

NOTES

INTRODUCTION. NONHUMAN WITNESSING

- 1 Like many, I first encountered the horrifying strike of February 21, 2010, through the excerpts from the transcript that open Grégoire Chamayou's *Drone Theory*, but it also plays a similar role in journalist Andrew Cockburn's *Kill Chain* and in international relations scholar Lauren Wilcox's brilliant analysis of racializing and gendering in the drone apparatus. In writing this account I am deeply indebted to the remarkable work of Derek Gregory, particularly a series of posts on his Geographical Imaginations site titled "Under Afghan Skies." In my rendition, I have sought to attend to the points of contact between technoscientific systems, human actions, and the environment. Chamayou, *Drone Theory*; Cockburn, *Kill Chain*; Wilcox, "Embodying Algorithmic War."
- 2 Whyte, "Indigenous Science (Fiction) for the Anthropocene."
- 3 Wynter, "Unsettling the Coloniality of Being/Power/Truth/Freedom."
- 4 Wynter differentiates between an original Man₁ arising from the Renaissance and a later Man₂ reshaped by the colonial encounter with the Americas and Darwinian biology, but as the distinctions between these two positions are not central to my argument, I am using "Man" to encapsulate this overrepresentation as the human in more general terms.
- 5 I understand affect in the Spinozan tradition: as the bodily capacity to affect and be affected. Here, as elsewhere in my work, affect gels with a

capacious conception of what counts as a body: texts, plants, drones, swans, databases, publics and waters can all be bodies as readily as individuated humans. Bodies—human and non, multiple and individuated—are enabled and constrained by the relations in which they are webbed, the resources and capacities for change, connection, signification and more. Those relations are the stuff of affect. Affect is thus not an exclusively human mode of experience akin to emotion, but the relational dynamics of bodies situated in contexts, entrained within environments, assembled in machinic processes, and so on. As Massumi writes, “The body is as immediately abstract as it is concrete; its activity and expressivity extend, as on their underside, into an incorporeal, yet perfectly real, dimension of pressing potential.” *Parables*, 31. Affect can be modulated, amplified, intensified and otherwise transformed by media: this is precisely what makes ubiquitous media so powerful. But affect can break, sheer, stretch, distend and rupture bonds between bodies as much as strengthen or intensify them. See Massumi, “Autonomy of Affect”; Gibbs, “Panic!”; Gibbs, “Contagious Feelings”; Angerer, *Ecology of Affect*; Schaeffer, *Evolution of Affect Theory*; Gregg and Seigworth, *Affect Theory Reader*; Clough, *Affective Turn*; Deleuze, “Ethology.”

- 6 De la Cadena and Blaser, *A World of Many Worlds*.
- 7 Amazon, “All In”; Greenpeace, “Clicking Clean Virginia.”
- 8 Sherwood, “Inside Lithium Giant sqm’s Struggle to Win Over Indigenous Communities in Chile’s Atacama.”
- 9 Gilmore, *Golden Gulag*; Robinson, *Black Marxism*.
- 10 Kelley, “Racial Capitalism.”
- 11 Packer and Reeves, *Killer Apps*, 5. On the history of computation, screens, and enemy production, see also Geoghegan, “An Ecology of Operations.”
- 12 Puar, *Right to Maim*; Mbembe, *Necropolitics*.
- 13 Browne, *Dark Matters*.
- 14 Halpern, *Beautiful Data*, 8.
- 15 Furuhashi, “Multimedia Environments and Security Operations,” 72.
- 16 Edwards, *A Vast Machine*; Edwards, *The Closed World*.
- 17 Hogan and Vonderau, “The Nature of Data Centers.”
- 18 On infrastructural violence, see Khalili, *Sinews of War and Trade*; Cowen, *The Deadly Life of Logistics*; and Easterling, *Extrastatecraft*. On slow and structural violence, see Nixon, *Slow Violence*; Farmer, “Structural Violence.” On algorithmic violence, see Bellanova et al., “Critique of Algorithmic Violence.”
- 19 Whyte, “Against Crisis Epistemology.”
- 20 Vigh, “Crisis and Chronicity,” 10.
- 21 Berlant, *Cruel Optimism*, 10.
- 22 Murphie, “On Being Affected,” 24.
- 23 Murphie, “On Being Affected,” 20.
- 24 Massumi, *Ontopower*, vii–viii.

- 25 As such, “politics, colonialism, settlement, capitalism, ecological destruction, racism, and misogynies are not wars by other means—they are war.” Grove, *Savage Ecology*, 61.
- 26 Grove, *Savage Ecology*, 10.
- 27 Cubitt, *Finite Media*, 3; and Cubitt, *The Practice of Light*.
- 28 Kember and Zylinska, *Life after New Media*, xv. On mediation as performative and lively enactment, see also Parks, *Rethinking Media Coverage*, 2.
- 29 Drawing on German and Canadian media theory, John Durham Peters defines media as “ensembles of natural and human elements” and “our infrastructures of being, the habitats and materials through which we act and are.” Andrew Murphie argues that “we move into relations with media that quite literally move us/the world and with which we can move the world.” Even the planet can be understood as a medium, argues Chris Russill, most clearly in the monitoring apparatuses of climate change and atmospheric military sensor networks. Peters, *The Marvellous Clouds*, 3, 15; Murphie, “World as Medium,” 17; Russill, “Is the Earth a Medium?”; Russill, “Earth Imaging.”
- 30 Cubitt, *Finite Media*, 7.
- 31 Russill, “The Road Not Taken.”
- 32 Patrick Wolfe has written persuasively about the relationship between settler colonialism and genocide, arguing that “settler colonialism is inherently eliminatory but not invariably genocidal” in “Settler Colonialism and the Elimination of the Native,” 388. Today, Aboriginal children are currently being removed from their families at even higher rates than they were in the 1950s, an era of systemic destruction of culture and peoples that made what became known as the Stolen Generation and for which the Australian government issued a formal apology in 2008. Cashless debit cards to control welfare benefits are being rolled out to Indigenous communities, many still living under permutations of the military occupation launched in 2007 by an ailing government looking to stoke anti-Indigenous resentment. Black deaths in custody have returned to their heights from the 1980s, while Aboriginal people are massively overrepresented in prisons and Indigenous women are far more likely to be subject to sexual violence.
- 33 Whyte, “Indigenous Science (Fiction) for the Anthropocene,” 226.
- 34 Estes, *Our History Is the Future*, 135.
- 35 De la Cadena and Blaser, *A World of Many Worlds*, 12.
- 36 Although, as of writing, it has not yet been recognized by either the International Commission on Stratigraphy nor the International Union of Geological Sciences as a division of geologic time.
- 37 Demos, *Against the Anthropocene*, 85. For a detailed discussion of Crutzen and Stoermer’s conception of the Anthropocene, see Grove, *Savage Ecology*, 36–40.
- 38 Moore, *Anthropocene or Capitalocene?*; Grove, *Savage Ecology*; Haraway, “Anthropocene, Capitalocene, Plantationocene, Chthulucene”; de la Cadena, “Uncommoning Nature.”

