

NUCLEAR BAROQUE



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KEHRER

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Previous double page:
Prypiat fairground, 2019.
Courtesy of Yasemin Atalay.

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**GLOW AND VIOLENCE
IN THE VISUAL AFTERMATH
OF CHORNOBYL**

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K E H R E R

ACKNOWLEDGEMENTS	9
1 AN INTRODUCTION TO NUCLEAR BAROQUE	12
2 (IN)VISIBLE MATTERS AND THE EVERYDAY	46
3 LANDSCOPIC DISASTER AND THE FABULOUSLY SUBLIME	84
4 RADIOACTIVE SILHOUETTES	133
5 (IN)VISIBLE MATTERS MATTER	168
6 TOWARDS SOME CONCLUSIONS	186
AFTERWORD: OPENING OUR EYES TO IMAGE VIOLENCE	188
ILLUSTRATIONS AND COPYRIGHT ACKNOWLEDGEMENTS	190
NOTES	192
REFERENCES	199

ACKNOWLEDGEMENTS

Much of what I know about nuclear power, irradiated communities, and war I have learnt in conversation with power station workers, residents, guides, and those who have entrusted me with their memories and stories. For their trust, I remain grateful.

First, I would like to thank my PhD supervisor Moa Petersén. You have made this journey fun and inspiring with all your wild ideas and new approaches. I will always value your enthusiasm and encouragement, which have carried me through, as well as your sharp, generous eye. I will always look up to you. Thank you, Peter Bengtsen, my supervisor for the early years of my MA and PhD who followed this project from its infancy. I truly appreciate your encouragement, insights about academia and beyond, and help in shaping a project from a disparate array of ideas. Thank you to my second supervisor, Joacim Sprung, whose meetings with coffee and croissants were a safe space I could test and hone ideas in intense theoretical debate. I have always left your office inspired and holding a new book. And thank you for letting me keep your personal – and now dog-eared – copy of *Critique of Judgment* after I took it with me around the world. My deepest thanks to Ulf Zander, who, in various roles has followed this project from its beginning, and whose optimism and incisive questions made the process fun and challenging. I have learned so much from you, and I do not think I will ever forget to question ‘the problem’ of it all. I am grateful to all of you for your guidance and support.

I want to thank the Division of Art History and Visual Studies at Lund University for making all of these years instructive, memorable, and genuinely enjoyable. Wandering the cathedrals of Northern France and circling the Duomo in Florence at midnight with Ylva Haidentaller and Anni Reponen are among my best memories. Equally memorable was running the Berlin half-marathon with Björn Fritz during a field trip, followed by a very painful 2-kilometre hobble to a steakhouse, which I still think should count as an extra credit. I also want to thank Cecilia Hildeman Sjölin whom I met that very first day in 2015 and whose teaching convinced me that art history is the field for me. Thank you to Erika Larsson, Max Liljefors, Petra Preisler, Lars Svensson, Ellen Suneson, Solfrid Söderlind, Robert Thavenius, and

Ludwig Qvarnström. Thank you, Maria Oen, my colleague and teacher for two months at the Swedish Institute in Rome, and a true role model. A special thank you to Emma Shachat, with whom I began my research journey; I value your friendship, and that sharp sense of humour that made some meetings difficult to remain serious at. Special thanks to Ylva, for your warm friendship and intellectual reminder to really *stay* with my material.

I did my PhD under the aegis of Sweden's National Research School in Historical Studies, a supportive environment with a wealth of opportunities that helped shape me as a researcher. Thank you, Ariadne Fioretos, Cecilia Riving, Hanne Sanders, Henrik Rosengren, Kajsa Weber, and Marie Småberg. I would also like to thank the research school community of doctoral students. I am glad to have met and learnt alongside you.

I wish to thank all the many friends I made as a PhD student for your encouragement and joy that has made these years special, and in particular Carin Graminius for your inspiring friendship and contagious enthusiasm; Daniel Leviathan for your warm and fun friendship; Franklin de Martinez for your critical eye and friendly check-ins; Niklas Dahl for your infectious curiosity; Ben Hogan for your optimism; and Camilla Borges Freitas and Karin Lundin for sharing office life and the daily twists and turns of being a research student. A special thank you for the friendship and insights of my 'nuclear clique', Anton Öhman and Hebatalla Taha. Thank you also to everyone at Cultural Sciences – Alma Aspeborg, Amanda Persson, David Bowling, Disa Runeby, Gurbet Peker, Jonas Bornsäter, Josefine Sarkez-Knudsen, Katja Roos, Lee Dallas, Magne Klasson, Marsanna Petersen, Molly Lindberg, Naoko Takayanagi, Olof Risberg, Phil Dodds, Rasmus Riegels Sørensen, Rikard Heberling, Sarah Vorminder, Shirley Chan, and Simon Halberg, Talieh Mirsalehi, and, at the National Research School in Historical Studies, Sara Williamsson, Anne Ladefoged, Joacim Seger, Yannick de Raaf, Magnus Borg, Patrick van der Geest, and Karl Vesterberg.

Thank you Amanda Landegren, Emma Forsberg, Evelina Kallträsk, and Sarah Pritchett. Your friendship, intellect, humour, and warmth have been invaluable. I would like to thank my dear friends Marie Trappehave, Michelle Winther, Martin Romatowski, Jens Niska, and Matthew Thompkins for being there. I would like to express my deepest gratitude to you, Charlotte Merton; your guidance and support have been vital to this publication and to me. Thank you.

I was fortunate to have a desk exchange with Linköping University's Tema-T division under the guidance of Anna Storm. The nuclear researchers' lively discussions really pushed my research forward. I am especially grateful to Anna, Hannah Klaubert, Sergiu Novac, Thomas Keating, and Marko Marila for your advice and suggestions.

The KTH Royal Institute of Technology in Stockholm gave me the opportunity to present my work and receive invaluable feedback on the theoretical implications. My special thanks to Per Högselius who generously shared his knowledge of nuclear history and inspired me to look for the larger 'puzzle'.

I wish to thank Robert Willim for his stimulating feedback and Marie Cronqvist for her thorough reading and helpful comments on earlier drafts of this book; Søren Hein Rasmussen, who, when this project was only a thought, sent me his book and answered my questions; Kate Brown, who encouraged me in the initial stages; Klaus Kehrer for his support; and Heidrun Führer for inspiring me. I owe a debt of thanks to Kristina Stenström at the Division of Particle and Nuclear Physics at Lund University, who chatted at length about nuclear physics and shared her teaching materials with me.

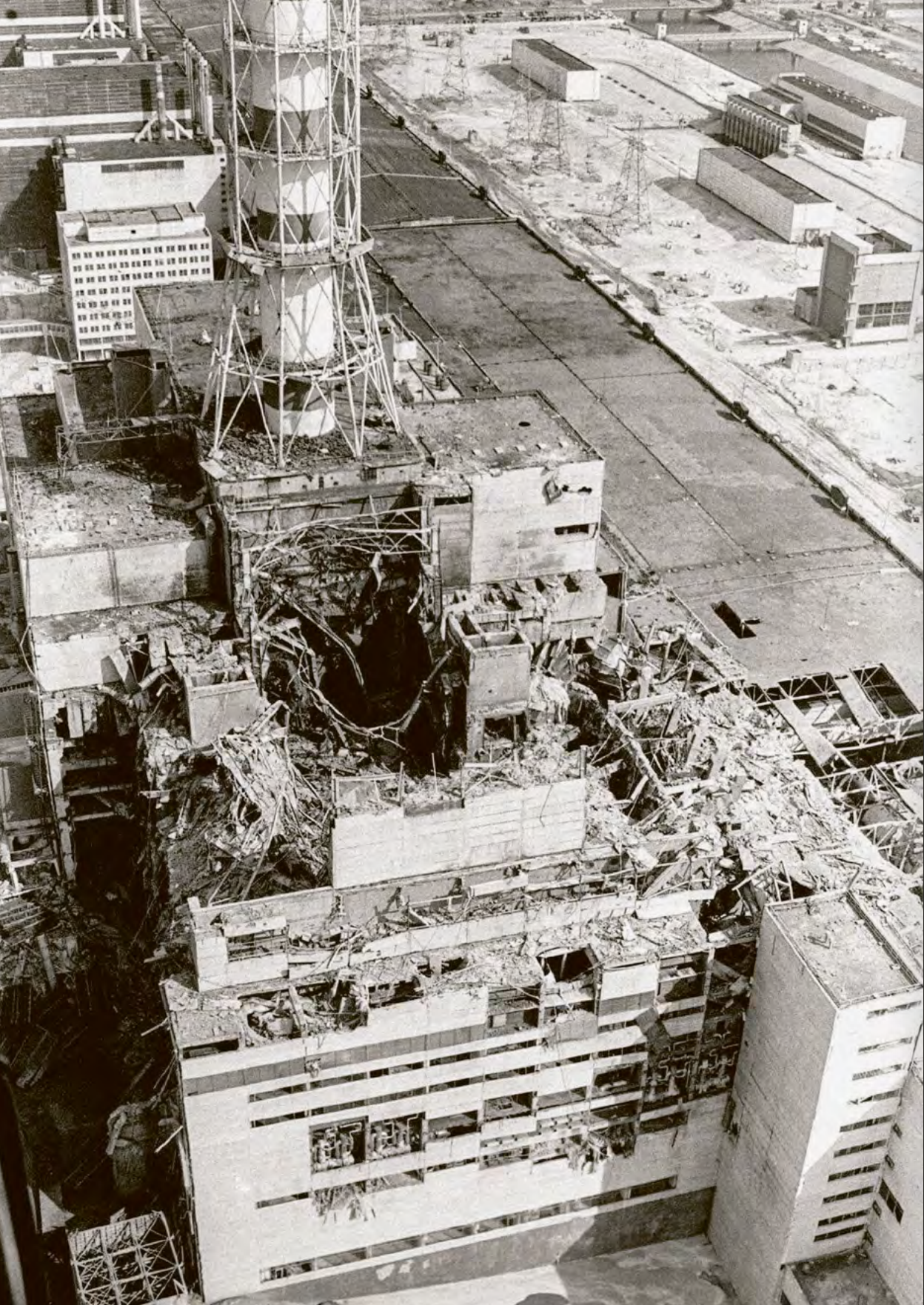
Thank you to the funders who generously supported this book and its publication: Dana's Legat, Gyllenstiernska Krapperupsstiftelsen, Bokfonden, Stiftelsen Längmanska Kulturfonden, William Karlssons Stiftelse, and Åke Wibergs Stiftelse. Thank you also to my colleagues at the Department of Cultural Sciences who helped finance this book by investing in my artworks. My deepest gratitude to Carsten Olsen who allowed me to use his photographs in this book. As well as the team of TheFarm51 who gave me permission to reproduce their material. This visual book became alive because of you, and I will always be thankful for your trust in me and this project.

I want to thank my local neighbourhood coffee shop, Östra Kaffebaren in Malmö, where, fuelled by innumerable Italian coffees, I read nuclear world news and wrote significant parts of this book. I am grateful to have worked in such a warm, creative space.

I wish to thank my parents who took me to see nuclear power stations as a child and told me about nuclear politics. Your activism and encouragement truly shaped what this book would be. Dad, thank you for supporting me by sending me everything you found about Chornobyl. Mom and Troels, thank you for being there. Thank you to my family, my brother Mikkel, and my in-laws, who supported me, even when I spent most holidays reading and writing – and discussing nuclear power over meals. These conversations helped shape my thinking, and I am grateful to you all.

The years spent writing were marked by the loss of many dear to me. They still mean so much, the people who listened to me, supported me, and sadly could not be here to see my book completed. Thank you Bedstemor, Mormor, and my friend, the boatwright André.

And above all, Melker Larsson, who has been by my side from the very beginning. Your love, enthusiasm, steady support, and (annoying) criticism have kept me going, especially when writing felt impossible. Eh-eh!



1

AN INTRODUCTION TO NUCLEAR BAROQUE

Some of the most iconic photographs of the Chornobyl disaster were those taken by Volodymyr Repik and Igor Kostin. As official Soviet photojournalists, they were brought to the nuclear power station on 26 April 1986 only hours after the explosion.¹ From the air, their images rendered the reactor as a white, box-shaped building, torn open to reveal a nasty cavity. Pipes and debris spilled out like frozen lava, silently recording the violence of the blast.

But it was not just the subject that made these photographs remarkable. The subtle look of what might, at first glance, seem to be a technical mishap – problems focusing or a smudge on the lens – was in fact the material interference resulting from high levels of radioactivity.² The very first images of Chornobyl were also the ones that reveal the most. Following the disaster, the Soviet Union worked tirelessly to suppress the scale of the catastrophe as it threatened not only human lives, but also the state's legitimacy as a nuclear empire during the Cold War.³ But Chornobyl proved infectious. From its very first picture, the disaster began to exceed the bounds of its historicity, inserted into cultural memory by the images that shaped how it would be seen, remembered, and imagined.

In 2026, while browsing Etsy, I discovered a 3D-printed humidifier that recreated those same portraits of Chornobyl. The miniature reactor glows either blue, red, or yellow, and perfumed vapour rises instead of radioactive smoke. Buyers responded with enthusiasm: 'Absolutely awesome. This gets awarded to staff in the office as the "Meltdown of the Week" award. It's a lot of fun'. Another joked, 'Exactly as described. I now have a radiation generator spewing gas throughout my room. 10/10'.⁴ And a third frames the object as energy politics:

I like this black humor way of turning the worst nuclear disaster in human history into a piece of home decoration :) I am also a strong proponent of nuclear power, believing it should be embraced and celebrated, since it's one of the ways to help us overcome the climate crisis.⁵

While all the reviews acknowledged the gravity of the disaster, in one way or another, they seemingly reframed it through humour and climate-minded optimism. But even more interesting is what the object itself accomplishes: a nuclear disaster once too vast to contain has become aestheticised, commodified, and packaged into something we can keep as an ornament. What does this piece of plastic suggest about how Chornobyl's aftermath is perceived and remembered today, and, more broadly, how we treat the prospect of a nuclear-powered society?

In this book, I investigate how popular culture visualises radioactive particles, objects, environments, and bodies and how such images navigate the ongoing risks and aesthetic sensationalism

of nuclear energy. By looking at the Chornobyl disaster, I argue that these representations do not merely depict radiation but comprise an active part in shaping the cultural perception of what life with nuclear power can be. This question has gained a new urgency at a time often framed as the 'nuclear renaissance', when nuclear power is increasingly promoted as a fast-track solution to the climate crisis.⁶ But rather than taking the perspective of policy-makers, nuclear physicists, or high art, I seek to look at the things that are more likely to constitute our day-to-day experience, such as browsing items on Etsy and finding a Chornobyl-themed humidifier.

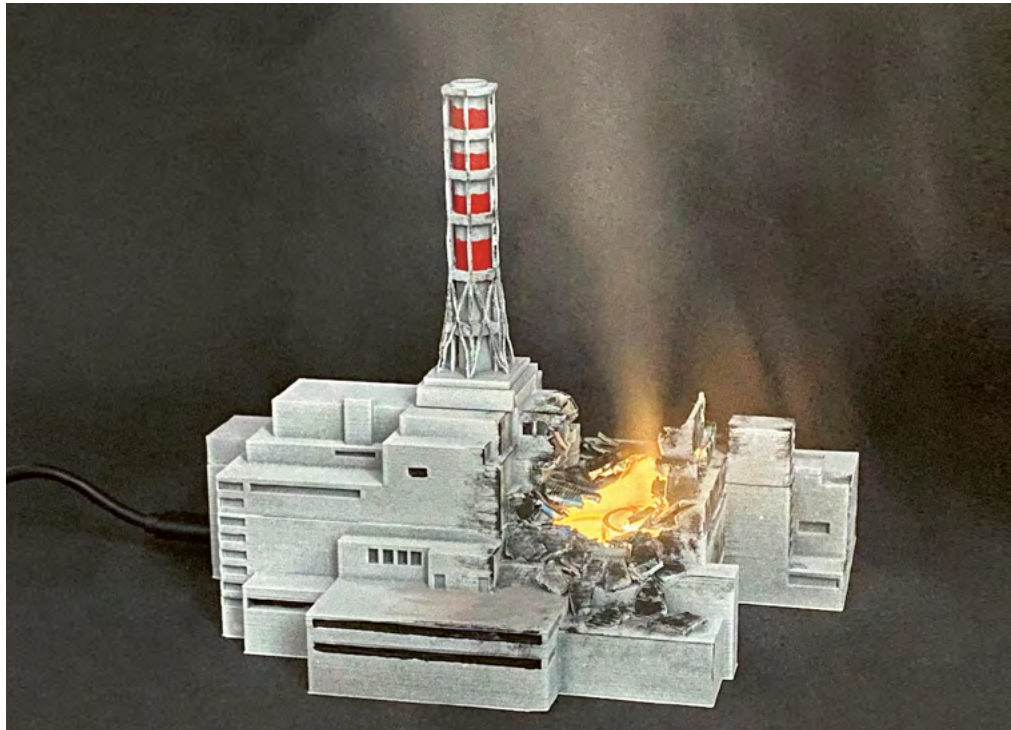
Chornobyl's popular visual landscape is rarely organised around images of nuclear success or technological progress, despite what the rhetoric of the renaissance might suggest. Rather, it is saturated with glowing images of survival and life next to disaster. Much as in English, in Danish and Swedish one can say something is baroque – *Det er helt barokt!* – when something is excessive, strange, absurd, or over the top. To be able to have the scent of roses wafting from a mini-Chornobyl is almost as baroque as the soft ambience of its glow. To be baroque does not only signify objects or images; it can be extended to situations or events. The word stems from the Portuguese *barocco*, a 'rough or imperfectly shaped pearl'.⁷ In art history, John Rupert Martin suggests it denotes 'an art that is extravagant, heavily ornate or bombastic'.⁸ In many ways, all of these qualities can encapsulate contemporary popular nuclear culture's attempts to visualise nuclear disaster, such as luminous sludge oozing from waste barrels or deformed monsters with glowing heads. The baroque period was when extravagant art and architecture was politically commissioned and used to direct attention toward the power of God and the state, appealing to the emotions with its overwhelming, dramatic beauty. If this baroque ideal of attraction and persuasion were translated into the contemporary political landscape of nuclear power, we might ask what kind of attraction the images of Chornobyl exert today.

I use the term 'nuclear baroque' to describe a visual culture in which nuclear disaster appears as excess, theatricality, glow, humour, horror, and attraction. Where the baroque period followed the Renaissance as a chronological 'next', the nuclear baroque names the visual excess that haunts today's rhetoric of nuclear rebirth. The baroque here is less a fixed period style than an aesthetic of nuclear extravagance, suggesting that its current visual culture may just exceed the language of the 'renaissance' that has contemporary nuclear scholarship in a chokehold.⁹

By bridging theoretical analysis with discourses of nuclear visual culture, I wish to encourage the reader to reflect on how these representations shape broader societal conversations about nuclear technology, risk, and sustainability. Drawing on art history,

visual studies, and the environmental humanities, I examine how the invisible is made visible in tropes and metaphors such as the radioactive glow and 'Chornobyl', and how these frame the aesthetic experience of nuclear disaster at a distance as either sublime or abject, safe or dangerous. In short, how do we aestheticise nuclear disaster? And how does the baroque as an aesthetic that governs its visual representation differ from, or align with, the political rhetoric of today's nuclear renaissance?

Figure 1
'Chernobyl disaster humidifier',
2026. Courtesy of Alpaca3D/Nastya.



THE GLOW

Radioactivity does not actually glow, yet our culture insists on making it shine. Take the lyrics of *Bikini Red* by The Screaming Blue Messiahs:

Hello stranger, don't be afraid
I only glow like this after midnight
And after all, the only thing you have to do
Is keep looking at the light.¹⁰

Or consider nuclear pollution in the popular cartoon franchise *The Simpsons*, where radioactive material is often bathed in brilliant green light. Similar to art historical definitions of the baroque,

where naturalism and light are privileged over idealisation, representations of nuclear disaster often render radioactivity visible by making it luminous.¹¹ While this visualisation draws on a kind of aesthetic idealism, there are several commonalities between the scientific presentation of radioactive matter and materials and their representation in popular culture. Nuclear waste, for example, is often imagined in the same green luminosity associated with uranium glass. In this book I use the glow as an anchor between scientific realism and cultural imagination.

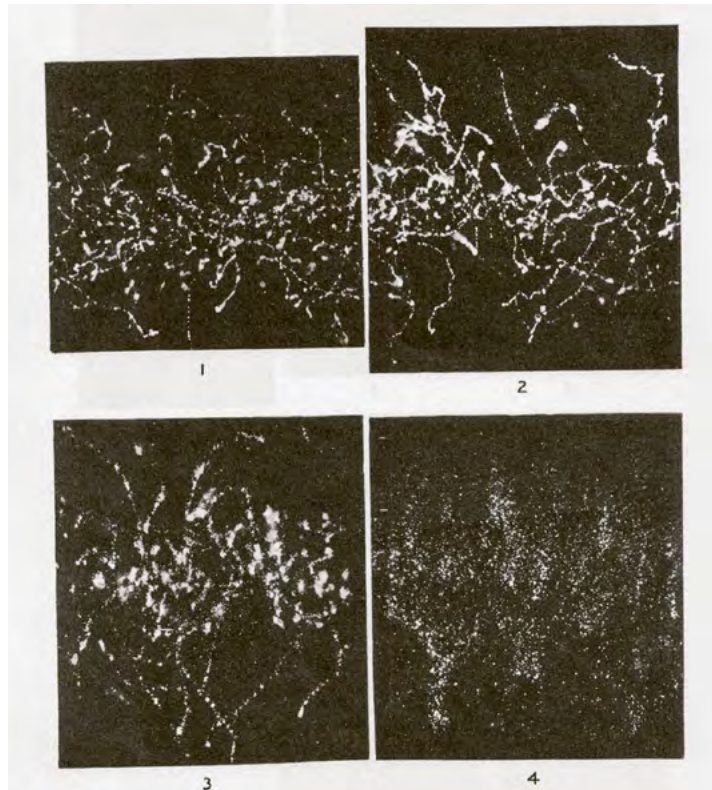
In Chapter 2 I theorise the glow in order to establish it as the project's conceptual anchor and lay the groundwork for how the nuclear can be seen and understood. By tracing how the visual glow metamorphoses from scientific realism into seductive warning symbols and special effects, I ask what happens when invisible danger is continually translated into visible light. What forms of knowledge, memory, and power structures are produced when catastrophe must shine in order to be seen?

Strictly speaking, radioactivity does not emit visible light on its own. Visible light appears only under particular conditions, such as when radiation interacts with other materials that then emit light as fluorescence, radioluminescence, scintillation, or Cherenkov radiation.¹² Not that I want to explain away the glow using nuclear physics: it would not make sense, as my interest is what the glow does at the level of cultural perception, where people seldom see the need to understand decay chains and wave-lengths. I therefore rarely distinguish between fluorescence and radioluminescence, and instead use umbrella terms such as light, luminosity, glow, and fluorescence.

With perceived luminosity comes the question of invisibility. Radioactivity is more than often referred to as invisible, because it is to the human senses, but many physicists have told me that, despite appearances, radioactivity is highly visible. For example, alpha, beta, and gamma radiation can be detected and quantified with instruments such as a Geiger counter or a cloud chamber, whereas air or gravity are truly invisible because they cannot be measured, even though, from my perspective as a visual scholar, they appear eminently observable.¹³ We feel the wind on our skin, and we can watch objects fall. Radioactivity, to me as a visual scholar, should be considered invisible. And even if radioactivity can be measured and 'seen', not everyone has access to such instruments. For most people, seeing radiation in a cloud chamber would be a special event, closer to a science demonstration than an everyday experience. Setting one up requires isopropyl alcohol, dry ice, a sponge, a bright torch, and a clear container with a tightly fitting lid.¹⁴ In the chamber, radiation leaves thin, dart-like trails as it passes through the mist – the brief flashes that resemble shooting stars (Fig. 2). That radiation is 'visible' is a privileged claim, only true for those with access to the correct tools and objects.

