaths.

Similarly in another study by Robert Baker of Texas Tech University bank voles are seen to have altered genomes as a direct result of living in close proximity to the region's highly radioactive soils and consuming toxic lichens that store concentrated amounts of radiation.[20] In their research on the ways in which radiation not only affects individual species but is magnified and protracted into what Mary Mycio calls "a state of being" so that the event of the nuclear disaster is no longer understood as a "state of shock" but seen as a "radioactive state never encountered in nature on such a scale before," Mycio and Rebecca Johnson study the ways in which radiation enters ecosystems through interlocking grids of interdependent relationships that structure them, making its way up the food chain and altering the very ontological constitution of particular ecologies. Thus while it may seem to the uninformed eye that "the zone's evacuation put an end to industrialization, deforestation, cultivation, and other human intrusions making it one of the Ukraine's environmentally cleanest regions" (Mycio, 32)[21] Chernobyl's soil with accumulated nuclear fallout washed into it by years of radioactive rain continues to be highly toxic, with cesium 137 travelling through roots into plants and passing into the bones of animals where it is deposited so much so that "the bones of some large animal carcasses in the zone are so radioactive that some scientists prefer to wear gloves to handle them." (26) This radioactive contamination of the earth corroborates in turn Mousseau and Moller's observation about the near extinction of certain insect populations in the zone like spiders and red fire bugs that lay their doomed eggs in the soil.

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[18] R F. Mould, *Chernobyl Record: The Definitive History of the Chernobyl Catastrophe,* Bristol and Philadelphia: Institute of Physics Publishing, 2000

[19] see Møller et al. 2012; Møller and Mousseau 2009

[20] Chesser, Ronald K., and Robert J. Baker. "Growing Up with Chernobyl: Working in a Radioactive Zone, Two Scientists Learn Tough Lessons about Politics, Bias and the Challenges of Doing Good Science." *American Scientist,* vol. 94, no. 6, 2006, pp. 542–49. JSTOR, http://www.jstor.org/stable/27858869. Accessed 2 Dec. 2022.

[21] Mary Mycio,*Wormwood Forest : A Natural History of Chernobyl.* Washington, D.C.: Joseph Henry Press, 2005

These investigations of Chernobyl's radioecological forensics attest to the manner in which invisible and slow occurring subtexts of precarity and harm underlie the more utopian narratives of rewilding that often end up obscuring or minimizing the extent of ecological damage, subtexts which are slow to emerge and even slower to gain traction and attention because of the cultural marginality of the non-charismatic animal subjects: rodents, birds, insects, that bear the brunt of harm, but whose vulnerability and suffering remain unseen or unrecognized. Mayumi Itoh in her detailed investigation of the condition of animals during and after the Fukushima disaster, charts the nexus of lack of disaster preparedness, ambiguously conveyed evacuation protocols, and negligence on the part of the authorities led to a parallel silent catastrophe involving the 3500 head of cattle, 30000 pigs, 630000 chickens in addition to companion animals and heirloom horses trained for Shinto cavalry races, captive wildlife in Fukushima zoo and Tohoku safari park, that comprised a thriving livestock and urban and suburban animal population that had to be left behind, often tied to their posts. According to Itoh, "it is estimated that more than 22000 companion species and 660000 livestock died."[22] The Japanese national media and government authorities however initially chose to suppress this information underplaying the enormity of animal suffering in the disaster's wake. It is this silence that Ota seeks to address through his photography, responding as he says in an essay to a need to "inform the world and leave evidence of what really happened."[23]

6 Documenting the Zoopolitics of Disaster Zones in Pierpaolo Mittica's Photography

In the apocalyptic scenographies of Pierpaolo Mittica, photography acquires narrative dimensions as scenes of depletion, death, mourning, and exhaustion, human and nonhuman are mediated through, set against, and analogized in relation to an extended topology of disaster. Dramatic dark clouds, rocky and rugged terrain brought into sharp, almost three dimensional relief, architectural rubble, grain and dirt on the bodies and hazmat suits of clean-up workers, skeletal remains of dead animals and shadows and lines furrowing the contours of human skin, collectively constitute an embodied topography where the vestiges of radioactive contamination are inscribed photographically in the image's articulation of bodily duress and debilitation produced by living and labouring in toxic aftermaths of anthropogenic disasters. If the central paradox of photographing nuclear disaster is radiation's invisibility, in Mittica's photographs atomic invisibility is transcribed through a process of visibilizing other forms of invisibilization– of lives, labour, communities, and affects– under capitalism's construction of particular sensory regimes, that arbitrate upon which bodies, subjectivities, and experiences are recognized and allowed to enter the political and discursive field and which are allowed to fall beneath the threshold of semantic registration or coercively disenfranchised from systems of representation.