- 39 Writing on what she calls “minimal ethics,” Joanna Zylińska argues that the response demanded by the Anthropocene is “strongly post-anthropocentric . . . in the sense that it does not consider the human to be the dominant or the most important species, nor does it see the world as arranged solely for human use and benefit.” Zylińska, *Minimal Ethics for the Anthropocene*, 20.
- 40 Davis and Todd, “On the Importance of a Date,” 763. By contrast, see, for example, McNeill and Engelke, *The Great Acceleration*.
- 41 Stewart, “Atmospheric Attunements,” 445.
- 42 Kaplan, *Aerial Aftermaths*, 17–18.
- 43 Or, as Kathryn Yusoff points out, if the end of the world of apocalyptic imagining is the end of this colonialist and capitalist one for some, then it is also “the prerequisite for the possibility of imagining ‘living and breathing again’ for others.” Yusoff, *A Billion Black Anthropocenes or None*, 13.
- 44 Rather than look outside the narrow frame of knowledges that helped get us into this mess—loosely grouped under the rubrics of the humanist tradition and Western scientific rationality—we are called to attend ever more earnestly to those very knowledges in the search for solutions to the damage they have wrought. See Snaza, “The Earth Is Not ‘Ours’ to Save,” 339.
- 45 Weizman, *Forensic Architecture*.
- 46 Fuller and Weizman, *Investigative Aesthetics*.
- 47 Schuppli, *Material Witness*, 19.
- 48 Schuppli, *Material Witness*, 34.
- 49 Pugliese, *State Violence and the Execution of Law*, 14.
- 50 Peters, “Witnessing.”
- 51 Frosh and Pinchevski, “Why Media Witnessing?,” 1.
- 52 Chouliaraki, *The Spectatorship of Suffering*.
- 53 See, for example, Reading, “Mobile Witnessing”; Andén-Papadopoulos, “Citizen Camera-Witnessing”; Andén-Papadopoulos, “Crowd-Sourced Video”; Papailias, “Witnessing in the Age of the Database”; Chouliaraki, “Digital Witnessing in Conflict Zones”; Gray, “Data Witnessing.”
- 54 Wu and Montgomery, “Witnessing in Crisis Contexts”; Rae, Holman, and Nethery, “Self-Represented Witnessing”; Ristovska, *Seeing Human Rights*.
- 55 For more on torture in ancient Greece and Rome, see Ballengee, *Wound and Witness*; DuBois, *Torture and Truth*; Peters, *Torture*.
- 56 On the religious roots of witnessing, see Peters, “Witnessing,” 708. On the emergence of new legal norms, see Langbein, *Law of Proof*.
- 57 Ballard, “And They Are like Wild Beasts,” 19. See also Bennett, *Vibrant Matter*, 8–10.
- 58 Langbein, *Law of Proof*.
- 59 Spillers, “Mama’s Baby, Papa’s Maybe,” 69.
- 60 Dispossession, stigmatisation and deprivation of First Nations served “both to ‘verify’ the overrepresentation of Man as if it were the human, and to

legitimate the subordination of the world and well-being of the latter to those of the former.” Wynter, “Unsettling the Coloniality of Being/Power/Truth/Freedom,” 268.

- 61 Law, as Zakkiyah Jackson explains, “denies those it deems ‘inhuman’ access to speech and law, thereby producing the inhumanity it excludes,” showing how the standard of the “human” witness is actually “fundamental to law’s injustice for both people of color and animals.” Jackson, “Animal,” 675, 676.
- 62 Fassin, “The Humanitarian Politics of Testimony,” 534, 541.
- 63 Daston and Galison, *Objectivity*.
- 64 On the relationship of science, testimony, and the production of knowledge in a classic vein, see Coady, *Testimony*. On the role of trust and social conformity, see Adler, “Testimony, Trust, Knowing”; and Hardwig, “The Role of Trust in Knowledge.”
- 65 Daston and Galison, *Objectivity*.
- 66 Haraway, *Modest–Witness*, 24. In her book, Haraway proposes her own feminist modest witness who is suspicious, situated, knowing, ignorant, partial, and more.
- 67 Haraway, *Modest–Witness*, 24.
- 68 Haraway, “Situated Knowledges.”
- 69 “Witnessing became a domestic act. . . . Television sealed the twentieth century’s fate as the century of witness.” Ellis in Peters, “Witnessing,” 708.
- 70 Frosh and Pinchevski, “Why Media Witnessing?,” 9.
- 71 Peters, “Witnessing.”
- 72 Boltanski, *Distant Suffering*; Chouliaraki, *The Spectatorship of Suffering*; Kozol, *Distant Wars Visible*.
- 73 On the significance of witnessing and testimony to the a host of scholarly disciplines and institutional practices, see Wieviorka, *The Era of the Witness*; Felman and Laub, *Testimony*; Frosh and Pinchevski, *Media Witnessing*; Givoni, “Witnessing/Testimony”; Guerin and Hallas, *The Image and the Witness*.
- 74 The German media theorist Friedrich Kittler was the leading proponent of this argument, which I am drawing on here by way of Sean Cubitt. See Cubitt, *The Practice of Light*, 7–12.
- 75 For the distilled argument, see the introduction to Cubitt, *The Practice of Light*.
- 76 As Halpern puts it, there emerged “a new set of investments in process, communication, and circulation, now encoded into built environments, machines, and attention spans.” See *Beautiful Data*, 84.
- 77 Gray, “Data Witnessing.”
- 78 McCosker, “Drone Media”; McCosker, “Drone Vision”; Andén-Papadopoulos, “Citizen Camera-Witnessing”; Chouliaraki and al-Ghazzy, “Flesh Witnessing”; Gil-Fournier and Parikka, “Ground Truth to Fake Geographies.”
- 79 The limits of representation in witnessing has been a significant theme in my own research, see Richardson, *Gestures of Testimony*; Richardson and