Throughout this book, I use radioactivity and radiation interchangeably. While the terms have distinct technical meanings – radioactivity is the process of nuclear decay and radiation the particles or energy emitted – visual culture frequently merges them, rendering the distinction irrelevant for the purposes of my analysis.¹⁵ This is not an oversight but a deliberate methodological choice, reflecting the cultural frameworks by which radioactivity is represented. Measurements and databases do not detain me in this investigation of radioactivity as it is imagined and communicated in popular visual culture – more often than not as the glow.

Figure 2
Ionising particles in a cloud
chamber, photographed
in 1912 by C. T. R. Wilson.



In this book I investigate how visual representations of nuclear disaster mediate the tension between ongoing risk and aesthetic sensationalism. In the second half of the twentieth century, nuclear power impinged on ordinary life in Western Europe, be it through environmental activism or cooling towers in the cityscape. Disasters, however, are the times when radiation and nuclear energy, otherwise dormant in their mundanity, are suddenly made hyper-present in the public, political, and ecological discourses. In the aftermath of a nuclear disaster most landscapes and bodies remain visually the same, however, and visual culture is one way of responding to the

representational challenge of communicating what fallout pollution entails. Nevertheless, in seeking to give form to and understand this type of disaster, such representations often exaggerate, dramatise, or aestheticise catastrophe.

I necessarily write from the perspective of Western Europe, and primarily Scandinavia, so distance is especially important. Although radioactivity from nuclear disasters and weapon testing can be measured in pond sediment or elk meat, Sweden has largely been spared the misery of the heavy contamination experienced by those living in closer proximity to disaster sites. At a remove, nuclear disaster can appear more approachable because we are not directly affected by its contamination. Images therefore provide a form of mediated access. But here a problem arises. How can tragedy be articulated while making it visually appealing to consumers? And what risks does it pose to those whose suffering, bodies, and environments are transformed into images?

I examine how popular visual culture represents nuclear energy and specifically how the recurring trope or metaphor of the glow informs the depiction of objects, landscapes, and bodies. Rather than looking to high art, I am interested in the popular media that are generally more available than visits to art museums or galleries, ranging from video games and television to photography and cultural artefacts. Using the visual motifs from the Chernobyl nuclear disaster in 1986 and its aftermath, I explore how cultural imaginaries shape public perceptions of nuclear power and catastrophe in an era of renewed nuclear optimism, driven by the climate crisis and rising energy demand.¹⁶ I argue that while these visual representations circulate in a time framed as the nuclear renaissance, aesthetically they move toward a 'nuclear baroque' in which aesthetic extravagance becomes a persuasive way of dealing with the consequences of nuclear disaster.

My theme is how popular visual representations of nuclear disasters navigate ongoing risks and aesthetic sensationalism. This raises a variety of questions. Why is radioactivity often depicted as glowing? What visual tropes distinguish images of radioactive landscapes from generic ruin imagery? How is the radioactive body imagined, and how does its image shape cultural understandings of it? How does the aesthetic experience of radioactivity, especially from a mediated distance, evoke a sublime experience? In what ways do the visual representations impact our perception of nuclear risk? How do they frame the cultural memory of the event itself? Ultimately, I argue that visual representations, while compelling and culturally resonant, may also function as a form of sanitised violence, lying dormant in periods of nuclear normalcy and flaring into visibility only in times of catastrophe. Chernobyl is the leading example, since it shows how we culturally remember, construct, and deal with nuclear disaster.

THE JOURNEY TO THIS BOOK

The Russian invasion of Ukraine in February 2022 cast everything in a new light. Initially, I had intended to write about tourism in Chornobyl and the ways in which Western visual culture frames the Soviet Union, and by extension Ukraine and Russia, as symbols in the ongoing political and aesthetic debate about nuclear power. But with the invasion, Chornobyl, once again, was off-limits. What had seemed like a site of tragic memory and symbolic distance was reactivated as a strategic military zone. The war closed borders, restricted access to archives, and disrupted the flow of information on social media. But more importantly, it highlighted other, more fundamental questions about how we treat disaster at a distance, which ultimately led to this book.

In Europe, many people have a story about Chornobyl. Hearing about the disaster for the first time; fearing the outdoors; refusing to eat meat and vegetables or drink milk; changing their mind about nuclear power. Chornobyl, after all, exceeded the confines of geography because fallout travels with the wind. Interestingly, in an effort not to have fallout rain over Moscow, on 27 April 1986 the Soviet Union used cloud-seeding techniques to manipulate the weather so the majority of the fallout rain fell on the Gomel and Mogilev regions in Belarus, which in turn became some of the most heavily contaminated places.¹⁷ Outside of the Soviet Union, countries such as Italy, France, Germany were affected too. Particularly in northern Sweden, ponds, mushrooms and other vegetation greedily soaked up radiation, and human consumption of both elk and some vegetables became restricted. Even today, Swedish wildlife in these areas is continually monitored for radiation. Chornobyl therefore continues its pollution on a less obvious scale. Historian Kate Brown, for example, mentions how contaminated blueberries from Ukraine are mixed with clean ones to lower their radiation content. This allows the berries to be sold at the Polish border, and transferred to the rest of the European market, and straight to Swedish tables.¹⁸ Even if Chornobyl is not always in the news, its story is far from over.

Chornobyl's afterlife is not only ecological, but also political and infrastructural. Starting in 1997, the International Atomic Energy Agency (IAEA) maintained a remote safeguard monitoring link – basically a surveillance camera – at the Chornobyl nuclear power plant to oversee its safety and dismantling. But in March 2022 the monitoring link went dark, and for a moment it seemed as if Chornobyl had been symbolically pulled back behind the Iron Curtain.¹⁹ The images that emerged afterwards – drone footage of trenches dug into irradiated soil, the tyre tracks of military convoys in the Red Forest – suggested the reawakening of nuclear risk. In the mainstream news media, unconfirmed stories began to

circulate that radioactivity had been disturbed and released, and as a consequence Russian soldiers had suffered radiation sickness.²⁰ Whether true or not, such stories became part of Chornobyl's ever-evolving mythology and help keeping its memory alive. The Russo-Ukrainian war has therefore not just reignited fears about Chornobyl; it has also placed nuclear power at the heart of geopolitics. When Russia began their occupation of the Zaporizhzhia nuclear power station, the largest in Europe, in 2022, it made clear that nuclear infrastructure remains a tool of war.²¹ Headlines speculated about whether the plant might be used as leverage, or worse, become the site of a new catastrophe.²² These anxieties are a reminder that nuclear danger is not merely a matter of past accidents or fictional futures; it is deeply embedded in our political present.

THE CHORNOBYL DISASTER

On the 26 April 1986 at the officially named Vladimir Ilyich Lenin Nuclear Power Plant, about three kilometres from the nearby city of Prypiat in northern Ukraine, close to the Belarusian border, reactor no. 4 exploded. Today, as then, the plant is commonly referred to as Chornobyl because of its proximity to the village of Chornobyl. The name is often translated as 'wormwood', referring to the bitter-leaved plants that grow abundantly in the area. Wormwood also appears in the Bible, in the Book of Revelation: a star named Wormwood falls from the sky and poisons the water of the earth.²³ The Chornobyl disaster has therefore often been interpreted through this biblical reference, as if it were a fulfilment of prophecy. On that day in 1986, to avoid potential disruptions to the power grid, plant managers chose to conduct a delayed safety test after midnight, when electricity demand was at its lowest.²⁴ At 01:23 the safety test failed after staff kept the experiment running by disabling the safety systems and the reactor became unstable from prolonged low-power operation, which led to xenon-135 poisoning.²⁵ When they finally initiated the emergency shutdown by inserting all the control rods, their graphite tips accelerated reactivity, triggering a sudden surge of energy that culminated in a massive explosion.²⁶

While it is tempting to reduce nuclear power to the metaphor of a souped-up steam engine, the comparison is not entirely misleading. Most nuclear power stations generate electricity by using heat to boil water to make steam that drives a turbine.²⁷ The difference, is that the heat comes from a controlled fission chain reaction, in which atomic nuclei are split into smaller nuclei by absorbing a neutron, releasing heat and further neutrons, and so the chain reaction continues.²⁸

The reactor type at Chornobyl was an RBMK, *reaktor bolshoy moschnosti kanalnyy*, a Soviet design developed for high-output

electricity production, but with a potential dual use for plutonium production that had strategic value in the Cold War.²⁹ Plutonium is key in nuclear arms production. By 1986, the Soviet Union was in a period of economic stagnation shaped by military expenditure, massive infrastructure planning, fatuous bureaucracy, and corruption.³⁰ The resultant shortages extended even into the nuclear sector, affecting the availability and quality of building materials. At Chernobyl, for example, the plant's roofing was covered in highly flammable bitumen, and when the Ministry of Energy in Moscow ordered the plant manager Viktor Brukhanov to replace it, he argued that flame-retardant material was not manufactured in the required quantities in the USSR.³¹ An exemption was granted, and the bitumen remained.³²

This was why an RBMK appealed to a strained state apparatus: it was comparatively cheap to build and could generate roughly 1,000 megawatts of electricity – enough for 1 million homes.³³ However, some of the same cost-driven design choices, most notably the absence of a robust containment structure, also contributed to making the consequences of the disaster so severe.³⁴

The immediate response in the spring of 1986 was shaped by delays due to bureaucratic deception, and systematic failures, which ultimately contributed to the widespread contamination and exposure of large numbers of Soviet citizens.³⁵ The evacuation of 44,460 people from Prypiat began the following day on 27 April, but it took several weeks to expand the Exclusion Zone and evacuate the remaining 75,000.³⁶ Visually, despite the invisibility of the radiation, it was all too evident in the photographs taken then. According to the historian Serhii Plokhyy, a film shot by local film-makers during the evacuation showed the contamination on a calm, sunny day:³⁷

Sparks and flashes in the film frames reveal the true meaning of what we see on screen: these are scars left by radioactive particles attacking the film through the thick lenses of the camera.³⁸

The official 30-kilometre Exclusion Zone, as it is commonly known today, was not put in place until May 1986.³⁹ And the radioactive contamination spread far beyond the borders of the Soviet Union. In fact, on 28 April, it was at Forsmark Nuclear Power Plant in Sweden that elevated radiation levels were first detected outside the USSR. In the early morning, the radiation monitoring alarms began to sound when personnel tried to enter their workspace. After having ensured that the radiation did not come from them, Forsmark raised the alarm that eventually forced the Soviet Union to acknowledge that something had occurred.⁴⁰ Since the disaster unfolded at the height of the Cold War, when

nuclear weapons and nuclear power were synonymous with geopolitical prestige, to acknowledge a catastrophic failure came at a political price.⁴¹ The disaster's true scale was therefore only revealed little by little and often in conflicting ways.⁴² In 2006, the former Soviet president Mikhail Gorbachev admitted that the Chernobyl disaster may have contributed to the collapse of the Soviet Union in 1991.⁴³ This was partly due to the USSR's already impending economic collapse, but also to the fact that the disaster occurred at a moment when Gorbachev was promoting *perestroika* and *glasnost*: reforms aimed at restricting the Soviet system, while encouraging greater transparency and communication both within the Soviet Union, and with the world beyond the Iron Curtain.⁴⁴ When the disaster happened, however, the truth remained difficult to grasp. Information was delayed, minimised, and obscured, leaving many people uncertain about the extent of their exposure and the risks to their health. In this contradiction between official openness and continued secrecy, Chernobyl became a crisis of trust.⁴⁵ The disaster exposed the limits and contradictions of *glasnost* that contributed to the erosion of trust in the Soviet state.

In an effort to contain and manage the disaster, the Soviet Union mobilised an extraordinary labour force, including roughly 600,000 liquidators: the men and women who were brought in to decontaminate the area by washing streets of radioactive particles, removing contaminated materials, and burying and sealing structures under layers of concrete.⁴⁶ In August 1986 a confinement structure, often referred to as the 'sarcophagus', was finished to enclose the destroyed reactor and limit the release of radiation into the environment. Made of heavy concrete and steel, it was constructed urgently and was never intended to last indefinitely. By the 2000s the structure had begun to deteriorate and was considered increasingly unstable. In 2010, work began on a new and much larger structure, the New Safe Confinement, designed and built by the French-led consortium Novarka. In November 2016, this immense arch was slid into place over the old sarcophagus, enclosing it so that the unstable structure and the radioactive debris beneath could eventually be dismantled and managed more safely.⁴⁷ As of 2026, the New Safe Confinement is the largest movable land-based structure ever built.

Quantifying the victims of Chernobyl remains contested. The real number is not known. The immediate figure for those who died as a direct result of the disaster came to 31, including first responders such as power station workers and firefighters.⁴⁸ But other calculations have estimated around 45,000 to 100,000 deaths attributable to the health effects of the disaster, such as cancer, general illness, and birth defects, particularly prevalent in liquidators and their families.⁴⁹ Kate Brown's *Manual for Survival* (2019) accounts for many of the ways in which the Soviet people were

exposed, in an effort to come closer to a more realistic number.⁵⁰ Similarly, the communication scholar Olga Kuchinskaya accounts for some of the contemporary ways in which the disaster affects the surrounding populations in Belarus in her *Politics of Invisibility* (2014). Despite all the liquidation work, Chornobyl's legacy continues to reside in the bodies of those who lived, and continue to live, in its vicinity.

The Chornobyl disaster was categorised as a level 7 on the International Nuclear and Radiological Event Scale (INES). Levels 1–3 are classified as incidents and levels 4–7 are accidents, ranging from accident with local consequences (level 4) to major accident (level 7).⁵¹ For comparison, the fire at Windscale (later Sellafield) in the UK in 1957, in which radioactive material was released into the environment following a reactor-core fire, was rated level 5 (accident with wider consequences), while the 2005 leak there was classified as level 3 (serious incident).⁵² The Fukushima Daiichi disaster in 2011 was also rated level 7, but, as the IAEA notes, INES is primarily a communication tool and is not meant to support simple, one-to-one comparisons between disasters.⁵³

FUKUSHIMA AND THE PROBLEM OF COMPARISON

While my primary focus is the Chornobyl disaster, because of the historical distance and extensive circulation in the Western popular media it is important to acknowledge the more recent Fukushima Daiichi disaster in 2011. The nuclear policy scholar M. V. Ramana has argued that the Japanese state entered the Fukushima disaster with far stronger economic and institutional prerequisites than those available to the Soviet Union in 1986.⁵⁴ Fukushima is also commonly understood as part of the larger compound disaster that began with a magnitude 9.0 earthquake, a subsequent tsunami, and a nuclear meltdown.⁵⁵ In the aftermath, there was public concern about the accuracy of Japan's official radiation exposure assessments. As the historian of science Néstor Herran observes, the tsunami damaged some 95 per cent of the region's radiation monitoring stations, delaying official estimates of radioactive releases for nearly a fortnight.⁵⁶ In response, citizens measured radiation themselves and published the data under a Creative Commons licence for several years following the disaster.⁵⁷ Using the data, activists confronted the Japanese government, pointing to discrepancies of up to 30 per cent between citizen and official measurements.⁵⁸ More than 15,000 people were killed as a direct result of the earthquake and tsunami, yet only one worker's death from lung cancer was attributed to radiation exposure from the Fukushima meltdown.⁵⁹ However, according to historian Robert Jacobs, cancers are rising among the evacuees, but still researchers disagree on whether the elevated rate of childhood thyroid cancer

is evidence of children's radiation exposure, or whether it results from increased testing.⁶⁰ Instead, citizens worry that their exposure is more often framed as 'radiophobia' by official voices, which implies an intense, exaggerated fear of radiation.⁶¹

Today, Tokyo Electric Power (TEPCO) is still carrying out long-term decommissioning and clean-up work at the Fukushima Daiichi Nuclear Power Station, and its surroundings.⁶² Alongside these ongoing efforts, several tourism initiatives and tour operators offer guided visits to disaster-affected areas in Fukushima.⁶³ In 2023, after speaking with a Japanese teacher from the Fukushima Daiichi area, I was offered an informal visit to the former evacuation landscape so that they could show me what life was like before the disaster. There was no financial incentive, only a former resident's wish to communicate what displacement actually entails. While I never went on that trip as a PhD student, the invitation stayed with me because it condensed one of the more central problems of this book. That to really 'see' a contaminated space is ultimately to ask what there is, in fact, to see.

A NUCLEAR PARADISE: THE EXCLUSION ZONE

Before the Russo-Ukrainian war, entry into the Chornobyl Exclusion Zone was formally prohibited, yet the area was increasingly a tourist destination for visitors seeking a curated experience of apocalypse. Meanwhile, former residents were largely confined to brief returns twice a year, such as for the Slavic Orthodox commemorations of the dead, Provody and Pokrova, unless they, like outsiders, paid for a tourist pass. In 2019, the Ukrainian President Volodymyr Zelenskyy publicly framed the Zone's development and regulated visits as a means of educating visitors about nuclear safety and national history.⁶⁴ When the TV mini-series *Chernobyl* was aired by the television service HBO in 2019, tourism reportedly increased by 40 per cent.⁶⁵ Reports also noted that the show's writer, Craig Mazin, publicly urged visitors to behave respectfully after 'inappropriate' social media posts from the site began circulating online.⁶⁶

When I was a teenager in the 2000s, the online images of Chornobyl were generally of the exploded power plant, abandoned buildings, and suffering children. Today, the digital visual landscape is dominated by tourists posing in front of the iconic Ferris wheel, digital monsters emerging from irradiated landscapes, and polished stills from the *Chernobyl* miniseries. It seems that in little more than a decade, the visual discourse about Chornobyl has transformed dramatically, from tragedy and contamination to cultural fascination and spectacle.

My experience reflects how the nuclear has re-emerged in the public sphere, not only as a visual trope, but also as a proposed

solution to the climate crisis. Nuclear power has once again been cast in a promising light: clean, efficient, and inherently safe. Yet this renewed optimism often relies on selective memory. Much of the nuclear industry's problematic history, its accidents, near-misses, and structural failures, has been reframed as part of a linear narrative of technological progress. For example, the fast-breeder reactor, once marked by numerous small-scale accidents, is now invoked as evidence of how far the industry has come. In this discourse, knowledge itself becomes a form of power, fuelling both advocacy and scepticism, reinforcing historical experience's entanglement with imagined futures in deciding between the good and the bad of nuclear power.

We have, in many ways, entered a new nuclear age. Researchers and policymakers alike acknowledge that another nuclear accident is likely, whether due to ageing infrastructure, geopolitical instability, or the escalating pressures of climate change.⁶⁷ Nuclear power stations originally designed to operate for 30 years are now being extended to 80, pushing materials such as concrete beyond their intended limits.⁶⁸ Meanwhile, new reactor designs, including small modular reactors, are being celebrated as the next step in safe nuclear technology, even though history suggests that new designs often bring unforeseen problems.⁶⁹ Nuclear waste, too, remains a central and unresolved issue, as the historian Rosemary Joyce reminds us.⁷⁰ The question is how we can safely store nuclear waste for thousands of years, when our current systems such as language and culture may have expired.

Geopolitics adds another layer of risk. The Russo-Ukrainian war has exposed the vulnerability of nuclear facilities in conflict zones, where civilian reactors are potential targets or tools of coercion.⁷¹ Climate change is further destabilising nuclear infrastructure because of rising temperatures, water scarcity, and extreme weather, all of which puts a strain on cooling systems, transportation, and waste storage.⁷²

Renewed nuclear optimism is, paradoxically, accompanied by a persistent lack of transparency. In democracies, nuclear governance often operates at the edge of public oversight, while in parts of the Global South, where many new facilities are being built, oversight can be even more limited.⁷³ The result can therefore be said to be a widening gap between the public's visual familiarity with the nuclear (in the media, games, and exhibitions) and its actual political and environmental realities. The way nuclear imagery has resurfaced in art and popular culture may reflect how societies continue to process the trauma of past disasters while negotiating the promises of a nuclear future.

During the Covid pandemic, this visual and narrative resurgence intensified. Perhaps the need to imagine and visualise invisible threats, the virus, radiation, contamination, found a

shared expression in the renewed fascination with the nuclear. Both the virus and radioactivity operate below the threshold of human perception yet exert immense influence over materials and societies. Visualising the invisible became a form of control: to picture what could not be seen was to make it containable. Colourful 3D models of the virus and glowing renderings of radiation converged in an uncanny visual vocabulary of unseen danger. Every day, the mainstream news provided animated graphs to show the development of the virus – how many ill, how many dead. The trope of the glow became a shared aesthetic device that made both threats appear seductive, uncanny, and strangely terrifying. This convergence of pandemic and nuclear imagery seemingly speaks to a broader cultural need: to aestheticise what frightens us and to make existential threats tangible and, in some sense, manageable.

There have been visual representations of the Chornobyl disaster in the various media since events in 1986. Recent years, however, have seen a marked increase in interest and popularity. Especially after the release of the *Chernobyl* miniseries in 2019, a number of popular media have emerged depicting the disaster. For example, Helen Bates graphic novel *The Lost Child of Chernobyl* (2021), or the video game *Stalker 2: Heart of Chernobyl* (2024). Other nuclear disasters have also been translated into television series. The 2011 Fukushima disaster, for example, has been remediated in the Japanese series *The Days* (2023), while the Goiânia accident is treated in the Brazilian series *Radioactive Emergency* (2026). Significantly, these series are national products about national disasters. This contrasts with the Chornobyl

Figure 3
Prypiat residential area, 2021.
Courtesy of Carsten Olsen.



disaster, which continues to be mediated, perhaps disproportionately, by outsiders and from afar.

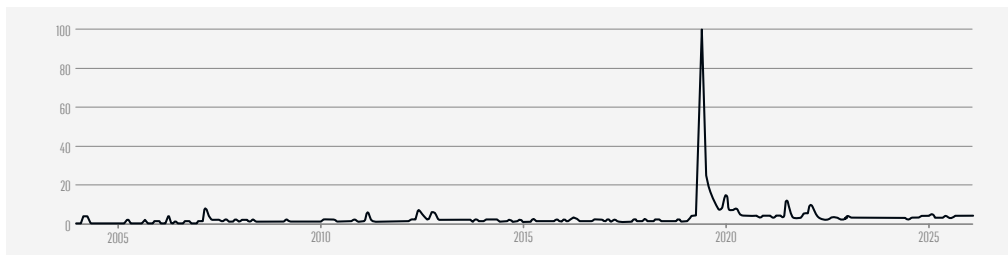
The popularity of visual representations of Chernobyl can be attributed to several factors, including heightened public awareness of environmental risk and nuclear safety in the context of war, climate change, and the renewed debate about nuclear energy. Yet it may also stem from a sustained fascination among those outside the former Soviet Union, but still within the imagined or material reach of its fallout, namely Europe. The disaster's 'poetic truth', meaning its dramatised version, may also help explain its transformation into myth. In this sense, Chernobyl is continually reimagined as an aesthetic experience alongside its historical factuality.

CHERNOBYL AND CHERNOBYLITE

In this book, I examine a range of visual representations of nuclear culture, from historical sources to contemporary popular media, paying particular attention to graphic renderings of radioactivity. Historical materials, such as objects and events, provide essential context for understanding present-day depictions of nuclear disaster. While nuclear visual culture offers many possible objects of study, I focus on two empirical cases: the TV series *Chernobyl* and the video game Chernobylite.