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[22] Mayumi Itoh, *Animals and the Fukushima Nuclear Disaster*, The Palgrave Macmillan Animal Ethics Series, 2018

[23] Ota Yasusuke, "One Man and His Cats in Fukushima (Photos)" Nippon.com, Jun 15, 2016, https://www.nippon.com/en/images/i00031/one-man-and-his-cats-in-fukushima-photos.html. Accessed 2 December, 2022

A particularly poignant image from Mittica's *Nuclear Trilogy* project is that of farm animals at their stations juxtaposed with long decomposed skeletal remains of their fellow creatures. A cow gazes piercingly into the camera, yet unlike Berger's characterization of the vacant look of the captured animal that has been denuded of all agency, here the image's pictorial language reanimates the creaturely look, but not as an anthropomorphic projection of sentimentalized emotion or an allegorical representation of "suffering" that normative ethicists like Peter Singer privilege as a mark of the animal's legal status and moral value. In the photo, the camera is placed low, almost at ground level, eschewing the human subject's bipedal and upright vantage and distending the frame to contextualize the lone animal in a wider matrix of entropy and loss. An off-centre and tilted perspective coupled with an eerie light seems to both bifurcate the scene and provide the flat pictorial surface with a depth that signals the image's location in time, informed by historical forces rather than being a mere snapshot of the animal as an object of visual consumption and commodification. This particular arrangement instead of petrifying the creaturely gaze liberates it as an affective vector– a disorienting and discomfiting charge that erupts while destabilizing existing modes of spectatorship. The animal's gaze brings our eye level to the ground where in a corner next to the live creature lie the bones of a dead one, its body still chained to the spot, suggesting a painful and protracted death by starvation while waiting to be rescued, that as scholarship on Fukushima's animals indicate was the shared fate of many.

Here the image generates its own interpretive conditions creating a visual idiom of mourning where grief is not a solely human emotion and acts of 'feeling' the animal's suffering are not based in a translation of animal affects from the perspective of human moral and ethical norms regarding the definition of what constitutes suffering. Instead, the photograph's proximity to death, decay, and survival as a set of material effects with which the image as a material object and photography as a cultural practice with ecological ties and implications, share a common ground, enables us to encounter nonhuman articulations of loss and grieving outside the semantic limitations imposed by anthropocentric rubrics. Loss is dispersed, much like radiation's scope, through the environment that the animal finds itself in, part of the fabric of a ruptured ecology. Mittica's image urges the viewer to consider death not just as an event that impinges on particular beings, and grief thus not simply as an emotion that is tied to particular constituencies, but as modes of inhabiting the absences and violations that accompany the loss of specific ecological possibilities: ways of living, relating to, cohabiting, making sense– that occur when entire ecosystems are endangered by anthropogenic calamities. In both this image, and a corresponding one that depicts an ostrich peering into the lens, its inquisitive gaze framed by its dead companion in the background, disaster's implications for animals is measured not just as what affects human-animal relations, but relations among animals as well. The heavily textured and delineated radioactive landscapes in Mittica's photos recalibrate the photograph as an extra-visual haptic and corporeal space, underscoring what Margaret Olin (2011) and Tina Campt (2017) refer to as the photograph's capacity to transcend a purely optical register and activate other sensory capacities in the viewer. By using the image to articulate a carnal politics that puts the finite, suffering, and malleable flesh to the centre of visual representation, Mittica's photos engage in what Beatriz da Costa and Kavita Philip (2010) call "tactical biopolitics," modes of activist and artistic engagements with biopolitical enclosures and arrangements particularly those that involve the control of bodies reduced to a depoliticized and sacrificial animality. In these images of abandoned farms, life and death, fecundity and loss enter into what Agamben calls a zone of indistinction, those thresholds marking the limits of modern sociopolitical structures where life, extracted, articulated, and attributed in certain ways and in association with certain forms (of what Agamben calls zoe or bare life of the *homo sacer*– the dehumanized and excluded entity whose life in not being of the same valuable order as the qualified life proper to humanity is also outside the purview of death, and who can thus not be killed but be sacrificed without impunity) is inserted into a regime of death.