- Schankweiler, "Affective Witnessing"; Richardson, "Drone's-Eye View." See also, Pinchevski, *Transmitted Wounds*; Ettinger, *The Matrixial Borderspace*.
- 80 Oliver, *Witnessing*, 195, 20.
- 81 Givoni, "Witnessing/Testimony," 165.
- 82 There are now many valuable interventions in how to rethink the human. Dana Luciano and Mel Y. Chen draw on queer theory to argue that the "inhuman"—or inhumanisms—"points to the violence that the category of the human contains within itself" by "resonating against the 'inhumane'" in "Has the Queer Ever Been Human?," 197. In alliance with this queer inhumanism, Julietta Singh calls for dehumanism, a "practice of recuperation, of stripping away the violent foundations (always structural and ideological) of colonial and neocolonial mastery that continue to render some being more human than others." Singh, *Unthinking Mastery*, 4. Like the earlier "antihumanism" of Louis Althusser and the critical Marxist tradition, the "de-" and "in-" signal a critical desire to undo the structures of knowledge-making and world-making of the humanities in their traditional form, but are not so geared toward the expansive account of agencies needed to think about witnessing outside the frame of the human altogether, which is why some prefer the "more-than-human" and "other-than-human." See Springgay and Truman, *Walking Methodologies*, 8–11; Pugliese, *Biopolitics of the More-Than-Human*.
- 83 Grusin, "Introduction," ix–x.
- 84 "Humanity and nonhumanity have always performed an intricate dance with each other. There was never a time when human agency was anything other than an interfolding network of humanity and nonhumanity; today this mingling has become harder to ignore." Bennett, *Vibrant Matter*, 31.
- 85 Race in general, and blackness in particular, "cannot be escaped but only disavowed or dissimulated in prevailing articulations of movement 'beyond the human.'" Jackson, "Outer Worlds," 216. One consequence of this thinking, as Tavia Nyong'o points out, is that "posthumanist theory has tended to present the decentering of the human as both salutary and largely innocent of history." Nyong'o, "Little Monsters," 266.
- 86 Barad, "Posthumanist Performativity," 809. Stacy Alaimo describes this as "trans-corporeality," or how "the human is always intermeshed with the more-than-human world." Alaimo, *Bodily Natures*, 17.
- 87 Luciano and Chen, "Has the Queer Ever Been Human?," 192.
- 88 Sheikh, "The Future of the Witness," 148.
- 89 Zylinska, *Nonhuman Photography*, 15.
- 90 Cubitt, *Finite Media*, 151.
- 91 Vivian, *Commonplace Witnessing*.
- 92 See, for example, Caruth, *Unclaimed Experience*; Felman and Laub, *Testimony*; Kaplan, *Trauma Culture*; Abraham and Torok, *Shell*.
- 93 Felman writes that "testimony seems to be composed of bits and pieces of a memory that has been overwhelmed by occurrences that have not settled

into understanding or remembrance, acts that cannot be constructed as knowledge nor assimilated into full cognition, events in excess of our frames of reference.” Felman and Laub, *Testimony*, 5.

- 94 LaCapra, *Writing History*; LaCapra, *Representing*.
- 95 Felman and Laub, *Testimony*, 24.
- 96 Agamben, *Remnants*, 141.
- 97 Arendt, *On Violence*, 50, 51.
- 98 Butler, *Precarious Life*.
- 99 Farmer, “Structural Violence,” 308. The term “structural violence” originates with peace and conflict studies founder Johan Galtung but has been elaborated and extended by Farmer and others, particularly in anthropology.
- 100 Das et al., *Violence and Subjectivity*.
- 101 Wolfe, “Settler Colonialism and the Elimination of the Native.”
- 102 Michael Taussig’s account of paramilitary violence in Colombia is a particularly vibrant and nuanced account of the latter. Taussig, *Law in a Lawless Land*.
- 103 Reflecting on her own refusal to revivify spectacles of tortured slaves, Saidiya Hartman pursues instead the “diffusion of terror and violence perpetrated under the rubric of pleasure, paternalism and property.” Hartman, *Scenes of Subjection*, 4.
- 104 Da Silva, “No-Bodies,” 214.
- 105 Weizman, *Forensic Architecture*, 117.
- 106 Oliver, *Witnessing*, 7.
- 107 Oliver, *Witnessing*, 7.
- 108 Oliver, *Witnessing*, 7.
- 109 Oliver, *Witnessing*, 68.
- 110 Oliver, *Witnessing*, 223.
- 111 See Chow, *Age of the World Target*; Bousquet, *The Eye of War*.
- 112 Oliver, *Witnessing*, 224.

CHAPTER ONE. WITNESSING VIOLENCE

- 1 As Pailthorpe’s work attests, aesthetic interventions into drone warfare can possess an ambivalent relation to their subject matter. Stubblefield argues that once drone art is restated in relation to the operative logics and processes of networked war, “a more nuanced reading emerges, one in which the apparent passivity of this genre is not only a conscious response to the specific conditions of drone power, but in fact the means for reimagining its relations of violence,” Stubblefield, *Drone Art*, 2. Further valuable commentaries on drone art can be found in Rhee, *The Robotic Imaginary*; Danchev, “Bug Splat”; Bräunert and Malone, *To See Without Being Seen*.
- 2 Cubitt, *Finite Media*, 4.
- 3 Cubitt, *The Practice of Light*, 8.

- 4 Packer and Reeves, *Killer Apps*, 9.
- 5 For an extensive examination of the relationship between scientific epistemes and warfare, see Bousquet, *The Scientific Way of Warfare*.
- 6 Packer and Reeves, *Killer Apps*, 7.
- 7 Bousquet, *The Eye of War*, 8, 11.
- 8 In a similar vein, Amoore observes that “algorithmic war appears to make it possible for the imagination of an open global economy of mobile people, objects and monies, to be reconciled with the post-9/11 rendering of a securitized nation-state.” Amoore, “Algorithmic War,” 51.
- 9 All too human testimony takes place outside the strictures of rights-based discourses, of course. In Afghanistan, for example, the weaving of war rugs to represent the weaponry and martial dynamics of successive superpower invasions can be understood as a form of testimony.
- 10 Tahir, “The Ground Was Always in Play,” 12.
- 11 Dawes, *That the World May Know*; Slaughter, *Human Rights, Inc.*
- 12 Givoni, *The Care of the Witness*.
- 13 Jess Whyte argues that neoliberals, threatened by socialist pushes for rights to social welfare and self-determination, set about developing an alternate framework of human rights that had the explicit intention of depoliticizing the social realm in order to protect private investment, strengthen liberal individualism, encourage market-based solutions, extend imperialism, and entrench a marketcentric international order. Whyte, *The Morals of the Market*.
- 14 Kaplan calls them “hybrid machines” that “make their worlds, materially and elementally” as “complex assemblages that gather and produce people, objects, discourses, information, terrains, atmospheres, and, in ways we must make more complicated, images.” Kate Chandler argues that the unmanning at the center of drone warfare elides its coconstitution by human, media and machine elements that “not only come together but also fail to cohere and the attendant politics that emerge through these relations,” Chandler, *Unmanning*, 7; Kaplan, “Drones and the Image Complex,” 30.
- 15 McCosker and Wilken, *Automating Vision*, 89.
- 16 Parks and Kaplan, *Life in the Age of Drone Warfare*, 9.
- 17 See Kaplan, *Aerial Aftermaths*; Chandler, *Unmanning*; Wilcox, “Embodying Algorithmic War.”
- 18 Kaplan, “Drone-o-Rama.”
- 19 Grégoire Chamayou argues that this “temporary autonomous zone of slaughter,” enacts “the idea of an invasive power based not so much on the rights of conquest as on the rights of pursuit: a right of universal intrusion or encroachment.” Chamayou, *Drone Theory*, 55, 53. When first deployed in the 1991 Gulf War, the kill box was an area the size of New York City, but as both the concept and necessary geolocation and information communication technologies developed, kill boxes became three dimensional and increasingly granular in time and geographical specificity.