Chernobyl is a TV drama miniseries from 2019 consisting of five episodes, each lasting an hour. It was created by Craig Mazin, directed by Johan Renck, and streamed on HBO Max (Home Box Office), a popular streaming site.⁷⁴ Based on witness testimony, it recounts the events of the 1986 Chernobyl disaster and the subsequent political and bureaucratic obstacles in dealing with Soviet nuclear power and secrecy by highlighting the efforts of firefighters, liquidators, scientists, and government officials.⁷⁵ *Chernobyl* seems to have sparked mass interest in the Chernobyl disaster, supposedly even leading to a 40 per cent increase in tourism to the Zone after the series was released.⁷⁶ A look at Google Trend search statistics shows that searches for 'Chernobyl' tended towards zero for many years and only rose a little in 2011 when the Fukushima Daiichi disaster occurred. However, the curve

Figure 4
Google Trends Statistic, 'Chernobyl'
searches in Sweden, 2004–2026.



soared in 2019 following the release of the miniseries.⁷⁷ After that, the curve has rarely gone down towards zero again.

Chernobylite is a science-fiction survival horror game developed by TheFarm51 and released in 2021. It can currently be played on a computer, Xbox, or Sony PlayStation. The game is set 30 years after the explosion in the Chernobyl Exclusion Zone, and tells the story of the nuclear physicist named Igor, a former employee at the nuclear power station. Plagued by nightmares about his fiancée, Tatyana, who disappeared during the disaster, Igor has returned to the Zone to find the truth about her disappearance. As Igor explores the desolate, radioactive landscape, the player must scavenge for resources, craft equipment, and manage their radiation exposure while encountering supernatural phenomena and hostile forces.⁷⁸ Chernobylite is a 3D-scanned rendering of the real Chernobyl Exclusion Zone, which makes a hyperrealistic visual copy of the Zone available to anyone with a console.⁷⁹

Although *Chernobyl* is a TV series and Chernobylite a video game, they share the same setting. Both have a high degree of historical accuracy and attention to detail in the depiction of the environment and the aftermath of the disaster. Game and the series alike explore the Chernobyl Exclusion Zone and allow their viewers or players to experience the atmosphere, abandoned buildings, and radioactive landscapes. While Chernobylite is primarily a survival horror game and *Chernobyl* is a historical drama, both explore the theme of survival after a nuclear disaster. Whether it is surviving the dangers of radioactive toxicity or navigating the bureaucratic and political aftermath of the disaster, both narratives emphasise the challenges faced by those affected. Even if Chernobylite and *Chernobyl* offer different experiences and narratives, each contributes to a deeper understanding of the Chernobyl disaster as a nuclear event and its legacy, while making it palatable and interesting. Strikingly, they were made long after, about three decades after the events – *Chernobyl* was released in 2019, and Chernobylite in 2021 – so naturally each depicts the disaster knowing what the aftermath would be. I specifically chose *Chernobyl* because of its popularity and close-to-accurate depiction; I chose Chernobylite for its hyperrealism and players' ability to move freely in the Zone. Moreover, the visual cues used to signal radiation and danger differ markedly between the two, and that, I would argue, allows for a more multifaceted analysis.

I find the renderings of Chernobyl are generally representative of how we engage with and visualise radioactive disaster, and for that reason do not consider other nuclear disasters at any length. The Chernobyl imagery has been more widely circulated, reproduced, and are generally of better quality. It is almost as if its temporality and location have allowed these kinds of representations to flourish, since the ones of Fukushima, for example, are not of

the same standard. The Cold War saw endless Soviet jokes, and perhaps it is in their legend that visual representations of Chornobyl can thrive, though that is something for a different study.

THE SELECTION

When I chose the materials with which to study the aesthetic experience and meaning of engaging with popular visual media, I did not have the nuclear baroque in mind, as that concept emerged in the course of my analysis. Instead, given the many intriguing aspects of the material experiences in *Chernobyl* and Chernobylite that signal the presence of radioactivity to the viewer – Geiger counters, dosimeters, protective gear, decontamination procedures, health impacts – my first step was to look at the elements that directly visualise radioactivity itself.

To select the appropriate scenes from the *Chernobyl* series to discuss, I began by mapping when radioactivity was most in evidence, whether in words or as a materialisation. I then looked for visual characteristics by asking how the viewer was meant to see that something in the scene is radioactive. While burns and wounds rated high, I soon realised that other factors such as dust, wind, colour, and light were more common in the post-disaster depictions of the Zone. This prompted me to go back and select the scenes where factors in the *mise en scène*, such as a glow or other ‘mechanics’, were most noticeable or effective in conveying a visualised experience of radioactivity to the viewer.

In Chernobylite, radioactivity was embodied by a presence (an ‘entity’ born from the reactor meltdown during the Chornobyl disaster) that can speak through the most contaminated object, hence a crystal called ‘Chernobylite’, which was created as a direct result of the radioactivity that escaped from Reactor 4.⁸⁰ While this existential, God-like portrayal of radioactivity is interesting and has its roots in the atomic age, the visual portrayal of radioactivity is what puts it at the heart of my argument.⁸¹ Radioactivity in Chernobylite is distinguished in two separate ways. One is the contamination of the landscape and its monsters, shown, for example, as a green radioactive fog emanating from broken pipes, contaminated waterholes or a green glowing monster. The other, is also conveyed by visually distorting the screen in certain areas. Both the TV series and the video game make use of natural forces, the impact on the environment, and the embodiment of organic beings to portray visualised radioactivity. Most tellingly, though, they all glow.

THE STATE OF THE ART

In examining how nuclear disasters are represented in nuclear visual culture, I work in the tradition of art history and visual studies to

ask how images and objects render nuclear harm perceptible, especially when radiation and its effects are invisible, latent, and unevenly distributed. My central claim is that nuclear disaster is repeatedly made legible by a repertoire of visual metaphors and tropes, and that they collectively shape our cultural perception of what nuclear disaster entails.

The scholarship about nuclear culture is inherently multidisciplinary and spans history, literature, sociology, anthropology, philosophy, film and media studies, and art history. For example, the literature addresses the environmental, medical, heritage, and political impacts of nuclear technologies, as well as how they have been governed and contested globally. In recent years this scholarship has accelerated, and at the time of writing, new studies on nuclear culture seem to appear every month, through email groups such as the Nuclear Culture Research Group.⁸² This renewed interest coincides with political and technological enthusiasm for nuclear power as means for combating growing energy demands during a time of climate change.⁸³ It is shaped by the promises and controversies of the nuclear renaissance, including the development of small modular reactors as one proposed solution.⁸⁴

Several works of historical scholarship explore the immediate sociopolitical implications of nuclear development, testing, and catastrophe. These include Kate Brown’s *Plutopia*, Paul Boyer’s *By the Bomb’s Early Light*, Serhii Plokhy’s *Atoms and Ashes*, and Robert Jacobs’ *Nuclear Bodies*. Studies that examine the broader history of the Chornobyl disaster and its consequences include Kate Brown’s *Manual for Survival* and Serhii Plokhy’s *Chernobyl*. I have situated my study historically in relation to this scholarship. With regard to the nuclear renaissance, however, it has been difficult to locate a clear or explicit definition of the concept. I have therefore sought to define it by drawing on fragments from scholars working in the broader field of science and technology studies, who address the environmental and political dimensions of nuclear power, such as M. V. Ramana’s *Nuclear Is Not the Solution*, William Nuttall’s *Nuclear Renaissance*, and Per Högselius’s *Kärnkraften Misslyckat?* Notably, many of the scholars I discuss below invoke the term nuclear renaissance in one form or another. As the historian Gabrielle Hecht writes:

Discourse surrounding the nuclear renaissance of the early twenty-first century has hewed to the standard industry script by playing down the terrifying longevity of radiation. The prospect of imminent [environmental and war] apocalypse and global warming has allowed nuclear power to reemerge as a commonsense and desperately needed energy source.⁸⁵

This matters here because renewed pro-nuclear politics circulate alongside popular nuclear imagery, yet, as already discussed,

contemporary nuclear visual culture seems at odds with this optimism.

Nuclear culture is often referred to as a sub-category of the genre of nuclear history.⁸⁶ According to the historian Jeff Hughes, nuclear history refers to the 'responses to the nuclear condition in the cultural modes of literature, art, music, theatre, film and other media, as well as accounts of nuclear imagery'.⁸⁷ Usually, these responses are discussed in national contexts – 'British nuclear culture', or 'American nuclear culture' – defined by the fact that the bombings of Hiroshima and Nagasaki did not lead to utopian dreams of nuclear societies, but rather campaigns of nuclear disarmament, and how these are reflected in synchronic popular culture.⁸⁸ In modern society, our bodies of knowledge are increasingly defined by the currents of globalised digitalisation. We are no longer just exposed to local or national culture, but rather to an accumulation of what is trending globally. Cultural products engaging with nuclear themes are created across national contexts, including, for example, video games in Poland and the US, films in Russia, the UK, and Lithuania, comic books in France and the US, and theatre in Denmark. Yet, through the processes of digital globalisation, the distribution and consumption of cultural products transcend borders, reaching a global audience. While nuclear culture circulates internationally, its dominant aesthetic and narrative framework remain rooted in Western perspectives. By 'Western' I mean primarily European and North American perspectives and to the fact that these representations are often created and consumed outside the local contexts to which they refer.⁸⁹ It may therefore be more accurate to speak of a 'Western nuclear culture', a transnational phenomenon shaped by global production and consumption but structured around Western cultural imaginaries.

As Western nuclear culture grows and spreads in the age of digitalisation, history is not deemed obsolete but is becoming increasingly diachronic because of how nuclear histories are written and rewritten.⁹⁰ Earlier studies of nuclear history follow a similar chronological linearity. However, this may lead to a diachronic perception of the nuclear depending on entanglements of exposure. Hughes notes that 'nuclear' can have a variety of meanings, since there exist a multitude of both nuclear technologies and social contexts.⁹¹ However, he reminds us that 'nuclear culture is not just an abstract parade of texts and representations', because nuclear culture is a reflection of all of its history – the technological and medical advancements as well as the misery of people who were misled by government postulations about safety.⁹² Yet, these cultural expressions should be seen as responses to the collectively constituted nuclear condition rather than passive reflections of it.⁹³ Nuclear culture is continually under construction, and the way we

see the nuclear today is a reflection of nuclear culture's ongoing exposure to our nuclear repertoire.⁹⁴

According to Hughes, what nuclear culture can do is unpack the structures and map the cultural politics of what nuclear means among laypeople.⁹⁵ Writing from the perspective of art history and visual studies, I am concerned with the perceptions of (in)visibilities in representations of materialisation of radioactivity, and their aesthetic experiences. This leads to the question of the relationship between interpretation and context in its complexity and contingency.⁹⁶ Because of my analytical approach, I choose to call this Western nuclear *visual* culture. This does not necessarily mean that history is excluded from the analytical framework; rather, my focus lies with the visualisation of nuclear in matter, material, and vision thereof. Such vision encompasses ontological or actual embodied sight and the epistemic or culturally sanctioned vision.

The *Nuclear Culture Source Book*, edited by the curator Ele Carpenter, is a collection of cultural expressions in the format of different genres of art and poetry. While Carpenter never expressly sets out a definition of nuclear culture, the idea seems to be that all of these cultural productions of art and artefacts are cumulative in the production of how society comes to understand the otherwise arbitrary and diffuse expression of 'nuclear' and its legacy. However, the *Source Book* does not explain how the products are perceived in relation to history, but only how they are perceived diachronically today. I build on this attention to cultural production by foregrounding the historical conditions in which nuclear culture takes form, in turn, and in turn asking the question of when and how such a culture began.

Most scholars writing about nuclear culture locate its origins at the birth of the Manhattan Project in 1939, because of the wealth of material that was produced for the general public, such as comics, autobiographies, popular science books (*ABC Atom*), and so on.⁹⁷ The historian Kirk Willis, by contrast, claims that nuclear culture originated earlier, in 1895 and 1896 when Röntgen and Becquerel discovered X-rays and radioactivity.⁹⁸ However, by using visual studies to look at the products and consumer culture, I claim that nuclear culture began as early as 1849, when uranium was mined in Britain to produce glassware and porcelain for everyday use.⁹⁹ During the Industrial Revolution, even after the advent of mass production, there remained a desire for spectacular objects that signalled both luxury and craftsmanship.¹⁰⁰ Uranium's vivid yellow-green hues and luminous qualities were prized for their aesthetic appeal rather than for their radioactivity.¹⁰¹ Although these objects were not yet associated with the 'nuclear', they were already connected to the idea of the glow, which would come to define much of nuclear culture in both literary and visual representations.

Notably, a similar visual code is found in nuclear scholarship, particularly on book covers, where the nuclear is repeatedly made alluring through the glow. Hence *Nuclear Bodies* by historian and nuclear scholar Robert Jacobs depicts a globe enveloped by a green glow, with a trefoil at its centre; *Strange Glow* by the physicist and historian Timothy Jorgensen is dotted with glow-in-the-dark trefoil symbols; and at least one edition of *Manual for Survival* by historian Kate Brown similarly stages a greenish atmosphere by using a photograph from a wooded area in the Chernobyl Exclusion Zone, where a soft green haze frames the scene.

This book is part of this visual discourse by its neon green spine and cover's image of Clarence Madison Dally's hand in the first stages of radiation-induced dermatitis.¹⁰² In that respect, I echo *Skuggor av Sanning* ('Shadows of Truth') by the historian of ideas Solveig Jülich, who similarly presents an X-ray hand in a distinct green glow. I chose Dally's hand for the cover because it is not primarily an image of victimhood, but one of curiosity and technological optimism. As an assistant to Thomas Edison for his X-ray experiments, Dally helped develop the fluoroscope, but repeatedly X-rayed his hands. Even as dermatitis progressed into skin cancer, he continued to work, convinced it would prove to be medical treatment that would benefit many.¹⁰³ Dally would die from metastatic skin cancer after multiple amputations, his case symbolic of the human cost of the drive to understand radiation. When looking at the visual profile on book covers, I wonder whether the use of the neon glow is a mediating device between scientific realism and cultural imagination. Or is it that the designs are cool-looking manifestations of the natural sciences in a form that is appealing to the humanities? Either way, their frequency suggests a persistent urge to make the nuclear visible.

The questions of visibility and legitimacy also feature in the debate about artistic mediation. In nuclear art, cultural scholar Gabrielle Decamous' *Invisible Colors* explores artistic depictions of nuclear events in the atomic age, by emphasising the perspective of artists who were working at the time where and when events unfolded. In her wide-ranging investigation, Decamous examines the challenges artists have faced in making their work seen, and how their struggles shape understandings of the atomic age as a global condition.¹⁰⁴ While Decamous is sometimes critical of how popular culture mediates nuclear events, I would argue that it matters because it shapes everyday encounters with 'the nuclear', especially in digital mediations.¹⁰⁵ Museums and art galleries remain important sites of cultural engagement, but rising travel costs and entrance fees mean they are not always the most accessible spaces. One could argue that streaming subscriptions and gaming consoles are not universally accessible either, but the popular media still tend to circulate more widely than museum-based art, and they

form part of many people's ordinary encounters with nuclear imagery. Thus instead of adhering to Decamous' line, I focus on the representations produced and consumed at a distance. Decamous closes her book by asking 'Isn't it the role of the arts to keep nuclear memory radioactive and alive?'¹⁰⁶ I would add, 'For whom, and at what cost?'

Some scholars ignore the highbrow versus lowbrow distinctions and look to broader discussions of cultural forms. The disaster historian Scott Gabriel Knowles argues that war and conflict are often memorialised as monuments of remembrance in the cultural consciousness, for example in song.¹⁰⁷ The historian Ulf Zander similarly notes the tendency for widely consumed media representations of disaster and catastrophe, such as the *Chernobyl* TV series, to enter the historical consciousness, where they actualise the fundamental questions of politics, ideology, and culture.¹⁰⁸ By fictionalising disaster, such media may enrich people's historical understanding rather than striving to reproduce events with strict historical accuracy.¹⁰⁹ It suggests that the nuclear baroque, despite its aesthetic exaggeration, can still generate knowledge and meaning for its audience.

Several studies demonstrate how visual practices and everyday mediation make the nuclear publicly intelligible. Solveig Jülich's work about the history and visual culture of early X-ray imagery in Sweden shows X-rays were long treated as entertainment before stabilising as serious medical instruments, shaping public acceptance prior to institutionalisation.¹¹⁰ The historian Maria Rentetzi traces the American fad for radium and its toxic consequences when radium went from scientific object to familiar, desirable commodity, while her colleague Søren Hein Rasmussen examines Cold War images in the Danish popular press in 1945–1962 to find that nuclear imaginaries merged with everyday culture, linking the bomb to sexualised femininity and consumer futurism such as nuclear-driven cars, planes, and kitchenware, while also mobilising stereotypes that framed the Soviet Union as technologically and culturally inferior.¹¹¹ Visualising the nuclear, then, is definitely not confined to highbrow art or a nuclear physics discourse, but one that is equally worthy to pursue from the perspective of mass-consumption and popular culture.

A foundational genealogy of nuclear imagery was set out by Spencer Weart, who charts nuclear images from alchemical signs to Cold War film and fiction.¹¹² While Weart casts his net wide, his interest is predominantly historical: in his hands imagery is evidence of changing cultural anxieties rather than analysed as image forms that structure perception in their own right. My study draws on this tradition by focusing the iconological and aesthetic capacities of visual tropes and metaphors.

The historiography of censorship further sharpens this focus on mediated visibility. The historian Monica Braw's study demonstrates how American censorship in occupied Japan muted the visual and

textual depictions of Hiroshima and Nagasaki, producing silences and ambiguities that persist in today's nuclear discourse.¹¹³ The art historian Susan Schuppli has argued that the Chornobyl disaster 'did not happen' before it was made public on 14 May 1986, emphasising how disasters only become 'real' when a visual or media signifier enters the collective discourse.¹¹⁴ Similarly, the communication scholar Olga Kuchinskaya argues that some newspapers, in an attempt to make the consequences of Chornobyl more palpable to their readers, turned to hypervisibility (bald children with cancer) in order to emphasise the lived reality of the disaster.¹¹⁵ This, in turn, transformed 'Chornobyl' into a symbol of state secrecy in the context of nuclear catastrophe.¹¹⁶ Extending such claims, Blouin and colleagues argue that the nuclear narrative is part of human experience, because we are dependent on meaning and structure.¹¹⁷ I consider the problem of meaning to be staged at the level of visual culture, where recurring designs (such as the glow) provide an aesthetic structure for phenomena that are otherwise invisible. The film and literature scholar Akira Mizuta Lippit has similarly explored how cinema's play of light and shadow reveals the ontological implications of atomic destruction.¹¹⁸ But unlike Lippit, who argues that atomic light disrupts representation, light in popular visual culture is in my view a condition for restablising meaning.¹¹⁹

The psychological and cultural impact of nuclear imagery has been discussed by the literary scholar and philosopher Susan Sontag, who argues that cinematic depictions of apocalypse create a sense of psychological distance and even cynicism.¹²⁰ More recent critics such as the historian William Knoblach note a shift in popular culture: where monsters as Godzilla, the Hulk, or Spider-Man emerged from radioactive accidents, contemporary narratives often replace radiation with bio-experiments or chemical waste.¹²¹ The nuclear literature reveals the complexity of nuclear culture, its entanglement with memory, trauma, and representation, and its continual reinvention in new cultural forms. Yet much of the existing work is preoccupied with the bomb or with nuclear disasters as spectacular ruptures. Less often studied are the everyday visual representations of nuclear power, the cultural codes that render radioactivity visible or invisible in popular visual media, and the ways in which these codes shape the collective imagination of nuclear power today. By examining how nuclear phenomena are visualised in popular culture and materials, I show how aesthetic experiences helps shape what life with nuclear power is imagined to be.

THEORY AND METHODOLOGY

My study is grounded in critical visual theory and cultural analysis. Drawing on aesthetic philosophy and nuclear studies in a broad sense, I examine how nuclear disaster has been rendered visible and

meaningful in contemporary visual culture. Rather than applying a single theoretical framework, I adopt an interdisciplinary approach that combines visual cultural analysis with three interrelated perspectives: hard scientific knowledge, popular culture, and critical theory.

Working with multiple perspectives presents both methodological and stylistic challenges, as each operates according to its own epistemic structures and ways of addressing the material. Bringing them into a meaningful dialogue requires careful consideration of the empirical analysis, but it is a worthwhile exercise in order to capture the complexity of nuclear visual culture without reducing it to a single explanatory model. As theory serves as a means of understanding and framing the object of study, while method provides the analytical tools by which that understanding is developed and articulated, there is a theoretical logic to sequence of the chapters, from the concept of the glow (Chapter 2), which I then use to anchor the experience of the sublime (Chapter 3), and ultimately how the sublime falters when the glow is subsumed into bodies where it ruptures perceptions of the nuclear as awe-inspiring (Chapter 4), and instead renders it abject, thus revealing the point at which visual representation can become violent (Chapter 5).

I have used representational theory as the basis for my research. I understand representation as a practice of meaning-making shaped by context, rather than a direct reflection of reality.¹²² Deriving from the Latin *repraesentare*, meaning to bring before or exhibit, to represent something is not to present it as is, but to make it stand in for something else, such as rendering certain aspects visible and tangible while risking leaving others obscured. A few months after the Chornobyl disaster, the philosopher Günther Anders argued that nuclear danger is defined by its invisibility, and that we must learn to understand the invisible 'as if it were right in front of us'.¹²³ His insistence on the problem of understanding, of how to sense and respond to what cannot be directly perceived, helps clarify why representation matters so much in the nuclear context. For Anders, living with the nuclear demands an exercised imagination; without it, the consequences of catastrophe become thinkable only in hindsight. He links nuclear disaster to the failure of 'men without imagination' to picture the consequences of what they make.¹²⁴ I draw on Anders's perspective in order to theorise the glow as the way cultural imagination renders radioactivity tangible. Where Anders speaks of imagination, I speak of its translation into a visual representation, moving beyond the realm of imagination into one of tangible signs and symbols. To build on this, I turn to Robert Jacobs' concept of radiation as a 'cultural talisman' to theorise how the glow can become a visual cultural indicator of radioactivity.¹²⁵ I use this concept to show how the glow functions as a visual shorthand between scientific reality and cultural imagination that, in turn, gives form to radioactivity.

I also draw on aesthetic philosophy, especially the sublime and the abject, to analyse the experiential dimensions of nuclear visual culture. Rather than treating aesthetic theories as fixed explanatory models, I use them as interpretive tools to articulate the complex and often contradictory experiences that characterise facing the nuclear: awe and dread, attraction and repulsion, intimacy and distance. These concepts are developed in dialogue with my empirical material and adapted where necessary to address the specific circumstances under which the nuclear is represented visually, and above all the invisibility, latency, and politics of looking.

Hecht argues that the nuclear has often been placed in a category of exceptionality, because 'The implication is that nuclear things are unique, different in essence from ordinary things'.¹²⁶ After the Cold War, the global fear of nuclear apocalypse gave way to climate change as the dominant existential dread, with nuclear power increasingly framed as solution.¹²⁷ In both scenarios, 'the nuclear' retains a powerful voice in the imaginaries, figured as either apocalypse or as salvation.¹²⁸ As conditions change, so too do the ways in which the nuclear is experienced and imagined. These imaginaries are also expressed aesthetically, even as they remain bound up with broader existential concerns.¹²⁹ Turning to visual representations of Chernobyl introduces a further set of conditions, in which the question is not only how nuclear disaster is experienced aesthetically, but how it contributes (or not) to the persistence of nuclear exceptionalism. The sublime becomes a way to understand how nuclear visual culture could invoke this feeling of exceptionality – even at a distance.