In a reworking of biopolitical critique, Nicole Shukin (2009) and Cary Wolfe (2012) have cautioned us, the tendency in postmodern philosophy to posit a common ground of animality as that part of life that is subtracted and excluded from the model of politically qualified life proper to humanity can run the risk of reducing the real flesh and blood animal to a metaphor for a debased and dehumanised figure as an instrument of the latter's desubjectivation. Within this schema the animal becomes instrumentalized as part of what remains despite its critical focus a patently anthropocentric semiotic structure. This in turn prevents us from gaining access to the ways in which animal bodies are invested, inscribed, and exploited by capitalism's necropolitical apparatuses: factory farms, testing labs, landfills, and the blasted landscapes that are left in the wake of radioactive, chemical, and other toxic industrial forms of ecocide. As Shukin elaborates, what is needed for biopolitical theory to be inclusive and aware of its own speciestic biases is:

> [A] different trajectory of biopolitical—or, we might say, zoopolitical—critique, one beginning with a challenge to the assumption that the social flesh and "species body" at stake in the logic of biopower is predominantly human. Actual animals have already been subtly displaced from the category of "species" in Foucault's early remarks on biopower, as well as in the work of subsequent theorists of biopower, for whom animality functions predominantly as a metaphor for that corporeal part of "man" that becomes subject to biopolitical calculation.[24] (9-10)

Mittica's documentation of radioactive landscapes foregrounds the ways in which seemingly isolated disaster scenarios in fact work in close conjunction with pre-existing structures of death and extinction, encoded in the very ways in which life as a site of extraction, colonisation, and control becomes the very ground where differential and exclusionary paradigms of recognition, conservation, and salvation are secured. While radioactive fallout's planetary reach is a scale or boundary defying hyperobject, toxicity's effects in relation to the unequal distribution of injury and harm within contemporary biopolitics are not uniform or universal.

7 Conclusion

What does rewilding look like in sites that are irreversibly irradiated by toxic substances? What behavioral patterns, ecological interdependencies, and modes of survival do animals in these regions adopt, especially where the very experience of disaster not instantaneous or spectacular but a form of slow and incremental seepage of toxicity and harm, and where the dispersed and distended temporal scale occasions complex niches of pleasure, joy, playfulness and companionship between species consigned to a common horizon of damage, thus making clear cut divisions between doomsday scenarios and lively flourishing difficult to be drawn? The photographs explored in this paper attempt to engage these questions while also alerting us to the largely anthropocentric epistemic and juridical frameworks within which categories of suffering, precarity, victimhood, and debility are configured, frameworks in which visual mediums participate as producers and mobilizers of the discursive and semantic limits of what is seen and the ways in which viewing operates.

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[24] Nicole Shukin, *Animal Capital : Rendering Life in Biopolitical Times,* University of Minnesota Press, 2009,

The three photographers and their diverse repertoires examined in this article, approach the common site of nuclear emergency and the shared question of visuality's relationship with nuclear modernity, via a range of styles, formats, and photographic principles, from documentary realism as in the case of Mittica and Ota's narrative exposition of ongoing practices of interdependence and care to Oldham's speculative worldbuilding. By juxtaposing them and reading their image making praxes, methodologies, aesthetics and politics comparatively, this article has attempted to highlight the provisional, open-ended, and contingent nature of multispecies coexistence in ecologies of damage and risk, while critically interrogating the participation of representational media as entangled with the very topographies they seek to witness, interpret, archive, and document– photography's specific epistemic modality as entwined with forms of immanent visuality configured by and in these emergent zones, be they biopolitical framings of animal life by dominant discourses or the kinds of possibilities for materialisation and intra-activity that the sites themselves afford. While Oldham's hybrid approach mixing documentary filmmaking and photography with fantasy and science fiction mise-en-scenes construct an imaginary of nonhuman agency that through its tongue in cheek, playful appropriation of culturally overdetermined tropes of heroism, conquest, mastery, and progress, offer an idiom of multispecies resilience that is at once decentered and cognisant of the role of mutuality, exchange, reciprocity, and mourning in sustaining the fragile bonds and communities that emerge in precarious landscapes, Ota and Mittica bring the suffering of animals to the forefront of photographic inquiry. The latter shifts the ethical force of affect particularly those affective conditions that hinge on loss, displacement, alienation, and violence, from their cultural location in an exclusively human capacity to feel to forms of nonhuman sentience and solidarities based on such nonhuman registers of testimony.

The disaster ecologies that thus emerge in Mittica and Ota along with Oldham's futuristic fictions of apocalypse complicate the anthropocentric narrative of nonhuman abundance in nuclear sites, while also questioning photography's own complicity as a historical medium of verisimilitude in the production and reproduction of such narratives. Through the insertion of experimental techniques, photomontage, comic and absurdist scenarios, discordant camera angles, extreme close ups, granularity and play of scales, all three photographers destabilize the medium's anthropocentric grounds, pointing to art's own unravelling as a cultural site of knowledge production under the effect of the Anthropocene's catastrophic conditions, and its entanglement with other human and nonhuman agencies, including radiation's particular inscriptional vector, in a planetary context.

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