- 20 Bousquet, Grove, and Shah, "Becoming War," 1.
- 21 Bousquet, Grove, and Shah, "Becoming War," 5.
- 22 Gregory, "From a View to a Kill," 193. See also Grayson and Mawdsley, "Scopic Regimes in International Relations."
- 23 See Gregory, "From a View to a Kill"; Michel, *Eyes in the Sky*.
- 24 "Drone vision intervenes at the point of generating a new actionable kind of visibility or visual knowledge." McCosker and Wilken, *Automating Vision*, 99.
- 25 Andrejevic, *Automated Media*, 85.
- 26 Parks, *Rethinking Media Coverage*, 146.
- 27 Parks, *Rethinking Media Coverage*, 147.
- 28 For an outstanding history, see Michel, *Eyes in the Sky*.
- 29 On the history and contemporary practices of photogrammetry and vertical mediation, see Wilken and Thomas, "Vertical Geomediation."
- 30 Pong, *For the Duration*, 1.
- 31 Although Behram's photographs are often disbelieved and dismissed by supporters of the war. See Tahir, "The Ground Was Always in Play," 14.
- 32 Dorrian, "Drone Semiosis," 55.
- 33 For Stubblefield, Dorrian's observations are the hinge into reading the photographs as an inversion of drone vision. Stubblefield, *Drone Art*, 31.
- 34 Kapadia, *Insurgent Aesthetics*, 54–60.
- 35 Kaplan, *Aerial Aftermaths*, 33.
- 36 Kaplan, *Aerial Aftermaths*, 36.
- 37 In the Stanford/NYU "Living Under Drones" report, Hisham Abrar states: "When the weather is clear, three or four [drones] can be seen. . . . They are in the air 24 [hours a day], seven [days a week], but not when it's raining. Every time they are in the air, they can be heard. And because of the noise, we're psychologically disturbed—women, men, and children. . . . When there were no drones, everything was all right. [There was] business, there was no psychological stress and the people did what they could do for a living." Stanford Law School and NYU School of Law, "Living under Drones," 164.
- 38 Stanford Law School and NYU School of Law, "Living under Drones," 81.
- 39 Edney-Browne, "The Psychosocial Effects of Drone Violence," 1347.
- 40 Schuppli, *Material Witness*, 124.
- 41 Kapadia, *Insurgent Aesthetics*, 69–72.
- 42 Kapadia, *Insurgent Aesthetics*, 5.
- 43 Chishty's shadowy drones share some loose affinity with James Bridle's identically named and more well-known *Drone Shadows* (2012–18), in which 1:1 outlines of Reaper and Predator drones are painted onto public spaces in cities such as London and New York, insisting on the return of the presence of the drone to the places that authorize their deployment. Jennifer Rhee provides an excellent critique of the limitations of the politics of identification enacted by Bridle's works, demonstrating how such works rest on an obscur-

- ing or forgetting of the racialized subjects of violence within those polities. Rhee, *The Robotic Imaginary*, 144–54.
- 44 Pakistan's Federally Administered Tribal Areas (FATA) operated under a separate legal and political regime to the rest of Pakistan, which is itself governed by structures inherited from the British colonial era. The securitization of FATA operates in two directions: by the United States and by the Pakistani state. As Madiha Tahir has powerfully argued, this violence (of torture, disappearance, and secrecy) constitutes part of the “distributed American empire,” in which the state and military enact their own desires for power and control. Tahir, “The Distributed Empire of the War on Terror.”
- 45 Pugliese, “Death by Metadata.”
- 46 Andrejevic, *Automated Media*, 86.
- 47 Stanford Law School and NYU School of Law, “Living under Drones,” 113.
- 48 Pugliese, “Drone Casino Mimesis.”
- 49 Stanford Law School and NYU School of Law, “Living under Drones,” 74.
- 50 Pugliese, *Biopolitics of the More-Than-Human*, 191. Pugliese quotes a Yemeni reporter: “Animals died, and the bodies of all those who died were disintegrated and scattered over a large area. . . . They were all exploded, and we could not identify them, their limbs ripped apart.”
- 51 Da Silva, “No-Bodies”; Pugliese, “Death by Metadata,” 11, 15. Of course, life in the Afghanistan-Pakistan borderlands remains much more complex and vibrant than the view through the drone suggests. See Bashir and Crews, *Under the Drones*.
- 52 Stanford Law School and NYU School of Law, “Living under Drones,” 108.
- 53 Pugliese, *Biopolitics of the More-Than-Human*, 22.
- 54 See Pugliese, *Biopolitics of the More-Than-Human*, 197.
- 55 Parks, *Rethinking Media Coverage*, 9.
- 56 Mirzoeff, *How to See the World*; Greene, “Drone Vision.”
- 57 Stahl, *Through the Crosshairs*, 68.
- 58 Not all drone witnessing is of aerial assault. In so-called overwatch missions, drone sensors might instead capture the violence of ground combat.
- 59 Starosielski, *Media Hot & Cold*, 168.
- 60 Fish, “Blue Governmentality.”
- 61 Herscher, “Surveillant Witnessing.”
- 62 UN News, “‘Crimes of Historic Proportions’ Being Committed in Aleppo, UN Rights Chief Warns.”
- 63 Kurgan, “Conflict Urbanism, Aleppo,” 74.
- 64 For a detailed reflection on this practice, see Kurgan, *Close up at a Distance*.
- 65 Weizman, *Forensic Architecture*, 28. The current 0.25m resolutions are for black-and-white imagery, with 1.6m limits on color.
- 66 Saldarriaga, Kurgan, and Brawley, “Visualizing Conflict,” 104.
- 67 Gil-Fournier and Parikka, “Ground Truth to Fake Geographies.”
- 68 Kurgan, “Conflict Urbanism, Aleppo,” 76.

- 69 Chouliaraki and al-Ghazzy, "Flesh Witnessing."
- 70 Kaplan, *Aerial Aftermaths*, 8.
- 71 On drone-human sensoria, see Agostinho, Maurer, and Veel, "Sensorial Experience of the Drone"; Graae and Maurer, *Drone Imaginaries*.
- 72 Azoulay, "The Natural History of Rape," 167.
- 73 Azoulay, "The Natural History of Rape," 169.
- 74 Barnell et al., "Agile Condor."
- 75 Virilio, *War and Cinema*.
- 76 Virilio, *War and Cinema*.
- 77 Virilio, *War and Cinema*.
- 78 On power and the edge of perception, see Massumi, *Ontopower*.
- 79 Barnell et al. "Agile Condor," 2015; Barnell et al, "High-Performance Computing," 2018; Isereau et al "Utilizing High-Performance Embedded Computing," 2017.
- 80 See Halpern, *Beautiful Data*.
- 81 Andrejevic, *Automated Media*, 38.
- 82 Bousquet, *The Eye of War*, 12.
- 83 The Institute of Electrical and Electronics Engineers (IEEE) is an electrical engineering professional organization that runs some of the most important conferences, journals, and magazines for the development of computational and related technologies.
- 84 SRC Defense, "Agile Condor."
- 85 Andrejevic, *Automated Media*, 18.
- 86 Andrejevic, *Automated Media*, 27. Andrejevic describes four distinct modalities of automated media: preemption, operationalism, environmentality, and framelessness.
- 87 Bousquet, *The Eye of War*, 12.
- 88 Andrejevic, *Automated Media*, 47.
- 89 DeLanda, *War in the Age of Intelligent Machines*, 2.
- 90 DeLanda, *War in the Age of Intelligent Machines*, 3.
- 91 DeLanda, *War in the Age of Intelligent Machines*, 7.
- 92 DeLanda, *War in the Age of Intelligent Machines*, 7.
- 93 DeLanda, *War in the Age of Intelligent Machines*, 46.
- 94 Packer and Reeves, *Killer Apps*, 14.
- 95 Whittaker, "The Steep Cost of Capture."
- 96 Holmqvist, "Undoing War," 551.
- 97 See Sharkey in Bhuta et al., *Autonomous Weapons Systems*.
- 98 Packer and Reeves, "The Coming Humanectomy," 266.
- 99 Amoore, *Cloud Ethics*, 150.
- 100 Amoore, *Cloud Ethics*, 81.
- 101 On the relations between autonomous killing and liberal subjectivity, see Atanasoski and Vora, *Surrogate Humanity*.
- 102 Massumi, "Affective Fact," 53.