The sublime was classically formulated by Edmund Burke and later by Immanuel Kant. Kant's account in *Critique of Judgment* from 1790 provides an important point of reference for this study; however, I do not treat it as a closed theoretical system. Instead, I follow the historian David Nye in understanding the sublime as historically contingent and mutable, as it is a mode of experience shaped by changing social, political, and technological conditions.¹³⁰ Nye identifies seven formations of the sublime, while acknowledging the fluidity between the various discourses.¹³¹ I found this framework most useful not as a rigid taxonomy to be applied categorically, but as evidence of the sublime's mutability and increasing entanglement with mediation and technological experience.

For example, Nye argues that new digital technologies such as virtual reality (VR) can collapse the boundary between the self and the machine through technological immersion and a heightened suspension of disbelief – one that may exceed even cinematic experience.¹³² At the same time, he emphasises that 'the powerful stimulus of real danger is absent', and that most VR is dedicated to entertainment.¹³³ While none of my examples are taken from VR technology, I argue that they too can create a heightened

suspension of disbelief. As an image-driven scholar, I am less interested in reading it as an absence of real danger than I am in recognising the specific power of images to generate fear, fascination, and a sense of fragility because of mediated distance. However, where Nye discusses the infliction of the nuclear bomb and its existence as both a revocation (atomic weaponry challenges the possibility of self-preservation) and inducement of the sublime, I do not address this because it risks reducing the study to a comparison of sublimes, which is not my intention.¹³⁴ Instead, I look at the conditions that shape this image-mediated sublime.¹³⁵

To connect the sublime to the cultural imaginary of nuclear exceptionalism in visual representations, I draw on Jacques Derrida's description of the atom bomb as 'fabulously textual', emphasising how nuclear threat is mostly available through language and mediation.¹³⁶ I propose an image-mediated sublime that I term the 'fabulously sublime', in which immersion, distance, and historical awareness converge to produce a sublime experience that is determined by what viewers know as much as by what they see. Applying the sublime to irradiated or suffering bodies raises an ethical issue, though, for to describe bodies so risks aestheticising harm and obscuring the dignity of those affected, as if the act of looking were itself morally elevating.¹³⁷ At the same time, I argue the irradiated body is not wholly other but intimate to the viewer, and that any distance beyond the screen is difficult to sustain. This necessitated a second conceptual lens, and for that I turned to abjection, drawing on Julia Kristeva's concept of the abject.¹³⁸

Although it originates in psychoanalytic theory, I do not use abjection to determine or predict viewers' aesthetic responses. Rather, I mobilise it as an aesthetic critical framework for articulating how radioactive bodies are made perceptible in visual culture, and how the gaze unsettles boundary-making when these bodies remain insistently 'oppositional' in appearance and meaning.¹³⁹ My approach is therefore not strictly Kristevian, as I am deliberately looser in my use of the concept as a heuristic for thinking through visibility and evidence in the face of latency. This framing also invites an ecological reading, insofar as the body appears (symbolically) inseparable from its contaminated environment.

Kristeva also distinguishes abjection from the sublime. Abjection is a crisis of boundaries where meaning does not disappear but becomes intolerable, because what should remain outside can no longer be kept at a distance, and we therefore seek to expulse it.¹⁴⁰ While distance is central to the Kantian sublime, as well as the fabulously sublime, Kristeva's emphasis falls on this precarious framing rather than on actual distance. In short, the abject is overwhelmed by intimacy and its boundary crossing, whereas the sublime holds excess at a distance the observer can endure often packaged as pop culture, as with the Chernobyl humidifier.

While the sublime and the abject address the immediate theoretical responses of representation, the temporalities of nuclear disaster require yet another lens: namely environmental historian Rob Nixon's concept of 'slow violence'.¹⁴¹ Whereas direct violence is a blow to the face, whereupon a bruise swiftly follows, slow violence describes harm that is gradual, often invisible, and dispersed across time and space – qualities that resonate with radioactive contamination, which may only manifest in illness decades after exposure. I extend Nixon's concept of slow violence into what I call sanitised violence: the dormant force of visual tropes that resurface with each new disaster, shaping collective memory and perpetuating harmful stereotypes (Chapter 5).

Theoretically, by tracing the glow across video games, television, photography, and art, I argue that it functions as both cultural trope and metaphor. It renders the invisible visible, while also shaping and being shaped by public perceptions of nuclear power. Because the glow has partial roots in scientific realism, it is not entirely false. Yet, when applied broadly to depictions of radiation, it can reinforce misunderstandings about nuclear risk. The glow is thus a powerful aesthetic strategy that exposes how nuclear disasters extend beyond technological, environmental events into visual cultural phenomena.

METHODOLOGY

My primary method for studying visual nuclear culture is the close analysis and interpretation of images and objects. This approach is standard in visual studies, as a formalist practice of sustained looking that examines how images produce meaning.

To grasp the enormity of the visual meaning of a subject that is, by nature, invisible and interdisciplinary, I began by approaching it through nuclear physics. As an art historian, it was unfamiliar terrain. I began studying independently for an hour each day, drawing on online introductory courses from CERN, guidance from the Department of Nuclear Physics at Lund University, several recent books by the likes of Timothy Jorgensen and Claudio Tuniz, and the online resources of the IAEA.¹⁴² While I did not intend to use nuclear physics as a means of explaining 'reality', a familiarity with the basics equipped me to read the signs and significations in nuclear visual culture.

I was initially influenced by the philosopher and physicist Karen Barad's new materialist framework.¹⁴³ It was tempting to analyse visual representations of the nuclear using the new materialism, but ultimately I found the approach to be too totalising for my purposes. The insistence on the entanglement of human and non-human, and of matter and meaning, would either push the project beyond its feasible scope or force me into a single, narrow

empirical vantage point, at the expense of the broader analytical depth I wanted to pursue.¹⁴⁴ I chose to make use of Barad's concept of intra-action. Barad argues that entities and meanings do not pre-exist relations but emerge through them.¹⁴⁵ It is misleading to describe our encounters with radioactivity as an 'interaction' between two already separate entities. Rather, we intra-act with radioactivity through the material and epistemic mediations that make it perceptible in the first place, such as instruments or our visual vocabulary. Encounters with radioactivity are therefore always shaped by what is already known (and how it can be known) which conditions how it is perceived and represented.¹⁴⁶ This perspective is particularly meaningful here, as a methodological way to account for how understandings of radiation are shaped by prior knowledge, and by the mediations by which it becomes legible, but I rely less on the concept's philosophical nature.¹⁴⁷ My study still shows signs of new materialism, less as a methodological shadow of Frankenstein's monster than as productive set of seams.

To make sense of the context that precede these visual representations, I adopted an iconological approach to the image analysis. For the visual culture theorist W. J. T. Mitchell, iconology clarifies what images do, mean, and want in historical and cultural fields, while remaining attentive to the ambivalences of representation, for example, how images can produce both knowledge and ignorance.¹⁴⁸ I use iconology methodologically to interpret the symbolism and significance of the glow, and to trace how its meaning shifts with its contextualisation in the media in which it appears. As Mitchell notes in *Iconology 3.0*, an image of the present does not break cleanly with the past, but instead 'gathers up all the fossils from previous times and reanimates them in relation to our circumstances'.¹⁴⁹ The glow, can be understood as one such reanimation. Although I do not always explicitly apply the framework, it has informed how I read the images.

The glow fluctuates between functioning as a metaphor and a trope, and for good reason: depending on context, it can operate as both at once. To follow the cognitive linguists George Lakoff and Mark Johnson, a metaphor involves 'understanding and experiencing one kind of thing in terms of another'.¹⁵⁰ Metaphors belong to the conceptual system with which we structure everyday reality. Because metaphors work conceptually, they are not bound to a single stable image: the same metaphor can change meaning across genres and media and organise perception in recognisable ways.¹⁵¹ The *Cambridge Dictionary* writes that in art and literature a trope is 'something such as an idea, phrase, or image that is often used in a particular artist's work, in a particular type of art, in the media, etc'.¹⁵² It can therefore be understood as a figure that becomes recognisable by repetition. These categories are elusive. The glow can be a trope of radioactivity and a metaphor for the desire to

render invisible forces visible, all at once. Depending on the emphasis and context, its meaning changes.

Both case studies in this book centre on the Chernobyl disaster as an historical event. Naturally, questions of historical accuracy and legitimacy arise. I approach the two works with the distinction between 'historical fact' and 'poetic truth' in mind. Visual representations have different premises than historiography, since they have other means of narrating history.¹⁵³ They frequently employ narratives of love or conflict, or affective imagery, to compel the viewer to stay engaged and to render events comprehensible.¹⁵⁴ This does not make poetic truth inferior to historical fact. As Zander argues, popular representations can still shape historical consciousness and activate fundamental questions concerning politics, ideology, and culture.¹⁵⁵ By fictionalising disaster, such works may enrich historical understanding rather than striving to reproduce events with strict historical accuracy.¹⁵⁶ My aim, therefore, is not to prioritise one perspective over the other, but to examine how they inform each other in an ongoing meaning-making process that shapes what nuclear disaster can come to mean, rather than simply reproducing what it once was.

My engagement with the material depended on the medium. With the video game *Chernobylite*, I adopted a practice-based method, playing the game repeatedly to the point where it turned from entertainment into a form of visual fieldwork. I soon realised that navigating the game required skill acquisition: I had to win battles against monsters and develop abilities in order to progress. Playing on 'easy' mode risked reducing the number of encounters I had with radioactive fog or monsters, so I played on 'standard' difficulty. A game designed for around 24 hours of play time eventually took me 197 hours to complete.¹⁵⁷ This immersion was methodological, as I sought to experience how the game mechanics themselves mediate the representations of radioactivity. In this sense, I adopted what I call a 'rogue gamer' approach, replaying the game to explore its different properties and radioactive environments. At time of writing, the developers, TheFarm51, were working on their new release *Chernobylite 2*, and therefore contact has been limited. Instead, I gained insight from their Reddit posts, YouTube interviews, and Discord discussions. They granted me permission to use screenshots and expressed their support for the project.

I had seen the *Chernobyl* TV series before and therefore approached it with preconceived notions, such as that I found it to be fascinating and, based on my previous knowledge of the disaster, a pretty good representation. Methodologically, however, I needed to do more than simply watch; I needed to observe the selected scenes. I first viewed them once without taking notes. On a second viewing, I recorded my reflections. On a third, I transcribed the scenes in detail, following the practice of formal analysis. I cannot

quantify how many times I returned to the series, but at a certain point I set the material aside and rewrote the scenes purely from memory, before returning once more to check and correct details. This process was intended to approximate the viewer's perspective – what the scene seemed to convey and what it presented formally – while remaining attentive to the limits of any single perception. Not every viewer will see the same things I did, but repeated, structured viewings allowed me to produce an account that is as grounded and transparent as possible, as a form of 'situated objectivity' from the position of a viewer.

Another methodological challenge caught me off guard while I was finishing the manuscript. Following a lengthy bureaucratic application process involving multiple rights holders, HBO declined permission to reproduce any still images from the series. Financial considerations were not the reason for this decision; however, no further explanation was provided. It is likely that it was a question of precedent. If they had said yes to me, what else would they have been compelled to have say yes to? Reports of litigation following *Chernobyl's* initial release indicate HBO's sensitivity about the circulation and reuse of its visual material.¹⁵⁸ One example concerned the series' portrayal of Lyudmilla and Vasily Ignatenko. According to Lyudmilla, she never consented to the use of her and her late husband's names for fictionalised characters, and after the series aired she described harassment from journalists as well as from friends and colleagues, ultimately forcing her to relocate.¹⁵⁹ In a lawsuit against HBO, she sought UAH 2.5 million in moral damages, but the Supreme Court ultimately recognised a violation of her right to a name and awarded UAH 0.5 million (USD 11,500) in compensation in January 2026.¹⁶⁰ Taken with HBO's copyright restrictions, which prohibit the commercial reproduction of scenes from the series and derivative uses such as fan art, this refusal can also be seen as control being exercised over the series' images and their reuse.

In response, I chose to employ the classic art historical method of producing original drawings to accompany my analysis as a way to circumvent HBO's mediation of events.¹⁶¹ The images were developed from survivor testimonies, archival material, and medical documentation of acute radiation sickness among the first responders. However, I felt increasingly uneasy as I began to finish the drawings. There was something unsettling and cynical about painting one of the most tragic moments in someone else's life, particularly given that *Chernobyl* had already visualised these scenes with hyperrealism. Would my drawings not extend the very lineage of the imagery I sought to critique? There was also the important question of consent. Who were these images for, and for whose sake would they be reproduced? What would they add to the analysis, beyond reiterating what was already available? I have

opted not to include any *Chernobyl* images in the analysis, but found it was still important to communicate the overall experience of the scenes, and so have described them in words.¹⁶²

WRITING A VISUAL BOOK

While this book is situated in the field of nuclear culture studies, there are some less usual considerations that come of studying visual representations of nuclear disaster. Thus I begin with the materiality of radioactive objects, and how the glow became a recurring visual trope in cultural depictions of the nuclear, mediating between science and imagination. These glowing objects, dials, glassware, and social media render radioactivity individualised, aestheticised, and seemingly manageable. Yet the glow also trivialises risk in its aesthetic detachment: if it glows, it is visible and, therefore, we imagine, 'safe' to avoid.

From exploring our 'visual bank' and the glow's disruption of nuclear anxiety, transforming danger into spectacle, myth, or even something that is 'cool', I move on to the radioactive landscapes shaped by nuclear disaster. The mediated depictions of the Chornobyl Exclusion Zone, exemplified by the *Chernobyl* TV series and the Chernobylite game environment can evoke a sublime experience in viewers, even when watched from a distance. They become landscapes of myth and memory that slowly seep into our ordinary understandings of nuclear disaster. They solidify the otherwise living environment into static experiences of what the Zone ought to be.

Though the landscape can be sublime, the extension of it into the body is not. The radioactive body is marked by mutation, illness, and the glow. Such a body is often stripped of individuality and made into a spectacle. Abjection theory shows that popular culture renders bodies acceptable by extremising them. The radioactive body as something intimate yet politicised forces us to confront the limits of control over biology, where latency is exchanged for immediacy and the stakes of nuclear disaster become uncomfortable and yet curiously dismissible.

Objects, landscapes, and bodies each contribute to a cultural vocabulary of nuclear disaster, which begs the question of what such representations mean in the context of the nuclear renaissance. I thus conclude by arguing that visual culture does not merely reflect nuclear realities, but actively shapes our perception of risk, ethics, and the future of nuclear energy. In doing so, I turn to the question of whether the signs of that renaissance may, in fact, be a manifestation of the nuclear baroque.

By registering to how nuclear histories are represented, circulated, and consumed, I hope not only to analyse visual culture, but also to contribute to an ethical rethinking of how we engage with the nuclear through culture. I have approached the material with

ethical sensitivity towards the individuals and communities affected by nuclear events, accidents, and disasters. This ethical responsibility also shapes how I read media material and artworks. When I analyse visual representations of radioactive landscapes and bodies, I am aware that the images can both expose and obscure, making some stories visible while silencing others. In the course of the book I therefore reflect on my own position in this visual discourse, because as a researcher working in the Western tradition I am inevitably part of the same circuits of fascination and mediation that I critique.

While finishing this book, I got in touch with Nastya, the artist behind the Chornobyl humidifier. She shared the story of her father, who inspired the object. In 1986, when Nastya was just 2 years old, he was sent to the Chornobyl Exclusion Zone to lead a group of liquidators, who used construction equipment to dig large pits in the villages and bury entire houses. Nastya's story is a reminder that the intentions behind images and products often emerge from a place of care. Without judging anyone, it is important to remember that while some representations are a humorous way of coping with disaster, for others they are commemorative and serve as an expression of respect and honour.



Figure 5
Alpaca3D/Nastya's father holding
the Chornobyl humidifier, 2026.
Courtesy of Nastya.



What's it like, radiation?
Maybe they show it in the movies?
Have you seen it?
Is it white, or what?
Some people say it has no color and no smell, and other people
say that it's black.
Like earth.
But if it's colorless, then it's like God. God is everywhere,
but you can't see Him.
They scare us!
The apples are hanging in the garden, the leaves are on the trees,
the potatoes are in the fields.
I don't think there was any Chernobyl, they made it up.
They tricked people.

Anna Petrovna Badaeva, 'Monologue About What Radiation Looks Like'.¹

The *Chernobyl* TV series opens with the line, 'What is the cost of lies?'² The soviet physicist Valery Legasov, portrayed by Jared Harris, goes on to warn that, when repeated often enough, lies can become truth. These words tie in not only with Chornobyl's tortuous history, but also with the popular culture that has emerged around it; one filled with images of glowing settings and silhouettes. Curiously, the visual representation of Chornobyl is expected to both honour reality and captivate its viewers with a compelling narrative. Yet, in constructing this visual truth, creators may unintentionally reinforce what could be considered one of the most iconic lies ever told: the idea that radioactivity glows.

In fact, radioactivity does not glow, at least not per se. But it does exist everywhere: in the rocks beneath our homes, in colour printers, even in our bodies, yet it remains invisible to our human senses.³ This paradoxical invisibility has, ironically, made radioactivity highly visible in popular culture. It is therefore no wonder that the 'resettler' Anna Petrovna Badaeva said wryly that Chornobyl was a lie when she saw nothing unusual in her garden. As Weart noted, 'the regions of the brain that organize memories also organize imagined experiences', meaning that without analysing our perceptions, we often accept them as truths.⁴ Weart goes on to explain:

many experimenters have shown that even a brief exposure to an image will act as an 'anchor' to thinking, biasing the observer's judgment on subsequent decisions. One reason advanced for this bias is that our brains must work with what is 'available' to them; we find it hard to believe something unless we can easily picture it.⁵

Consequently, when something defies simple visualisation, like invisible radiation, we may substitute it with familiar images or tropes, which in turn can fuel misconceptions, making the very power of the image problematic. As the artist Paul Klee put it, 'Art does not reproduce the visible, it makes visible', emphasising that art does not simply mirror reality but instead constructs a representation of it.⁶ Similarly, Anders insisted on imagination as a means to make sense of abstract realities such as nuclear threat and political ambiguity.⁷

Stay here and walk on the roads and bridges. And think where you walk, and on what, and who you are. And consider that nothing you see is real; that real is only the fact that you no longer see reality, that you can no longer see it. Close your eyes and trust your imagination. For only the lazy rely on their eyes today.⁸

Rather than claiming that the visible world is unreal, Anders countered that the most profound threats in the nuclear age are imperceptible – radiation, nuclear politics. This means that imagination can become a necessary tool for grasping realities that are not visually (or structurally) apparent in ordinary life and that may be 'too immense' to fit into the conceptual categories we have available.⁹ If we were to rely only on what our eyes can see, we might mistake invisibility for safety, a confusion reinforced by popular visual representations that equate danger with spectacle, much like assuming that radiation must be glowing if truly harmful.¹⁰

Thus, when Badaeva was told that her home was radioactive and no longer fit for habitation, she was scared and dismissive. She did not have the visual vocabulary for such danger. By urging us to look beyond immediate appearances, Anders reminds us that some realities can only be comprehended by the imagination and conceptual thinking rather than direct sensorial evidence.¹¹ In this sense, the question posed by the *Chernobyl* TV series – 'What is the cost of lies?' – addresses not only the political and bureaucratic deceptions that led to disaster, but also the cultural narratives and visual habits with which nuclear danger is made thinkable, or, just as often, made easier to digest and ignore.

In this chapter, I explore the history of radioactivity as a visual cultural phenomenon in the Western discourse, and how its scientific counterpart is often its starting point, if not counterpoint. Consider Marvel's fictional character the Hulk, a nuclear scientist who is turned into a dangerous, glowing green monster after an accident in his lab exposed him to gamma radiation.¹² In real life when individuals are exposed to radioactivity, they do not glow. Yet they are frequently described or mocked as 'glowing in the dark', 'shining', or otherwise being luminous, which says something about how these creative visual interpretations of exposure to

radioactivity can seep into ordinary language and contribute to what we might call 'nuclear bullying'.¹³

To analyse the visual cultural dimension of these depictions, I introduce in this chapter my own concept of the glow. In the *Oxford English Dictionary*, a glow is either a brightness and warmth of colour, or a bright light without a flame. But culturally, 'glowing cheeks' can also indicate youth or health, or the sense of ardour.¹⁴ The art historian Monica Wagner even describes that when a car shines or 'glows', it exudes a certain sex appeal.¹⁵ Similarly, Nicholas Maffei and Tom Fisher note that when something is said to have a glow, shine, or gloss, this can be a metaphor for vitality or attractiveness, but it can also suggest that something is 'slimy' or 'cheap':¹⁶ 'Shininess then is slippery. We think we know it, but through infinite physical variety and countless cultural contexts its meanings become multiple'.¹⁷ The glow, by extension of all its synonyms, is therefore an ambivalent term which is fully dependent on its context.

I will use the glow as a descriptive concept, as cultural and historical portrayals of radioactivity often hinge on the idea of luminescence, and so link nuclear physics with its representative visual counterparts. In turn, this sets the stage for exploring how these different perspectives – social, scientific, and fictional – intersect and shape our broader cultural perception of radioactivity as an (in)visible matter. This discussion will ultimately help in showing how these perspectives intra-act with one another to shape radioactivity's ontological and epistemological significance and subsequently its visual importance. By understanding how radioactivity is portrayed in visually and culturally, we may better grasp how scientific facts compete with (or are overshadowed by) imaginative narratives in the chapters to come.

HOW RADIOACTIVITY STARTED TO GLOW

From early nineteenth-century uranium glass to Cold War watch dials, from glowing cat fantasies to Cherenkov blue, what is here a necessarily selective discourse of a nuclear visual culture has come to commodify radioactivity in popular culture. Although the discourse excludes propaganda posters with golden mushroom clouds, or shining green adverts hailing the atom, cartoons (such as the Simpsons) or street art, their omission does not weaken the point; rather, it emphasises the sheer pervasiveness and extent of the glow as a visual representation of the nuclear, as well as how the glow can leap between categories of visual practice as an omen of and for either progress or warning.

The cultural belief that radioactivity glows probably started with the popularity of uranium glassware, whose faint greenish-yellow luminescence made the connection between radiation and visible light seem self-evident. This type of glassware is produced

by adding uranium to the molten mixture, in turn creating a slick, oily, greenish-yellow hue when blown into glass.¹⁸ Under normal light, uranium glass appears to be ordinary glass, but under ultraviolet light it glows.¹⁹ Its brightness varies in intensity depending on the amount of radioactive material it contains.²⁰

While the chemist and uranium glass expert Barrie Skelcher recorded that British glassmakers were already experimenting with Cornish uranium oxides by 1817, the pigment did not enter regular production until about 1849.²¹ However, its popularity truly soared only after the turn of the twentieth century, when glasses, dinner plates, ornaments, and even buttons for clothes advertised their faint radioactivity as health-inducing rather than purely decorative.²² The appeal of radioactive fashion statements resembles the contemporary aesthetic of the healthy glow of suntanned skin. Another reason for uranium glassware's popularity was likely due the development of the pressed glass technique that contributed to its great variety.²³ In fact, uranium glass is often referred to as Depression glass because it was mass-produced in the Great Depression in the US between 1929 and 1939. This specific type of glassware was cheap to produce, bright in colour, and believed to provide some sort of affordable luxury through colour and tactility at a time of economic hardship.²⁴

Figure 7
Uranium glassware in a shop window in New Orleans, 2021.
Courtesy of Moa Petersén.