- 103 Andrejevic, *Automated Media*, 86.
- 104 Suchman, "Algorithmic Warfare and the Reinvention of Accuracy," 10.
- 105 Asaro, "Algorithms of Violence," 36.
- 106 Grove, *Savage Ecology*, 221. Elsewhere, Grove calls for a new "grammar" of geopolitics that reckons with the transformative ramifications of technological development, see Grove, "From Geopolitics to Geotechnics."

CHAPTER TWO. WITNESSING ALGORITHMS

- 1 Manjoo, "I Tried Microsoft's Flight Simulator. The Earth Never Seemed So Real."
- 2 Chayka, "The Weird Failures of Algorithm-Generated Images." In this vein, Clement Valla's *Postcards from Google Earth* project seeks to expose these strange and often beautiful moments of breakdown in the automated assembly of images. Valla, *Postcards from Google Earth*.
- 3 See, for example, Amoore and Raley, "Securing with Algorithms"; Bellanova et al., "Critique of Algorithmic Violence"; Noble, *Algorithms of Oppression*; Bucher, *If... Then*; Eubanks, *Automating Inequality*; Sadowski, *Too Smart*; Finn, *What Algorithms Want*; Benjamin, *Race After Technology*; Pasquale, *The Black Box Society*; Rouvroy and Berns, "Algorithmic Governmentality"; McKittrick, *Dear Science*.
- 4 Finn, *What Algorithms Want*, 5.
- 5 Machine learning algorithms are trained on data, but also optimized using a range of statistical functions. For example, Google's AlphaGo was optimized using various techniques of Bayesian optimization. Chen et al., "Bayesian Optimization in AlphaGo."
- 6 Mackenzie, *Machine Learners*.
- 7 Sadowski, "Potemkin AI."
- 8 Taffel, "Data and Oil."
- 9 Pasquale, *The Black Box Society*.
- 10 On algorithmic violence, see, for example, Bellanova et al., "Critique of Algorithmic Violence"; Safransky, "Geographies of Algorithmic Violence"; O'Malley and Smith, "'Smart' Crime Prevention?"; Asaro, "Algorithms of Violence."
- 11 Finn, *What Algorithms Want*, 5.
- 12 Halpern, *Beautiful Data*, 184.
- 13 Bucher, *If... Then*, 20.
- 14 Bucher, *If... Then*, 8.
- 15 Noble, *Algorithms of Oppression*; Phan and Wark, "What Personalisation Can Do for You!"
- 16 Offert and Phan, "A Sign That Spells."
- 17 Seaver, "Algorithms as Culture," 5.

- 18 “In spite of the rational straightforwardness granted to them by critics and advocates, ‘algorithms’ are tricky objects to know,” such that “a determined focus on revealing the operations of algorithms risks taking for granted that they operate clearly in the first place.” Seaver, “Algorithms as Culture,” 2, 8.
- 19 Scannell, “What Can an Algorithm Do?”
- 20 Stark, “Facial Recognition Is the Plutonium of AI.”
- 21 MacKenzie and Munster, “Platform Seeing,” 2.
- 22 MacKenzie and Munster, “Platform Seeing,” 8.
- 23 MacKenzie and Munster, “Platform Seeing,” 6.
- 24 MacKenzie and Munster, “Platform Seeing,” 4.
- 25 MacKenzie and Munster, “Platform Seeing,” 3.
- 26 Amoore, *Cloud Ethics*, 16.
- 27 Amoore, *Cloud Ethics*, 9.
- 28 Amoore, *Cloud Ethics*, 135.
- 29 Amoore, *Cloud Ethics*, 66. Emphasis in the original.
- 30 Guattari’s theorizing of the machine is complex and more nuanced than is necessary to elaborate here. See Guattari, *Chaosmosis*; Guattari, “On Machines.”
- 31 My sincere thanks to one of the anonymous reviewers of the manuscript for the formulation of machinic affect as promiscuous in its adhesiveness.
- 32 Massumi, *Parables*, 35.
- 33 On potential, probability, possibility, and algorithmic systems, see Amoore, *Politics of Possibility*.
- 34 Amoore, *Cloud Ethics*, 109–29.
- 35 Massumi, *Parables*, 26.
- 36 Cole, “AI-Assisted Fake Porn.”
- 37 Cole, “AI-Assisted Fake Porn.”
- 38 Goodfellow et al., “Generative Adversarial Networks.”
- 39 In 2017, University of Washington researchers trained a machine learning model to transform video footage of Barack Obama to photorealistically lip-sync to an audio input track. It was a key early indicator of the potential for AI-generated media to mimic real persons, including world leaders. See SyncedReview 2018 for an overview. Since then, concerns over generative AI have exploded. The questions sparked by the Obama lip-sync video take on a different hue in the context of generative models, but their implications are only just beginning to be understood as this book goes into production.
- 40 Not least, how to think about the knowledge produced in the scientific application of GANS. See Offert, “Latent Deep Space.”
- 41 Maddocks, “‘A Deepfake Porn Plot’”; Kikerpill, “Choose Your Stars and Studs”; Nagel, “Verifying Images”; Popova, “Reading out of Context.” Samantha Cole has also made the point repeatedly in *Motherboard* that while the political implications of deepfakes have attracted the mainstream headlines,

- the videos remain almost exclusively pornographic and targeted at women in practice.
- 42 Gerstner, "Face/Off"; Kirchengast, "Deepfakes and Image Manipulation"; Maras and Alexandrou, "Determining Authenticity."
 - 43 Chesney and Citron, "Deepfakes and the New Disinformation War," 149. In a similar vein, deepfakes have been articulated as both new forms of "political warfare" and as a critical "multi-level policy challenge" for states. See also, Paterson and Hanley, "Political Warfare in the Digital Age."
 - 44 McCosker, "Making Sense of Deepfakes."
 - 45 Uliasz, "On the Truth Claims of Deepfakes," 25, 27.
 - 46 See, for example, Whyte, "Deepfake News"; Fallis, "Epistemic Threat of Deepfakes"; Rini, "Epistemic Backstop."
 - 47 WITNESS Media Lab, "Synthetic Media and Deepfakes," 15.
 - 48 WITNESS Media Lab, "Synthetic Media and Deepfakes," 18.
 - 49 Chouliaraki and al-Ghazzi, "Flesh Witnessing."
 - 50 Uliasz, "On the Truth Claims of Deepfakes," 37.
 - 51 Sear, "Xenowar."
 - 52 Deleuze, *Cinema 1*; Tomkins, *Shame and Its Sisters*.
 - 53 Anderson, *Technologies of Vision*, 21.
 - 54 Anderson, *Technologies of Vision*, 23.
 - 55 Experts remain divided on which side will win, most major platforms and numerous start-ups are developing detection—although questions remain about who will have access to them and whether they will be usable by people in the Global South. See <https://lab.witness.org/background-deepfakes-in-2020/>.
 - 56 Miglio, "AI in Unreal Engine."
 - 57 Pugliese, *Biopolitics of the More-Than-Human*, 15.
 - 58 Weizman, *Forensic Architecture*, 65.
 - 59 Weizman, *Forensic Architecture*, 58.
 - 60 Weizman, *Forensic Architecture*, 58, 82.
 - 61 There is, it should be noted, an increasingly significant domain within machine learning research that aims for "explainable" AI; however, this is far from the norm and contains problems of its own, such as the limited frames within which such systems might be "explained."
 - 62 Amore, *Cloud Ethics*, 119.
 - 63 Massumi, *Ontopower*, 53.
 - 64 Sontag, *Regarding Pain*; Kozol, *Distant Wars Visible*; Mirzoeff, *The Right to Look*.
 - 65 Google's former CEO Eric Schmidt is a notable proponent of strengthening ties between big tech and the US military. He is the chair of the Defense Innovation Board and reportedly an influential voice in the Biden administration on the advantages of advance technology, often framing its importance with reference to China's capabilities.
 - 66 Department of Defense, "AWCFT Memorandum."

- 67 Department of Defense, "AWCFT Memorandum."
- 68 *Bulletin of the Atomic Scientists*, "Project Maven."
- 69 Johnson, "Influx of Drone Footage."
- 70 Human Rights Watch, "A Wedding That Became a Funeral."
- 71 Amooore, *Cloud Ethics*, 128.
- 72 Amooore, *Cloud Ethics*, 127.
- 73 GovernmentCIOMedia, "AI to Help Pentagon."
- 74 See, for example, Mbembe, *Necropolitics*; Wilcox, "Embodying Algorithmic War"; Rhee, *Robotic Imaginary*; Wall and Monahan, "Surveillance and Violence from Afar"; Kapadia, *Insurgent Aesthetics*.
- 75 Benjamin, *Race after Technology*, 36.
- 76 Phan and Wark, "Racial Formations," 2.
- 77 Wilcox, "Embodying Algorithmic War," 21.
- 78 Bender et al., "On the Dangers of Stochastic Parrots." Coleader of the Ethical AI team Margaret Mitchell was fired a few weeks later, having been vocally and publicly supportive of Gebru and critical of her dismissal.
- 79 Dencik, et al., "Data Justice."
- 80 Sadowski, "When Data Is Capital."
- 81 Holmes, "Google's Off-Limits Data Farm."
- 82 Within industry and academia, AI ethics have become their own "economy of virtue" in which engagements with ethics and performances around the issue have become powerful currency. See Phan et al., *Economies of Virtue*.
- 83 OpenAI, "Proximal Policy Optimization."
- 84 Amooore, *Cloud Ethics*, 23.
- 85 Glissant, *Poetics*.

CHAPTER THREE. WITNESSING ECOLOGIES

- 1 Clarke, "Australia Shuts Down Climate Deal."
- 2 Lyons, "Fiji PM."
- 3 Westfall, "Australia Ranks Last on Climate Action."
- 4 DeLoughrey, *Allegories of the Anthropocene*, 25.
- 5 DeLoughrey, *Allegories of the Anthropocene*, 7.
- 6 McDonald, *Ecological Security*.
- 7 Jetñil-Kijiner, "Tell Them."
- 8 DeLoughrey, *Allegories of the Anthropocene*, 1.
- 9 DeLoughrey, *Allegories of the Anthropocene*, 5.
- 10 DeLoughrey, *Allegories of the Anthropocene*, 195.
- 11 Jetñil-Kijiner, "Tell Them."
- 12 Daston, "Epistemic Images," 17.
- 13 Cubitt, *Finite Media*, 4.
- 14 Fuller, *Media Ecologies*, 17.
- 15 Grove, *Savage Ecology*, 4.

- 16 Cubitt, *Finite Media*, 117.
- 17 Haraway, *Staying with the Trouble*.
- 18 Cubitt, *Finite Media*, 154.
- 19 Yusoff, *A Billion Black Anthropocenes*.
- 20 Turner, *From Counterculture to Cyberculture*.
- 21 Perhaps most powerfully manifest in the back to the land movement, which tended to be principally pursued by white middle-class youth who imagined a pure nature in which Indigenous people and knowledge was either absent or reduced to readily appropriated totems.
- 22 Edwards, "Entangled Histories," 34.
- 23 On the technical processes involved in earth imaging, including the role of satellites, tracking stations, pixels, and analysts, see Russill, "Earth Imaging," 245. In his study of the formation of the climate-monitoring system, Paul N. Edwards shows how the twinned dynamics of making data global (data from one place that could be analyzed in relation to data from elsewhere) and making global data (data about climatic change on a global scale) entailed significant labor, which he calls "data friction." Encompassing everything from adjusting recordings based on known instrument eccentricities to the sheer effort of transcribing handwritten records into digital spreadsheet, the challenge of data friction erodes the promise of bringing immense computational power to bear on climate and environmental analysis. Edwards, *A Vast Machine*. See also Yang et al., "Satellite Remote Sensing in Climate Change Studies"; Kidder and Haar, *Satellite Meteorology*.
- 24 Parks, *Rethinking Media Coverage*.
- 25 Russill, "Earth Imaging," 232.
- 26 Parks, *Cultures in Orbit*; Kurgan, *Close up at a Distance*; Russill, "Is the Earth a Medium?"
- 27 Russill, "Earth Imaging," 232. The shift toward using a range of datalogical technologies within human rights work, particularly via the emergence of open-source investigation, has necessitated new expertise in these media forms within human rights fields and produced new intermediary organizations, see Ristovska, *Seeing Human Rights*.
- 28 Furuhashi, *Climatic Media*.
- 29 Weizman, *Forensic Architecture*, 20.
- 30 Rothe, "Seeing Like a Satellite," 340, 337.
- 31 Gabrys, *Program Earth*, 11.
- 32 Guattari, *The Three Ecologies*, 44.
- 33 Guattari, *The Three Ecologies*, 43.
- 34 Fuller, *Media Ecologies*, 20.
- 35 Clark, "Scale," 148.
- 36 Fuller, *Media Ecologies*, 147.
- 37 Fuller, *Media Ecologies*, 147.
- 38 Chakrabarty, "Climate of History," 206–7.