Today, despite its low-level radioactivity, uranium glass remains sought-after by collectors and is frequently found in antique shops or flea markets across the West, as in a New Orleans shop window (Fig. 5), displaying its fluorescent products for contemporary buyers. Nevertheless, many European poison-control regulations categorise uranium compounds as radiotoxic heavy metals, which implies that the sale and private ownership of such objects can be deemed illegal.²⁵ A similar caution concerning the toxicity of uranium glassware has emerged in the antiques trade as well. The English auction house Decorative Collective warns that uranium glass is for display only and should not be used for food or drink.²⁶

In the course of my research, I have met numerous European collectors who generously shared their photographs and personal experiences with uranium glassware. In order to avoid exposing them to potential legal repercussions, I have refrained from including any of their images in this book. Their enthusiasm and sense of wonder, however, continue to accompany me as I write these pages. One such account came from a young French person who explained that the luminous glass served as inspiration when they came home from their workday. They also argued that its shade of green and luminosity were equally important to them, as their collection had to do with the beauty of the glass's ethereal light, rather than its toxic qualities.

There are many types of uranium glass, ranging from deep red hues to champagne tones and milky, slightly opaque finishes. The colour differences result from variations in production methods, particularly the proportions of lead and other additives incorporated into the glass mixture.²⁷ Although uranium glass was manufactured in many countries, certain regions became especially renowned for their craftsmanship. In France, for example, the glassworks at the companies Choisy-le-Roi and Baccarat gained recognition for their refined uranium glass production.²⁸ Glassmakers in Bohemia, what is today part of Czechia, likewise developed a strong tradition of working with uranium.²⁹ Despite the diverse surface colours of uranium glass, under UV light its green fluorescence remains a consistent, defining characteristic.³⁰ The American glassware producer Vaseline even branded their line of uranium glassware with the slogan: 'If it doesn't glow green, it's not Vaseline!'³¹

Industrial production of uranium glass was disrupted by the Second World War. By 1943, the US government had bought up civilian uranium stocks to use in the classified Manhattan Project.³² When manufacturing eventually resumed in 1953, glassmakers were restricted to depleted uranium, which was less radioactive.³³ While I was unable to find a reason why many European glassmakers stopped producing uranium glass, I imagine that the sudden race in other countries to create their own nuclear arsenal

(and later energy) likely halted the production there, too, or that it simply went out of style.

Despite grey areas in the uranium antiques trade, collectors proudly display their uranium glassware on social media platforms such as TikTok and Instagram. One American user, @TerrestrialTreasures, describes the pieces with enthusiasm: 'I'll never get over that glow! Still feels like a dream'.³⁴ This sentiment echoes Marie Curie's reflection on the discovery of radium: 'These gleamings, which seemed suspended in darkness, stirred us with ever new emotion and enchantment'.³⁵ The attraction of radioactive objects arises both from the invisible radioactivity *and* their captivating fluorescence, which has fascinated people across space and time.

In many ways, uranium glass existed alongside the discovery of radioactivity. While its popularity grew after radiation's supposed benefits were proclaimed, it also delighted the population pre-discovery due to its enticing colour. The discovery of radiation is generally dated to 1895, when the physicist Wilhelm Conrad Röntgen, while experimenting with cathode rays in a Crooke tube, noticed that a fluorescent screen in his darkened laboratory emitted a faint glow.³⁶ Intrigued that this type of light seemed to pass through objects, Röntgen began testing solid objects, but when he finally held up a disk of lead between this finger and thumb, he suddenly saw the shadowy outline of the bones of his hand.³⁷ This new 'way of seeing' using the invisible rays he called 'X-rays', ultimately led to the discovery and creation of Röntgen photography that remains essential to medical imaging today.³⁸

Figure 8 is one of the earliest radiographs ever made: the X-ray of Wilhelm Röntgen's wife, Anna Bertha Röntgen's hand from 1895. In it, her wedding ring appears as a dark band encircling the nearly translucent bones. In comparison, Figure 9 shows an X-ray of my own hand, taken in 2023 after a yoga-related injury. Although separated by more than a century, both images capture the uncanny moment in which the body becomes visible and strangely alien to itself. Allegedly, when Mrs Röntgen was shown her own bones, she exclaimed; 'Ich habe meinen Tod gesehen': 'I have seen my own death'.³⁹ As the literary scholar Simon Avery argues, back then it was extraordinary to see inside the body without surgery or dissection, something that (mostly) only occurred in either sickness, violent accidents, or death. To see one's bones was like gazing at one's own mortality.⁴⁰



Figure 8
The bones of Anna Bertha Röntgen's
hand in an X-ray. Print by Wilhelm
Röntgen, 1895.



Figure 9
The bones of the author's hand in an
X-ray, 2023. Courtesy of author and
Region Skåne.

I have placed the X-ray of my own hand next to Mrs Röntgen's to make the visual point of how far medical imaging has come. What began as a soft hazy glow has, over the century, turned into a sharp digital image in which every little structure is visible, even the small heart-shaped form that rests on the metacarpal of my thumb. Back in 1895 it took about fifteen minutes of exposure to produce an X-ray image, a duration that subjected the body to a very high dose of radiation. Today, a comparable image can be made in as little as 1/50 of a second, with far lower exposure risk.⁴¹ In Röntgen's time, X-ray machines were relatively cheap, and were often used at fairs and other entertainment venues, promising to produce 'strange' or 'bizarre' imagery.⁴² In contrast, modern medical imaging is governed by strict protocols in which each image is weighed against the potential long-term risk of radiation-induced cancer.⁴³

It was through the discovery and subsequent invention of X-ray photography that Polish-French scientist Marie Skłodowska-Curie and her husband Pierre Curie decided to try and extract the matter that created these X-rays.⁴⁴ In her doctoral thesis *Recherches sur les substances radioactives: Radio-Active Substances* (1903) (*Radio-Active Substances*, 1904), she names these mysterious rays 'radio-activity', the prefix radio deriving from the Latin *radius* meaning ray, while activity comes from the Latin *activitas* or action.⁴⁵ Her neologism suggested rays that act, and specifically rays that act at a distance. Together, in 1898, the Curies identified and named two new elements: polonium and radium.⁴⁶ The press quickly took an interest in this new discovery, and it soon became a foundation for much early twentieth-century research and experimentation, while also circulating in cultural and commercial settings as part of a seemingly tireless search for new ways to improve life.⁴⁷ As Jülich notes, the discovery of x-rays and radioactive elements coincided with popular fantasies of the occult: the desire to photograph the invisible and to capture immaterial or psychic phenomena such as the aura. Jülich writes that 'Photographing the invisible was even seen as evidence that outside the spectrum of light there existed phenomena and powers of a supernatural character'.⁴⁸ Nevertheless, as she also points out, the boundary between spiritism and science was not yet fully settled.⁴⁹ It is therefore interesting that the ghostly light of radiation striking the photographic plate was of interest to both scientific and spiritualist circles.

This entanglement of science and spectacle was also true of radium itself. In the early days, the Curies 'proudly displayed little vials of radium compounds so active that they glowed with a pearly light'.⁵⁰ This radium luminescence seemed a captivating spectacle and even made its way into theatres. The composer Jean Schwartz's 1904 Broadway musical *Piff! Paff! Pouf!* had dancers wearing stage costumes glowing under radium-based paint for the shows 'Radium Dance'.⁵¹ A review of the show recounted the following:

The lights go out, even the orchestral lights... only visible thing is the conductor's baton which moves like a shoal of glowworms in the abyss. Suddenly appears a row of glowing white figures which might if they had faces be Pierrots; then skirts and bodices and sugar-loaf hats... the ghostly figures move phantastically, separate and intertwine and mingle in strange shapes... The part the audience played was to strike matches in the gallery to see how it was done.⁵²

There was not only a fascination with the material that glowed in the dark, but also radium was celebrated as a near-miraculous substance as it was thought to cure disease, boost vitality, and even rejuvenate the skin.⁵³ These claims were not entirely unfounded: early medical experiments showed that placing small vials of radium near cancerous tumours could shrink them, something previously unheard of.⁵⁴ Similarly, wealthy men suffering from sexual impotence, hair loss, acute gonorrhoea, and arthritis (often caused by syphilis) reported finding some relief after bathing in radium-infused waters.⁵⁵ As the historian Maria Rentetzi notes:

The marketing pitch was that radium could resolve any number of unwanted conditions prevalent among successful men, from impotence and lack of sexual virility to baldness and old age. And it offered so much more: vitality and invigoration.⁵⁶

While such treatments initially flourished in Germany and Austria, similar facilities soon opened in the US, particularly in Colorado, where naturally radioactive groundwater was discovered.⁵⁷ Even Sweden offered a comparable experience at the Ronneby Brunn spa in Blekinge, such as radioactive mineral water.⁵⁸ Rentetzi further describes how the 'radium soak' was advertised as 'better able to stimulate cell activity and arouse secretory and excretory organs than any electrical treatment in these facilities'.⁵⁹

During the radium craze, 'radium was rapidly transformed into an everyday commodity that was familiar, accessible, and trusted. It even became an object of lust'.⁶⁰ Radium-infused creams, toothpaste, baby clothes, tonics, and toothpaste were marketed as modern marvels; their adverts often relied on a shared visual vocabulary: suns, halos, and beams of light radiating from the products' name. In visual style it was similar to industrial designer Peter Behrens's famous 1907 advert for metal-filament lamps for AEG (General Electric Company), where dotted 'rays of light' emanate from a centrally placed light bulb.⁶¹ In an advert by the French brand Tho-Radia (1920–30), a modern woman complete with pin-up curls is illuminated from below in a light that comes directly from the radium products located at her throat.



Figure 10
Radium razor blades
at Musée Curie, Paris, 2023.



Figure 11
Batschari radium cigarettes, 2015.
Courtesy of Alf van Beem.

According to the Curie Museum in Paris, Tho-Radia's marketing supposedly said that with the range of radium products, 'There's no excuse for staying ugly!'.⁶²

However, because radium was very expensive, many supposedly radium-infused products, such as Nutex radium condoms or radium razors, rarely contained any radium at all.⁶³ Instead, the word 'radium' was co-opted for marketing, implying superior quality or cutting-edge science. An example of this is the radium razor packaging (Fig. 10) with its slogan in French 'La Lame Scientifique "Radium" est incomparable', translated to 'The Scientific Blade "Radium", it is incomparable'. The word 'radium' looks to appear from the beaming rays of the little 'sun' (perhaps an atom), as its letters undergo progressive scaling. The packaging is similar to the German Batschari cigarette brand's radium cigarettes from c.1912.⁶⁴ Here the product name is placed in the sun's core and beams radiate out as if the product shines from within (Fig. 11). The packaging visualises radioactivity as a seductive visual glow, but in reality, genuine uses of radium often had tragic consequences.

In the 1910s, when going to work at the United States Radium Corporation in Orange, New Jersey, young female employees often wore their Sunday best.⁶⁵ By day, they painted watch dials with luminous radium paint – radium mixed with zinc sulphide – believed at the time to be both safe and healthy.⁶⁶ Encouraged by this, many women playfully painted radium paint on their faces or dusted their dresses in radium powder, so that, come the evening, they would glow on the local dance floor. This earned them the nickname 'shining women'.⁶⁷

However, as thrilling as the life of the radium girls might have seemed, the reality was quite different. By the early 1920s, several employees started to complain of aches and pains.⁶⁸ It turned out, to achieve finer and quicker brushwork, the dial painters employed a technique called lip-pointing (or tipping), using their lips to shape the brushes and unknowingly ingesting radium.⁶⁹ According to Jorgensen:

It has been estimated that a typical worker might have lip pointed her brush four times per dial, consuming about 0.001 grams of paint each time. At 300 dials per day for a five-day week, this could have resulted in about six grams (about one teaspoon) of paint being consumed each week. Over a year's time the worker would have consumed 300 grams of paint (about one coffee cup).⁷⁰

This constant exposure led many workers to develop jaw necrosis, cancer, and other ailments that resulted in their premature death.⁷¹ Their case received widespread publicity and appeared alongside other



Figure 12
Dial painters at work in the factory
of the United States Radium
Corporation in Orange, c.1922.

accounts of harm caused by radioactive consumption.⁷² As Jülich suggests, such cases may be one reason that radioactive products, and even X-ray photography, gradually ceased to be framed as leisure and entertainment.⁷³ The suffering of the women eventually prompted legislation to protect radium workers. After 1927, new precautions were introduced: dial painters were no longer permitted to lip-point their brushes and were required to wear hairnets and rubber gloves.⁷⁴ After all, the glow was still considered useful in wartime, when glow-in-the-dark dials were valuable in trench conditions and for night manoeuvres.⁷⁵

THE DAWNING OF THE ATOMIC AGE

On 6 August 1945, the secret Manhattan Project, which had hoovered up most of the uranium from conventional commodity production, suddenly made its entrance on the world stage. Under the command of President Truman (1945–53) the atomic bomb ‘Little Boy’ was dropped on Hiroshima, and three days later Nagasaki suffered the same fate on the detonation of ‘Fat Man’.⁷⁶ They were revealed in a blinding flash, and in this brutal illumination emerged scorched landscapes devoid of buildings and bodies. These devastating events

marked not only the end of the Second World War, but also the dawn of what would come to be known as the Atomic Age.⁷⁷

Although there were significant nuclear developments in Europe at the time, they were profoundly shaped by this origin point, which positioned the US as the world’s first nuclear superpower. In the post-war time, the public’s curiosity about the atomic bomb and its consequences paralleled scientists’ urgent desire to communicate the unprecedented severity of nuclear weapons.⁷⁸

According to the historian Paul Boyer, a consensus emerged in the scientific community that the destructive potential of the atomic bomb should be publicly emphasised in order to cultivate fear and anxiety regarding its future use, popularly referred to as the Scientists’ Movement.⁷⁹ The prevailing belief was that heightened public apprehension would reduce private investment in nuclear armament and deter the normalisation or glorification of atomic weaponry.⁸⁰ The scientists’ newly public role thus centred more on issuing warnings than on promoting nuclear as a means for energy and a fast-advanced technological society. Yet, post-war popular culture did not evolve as they hoped. Less than 24 hours after Little Boy had been dropped, the *St Louis Post-Dispatch* wrote: ‘Imagination leaps forward to visualize the use of atomic power for man’s comfort and enjoyment in generations to come’ – and the Washington Press Club began serving an Atomic Cocktail, which was ‘a greenish blend Pernod and gin’.⁸¹ The promises of fast progress and innovation spurred a broad fascination with the atom, leading to a romanticised vision of nuclear power as an inexhaustible source of energy and technological breakthroughs.⁸²

The scientists’ attempts to raise awareness of the risks of nuclear research were partially overshadowed by a wave of optimism in which nuclear power was held up as a symbol of progress and a modern lifestyle.⁸³ This idea was particularly strong in France, the birthplace of nuclear physics. The American attacks on Hiroshima and Nagasaki had unsettled the Republic, which had previously considered itself at the forefront of nuclear invention.⁸⁴ Now, in the aftermath of the war, they had to recognise the US’ technological superiority. As the anthropologist and historian Gabrielle Hecht observes:

No wonder, then, that the nation expressed such enthusiasm when Zoe, its first experimental nuclear reactor underwent a chain reaction in December 1948, only four years after the Liberation. This success, proclaimed one newspaper, was ‘a great achievement, French and peaceful, which strengthens our role in the defense of civilization.’ The following year, scientists isolated France’s first milligram of plutonium. President Vincent Auriol paid Zoe a visit and solemnly declared: ‘This achievement will add to the radiance of France.’⁸⁵

Although plutonium is a fissile material essential for nuclear weapons rather than energy, what is most interesting here is the rhetoric with which technological success was narrated.⁸⁶ Hecht notes that the state's early nuclear programme was called *Le rayonnement de la France* – the word *rayonnement* has a dual meaning as both radiation and radiance.⁸⁷ The atomic project was therefore framed as both scientific progress and as the luminous expansion of national prestige. In this formulation, nuclear capability was framed as a matter of military potential, and as a visual and symbolic technology that promised to restore France's global standing.⁸⁸ Atomic energy, despite all its destructive associations, was domesticated or even nationalised – an emblem of modernity and the aestheticised glow of national renewal.

In line with the domestication of a subject that was otherwise difficult to understand, many consumer products that invoked civilian nuclear use appeared in the period. For example, the brightly coloured Gilbert Atomic Energy Lab, a toy lab set for children that contained four types of uranium ore and three different sources for radiation.⁸⁹ It was sold for USD 50, a steep price for the time, but it promised it would be:

Not just a toy... precise and accurate scientific instruments developed by Gilbert engineers with leading nuclear physics. With this complete laboratory everyone can explore the mysterious universe of the Atom – With complete safety!⁹⁰

Figure 13
The Gilbert U-238 Atomic Energy Laboratory. Courtesy of Tiia Monto.



By adapting nuclear physics for children, the product suggested that the nuclear had a future, one tied to fantasies of generational progress. Energy seemingly produced from almost nothing could be made understandable and playful even to the young. Beyond toys, however, the desire to materialise atomic energy also appealed to adults, for example by collecting Trinitite.

At the Trinity test site near Alamogordo, New Mexico, the combination of extreme heat and radiation fused desert sand into small pieces of glass later named after the test itself: Trinitite.⁹¹ In its greenish-yellow hue, Trinitite recalls the appearance of uranium glass, though its surface is far less delicate. It was collected and fashioned into jewellery, paperweights, cufflinks, and much more.⁹² As Fifth Avenue in New York advertised:

Bursting Fury – Atomic Inspired Pin and Earring. New fields to conquer with Atomic jewellery. The pearled bomb bursts into a fury of dazzling colors in mock rhinestones, emeralds, rubies, and sapphires. ... As daring to wear as it was to drop the first atom bomb. Complete set \$24.75.⁹³

Some scientists, Boyer notes, helped cultivate public fascination by sending glass paperweights, made from Trinitite, to 42 of the US's largest cities.⁹⁴ While it was supposed to serve as a testimony to the innovation and violence of the nuclear bomb, it also became a symbol of American progress. The gesture suggests how much rhetorical force the physical object itself could carry, as both evidence and keepsake (reminiscent of the Chornobyl humidifier).⁹⁵ However, as its popularity soared, American authorities soon grew concerned about the uncontrolled spread of radioactive material and declared it illegal to collect Trinitite from the Los Alamos test site.⁹⁶ However, in the US, any Trinitite gathered before 1952 remains legal to distribute and can still be found on online platforms such as Etsy and through auction houses.⁹⁷ Today, at the entrance to the test site, a sign reads: 'Removal of Trinitite is theft of Government property and can result in fines and jail time'.⁹⁸ Naturally, it begs the question of how to determine when a piece was picked up.

Interestingly, as visual materials of and related to the atomic bomb grew in popularity, the US government attempted to broadcast a nuclear test to the public.⁹⁹ Americans across the country gathered to listen, expecting to hear the terrifying sound that had thrust the human race into a doomsday scenario. The outcome was anticlimactic. Aside from a dull thud and intermittent static crackling, the broadcast conveyed little sonic drama.¹⁰⁰ However, while the audio might have been underwhelming, the visual spectacle remained powerful, indeed so powerful that the Nevada test site soon became a tourist destination.¹⁰¹

By the 1950s the then-teenager Darlene Phillips explained that at her summer job at Bryce Canyon:

Everybody at the dorm... would get up early, before dawn, and get on the catwalk which faced west. It would be kind of chilly, and we would count down with it because we knew what time it was to go off. Then you would see the whole sky light up as if the sun were coming up backwards, and even the shadows of trees would be wrong, casting their shadows in the other direction.¹⁰²

According to the Public Broadcasting Service's *American Experience*, 'On the eve of detonations, many Las Vegas businesses held "Dawn Bomb Parties." Beginning at midnight, guests would drink and sing until the flash of the bomb lit up the night sky'.¹⁰³ The Atomic View Motel guaranteed its guests a view of the blast from the poolside, and the tourist board made sure that courtesy buses with picnic baskets were available to drive onlookers to the best vantage points.¹⁰⁴ The historian Gerard De Groot observes that nuclear testing was largely made possible by this bomb blast enthusiasm, because despite a handful of protesters, most of the down-winders (the ones affected by fallout) benefitted financially from the atomic tests.¹⁰⁵

Atomic tourism was born. Las Vegas was the 'City of Lights' in more ways than its multicoloured neon LED signs, as it was an opportunity to view the glamorous atomic lights in the cityscape. The enthusiasm for the bomb's mushroom cloud and dazzling lights inspired such phrases as 'She's the bomb!' and 'What a bombshell!', again showing how atomic terminology slowly made its way into everyday language, even serving to describe a woman's beauty and allure.¹⁰⁶ Connecting the 'bombshell' woman with the earlier 'radiance' of France, it can once again be seen how nuclear rhetoric infused everyday rhetoric. However, as the historian Elaine Tyler May explains, the concept of the 'bombshell' carried a dual meaning.¹⁰⁷ While it referred to an attractive woman, it also implied that an unmarried woman posed a kind of threat or volatility that needed to be contained in the ideal of domestic stability.¹⁰⁸

In the Cold War, the US, affected by other political conflicts such as the Vietnam War (1955–1975), could not afford frivolous young men and women, so 'locking' them into 'nuclear families' meant that they would have something worth fighting for, thus prompting them to go to war without question.¹⁰⁹

Figure 14
The Encore Test, Nevada desert,
released 16 March 1953.
Courtesy of the National Museum
of the US Navy.



Further withstanding the scientists' warnings, in 1953 President Eisenhower (1953–60) delivered his 'Atoms for Peace' speech, designed to rehabilitate the atom's reputation after the many alarming reports from scientists regarding possible nuclear annihilation. This manoeuvre effectively allowed the state to reclaim a degree of freedom in controlling nuclear power and subsequently advancing weapons' research. It shifted the focus from the bomb to that of nuclear power for civilians.¹¹⁰ Thus the nuclear technology behind the bomb – symbolising total destruction and annihilation – could also be seen through rose-tinted spectacles as a means to create a utopian society in which nuclear paved the way for wonder machines and free unlimited energy. In the words of the politician and businessman Lewis Strauss, nuclear power would become 'too cheap to meter', due to its exceptional quality of creating energy out of 'nothing'.¹¹¹ According to the nuclear physicist M. V. Ramana, Eisenhower's speech played a part in shifting focus away from how the nuclear could create bombs and towards the possibility of energy.¹¹² However, as the historian Robert Jacobs has claimed, 'It is possible to operate nuclear power plants without building nuclear weapons, but no nation has yet manufactured such weapons without first operating nuclear powerplants'.¹¹³ For Jacobs, nuclear power is born violent for the reason that it came from a programme that was designed for mass destruction.¹¹⁴ Günther Anders likewise argues that there is no turning back from nuclear weaponry, as even if 'nuclear weapons might be eliminated in an ideal world ... the capacity to create them remains'.¹¹⁵

Meanwhile, in popular culture, the bomb's power to irrevocably transform society was a consistent metaphor. According to Jacobs, in the early Cold War era (1945–65), radiation – often stemming from nuclear testing rather than warfare – appeared in over 500 science-fiction films, among them *Them!* (1954), *Godzilla! King of the Monsters* (1956), and *The Incredible Shrinking Man* (1957).¹¹⁶ In the latter, the protagonist is shown covered in glitter-like particles before he begins to shrink, serving as a cinematic visualisation of radioactivity. And, as Jacobs notes, in the *Godzilla* film, the barren landscape left by the monster's fiery, radioactive breath directly invokes the destruction of Hiroshima and Nagasaki.¹¹⁷ In many science-fiction depictions of radioactivity, monsters are oversized, glowing, and wildly radioactive, in turn offering a focal point of what such contamination may look like. Interestingly, radioactivity was used as a plot device: 'Not unlike the maxim about a gun seen on stage during a play – that it must go off by the third act – the clicking of a Geiger counter in a 1950s science-fiction film signified that something was about to go terribly wrong'.¹¹⁸ Jacobs further explains that when nuclear weapons tests were moved underground in 1963, public awareness of radioactivity receded, making it a less prominent theme in popular culture.¹¹⁹

According to the historian William Knoblach, the 1980s saw a boom in nuclear-missile-themed video games.¹²⁰ He attributes it to several key events that generated widespread anxiety about nuclear warfare, such as the 1979 Soviet invasion of Afghanistan, the partial meltdown at the Three Mile Island nuclear power station that same year, and the 1980 presidential election of Ronald Reagan, which ushered in a significant nuclear arms build-up and fuelled the nuclear freeze campaign.¹²¹ In this period, games often depicted the nuclear threat as a pixelated apocalypse in which no side came out a 'winner' – a direct reference to the 'mutually assured destruction' treaty, as well as perhaps a more sombre note that in nuclear war there are no winners; the world would be too contaminated for life to exist. Games such as *Nuclear War* (1987), and *Splitting Image* (1988) exemplified the idea.¹²² However, by the 2000s, following the 9/11 attacks, nuclear narratives in games evolved. Titles began presenting nuclear bombs as viable weapons of war rather than distant doomsday devices, reflecting a shift in geopolitical anxieties.¹²³

THE NUCLEAR RENAISSANCE

In recent years, nuclear energy has re-emerged as a possible solution to the climate crisis. This renewed interest, often referred to as the nuclear renaissance, first surfaced in the 1980s, paradoxically at a time when many nuclear projects were being cancelled.¹²⁴ Back then, the term suggested a return to a pre-nuclear world; today, however, it signals a revival of pro-nuclear enthusiasm, similar to the one that prevailed among the atomic age.¹²⁵ Yet this renaissance has been widely criticised for ignoring key historical and technological challenges, such as uranium mining, long-term waste storage, and the human cost of past disasters.¹²⁶ While today's visual culture seemingly carries some visual-historical connotations, it also departs from the earlier popular imagination.

Supplementing Knoblach's survey of nuclear imagery with more contemporary examples, it is apparent that the visual representations that emerged in the early 2000s persist in today's video games, albeit now in more photorealistic and immersive formats. Consider the popular game franchise *Fallout* (2015–), set in a post-nuclear-bomb apocalyptic world where players navigate ruined landscapes as society attempts to rebuild.¹²⁷ In high-radiation areas, players occasionally encounter bioluminescent mushrooms pulsating with a green glow. These mushrooms often grow near remnants of nuclear bomb vessels, and a similar green shade often appears in some of the game's mutated creatures too. Iconographically, these visual similarities work in the way of an index, linking radioactivity and nuclear destruction to biological transformation and danger through the historically familiar trope of the glow – the same green as uranium glass or vials of radium.

Nuclear imagery has taken another turn in recent years, though. While the historian William Knoblach notes the waning prominence of nuclear threats in late public discourse, nuclear themes have again seeped into collective consciousness.¹²⁸ Escalating geopolitical tensions and instances of nuclear bullying by heads of state have revived anxieties about atomic weapons. This is reflected in the news cycle, but also, I argue, in the growing popularity of nuclear narratives across media. In late 2024, the franchise Call of Duty introduced a new arena called Nuketown to their sub-game Warzone. The map features a nuclear power station whose cooling tower is sometimes coated in glowing green sludge that serves as a visual cue that the game is nearing its end.¹²⁹ Up to 44 teams compete in this 'last man standing' format. While most win by eliminating rivals, an alternate path to victory involves assembling and detonating a nuke, resulting in the obliteration of the map and sole victory for the team that set it off.¹³⁰

It seems that in today's nuclear narratives, humans are no longer just passive witnesses; they are active agents in wielding nuclear 'power'. For example, in the 2021 video game Chernobylite, radiation is visualised as glowing green crystals, which enable space-time travel and the development of weapons and base upgrades. Nuclear energy's dual role recalls themes in President Eisenhower's 'Atoms for Peace' speech, which framed atomic power as part harbinger of destruction, part promise of a utopian energy future. There are also similarities with the Gilbert U-238 Atomic Energy Lab, which presented radioactive experiments as something obviously manageable to future generations. As if the role of the 'expert' is slowly becoming all the folksier as radiation ebbs out into the community.

Contemporary pro-nuclear activism also reflects this shift. A prominent voice in today's nuclear discourse is the Brazilian influencer and model Isabelle Boemeke, known as @I_sodope on Instagram and TikTok. Her clips often translate nuclear technologies into instantly legible visual representations, such as showing the size of a uranium fuel pellet in the shape of a gummy bear.¹³¹ One can even purchase merchandise, such as a cap reading 'Get in loser we're going nuclear', a direct meme reference to the 2004 college film *Mean Girls*, in which the antagonist says 'Get in loser, we're going shopping'.¹³² Boemeke's output is both fast-paced and stylistically consistent with the media content which younger audiences are already familiar with. In doing so, she makes nuclear advocacy feel native to the platform.

This visual strategy frequently relies on a soft neon palette and glow effects that subtly recontextualise radioactivity from the realm of danger to that of utility. A Valentine's themed post on 14 February 2025, for example, paired glowing pink hearts and purple text saying 'Texas' Love Affair with Nuclear', with a cooling-tower

blueprint.¹³³ The aesthetic extends to her 2025 book *Rad Future*, whose cover features glowing rainbow colours.¹³⁴ In 2023, she was listed as a keynote speaker at an IAEA stakeholder engagement conference in Vienna, where she discussed social media as a tool for challenging the (negative) stigma of nuclear power by presenting it to younger generations using the platforms they already understand.¹³⁵ The glow, then, assumes the role of the mediator between past and present understandings of nuclear power, though its meaning changes with the form it is presented as.

Despite the growing number of pro-nuclear voices, researchers, engineers, and policymakers continue to highlight the unresolved issues about nuclear power, especially the challenge of long-term radioactive waste storage.¹³⁶ In response to such problems, Boemeke notes:

kissing nuclear waste casks sounds crazy until you realize it's the safest, least harmful waste in the world. nuclear waste is misunderstood. it's not leaky green goo like the simpsons portrayed it. it's actually called spent fuel, and it looks like long metal straws all stacked neatly inside a steel and concrete cask that just sits there harming nothing and no one.¹³⁷

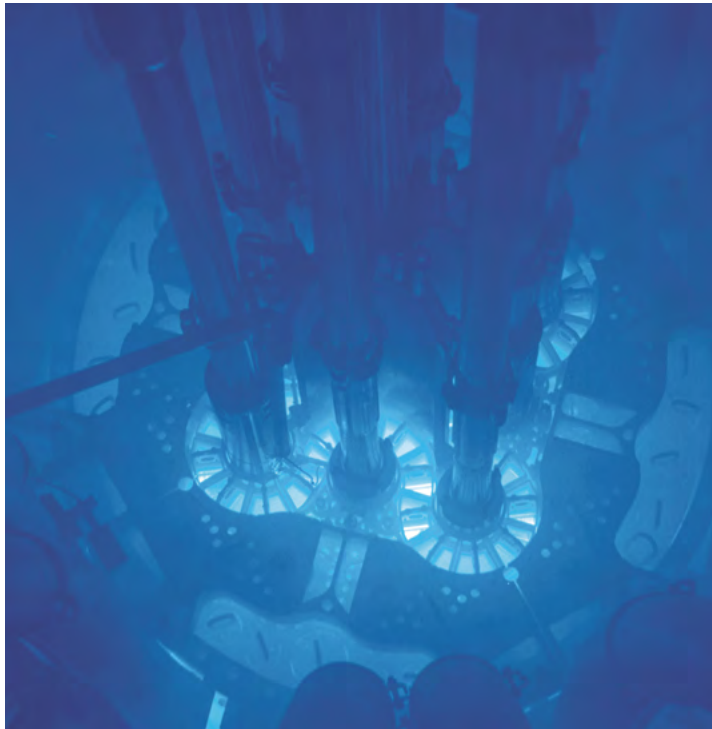
Yet, they are only temporary waste units for surface storage while they await a permanent repository.¹³⁸ Once the waste reaches its permanent storage unit, other questions arise such as how to communicate the danger of radioactive waste to a distant future 10,000 or 1 million years from now, when today's languages and cultures may have vanished.¹³⁹

One proposed solution reaches for the literal glow: the 'Ray Cat Solution' suggested by the French author Françoise Bastide and Italian semiotician Paolo Fabbri in 1984. They imagined a genetically engineered breed of house cats whose fur would change colour in the presence of radiation, and thereby connect the warning to folklore – 'if your cat changes colour, leave'.¹⁴⁰ While no hue was specified, retellings often depict the cats glowing green or blue, much like the technological colours of radium green or Cherenkov blue.¹⁴¹ There is a certain charm to the idea that while we imagine our common languages, visualities, sounds, and culture will have disappeared or been altered beyond recognition, we still expect domesticated cats to be around.

Could it be that the nuclear presence is growing all the more solid because of internet access? Besides the loud voices of pro-nuclear influencers or uranium glassware collectors, and indeed the whisper of people idly scrolling, larger nuclear organisations are joining the visual discourse. The IAEA, for example, has posted footage of initiating a nuclear reactor, revealing the vivid blue light of Cherenkov radiation in the reactor pool.¹⁴² This phenomenon

happens when ‘Neutrons release visible blue light as they move at extremely high speeds through matter. ... It is actually just light from the blue part of the visible wavelength spectrum’.¹⁴³ This blue glow is seemingly mirrored in the DC superhero Dr Manhattan, who first appeared in 1986. After a laboratory accident, the nuclear physicist Jon Osterman is transformed into a blue ‘godlike being’ when he is caught inside a radioactive particle test chamber.¹⁴⁴ In an interview, the co-creator Dave Gibbons explains that Dr Manhattan’s skin colour ‘relates to the way you might visualize electrical energy or atomic energy. That it’s a kind of blue, pure energy. A cold energy, unlike fire or flame, which is what a red color would make you think of.’¹⁴⁵

Figure 15
Cherenkov radiation surrounding
the advanced test reactors core,
2009. Courtesy of the Idaho
National Laboratory’s ATR.



Chornobyl’s visual representations also align with a broader ‘nuclear glow’ aesthetic on social media and merchandise, although in a way that veers almost uncomfortably close to reality. On YouTube, tourists document their visits to the Exclusion Zone. Many even visit *samosely* or resettlers, who have returned to the Zone to live in family homes further out in the countryside, where liquidators did not bury the buildings under concrete. The resettlers often depend on tourists for groceries as well as social contact. In one video, produced by Benjamin Rick with the alias *Bald and Bankrupt*, he visits an elderly man named Ivan Ivanovic.

Ivanovic is wearing a red T-shirt, on the back of which it says: ‘Stop staring at my glowing body! I was on radiation diet’, while the front reads: ‘Enjoy Chornobyl – Die Later’, in Coca-Cola’s familiar typography (Fig. 17).¹⁴⁶

At first, the shirt might be read as dark humour, but on reflection its significance changes. The shirt probably comes from the official Chornobyl Museum in Kyiv, and while it can be read as absurd, funny, or ironic, it may be considered practical in a place where goods are scarce. The Chornobyl Museum informed me that the T-shirt was part of the liquidator and radiation reconnaissance platoon commander Serhiy Mirny’s project about overcoming the psychological consequences of the Chornobyl tragedy using souvenirs and humour. While this may be the case, there are several discrepancies by this statement. For example, Ivanovic, who does not speak English in this video, communicates through a guide. Whether or not he understands his T-shirt’s message, the statement suggests his body *still* glows, as if marked irreversibly by past exposure from ingesting food. Thus he himself has become an extension of the landscape which he inhabits. And even if, the T-shirt is worn in order to psychologically process the disaster through humour, it is simultaneously catering to the visitor (or those watching the video on YouTube) who can, if they want, fetishise Ivanovic as a commodity of the Zone. Because the T-shirt becomes the visual index that ties him together with the contaminated soil. I will return to the radioactive body and examine how its two-dimensional representation can generate an aesthetic experience (Chapter 4).

In this brief account of visual representations in a nuclear culture that glows, it is plain that radioactivity has become a form of cultural capital. The glow is a carefully crafted cultural artefact, threaded together from science, history, fascination, fear, and a desire for knowledge and beauty. Its existence does not hinge only on scientific representation or material actuality, but also on the political and cultural practices through which radiation has been imagined and understood. The next section takes this proposition seriously by asking how far we can understand the glow as something shaped as much by culture as by decay chains?

EXTRACTING THE GLOW

Looking for light is hardly a new concept. Artists have been exploring and creating art from and within light for decades, such as Michelangelo Merisi da Caravaggio’s *Narcissus* (1594–96), Tetsumi Kudo’s *Flowers* (1967–68), or Olafur Eliasson’s *Weather Project* (2003). It is not unreasonable, then, to be enchanted by the gleam of radioactive matter and materials. Jorgensen even noted, ‘Light is just a tiny part of the world of radiation, but a very

Figure 16
T-shirt with 'Enjoy
Chornobyl – die later'. Souvenir
from the official Chornobyl Shop.



important part. We would be remiss if we neglected light'.¹⁴⁷ Radioactivity has always been closely intertwined with light; its very discovery was made possible by the invention of electric lighting, which had sparked a widespread fascination with the nature of electromagnetic waves.¹⁴⁸

Yet, much scholarship on the visibility of radioactivity often points to its fundamental invisibility. The literary and media researcher Akira Lippit, for example, introduces the concept of 'atomic light' to describe the paradoxical nature of the nuclear bomb: while its detonation is marked by a hyper-visual flash and destruction of the site where it was dropped, its subsequent contamination remains mostly unseen.¹⁴⁹ Lippit argues that this contrast creates a rupture in representational logic because the event exceeds the temporal and spatial limits of visibility. In this way, atomic light produces a representational condition of crisis that disrupts conventional understandings of the atomic bomb, by demonstrating that the event continues even when there is nothing left to see.¹⁵⁰ The aesthetic of the nuclear baroque seemingly works

in a different way. By restabilising nuclear visibility by the use of light, it shifts images of destruction to those of continuity. It is therefore possible to argue that nuclear power can be seen as more normalised in contemporary visual culture because its environments can be restabilised, most notably through images of ecological recovery and renewed biodiversity. The nuclear bomb, on the other hand, remains bound to a representational regime of physical devastation, in which the ruined landscape serves as concrete evidence of catastrophe, even if the long-term effects remain largely visually imperceptible. I will return to this in the following chapter, but for now I will turn to the philosopher Jacques Derrida who refers to the atomic bomb as textual, explaining how its power resides as much in the network of discourses and representations as in the visible spectacle of the blast.¹⁵¹ He notes how representations simultaneously inform decision-making about creating arsenals, weaponry, or warfare policies:

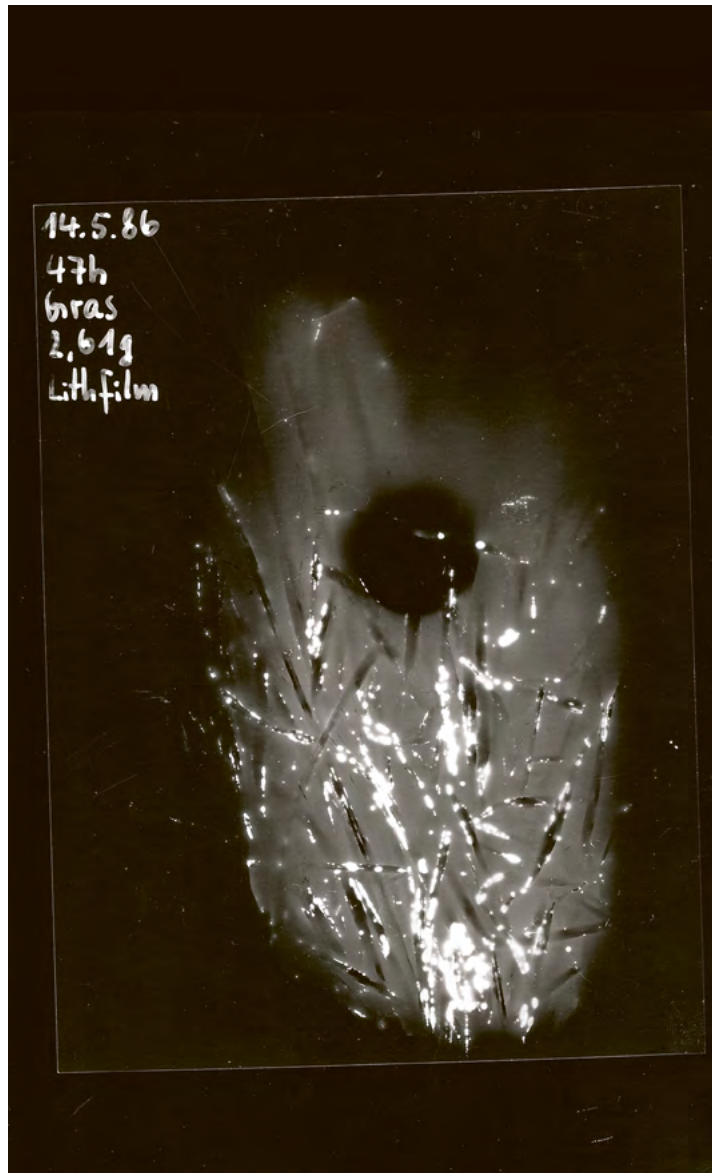
There is nothing but doxa, opinion, 'belief'. One can no longer oppose belief and science, doxa and épistémè, once one has reached the decisive place of the nuclear age, in other words, once one has arrived at the critical place of the nuclear age. In this critical place, there is no more room for a distinction between belief and science.¹⁵²

Derrida tells us that we no longer have clear access to truth via science alone. Instead, we need to navigate a field of images, narratives, beliefs, and otherwise mediated information: all of which blurs the line between actual knowledge and ideology.¹⁵³ Together, Lippit and Derrida encourage us to rethink not only the aesthetics of atomic imagery, but also the broader cultural narratives that frame our understanding of radiological threats and their aftermath. This is partly why I repeatedly refer to radioactivity as (in)visible matter. It can appear visually in many artistic depictions and representations, yet in its nature it remains elusive and hidden beneath the surface of human sensorial perception. Radioactivity is neither just invisible nor visible; it is always ambivalent in our perception because of the iconography we carry with us.¹⁵⁴

In 1965, Susan Sontag published her famous essay 'The Imagination of Disaster', examining the rise of science-fiction films – particularly those centred on the atom bomb and nuclear research – and their broader cultural significance. Sontag observes that 'another of the things that fantasy can do is to normalize what is psychologically unbearable, thereby inuring us to it. In one case, fantasy beautifies the world. In the other, it neutralizes it'.¹⁵⁵ Sontag emphasises the human tendency to use fantasy or imagination as a means of coping with or ultimately dulling the impact of unimaginable fears.¹⁵⁶ Building on Sontag's hypothesis, Knoblauch observes

that many early superhero narratives involving radioactivity have since substituted that same nuclear dimension with chemical pollution.¹⁵⁷ This shift reflects a cultural landscape less defined by immediate nuclear anxieties than in Sontag's time, writing just three years after the Cuban Missile Crisis of 1962, at the height of the Cold War. Nevertheless, depictions of nuclear material and pollution share a central commonality: both are largely imperceptible to the human eye, necessitating narratives or visual cues to make their threat immediately comprehensible.

Figure 17
131-Iodine isotope, as white spots
on the grass leaves because
radioactive fall-out particles stick to
plants, 14 May 1986 (the dark
round spot was a coin used to
generate a contrast area). Courtesy of
ViolaceinB and Tyno Abdul-Redah.



This relationship between radioactivity and its perceived materiality prevails across multiple levels. For example, as the IAEA points out, 'Although we cannot see or feel the presence of radiation, it can be detected and measured in the most minute quantities with quite simple radiation measuring instruments'.¹⁵⁸ However, radiation can in itself also leave a physical trace, as in Figure 17 where contaminated grass has imprinted itself on photographic paper. Here radiation can actually be seen as glowing white spots on the paper, in turn assuming a new physical presence.¹⁵⁹ The forensic architect and art historian Susan Schuppli refers to these types impressions as 'radioautographs' or 'a new kind of photosynthesis', arguing they undermine the notion that humans alone can create images.¹⁶⁰ According to Schuppli, 'matter can write its own history by generating knowledge of itself', suggesting that nuclear phenomena quite literally imprint their own narratives onto the world, even when we cannot see them at first glance.¹⁶¹ In Baradian terms, the non-human already has agency, even if the human constantly tries to give it a form. The visibility of the glow remains a mediator between the two, be it through the clicks and sparks of the Geiger counter, or these glowing strays of grass. Meaning that, despite radiation's perceived immateriality, it does leave a visual trace, albeit one that can only be seen with certain tools.

In popular visual culture, Jacobs describes the portrayal of radioactivity as a 'cultural talisman'.¹⁶² Focusing on early Cold War science fiction, Jacobs observes that radiation frequently served as a narrative marker that signalled a rupture in everyday reality – an indication that 'a boundary had been crossed' and that after the moment of contamination 'anything was possible'.¹⁶³ In this way, radioactivity functions as a force that 'separates normal from supernatural and that it is settled in radiation's physical nature'; 'the invisible ability to transmute one element into another, the ability to affect action at a distance', and 'aspects of its effect on society (marking a potential end time or golden era of peace and plenty)'.¹⁶⁴ This type of transformation brought on by radioactivity can be seen in the visual representations of the Chernobyl disaster, too. In the Chernobylite video game, areas that are highly toxic will sometimes glow green (Fig. 18).

Next double page:
Figure 18
The area of 'Moscow Eye', showing
remnants of infrastructure in
the Zone, including the Duga Radar.
A green mist is appearing from on the
right, screenshot from Chernobylite.



40 m



173 m

239 m



Navigate to:



Other

SCAN

Just as Schuppli's 'radioautographs' reveal matter's capacity to inscribe its own story, so Jacobs' perspective shows how popular narratives harness radiation's mysterious power as a signal that a 'fantastic' boundary has been crossed, one that separates ordinary life from the realm of the extraordinary.¹⁶⁵ In reality, though, as communication scholar Olga Kuchinskaya observes:

one's experience of radiological contamination, even for those who live with it on a daily basis, is highly mediated – by media narratives, authoritative accounts, scientific theories and equipment, maps, rumours, and any other representations that render radiation publicly visible.¹⁶⁶

In other words, our perception of radiation is not a purely physical phenomenon; it is shaped by numerous intermediaries. Human 'experience' of contamination is thus constructed through iconology, those overlapping layers of interpretation and mediation: maps 'fix' exclusion zones, Geiger counters translate radiation into sound, and media narratives shape public conceptions of risk. Collectively, these layers form an intermedial network that simultaneously exhibits and shrouds the reality of radiation.

Following this glow as an example of Jacobs' cultural talisman, which brings together scientific realism and cultural imagination, also clarifies the work that representations do. They make transformation tangible, showing how something that was one thing can change into something else under the influence of radioactivity. In the context of the Chernobyl disaster, these representations suggest how a contaminated area 'ought to be', since directly showing how it truly is (invisible contamination yet abundant wildlife) might be too ambiguous (or boring) to grasp. Or, like the example of Ivan Ivanovic' Chernobyl T-shirt, how a person can deictically become part of the environment. Meanwhile, the glow also provides a way of interpreting both radioactivity's ontology and epistemology. Ontologically, radioactivity becomes a visible entity through its discovery by science – its glow in the little vials that the Curies displayed conveys a certain connection to its visual properties. Epistemologically, on the other hand, radioactivity seems to be constructed through popular culture which has continually re-engaged in shaping its visual material as in where and how it appears, as I will explore below. To further illustrate the role of this glow in shaping perceptions of radioactivity, I will now consider a specific example from Chernobyl's visual discourse.