- 39 Clark, "Scale," 152.
- 40 Woods, "Scale Critique for the Anthropocene," 138.
- 41 Alaimo, *Exposed*, 168.
- 42 Raymond Williams proposed "structures of feeling" as a way of understanding how particular meanings and values are organized into the lived experience of the present. See Williams, *Marxism and Literature*.
- 43 Zylinska, *Nonhuman Photography*, 37.
- 44 Woods, "Scale Critique for the Anthropocene."
- 45 Clark, "Scale," 151.
- 46 Farrier, *Anthropocene Poetics*, 15.
- 47 Schankweiler, Straub, and Wendl, *Image Testimonies*; Guerin and Hallas, *The Image and the Witness*; Camp, *Listening to Images*.
- 48 Zylinska, *Nonhuman Photography*, 81.
- 49 Peters, "Witnessing," 722.
- 50 Tsing, "Nonscalability," 505.
- 51 James, *The Black Jacobins*; Taylor, *Empire of Neglect*; McKittrick, *Dear Science*; Rosenthal, *Accounting for Slavery*.
- 52 Tsing, "Nonscalability," 510.
- 53 Whyte, "Environmental Injustice," 125.
- 54 Nixon, *Slow Violence*.
- 55 Kaplan, *Climate Trauma*; Richardson, "Climate Trauma."
- 56 Morton, *Hyperobjects*, 1.
- 57 While Morton has elsewhere written about the necessity of addressing ecology without the overdetermining of Nature, the irony of their hyperobjects is that they risk replace replacing one problematic enclosure with another. As a theoretical endeavor, the object-oriented ontology movement, of which Morton is a prominent flag-waver, results in something of a political dead end, not least due to its insistence on the primacy of objects and the nonrelationality of existence.
- 58 On bushfires and their elemental properties, see Neale, Zahara, and Smith, "An Eternal Flame."
- 59 Massumi, *Ontopower*, 22.
- 60 Mittmann, "Maralinga."
- 61 Cited in Barnaby and Holdstock, *British Nuclear Weapons*, 99.
- 62 Ladd, "Lesser Known History"; Tynan, *Atomic Thunder*.
- 63 Tynan, "Sixty Years On"; Maralinga Rehabilitation Technical Advisory Committee, "Rehabilitation of Emu and Maralinga."
- 64 Barnaby and Holdstock, *British Nuclear Weapons*, 102. Authorized by Prime Minister Robert Menzies without cabinet consultation, the tests were overseen by the Atomic Weapons Test Safety Committee. The AWTSC was headed by scientists present at the 1952 trials (Project Hurricane), which was the first atomic bomb tested by the British in Australia (Arnold and Smith, *Britain, Australia, and the Bomb*, 27; Smith, *Clouds of Deceit*, 58). No regard was given to the effects on Indigenous inhabitants.

- 65 Tynan, "Sixty Years On."
- 66 Cook et al., "Pu-Bearing Particles at Maralinga."
- 67 ICAN: International Campaign to Abolish Nuclear Weapons, "Black Mist."
- 68 Quoted in Mittmann, "Maralinga," 10.
- 69 McLelland, *Report of the Royal Commission into British Nuclear Tests in Australia*, 574.
- 70 Cited in Alexis-Martin, "Nuclear Warfare and Weather (Im)Mobilities," 258.
- 71 Tynan, "What Is Relationality?," 1.
- 72 According to Moreton-Robinson, "White possessive logics are operationalized within discourses to circulate sets of meanings about ownership of the nation, as part of commonsense knowledge, decision making, and socially produced conventions." Moreton-Robinson, *The White Possessive*, xii.
- 73 The British government has admitted to using Australian servicemen in radioactivity experiments, ordering them to walk into blast zones after tests. Carter, *British Nuclear Tests in Australia*.
- 74 Mittmann, "Maralinga," 9.
- 75 On terra nullius and the cultural and legal logics of colonial possession in Australia, see Moreton-Robinson, *The White Possessive*.
- 76 Made popular by 1990s antinuclear activism, the term nuclear colonialism "designates contemporary dynamics of colonial exploitation, in which imperial countries militarily occupy and irreversibly pollute the lands and natural resources of communities, far away from their own economic and political centers, in order to further the development of their nuclear technologies." Maurer, "Snaring the Nuclear Sun," 372. See also Endres, "Rhetoric of Nuclear Colonialism"; Endres, "Most Nuclear-Bombed Place"; Edwards, "Nuclear Colonialism."
- 77 Maurer, "Snaring the Nuclear Sun," 373.
- 78 Hau'ofa, "Our Sea of Islands."
- 79 This co-option of Aboriginal language to name military sites was hardly new. The nearby town of Woomera was named for an Aboriginal spear-throwing implement after it was built to facilitate long-range weapons testing in 1947.
- 80 Hydrogen bombs, or thermonuclear weapons, use a combination of nuclear fission and nuclear fusion, a separate process in which the energy is released through smashing unstable atoms together.
- 81 Of the first nuclear detonation at White Sands Missile Test Range at Jornada del Muerto desert of New Mexico, Alexis-Martin writes: "This first nuclear weapon detonation marked the dawn of a freshly atomic Anthropocene, creating localized air temperatures so hot that silica sand seared into glassy trinitite, fossilizing the heat of the blast into puzzling." Alexis-Martin, "Nuclear Warfare and Weather (Im)Mobilities," 251.
- 82 Ray, "Myth of Empty Country," 5.
- 83 Scarce, Delany, and Australian Centre for Contemporary Art, *Missile Park*, 92.

- 84 The measure by which an isotopes radioactivity decreases (and the time it takes for it to fully transform into its product atom) is called a half-life. More specifically, it's the time that it takes for one half of the original radioactive isotope to decay. This means that as time passes, each successive half of the remaining radioactive isotope transforms and its level of radioactivity also decreases. If the half-life of an isotope (e.g., Thorium-90) is twenty-four days, it takes twenty-four days for half the isotope to disintegrate; followed by another twenty-four days for half of the remaining half, and so on. Depending on the isotope, the half-life could be years or minutes.
- 85 Vivian, *Commonplace Witnessing*.
- 86 Scarce, Delany, and Australian Centre for Contemporary Art, *Missile Park*, 126.
- 87 Ray, "Myth of Empty Country," 5.
- 88 Alexis-Martin, "Nuclear Warfare and Weather (Im)Mobilities," 251.
- 89 Harkin, "Anneal This Breath, 86."
- 90 Deleuze, *Logic of Sense*, 73.
- 91 Deleuze, *Pure Immanence*. Among other texts, this book contains the essay "Immanence: A Life. . ."
- 92 For more on plural worlds and William James, see Savransky, *Around the Day in Eighty Worlds*.
- 93 De la Cadena and Blaser, *A World of Many Worlds*.
- 94 De la Cadena, *Earth Beings*, 5.
- 95 Deleuze, *Pure Immanence*, 31.
- 96 Deleuze and Guattari, *A Thousand Plateaus*, 266.
- 97 Tynan, "What Is Relationality?," 5.
- 98 Deleuze, *Pure Immanence*, 31.
- 99 Deleuze, *Pure Immanence*, 31–32.
- 100 Caruth, *Unclaimed Experience*, 4.
- 101 Massumi, *Parables*, 35.