THE GLOW IN THE LEFT-BEHIND

It has struck me how most photo books about Chernobyl feature images of gas masks scattered about, often being worn by dolls, or

toys deliberately placed to make them seem eerie or to evoke 'the sense of abandonment in the landscape'. Every surface seems to be marked by prior human presence, and the intrigue of the space seems to lie in the predominance of left-behind objects.

In the video game *Chernobylite*, the horror aesthetics make use of these abandoned items to instil a sense of unease when exploring the Zone. At times, the dolls unexpectedly start to glow green or turn their heads, suggesting that even the objects left behind are inherently part of the contaminated terrain and perhaps that radiation has given them life. Additionally, green fog and thunder envelop the landscape, ensuring that those exploring are actively experiencing and existing in the realm of a radioactive zone.



Similarly, the TV series *Chernobyl* tries to bridge reality and fiction by depicting the surrounding environment as authentically as possible. It was mainly filmed in Lithuania – in Vilnius and at the decommissioned Ignalina nuclear power station – in order to capture the genuine Soviet atmosphere among soaring, brutalist architecture.¹⁶⁷ Focused on the disaster itself, the imagery in the series highlights other types of things that were left behind: abandoned laundry, open schoolbooks, restaurant tables still set with food, and the chaotic but unpopulated scenes in the hospital, where medical supplies are scattered on the floor among human remains, vomit, and blood.¹⁶⁸ Empty halls, deserted streets, and ultimately an abandoned city all signify the pervasive contamination – a stark division where the things left behind become inherently intertwined with the contaminated landscape, while the people who were evacuated seem to receive another status as 'washable' and

Figure 19
Dolls placed in an abandoned building with working TV despite the lack of electricity, screenshot from *Chernobylite*.

therefore able to leave. This creates a contrast between the human and non-human, deliberately making the Zone a space of non-human but still very human things left behind.

While some of the evacuees were eventually permitted to temporarily return to retrieve their most valuable belongings, not everything could be transported due to strict radiation controls and time constraints.¹⁶⁹ Consequently, some resorted to illegally returning later to reclaim their belongings. One such example is recounted by evacuee Nikolai Fomich Kalugin, who returned in the middle of the night to 'steal back' his family heirloom: their front door.

I can't leave the door. ... Our door – It's our talisman, it's a family relic. My father lay on this door. I don't know whose tradition this is, it's not like that everywhere, but my mother told me that the deceased must be placed to lie on the door of his home. ...

But I took it with me, that door. At night. On a motorcycle, through the woods. It was two years later, when our apartment had already been looted and emptied. The police were chasing me. 'We'll shoot! We'll shoot!' They thought I was a thief. That's how I stole the door from my own home.¹⁷⁰

The desire to reclaim their door reflects the family's commitment to a cultural tradition of laying out the deceased on it. This custom, which was common in the rural regions of Gomel and Chornobyl, adds a layer to the symbolism of the door: it is as much a mortuary rite, as it is a representation of the negation of upholding the tradition due to the circumstances of the disaster.¹⁷¹ Thus, the loss is multilayered, as it extends beyond the material loss of objects to the loss of a thing-tied intergenerational cultural practice.

In considering the matter of contaminated objects in the Chornobyl Exclusion Zone, it is important to acknowledge the emotional and symbolic significance attached to these artefacts. According to the *Cambridge English Dictionary*, an artefact is 'an object that is made by a person, especially something of historical or cultural interest'.¹⁷² These things in Chornobyl carry memories, generational and cultural significance, and emotional weight for the individuals affected by the disaster. Yet, things also undergo a transformation due to the radioactivity. Because of their physical contamination, the objects cannot leave the Exclusion Zone.¹⁷³

Figure 20
Doctors' lab coats hanging
abandoned in Prypiat Hospital
no. 126, 2019.
Courtesy of Carsten Olsen.



That means the things left behind become the subjects of a symbolic transformation; they are no longer the belongings or possessions of an individual but now belong to the Chernobyl disaster. This is likewise seen in the portrayals of the glowing dolls (as if being awoken to life), as mentioned above. Once they start glowing, it is implied that they belong to the catastrophe.

This acknowledgement of radioactivity's transformative power highlights the complex intra-action between cultural attachment and the physical environment of Chernobyl. The left-behind things undergo a metamorphosis, whereby they become part of the natural environment by retaining their presence long after the initial disaster, as an eerie reminder of the former human presence. These artefacts are therefore an inherent part of the visual discourse on Chernobyl, since, as mentioned in the introduction to this section, they often form part of the Zone both in photographs and in popular renderings such as *Chernobyl* and Chernobylite.

THE PRICE OF LUMINESCENCE

'What is the cost of lies?' Valery Legasov's question in *Chernobyl* lingers above every page of this chapter. I have argued that in visual culture, the price is the stubborn survival of one of the atomic era's most seductive lies: the cultural construction that radioactivity glows.

Since the late nineteenth century, the glow has acted as a unifying shorthand between scientists and lay audiences, bridging the gap between scientific fact and cultural imagination. The glow of radium that Marie Curie once described as enchanting has metamorphosed into a trope that instantly marks an object, landscape, or body as 'touched by the nuclear' – a transformation that Jacobs calls a 'cultural talisman'. Visualising radioactivity in this way makes the imperceptible tangible and powerful by cautioning it an 'ability to act'. Yet other questions have emerged. How is this visual metaphor mobilised today, and to what effect?

Although the glow has no fixed colour, representations often return to greens, yellows, and blues – hues thick with historical and symbolic connotations. Toxic greens dominate video-game wastelands; Cherenkov blues (like the reactor pools or Dr Manhattan) claim the prestige of scientific reality; yellows echo early 'radio-active' labels (and their relation to electricity). Even when Instagram shifts the palette to neon pinks and violets, the same logic holds: it is the luminescence that binds these disparate images together. Repeated in uranium-glass curiosities, advert posters, monster films, TikToks, and genuine reactor footage, the glow gains a veneer of truth, a fiction that serves advertisers and entertainers alike while leaving contaminated communities doubly invisible.

As Weart reminds us, the brain stores imagined scenes alongside remembered ones; without reflection, we accept the composite

as truth.¹⁷⁴ The glow thus slips easily from metaphor to testimony, from illustrative device into epistemic bedrock. It reassures some viewers that they can see radiation coming, even as it distracts others from the silent exposure that defines real nuclear risk. In other words, creating an image of what the nuclear looks like can shape misconceptions that risk creating an illusion of how we 'know' something supposedly is, and therefore muddles the way we act towards it.

Read against their historical lineage, these representations show that radioactivity is not merely a scientific phenomenon but a deeply cultural one. The glow mediates, even manufactures, our sense of the nuclear: it is at times reassuring, alarming, fascinating, but it always frames what cannot otherwise be apprehended by the human instrument. Most importantly, as much as radioactivity can contaminate, the glow can migrate, from objects to landscape to flesh, re-inscribing the same iconic 'lie' on an ever-larger scale.

Next page:
Figure 21
Inside Prypiat's residential area,
screenshot from Chernobylite.



3

LANDSCOPIC DISASTER AND THE FABULOUSLY SUBLIME

In the nineteenth century, shipwrecks often served as a metaphor for the decline of the *ancien régime*. They symbolised a journey towards the inevitable destruction of old-world regimes as ships approached cliffs only to vanish into the sea.¹ Similarly, Chornobyl has emerged as a point of reference for nuclear destruction, such as when former Soviet President Mikhail Gorbachev spoke of nuclear disarmament on 15 May 1986:

The accident at Chernobyl showed again what an abyss will open if nuclear war befalls mankind. For inherent in the nuclear arsenals stockpiled are thousands upon thousands of disasters far more horrible than the Chernobyl one.²

In some ways, by foreseeing ‘thousands upon thousands of disasters’, Gorbachev seems to implicitly challenge the specificity of Chornobyl. This notion resonates with the way Chornobyl has, in Western nuclear discourse, come to function as a metaphor for anything radioactive. Other nuclear disasters and accidents are frequently framed vis-à-vis Chornobyl, more radioactive than Chornobyl, comparable to Chornobyl, and so on.³ This relates to Robert Jacobs’ reading of radiation as a cultural talisman, a sign that a boundary between the ordinary and the extraordinary has been crossed.⁴ By extending the argument, one could say that radioactivity also assumes a broader sociocultural role by reshaping ordinary landscapes into something extraordinary. Yet an important question remains. What, in fact, is there to be seen in such a space, when what defines it is ultimately invisible?

According to the historian Per Högselius, watching a sinking ship was an event people actively sought out. In the early nineteenth century, restaurants and cafés along the coast would open, anticipating the crowds which might gather to watch unfortunate sailors meet their end.⁵ Such shipwrecks became a form of ‘grotesque’ entertainment in which suspense was key: the ‘what if’ drew new spectators to the beaches that had previously been regarded as treacherous.⁶ It is reminiscent of the ways in which people visited Chornobyl. The disaster site, before the escalation of the Russo-Ukrainian war on 24 February 2022, was a thriving tourist destination. Radioactivity may have been assumed to be present there, but locating it, determining where and at what level it might manifest, must have introduced its own form of suspense. Much as shipwrecks were depicted in early nineteenth-century paintings such as *The Raft of the Medusa* (1818–19) by Théodore Géricault, Chornobyl and its aftermath have been repeatedly visualised and reimagined.⁷ Instead of being framed as an isolated disaster, the site has come to be represented as a landscape of arrested decay, post-apocalypse, and nature’s slow reclamation of ‘human lands’. I argue that this continual ‘gazing’ at the aftermath



has seemingly layered the site with multiple and at times conflicting meanings: radioactive contamination, technological tragedy, ecological anomaly, safe tourist destination, wildlife reserve, and imaginative myth. In turn, this raises the question whether the mixture of awe and terror that captivates contemporary audiences of nuclear spectacles is in any way akin to what captivated nineteenth-century beachgoers when they apprehended disaster from afar.

Sight, and perceiving disaster, becomes important in this experience. Just as the sea might appear deceptively unchanged in the morning after a shipwreck, save for the odd plank washing ashore, so Chornobyl and its surroundings appeared largely unchanged once the fire had been extinguished. Yet, the Zone was now uninhabitable.⁸ Still, over time, vegetation sprouted through asphalt and wildlife began to flourish in the absence of human intervention. Somehow this surface vitality seems to complicate the perception of contamination.⁹ What exactly has been harmed, where does that harm reside, and how long does it persist?

Can images stand in for these questions about the invisible? And what happens when visual representations of the Chornobyl environment suddenly become reference points for radioactive pollution? Such representations can lend radioactivity a tangible presence, hinting at its behaviour and reach in an environment that is largely inaccessible to the unaided visitor yet made oddly available through its digital simulation, and imaginative proximity.

Figure 22
Théodore Géricault, *Le Radeau de la Méduse, The Raft of Medusa*. © Grand Palais Rmn (Musée du Louvre)/ Michel Urtado.



In this chapter, I examine the sublime experience of encountering the glow in visual representations of the Chornobyl environment by focusing on how a contaminated yet seemingly ecologically thriving environment intra-acts with a safely distant viewer. I am particularly interested in whether this encounter could, at least theoretically, evoke a sense of the sublime comparable to that produced by nineteenth-century portrayals of shipwrecks, where awe and unease are closely intertwined. As Högselius notes, when watching ships wreck, spectators might have expressed sympathy for the drowning sailors, even as they were captivated by the spectacle of the event.¹⁰ I wonder whether the glow embedded in representations of the Chornobyl environment reveals layers of ambiguity and complexity that invite an imaginative sense of the disaster's vast, yet distant, scale, something that can be experienced from the safety of our homes. This, I suggest, may constitute a contemporary form of the sublime experience.

This is also partly why I have chosen two time-contrasting examples to analyse in this chapter. The first is the 'Bridge of Death' scene from HBO's *Chernobyl* TV series, in which onlookers witness the unfolding disaster through an unnatural glow, while we, as viewers, observe the contamination of the surrounding environment. In the second half of this chapter, I examine how the video game *Chernobylite* actively constructs the idea of an explorative radioactive environment through the possibility of roaming freely in the Zone, while encountering glowing green vegetation and visual distortions. Although these two examples present different temporal perspectives in the aftermath of the explosion, they both arise from the real-life post-disaster context and use similar visual strategies to convey the presence of radioactivity, though vastly differently.

THE FABULOUSLY SUBLIME

While the glow is a key term in this book, its presence in visual representations frequently elicits what I argue can be understood as a sublime experience. In this chapter, the sublime is not approached solely in its classical philosophical sense, as articulated by philosophers Edmund Burke or Immanuel Kant, but rather as a moment at which perception is unsettled: when something appears at once magnificent and terrifying, familiar yet almost unreal, and exceeds ordinary modes of comprehension. The sublime, here, therefore refers to an encounter with something so overwhelming, tangible, yet ambiguous that it momentarily destabilises the viewer's sense of safety and reality.

I describe the encounter as *fabulous* not in the sense of celebratory admiration, but instead as the radioactive landscape is often rendered almost fantastical or aesthetically intensified.

Through the glow, contamination is transformed into something that appears enchanted and visually seductive, as if belonging to the realm of fable rather than to a lived catastrophe. This, I argue, can complicate spectatorship and understanding.

The sublime is not a new addition to nuclear culture studies. Often referred to as the nuclear sublime, it is imagined through catastrophe: mushroom clouds, post-apocalyptic landscapes of ruins and scorched nature.¹¹ But scholarly attention tends to gravitate towards spectacular, singular events that disrupt social order and prompt existential reflection on life under nuclear power and weaponry.¹² Yet, if Chornobyl is compared to a shipwreck observed from the shore, the analogy ultimately falters on one central point: whereas a shipwreck is immediate and visible, the force of a nuclear disaster, aside from the initial explosion, is enduring and largely invisible.

In Immanuel Kant's *Kritik der Urteilskraft* (1790, *Critique of Judgment*), the sublime arises when nature's overwhelming grandeur, in the form of such phenomena as towering waterfalls or violent thunderstorms, provokes our self-assurance.¹³ Kant explains that the sublime 'elevates [*erhebt*] our imagination, [making] it exhibit those cases where the mind can come to feel its own sublimity, which lies in its own vocation and elevates it even above nature'.¹⁴ In other words, a landscape becomes sublime not because it fascinates or frightens us, but because its sheer power indirectly reminds us that, as moral beings, we are no more than passive fragments of nature.

The Chornobyl environment, however, complicates this model. It does not look polluted; it looks abandoned. Kant's dynamical sublime presupposes a sensibly overpowering phenomenon, yet radioactivity transgresses human sensibility by remaining largely imperceptible.¹⁵ His second category, the mathematical sublime, might seem more applicable, since it is concerned with vastness and scale.¹⁶ The Zone's geographical expanse, roughly the size of Luxembourg, and the ungraspable dispersal of radioactive particles both seem to invite a mathematical sense of the sublime. Yet radioactivity also exceeds this framework. Neither is it formless in the Kantian sense of formless, as a natural force as in waterfalls or thunderstorms, nor through visible magnitude, as in the starry sky or oceans.¹⁷ Rather, it is formless because it withdraws altogether from perception, and perhaps even imagination. Radioactive pollution does not blanket the Zone in one sweeping layer, rather, it is concentrated in unevenly distributed 'hotspots'. Acknowledging this invisible threat requires scientific understanding or tools, such as a Geiger counter, which begs the question: would Chornobyl be sublime at all without an awareness of radioactivity?¹⁸ The initial radioactive fallout from the explosion in 1986 acted as a cultural talisman by transforming the space fundamentally, but in a

counter-intuitive way: it left houses and roads to decay, while wildlife and foliage now blanket the Zone in reverential silence.¹⁹

This brings to mind the controversial 'deep time' warning message system proposed for nuclear waste repositories in the US in the 1980s. Conceived by the Human Interference Task Force as a way to communicate danger to future civilisations thousands of years from now, the proposed message read:

Sending this message was important to us. We considered ourselves to be a powerful culture. This is not a place of honor. ... What is here was dangerous and repulsive to us ... This place is best shunned and left uninhabited.²⁰

This imagined voice from deep time is more than a warning; it stands as a negative monument to the past, which advertises its own unworthiness. By insisting that nothing of value lies here, the message paradoxically proclaims the site as a locus of continual danger, invoking the invisible radiation as a moral and temporal marker for all future cultures. Given the outward calm of a dangerous waste deposit, the site seemingly elicits a distinctly 'nuclear' sense of the sublime, because it confronts us with an invisible and purportedly 'immeasurable' force that exceeds sensory perception while remaining materially efficacious.

Here, I would like to draw upon Derrida's concept of the 'fabulously textual bomb', which suggests that nuclear war, and by extension 'apocalypse', which he classifies as revelation, truth, unveiling, typically resides in the realms of visual and textual representations, because we hardly have any real-life examples.²¹ Unlike more common technological warfare, the nuclear bomb remains comparatively hypothetical due to the scarcity of real-life examples of its devastation.²² Derrida's notion also faintly suggests that the future use of a nuclear bomb is something that will likely remain in the realm of fiction. However, Chornobyl, as a nuclear power station meltdown, is an exception, being a tangible site of nuclear destruction. Despite this, the Zone has always been mostly accessible through visual representations, since entering radioactive zones can pose health risks, and visiting them is essentially a class matter due to the cost of travelling and gaining access to such sites.²³ At the time of writing this book, other circumstances, such as the Russo-Ukrainian war (2014–), also limit our physical access to the Zone. As such, images of the Chornobyl environment play a part in making it fabulously accessible.

Conceptually, the sublime has evolved since Kant's time. While Kant likewise positioned the sublime in the realm of awe and terror, modern theorists such as the historian David Nye subdivide the sublime into multiple categories – for example, the 'technological sublime' or the 'toxic sublime' – to reflect new forms of human

encounter, achievement, and threat.²⁴ The technological sublime, as an example, hinges on the idea that perceiving a new technological invention like the railway may instil a sublime experience, yet it stalls when faced with newer, greater inventions such as the skyscraper or the electric car.²⁵ The sublime is therefore comparable. But does this mean that it also wanes? If the sublime is shaped by habit and exposure, perhaps even more so today than in Kant's time, then the question is whether our repeated encounters with what once provoked awe still grant us those rare flashes of sublimity, or whether they now feel merely mundane. For example, standing before the great waterfall Dettifoss in Iceland can still awaken a sense of the sublime by the very confrontation with something so vast and uncontrollable. Yet the ease of modern travel may risk dulling that edge of awe: repeated encounters with great waterfalls could potentially bring us to admire them as spectacles rather than fear them as forces capable of sweeping us away in a sudden landslide. I therefore do not think we can dismiss the 'natural' experience of the sublime just yet, but instead we might move forward from it taking care to keep in mind our modern lifestyles. The cultural scholar Frances Ferguson likewise suggests that 'though the sublime may come to seem an increasingly rare thing (since you presumably become less afraid of, say, Mont Blanc than you were on your first encounter with it), it nonetheless retains a powerful hold on aesthetic discussion'.²⁶ For Ferguson, the sublime is not merely an aesthetic reaction to vastness or terror; it functions as a defence mechanism that distances us from the world's uncontrollable conditions – such as nuclear disaster.²⁷ Thus, the nuclear sublime resists neat classification. Its power does not appear to diminish with familiarity or technological progress. Rather, each new incident, policy debate, or cinematic portrayal seems to reaffirm the fearful allure of nuclear bombs and reactors.²⁸ Though a sub-category of the sublime, the nuclear sublime seemingly connects to Gabrielle Hecht's concept of nuclear exceptionalism – the idea that anything to do with nuclear is perceived to be uniquely different from other weapon and energy policies and technologies and is therefore treated differently.²⁹ I will return to this argument, but for now it suffices to explain why the nuclear sublime has its own sub-category.

For whom, then, is a nuclear environment or event sublime? Kant argued that the sublime lays claim to universal validity, and therefore appears as an 'absolute', illustrated by classic examples such as witnessing a shipwreck or lightning.³⁰ Edmund Burke, on the other hand, argued that the sublime could be an individual experience.³¹ Today, in an age of highly mediated experiences of catastrophe (in documentary photography, for example), those of a nuclear disaster, such as Fukushima, often hinge on our engagement with digital portrayals rather than any direct contact with

fallout. According to William Nuttall, Fukushima could never have been hidden in the way earlier nuclear disasters were, because its destruction unfolded in real time on television.³² In an era in which almost anyone can document and disseminate images instantly online, disasters no longer depend solely on tales, or official narratives or state-controlled archives to become visible.³³ This emphasis on mediating technology is significant as it marks a historical shift in how nuclear catastrophe can be witnessed, remembered, and even contested.³⁴

To my mind, images, by their sheer circulation, have come to function as a kind of universal right. By that, I mean that there seems to be a growing assumption that events will be recorded and disseminated whenever there is a camera present. In turn, this forces us to ask whether visual representations can still evoke the sublime when we remain removed from any physical danger. Nye reminds us that the sublime hinges on comparability. I imagine that an excess of images renders disaster increasingly comparable, even familiar. This surplus of representation therefore challenges the question of whether the experience we encounter can still be called sublime.