CHAPTER FOUR. WITNESSING ABSENCE

- 1 Kember and Zylinska, *Life after New Media*, 71–72.
- 2 Farwell, "Media Strategy of ISIS"; Ingram, "Islamic State's Information Warfare."
- 3 Hoskins and Illingworth, "Inaccessible War," 1.
- 4 Seigworth and Tiessen, "Mobile Affects."
- 5 Ahmed, *Cultural Politics of Emotion*, 71–80.
- 6 Bourke, "Public Beheading Fears."
- 7 Sparrow, "Plastic Sword."
- 8 Grusin, *Premediation*, 72.
- 9 Clery, "Six Handshakes, Then Silence."
- 10 Wise, "How Crazy Am I?"

- 11 Christopoulos and Ustinova, "Urgent Hypothesis on Plane MH370 Disappearance."
- 12 Day and Lury, "New Technologies of the Observer"; Bremner, "Technologies of Uncertainty in the Search for MH370"; Bremner, "Fluid Ontologies."
- 13 Gabrys, *Program Earth*.
- 14 Chris Ashton et al., "MH370."
- 15 See Day and Lury, "New Technologies of the Observer"; Taylor, "Fiction Machines."
- 16 Edwards, *Closed World*.
- 17 Scannell, *Television and the Meaning of Live*, 66.
- 18 Jue, *Wild Blue Media*.
- 19 Pinchevski, *Transmitted Wounds*, 14.
- 20 Pinchevski, *Transmitted Wounds*, 15.
- 21 Cubitt, *Practice of Light*, 2.
- 22 Berlant, "Feeling Historical," 6.
- 23 Gibbs, "Panic!"; Gibbs, "Contagious Feelings"; Richardson, "There's Something Going On."
- 24 Seltzer, "Wound Culture," 3.
- 25 Atkinson and Richardson, *Traumatic Affect*, 12.
- 26 Pinchevski, *Transmitted Wounds*, 22.
- 27 Murphie, "On Being Affected," 24.
- 28 Massumi, *Parables*, 35.
- 29 Richardson and Schankweiler, "Affective Witnessing as Theory and Practice."
- 30 Lapoujade, *William James*.
- 31 Kaleem, "Death on Facebook."
- 32 Öhman and Watson, "Are the Dead Taking over Facebook?"
- 33 Leaver, "Social Media Contradiction."
- 34 For many, Facebook is a site of testifying to lives lived and to the grief endured by survivors. See Keskinen, Kaunonen, and Aho, "Grief on Facebook."
- 35 Frosh, *Poetics of Digital Media*, 111.
- 36 Hogan, "Facebook Data Storage Centers," 11.
- 37 Brubaker, Hayes, and Dourish, "Beyond the Grave."
- 38 Gibbs, "Writing and Danger."
- 39 The very distinction between online and offline is, of course, problematic. "The notion of the offline as real and authentic is a recent invention, corresponding with the rise of the online." Jurgenson, *The Social Photo*, 68.
- 40 Stiegler, "Anamnesis and Hypomnesis."
- 41 Chow, *Entanglements*, 19.
- 42 Thrift, *Non-Representational Theory*, 2.
- 43 Angerer, *Ecology of Affect*, 24.
- 44 Manning and Massumi, *Thought in the Act*, 24.
- 45 Doane, *Cinematic Time*, 225.
- 46 Manning, *Minor Gesture*, 54.

- 47 Manning, *Minor Gesture*, 134.
- 48 Massumi, *Ontopower*, 95.
- 49 Chow, *Entanglements*, 12.
- 50 Berlant and Greenwald, "Affect in End Times," 82.
- 51 Berlant, "The Commons," 393.
- 52 Berlant, "The Commons," 394.
- 53 Massumi, *Parables*, 30.
- 54 Massumi, *Parables*, 98.
- 55 While the Puutu Kunti Kurrama and Pinikura peoples use the acronym PĶĶP, they are distinct socioterritorial groups. As their submission to the Joint Standing Committee on Northern Australia inquiry into Juukan Gorge states: "The Puutu Kunti Kurrama people and the Pinikura people are separate peoples with discrete rights and interests in country, though we have some shared laws and customs." Cited in Joint Standing Committee on Northern Australia, "A Way Forward," 2.
- 56 Joint Standing Committee on Northern Australia, "Never Again," 2.
- 57 Moreton-Robinson, *The White Possessive*, ix.
- 58 Wolfe, "Settler Colonialism and the Elimination of the Native."
- 59 Berlant, *Cruel Optimism*, 1.
- 60 This positive potential should not be overstated. As Jasbir Puar argues in response to optimistic sloganeering in response to depression and suicide among queer youth, the "tendentious mythologizing that 'it gets better'" after traumatic events obscures and even protects the systemic origins of violent oppression. Puar, "Cost of Getting Better," 149.
- 61 Manning, *Minor Gesture*, 151.
- 62 Manning, *Minor Gesture*, 1.
- 63 Stewart, "Worlding Refrains," 340.

CODA. TOWARD A POLITICS OF NONHUMAN WITNESSING

- 1 Weston, *Animate Planet*, 33.
- 2 See Davis, "How a Pandemic Happens."
- 3 Cubitt, *Finite Media*, 162.
- 4 Rancière, *Disagreement*.
- 5 De la Cadena and Blaser, *A World of Many Worlds*, 13. There is also a rich body of literature on pluriversality from both process philosophy and non-Western perspectives that I cannot do justice to here but that interested readers might wish to pursue. For example, Escobar, *Pluriversal Politics*; Escobar, *Designs for the Pluriverse*; Reiter, *Constructing the Pluriverse*; Savransky, *Around the Day in Eighty Worlds*; Yunkaporta, *Sand Talk*.
- 6 De la Cadena and Blaser, *A World of Many Worlds*, 15.
- 7 De la Cadena, "Indigenous Cosmologies," 359.
- 8 De la Cadena, "Indigenous Cosmologies," 345.

- 9 De la Cadena, "Indigenous Cosmologies," 361.
- 10 Cubitt, *Finite Media*, 178.
- 11 Cubitt, *Finite Media*, 177.
- 12 Glissant, *Poetics*, 62.
- 13 Glissant, *Poetics*, 62.
- 14 Glissant, *Poetics*, 191.
- 15 Glissant, *Poetics*, 190.
- 16 Glissant, *Poetics*, 160.
- 17 I am deeply indebted to Andrew Brooks for his wisdom and generous guidance through Glissant.
- 18 Cubitt, *Finite Media*, 6.
- 19 De la Cadena, *Earth Beings*.
- 20 De la Cadena, "Indigenous Cosmologies," 360.
- 21 "Our proposal is an invitation to think that instead of the sameness that recognition supposes, politics might not start from, nor resolve in ontologically homogeneous grounds. Rather, the grounds of adversarial dispute or of allied agreement would be what we call uncommons." De la Cadena and Blaser, *A World of Many Worlds*, 27.
- 22 Fuller and Weizman, *Investigative Aesthetics*, 165.