Returning to Kant, it becomes clear that visual representations of radioactivity act as a type of 'substitute idea'.³⁵ We grasp conceptually that the Zone is contaminated, but its scale and invisibility elude synthesis. The resulting strain on the imagination generates the 'substitute idea', which, according to Kant, often has ethical implications (relating to God or freedom), but it can also be political or otherwise.³⁶

Interestingly, though, Kant denied the possibility of the sublime in art on the grounds that its formal purpose appeals to the imagination rather than overwhelming it.³⁷ However, Kant, of course, did not live in an age of moving images or radiation science, where apprehension can arise when encountering the moving image.³⁸ It allows us to see and know things that are outside Königsberg.³⁹ In representations of nuclear environments, such as *Chernobyl* or Chernobylite, radioactivity is made visible through aesthetic choices such as the glow. These representations give form to the formless, rendering the invisible perceptible and thus seemingly disqualifying the experience from Kant's account of the sublime. Yet rather than resolving the tension, this visualisation introduces a new kind of imaginative failure. Not because the imagination cannot form a mental image, but because it has already provided one that it *knows* to be inadequate. The viewer is caught in a dissonance between sensorial experience and rational awareness: the image functions as a proxy for a phenomenon that exceeds representation. In this way, the sublime re-emerges through the recognition of its own insufficiency. Here, I argue, rationality steps in, distancing from rather than resolving the terror, and reassuring the

viewer of their position as a safe observer. This mediated or fabulously sublime marks a change in aesthetic experience: one where the imagination collapses not before the chaos of nature, but before the very mechanisms of representation that seek to contain it. After all, as Kant proclaims, 'the sublime moves us, the beautiful charms us'.⁴⁰

Günther Anders's concept of the Promethean discrepancy seemingly reinforces this dynamic. The Hiroshima bomb marked both the dawn of the nuclear era and humanity's realisation of its capacity for self-annihilation.⁴¹ This realisation created a 'discrepancy' between what we can create (say, a nuclear bomb) and what we can truly imagine. Anders illustrates this with the story of Major Claude Eatherly, one of the pilots involved in checking conditions before the bomb was dropped and who was later consumed by guilt over its effects. While Eatherly was culpable, Anders suggests that *anyone* would have acted similarly, given that the bomb's full consequences lay beyond human imagination.⁴²

To bridge the gap between our technological capabilities and our limited imaginative faculties, Anders insists on the need to expand imagination, though not in the sense of inventing fictions, but as a way of facing a reality that has itself become more 'fantastic' in scale.⁴³ He writes:

The imagination required today no longer means what we once understood by that term, no longer involves exaggerating the real or envisioning unreal beings or fantastic creatures... On the contrary today imagination means confronting today's truly fantastic reality and interpreting it appropriately. In sum: since its object, the fantastic reality, is itself fantastic, imagination must function as a method of empiricism, as perception organ for the genuinely immense.⁴⁴

While Anders argues for imagination as a means of comprehending nuclear devastation, he also calls attention to the fact 'that the real does not correspond to the visible but is created by imagination'.⁴⁵ Put differently, Anders asserts that imagination must act as a new 'sensory' organ. It must help us 'see' or 'comprehend' phenomena that are otherwise too large or abstract. However, this does not mean that art and media automatically 'solve' the discrepancy. Representations can certainly help communicate what exceeds direct perception, but they can also reduce catastrophe by giving it a form that becomes easier to consume.⁴⁶ In a similar way, representations of the Chornobyl environment may occupy the liminal space where we hover between technological reality and our inability to fully and truly fathom its consequences, in short, the Promethean discrepancy.⁴⁷

This leads me back to invisibility and uncertainty. As with true crime stories, audiences vicariously experience dread through the

Figure 24
Rassokha Field with abandoned
trucks and helicopters used in the
Chornobyl disaster clean-up,
15 October 2000.

knowledge that the events depicted have actually occurred, while remaining safe at home. In this sense, representations of Chornobyl, whether fictionalised or not, operate in a similar manner. They offer an encounter with real disaster at a distance, allowing viewers to engage imaginatively with existential danger without confronting radioactivity in person. Unlike conventional horror, where the threat is often clearly marked as unreal, neither serial violence nor radioactive contamination can be neatly contained in the realm of fiction. Once their existence is acknowledged, there is no clear boundary between safe or unsafe. It is in the attempt to locate this border that images become crucial, transforming abstract danger into something perceptible. The knowledge that contamination is an omnipresent possibility can unsettle us; in this sense, the nuclear sublime signals an all-consuming awareness of our vulnerability, as something that, paradoxically, becomes more vivid in art, film, and interactive media. Making the possibility of such disaster both speculative and very real, it perhaps becomes psychologically bearable at last, because we have seen its destruction, just as Susan Sontag advocates.⁴⁸

We seek visual cues to frame the danger, to make it legible, to hold the danger at arm's length, but radioactivity's ontological nature seemingly cuts that separation into two. While there is the visual representation that aids in creating a visual boundary, there is also a reality in which radioactivity is painfully un-sensory. Hence, the fabulously sublime emerges in the uneasy space where the invisible threat of nuclear catastrophe collides with our human compulsion to see, name, and understand what ultimately lies beyond our sensory reach, through the very creation of that nice green glow. The fabulously sublime makes an appearance through this double bind: the aesthetic form that allows us to see becomes the very thing that confirms our inability to know.

THE RADIOACTIVE LANDSCAPE

In Svetlana Alexievich's book *Voices from Chernobyl*, many evacuees from the Chornobyl Exclusion Zone recount their first encounters with radioactivity, describing it in material and visual terms despite its imperceptibility to the senses. For example, resettler Zinaida Yevdokimovna Kovalenko recalls seeing caesium as 'ink-black', 'blue', and 'red' chunks scattered across her garden and nearby fields.⁴⁹ Others describe similar phenomena: 'I had that radiation in my garden. The whole garden went white, white as white can be, like it was covered with something. Chunks of something'.⁵⁰ These vivid descriptions transform radioactivity into something visible, using colours and textures to interpret what is otherwise abstract; in this sense, radiation becomes strangely tangible. While I am not concerned with the scientific accuracy of these accounts, they do

Figure 25
Bags of radioactive waste from the
radioactive decontamination process,
23 May 2016, after the Fukushima
disaster in Japan.
Courtesy of Eric Lafforgue.



show that distinctly human tendency to try to solidify something imperceptible, bridging sensory gaps with colourful visual representations (Chapter 2).

The impulse to visualise radioactivity extends beyond personal experiences to socio-political efforts to structure and make sense of radioactive landscapes. For example, there is one of the Chornobyl Exclusion Zone's vehicle graveyards (Rassokha Field or Buryakivka, Fig. 24), which remains a lasting image of liquidation and containment efforts.⁵¹ Rows of abandoned cars, trucks, and helicopters, neatly lined up as if in a dealership, are juxtaposed with their decaying context – vehicles corroding, vegetation creeping between them. Similarly, after the Fukushima Daiichi disaster in 2011, fields near the site were temporarily dotted with 9.1 million neatly arranged bags of radioactive debris removed during decontamination (Fig. 25).⁵² These arrangements, along with the trefoil warning signs, serve as tangible markers of contamination. Yet, they also risk fostering an illusion of control, masking the persistence of radioactive matter in the surrounding landscape under a fine veneer of order. As Robert Jacobs reminds us, 'radionuclides cannot be made nonradioactive beyond their natural decay rate, once deposited into the ecosystem they can only be moved from one place to another'.⁵³ In other words, the decontamination of a space is rather the redistribution of radioactive debris into waste facilities than any actual 'cleaning'.⁵⁴

The devastated Chornobyl environment, however, resists being reduced to a mere site of containment or static imagery. According to the cultural scholars Matthew Fuller and Olga Goriunova, devastation is a 'differential' state – an unfulfilled potential, wounded and transformed into a 'devastating becoming'.⁵⁵ From this perspective, the Exclusion Zone is not frozen in time but dynamically evolving. Its landscapes are shaped by both human and non-human forces. One of the earliest visual cues of radioactive contamination was the area now known as the Red Forest (Fig. 26), where fallout caused pine trees to turn a deep crimson in the days following the explosion at the end of April 1986.⁵⁶ According to Goriunova and Fuller, radioactivity has altered:

the microbial and fungal ability to process biological decay, thus leading to the conservation of the dead. As a result, thousands of trees lie undecayed in the same spot where they fell. This interference with the dead is of a different quality to that of work attributed to the afterlife: it is an arrest of death.⁵⁷

Simply put, in the Red Forest, fallen trees become a visual reminder of the land's altered potential. Their unusually slow decay, caused by radioactive interference, produces an uncanny image of what 'devastation' might be understood to 'look like' in the Zone.⁵⁸



The encounter between the viewer and a toxic landscape is often shaped by visual contradiction. As the environmental scholar Phaedra Pezzullo writes, 'Many people who see a toxic dump for the first time are surprised at how benign it looks'.⁵⁹ In the case of Chornobyl, this unsettling normality complicates our understanding of habitability and danger. For those who were evacuated, vivid visual rhetoric, such as 'caesium chunks' and 'white gardens', marked the beginning of estrangement from familiar land. For contemporary observers, however, these same spaces risk being aestheticised and monumentalised through visual representations. The historian Verónica Tello's concept of *aftermath photography* captures this dynamic, which she describes as follows:

Capturing the aftermath of war, terrorism and other forms of human suffering, these photographs are distinguished through their imaging of vacant and/or ruined buildings and landscapes, or what curator and writer David Company articulates as 'the trace of the event'.⁶⁰

Rather than documenting disaster or catastrophe in real time, aftermath imagery constructs a quiet, monumental record of what remains and thus distances itself from sensational news imagery.⁶¹ In this sense, the notion of devastation as an ongoing process does not contradict the idea of an aftermath. Instead, it expands it,

Figure 26
The Red Forest, 2021. Courtesy
of Carsten Olsen.

suggesting that the disaster is not over but continues to unfold through altered environments much like ripples in a pond.

In Chernobyl, this lingering presence is felt in what has been left behind: crumbling buildings, abandoned objects, and small domestic traces, such as dinnerware left on tables. These remnants fuel a particular fascination, turning the Zone into a space in which human history and environment are deeply entangled. As David Company argues, aftermath photography can offer a vehicle for collective mourning, a way of working through trauma.⁶² However, Tello warns that it simultaneously risks abstracting the event, creating a significant distance between the observer and the depicted atrocities.⁶³ In this way, while images of the Chernobyl Exclusion Zone, whether documentary or fictional, can become monuments to human suffering and resilience, they risk rendering the Zone static, ignoring its ongoing transformations, because representations usually capture the space at a given time.

Drone imagery from 2023 shows how the Chernobyl environment remains visibly altered. Trenches dug in the Red Forest in the period of Russian military occupation, alongside barren patches of disturbed soil, evoke a renewed sense of unease. The disruption of contaminated land risks re-releasing radioactive particles into the air, once again exposing the fragile balance between human intervention and toxic environment.⁶⁴ These images circulated widely in the international news media, accompanied by reports that occupying soldiers had suffered from radiation sickness.⁶⁵

Figure 27
Prypiat swimming pool Azure, 2019.
Courtesy of Carsten Olsen.



Figure 28
Prypiat swimming pool Azure,
screenshot from Chernobylite.

Regardless of the veracity of such claims, the episode nevertheless underlines that the Chernobyl Exclusion Zone is far from a fixed monument. Rather, it remains a dynamic and contested space, where radioactivity continues to shape thoughts and imaginings.

What do these visual representations of the Chernobyl environment actually do? On the one hand, images such as drone photographs can restore a sense of movement and instability to the Zone, countering the idea that it is static or sealed off from history. On the other hand, they still present the landscape to us from a distance, framing it from a particular angle and moment in time. Here, I would like to draw on the anthropologist Tim Ingold's observation on the art historical use of the word landscape, and how it could perhaps more accurately be termed 'land-scope'.⁶⁶ If landscape traditionally refers to land that has been shaped or 'scaped' through human activity, then landscape draws attention to the act of looking itself, to the position and the limits of the observer.⁶⁷ This is also apparent in other technological inventions which purposefully guide our vision – kaleidoscope, fluoroscope, microscope, telescope, spectroscope, and so on.

Chernobyl, of course, is a landscape in both material and historical terms: it has been shaped by agricultural use, industrialisation, nuclear disaster, abandonment, scientific research, tourism, and now war. Yet when encountered through screens, as

photographs, films, television series, video games, or social media, it also becomes a landscape: a space primarily accessed through vision, mediated by technology, and structured by particular ways of seeing. In many ways, such mediated views actively shape how Chornobyl 'ought to be', rather than as it 'is'. Take for example the photograph of the public swimming pool Azure in Prypiat in 2019 (Fig. 27) against how Chernobylite renders the same space in a digital version (Fig. 28). TheFarm51, creators of Chernobylite, 3D-scanned the place between 2017–2018, and while the images are close in time, subtle differences such as the rubble set them apart.⁶⁸

In this sense, visual representations of Chornobyl go beyond documentation, contributing to a visual logic in which the Zone appears suspended in time. Meanwhile the real environment continues to change, yet the images we repeatedly encounter tend to freeze it into a recognisable aesthetic of ruin, one which we can reset and replay at any time. It is this tension between landscape that remains in flux and an image that fixes it that I refer to as 'arrested decay'. In framing nuclear devastation as arrested decay, it highlights the illusion that Chornobyl is contained and perhaps even resolved, when, in reality, its material consequences persist far beyond the limits of the frame.

Contemporary spectatorship shapes how Chornobyl is culturally constructed: it is both abandoned and repeatedly revisited (via screens, photos, social media). The *Chernobyl* TV series serves as a recent example, as it reignited public fascination with the historical event and the mythologised space alike. In turn, this contributed to a surge in dark tourism in the area, showing how a landscape perspective, rooted in observing from afar, can paradoxically bring a place closer to global attention.⁶⁹

Yet, these persistent efforts to frame and package the Zone also risk transforming it into a fetishised object: something valued for its symbolic and aesthetic look rather than its material reality. In other words, our Chornobyl becomes idealised for its imaginative quality rather than its actuality. In this way, repeated visual representations may convert the landscape back into a familiar landscape, one we believe we already know, even as the actual environment continues to change beyond the camera's frame. Visual representations intensify this fetishistic loop, reshaping the terrain imaginatively only to freeze it in a state of arrested decay. In effect, we remake Chornobyl through perception alone, perhaps in the hopeful belief that by framing the shipwreck, we might help salvage it, even while we still watch from the safety of the shore.

Keeping the Zone's static transformation in mind, alongside the impact of the *Chernobyl* TV series, I now turn to one of the series' most influential scenes, a sequence that rekindled interest in the disaster and further influenced how the Zone is imagined, consumed, processed, and continually recast in the media.

BRIDGING THE FABULOUS SUBLIME

The *Chernobyl* TV series has been applauded for its historical accuracy.⁷⁰ One of the most captivating scenes in the series has come to be known as the 'Bridge of Death', and for good reason, as it makes visible the gravity of the disaster in a way that is visually appealing.⁷¹ The scene appears in Episode 1, '1:23:45', and is available on HBO's YouTube account.⁷² In it, the citizens of Prypiat gather on a bridge to watch the fire at the Chornobyl nuclear power station. Among the flames, a distinct column-like blue light billows towards the sky, hereby transforming the ordinary fire into something visually extraordinary. The location mimics a real bridge in Prypiat, which is often featured in tourist photography of the Zone (Fig. 29), and even appears as an Easter egg in the 2025 release of the video game *Stalker 2: Heart of Chornobyl*.

The Bridge of Death foreshadows the scale of the disaster by visually hinting at how fallout would affect both the land and its inhabitants for generations. According to the series producer, Craig Mazin, the scene is based on an actual event in which citizens of Prypiat gathered on a bridge to watch the fire at the power plant unfold.⁷³ In an interview with the comedian Peter Sagal, Mazin explains:

But that light was – That blue light which was described by a lot of people and described as quite beautiful was essentially the ionization of the air. The radiation was so intense.⁷⁴

He further argues that people knew so little about radioactivity that they stood there watching, unaware that they were being contaminated. Mazin then contrasts this lack of information with our present-day understanding:

if you or I were somewhere and someone said, 'Oh, there's a fire at a nuclear power plant – it's not – But it's not the core. It's just a fire. Do you wanna go see?' We would say, 'No. Are – Are you insane? I'm gonna drive in the other direction'. But they didn't know.⁷⁵

While Mazin attributes the Prypiat residents' decision to remain and watch the fire to a type of naivety, given they did not know of the risk of fallout, he simultaneously implies that contemporary audiences are more informed. This is likely due to how in an information-saturated society, nuclear safety and hazards are frequently raised in conversation and the media in relation to nuclear power.

Mazin also alludes to how viewers implicitly recognise the disaster's consequences. While many who watch the miniseries may



already possess historical or cultural associations tied to the disaster, such as that they knew the disaster happened and that it was bad, they may not necessarily know all the details. Instead, many may have a clearer memory of the Fukushima Daiichi disaster that happened in 2011, which is closer in time. This, in turn, means that those who watch the series can understand that the citizens on the bridge were not just observing a tragedy but unwittingly becoming part of it. Seen through the lens of the sublime, the citizens can perceive the fire as a sublime experience because they are safely distant on a bridge. Viewers of the scene, however, witness the unknowing pollution of another from the safety of the screen, and thereby the creation of the first generation of victims. This is later confirmed when the series depicts these same citizens in the hospital alongside the first responders, all suffering from various degrees of radiation burns.⁷⁶

The Bridge of Death scene actively plays with layers of distance. There is a physical distance between the power plant and the onlookers, as well as between the onlookers and the TV audience. Simultaneously, there is the psychological distance between naivety and knowledge: the citizens are distanced from the nuclear threat by their ignorance, while the viewers, already aware of the consequences of the Chernobyl disaster, are distanced from the citizens' experience because of their (presumed) knowledge. These distances could in turn create two different kinds of sublime experience all at once – a sublime *mise en abyme*, in which an image or a motif continually refers back to itself, which strengthens the very fabulosity of nuclear imagery.

These acts of observing can, in turn, shape public expectations of what radioactivity 'looks like' and how it behaves. Through visual effects, *Chernobyl* portrays radioactivity almost as 'subtly natural' as possible, using light, air, and ash. The show's stylistic choices, and its inherent ambivalence about known and unknown, emphasise multiple sedimentary layers of meaning, as I will go on to discuss. In doing so, it suggests a sublime quality that emerges through knowing in the aftermath: a sense of awe and dread intertwined with the otherworldliness of the glow and a realisation that the invisible threat was, and perhaps remains, very real.

Figure 29
The Bridge of Death with the roof of
the Chernobyl sarcophagus in the
background, 2019. Courtesy of
Carsten Olsen.

The scene's layers intra-act to evoke the sublime at a distance, as a visual reading of the scene shows. The shooting script provides only a skeletal guide that outlines intended actions and moods, but does not convey the exact camera angles, edits, or the atmosphere ultimately crafted in post-production.⁷⁷ I present a poetically shaped formal analysis here so the reader may follow how I watched and interpreted the scene. Central to this reading is the deployment of the scene's distinctive glow, which radiates beyond the diegesis and distils itself into being part of the sublime experience – even for those of us observing it from afar.

A BRIDGE OF DEATH

Their gazes are fixed on the horizon. A soft wind plays the loose strands of Oksana's hair and, though it is nearly two in the morning, there is hardly any need for a jacket. Instead, the vodka in the mug she shares with her husband, Mikhail, keeps them warm. 'What do you think makes the colours?' she asks, still unable to look away. Mikhail considers it for a moment. 'Oh, it's the fuel, for sure'. Oksana chuckles and turns to him, 'It's the fuel for sure?' Her tone is gently mocking, and it makes him smile as he looks at her. 'What do you know about it? You clean floors at a train station', she says, then follows his gaze back to the distance. 'My friend, Yuri, works at the power plant. He says it runs cold. No gas, no fire. Just atoms. Yuri says the only thing is, you can't walk right up to the fuel. If you do, a glass of vodka an hour for four hours,' Mikhail says, taking a long sip. 'Isn't Yuri a plumber?' They look at each other. He lifts his mug towards the horizon; 'At the nuclear power plant, yeah'. Oksana scoffs and shakes her head, still smiling. She leans into him, resting her head on his shoulder, and her eyes return to the view. 'It is beautiful', she murmurs. 'Yeah', he says, and turns back too.

In the distance, an unusual sight meets them – and they are not alone in being drawn to the bridge just outside Prypiat. The Chernobyl nuclear power station is on fire. It can barely be seen through the thick forest that separates the citizens from the fire itself, yet the colours are spectacular. From the heart of the inferno a column of blue light shoots up into the night sky, like something from a science-fiction film. Voices fade into silence, leaving only the background music that becomes louder. Time seems to slow, as ash begins to fall.

At first, it drifts on the wind like white snowflakes. When it lands on people, it turns black. The image of the streetlamp, the only light besides the glow from the plant, has been turned on its head. The lamp's colours grade from warm yellow into the blues of night. For a second, the ash seems to fall upwards, mimicking radiation rising from the ruptured reactor. Ash settles on a woman's

lips, another smiles as a speck of ash lands on her hand, still wrapped around the bridge rail. Mikhail, who spoke earlier, lifts his baby into the air so the child can enjoy it too. Nearby, a woman guides her child's hand towards the falling flakes, encouraging the touch, the play. Below the bridge, children frolic beneath the ash as it sifts down like a snowstorm in April – arms outstretched, faces tilted upwards. The delight spreads. They dance and spin as the ashfall thickens. Then the image of the upturned streetlamp returns, and what had been drifting down now seems to surge like a pale blizzard rising from the glow.

THE FABULOUSLY SUBLIME IN THE AFTERMATH

The Bridge of Death scene is rich in signs and symbols that foreshadow the impending nuclear disaster at Chernobyl, as well as its aftermath. Among these, the most striking is the blue glow that not only seems to emanate from the fire, but also frames the conversation between Mikhail and Oksana, while it reflects in the falling ash. In doing so, the glow becomes a *mise en abyme*. This recursive effect creates a sedimented point of reference by forging connections between seemingly disparate elements – fire, conversation, ash, wind. In turn, it builds them into a cohesive and layered narrative. The glow therefore manifests in three distinct iterations, each serving as both scientific and artistic signifiers that gain meaning through intra-action.⁷⁸

The main focus of the scene, the blue glowing column, emanates from the middle of the Chernobyl nuclear power station. On a technical level, this glow alludes to the Cherenkov effect, which occurs when charged particles, often electrons, travel faster than the speed of light in that medium, and in turn disrupt the surrounding H₂O molecules in the air, causing a faint but unmistakable blue light.⁷⁹ Artistically, and perhaps even culturally, this blue glow acquires an otherworldly quality, which signifies the presence of something extraordinary. In the *mise en abyme*, the glow reappears in the streetlamps: for example, in an inverted streetlamp that visually mimics the Cherenkov effect or glow of a reactor, turning an ordinary object into a visual likeness of the open reactor in the background. Blending scientific fact with artistic representation, the glow thus becomes a symbol that bridges science and cultural understanding, by literally showing that there is *something* to look for.

In the previous chapter, I explained how our interpretation of images is often shaped by prior visual experiences. But in the Bridge of Death scene, our anticipation of tragedy is built on knowledge that the citizens themselves do not yet possess. The only thing they do know is that the nuclear power station 'runs cold', which is reason enough for the peculiar blue column of light to

make sense, since blue usually connotes coldness. The glow therefore becomes an ominous harbinger rather than a beautiful spectacle for us onlookers.

The depiction of falling ash functions as an index for radioactive fallout. By index, I mean the semiotic connection between the sign and the signified, for example how smoke often indicates fire. As the ash accumulates in the scene, falling more thickly, similar to a snowfall, it begins to suggest the omnipresence and inescapability of radioactivity. This crescendo of ash echoes early worries of radioactive contamination. As Weart writes, 'It all began with dust. Already in the planning of the trinity bomb test the Los Alamos scientists had worried about the dust that the explosion would hurl into the air'.⁸⁰ Ash has almost the same visual quality as dust; it moves at the edge of sight as a natural effect, and as such it can easily be dismissed as belonging to something else.

In Hulu's TV series *The Handmaid's Tale* (2017–25), a dystopian series about the theocratic regime of Gilead that enslaves women to increase falling birth rates, dust similarly serves as an index of radioactive contamination in the Colonies. These are the penal labour camps in which 'disobedient' women clean up the radioactive fallout that contaminated the soil during Gilead's take-over of America.⁸¹ The pursuit of a cleaner, non-polluted world made them forget the 'cleanest' energy of all that in turn became so polluted that they needed to structure their entire social order around it. The women's living quarters in the Colonies are often shown with specs of dust in the frame.⁸² The unassuming nature of the dust may first make one think that the space is merely dirty, but in combination with the surrounding environment, its visuality plays a subtle invitation for the viewers to know that though at 'home' in the Colonies, their space is always permeated by something dirty, which in this case are those invisible rays.⁸³

In the *Chernobyl* Bridge of Death scenes, the characters are happily engaging with the ash. The ash falls around them, but is treated more like the first flakes of snow of the season than actual remnants of an ongoing fire. The children are even playing in it; babies are encouraged to touch it. But when the ash finally touches the citizens, they undergo what could be described as a ray cat-like metamorphosis, turning black, like the waste-guarding cats turning a colour when in presence of something radioactive.⁸⁴ This subtle transformation hints at the deeper human consequences of the disaster, the illness and fertility issues that would last for generations.⁸⁵ For example, the radioactive isotopes caesium-137 and iodine-131 were responsible for many cancers, particularly thyroid cancer in children.⁸⁶ The thyroid holds a strong affinity to iodine since it utilises it in hormone-production, something which is vital for the developing body. Because the soil in the Chornobyl region was poor in minerals, and the local salt was not fortified with

iodine, many people were iodine-deficient.⁸⁷ As a result, their thyroids gladly absorbed the radioactive iodine, as if it was the stable (non-radioactive) kind (Chapter 4).⁸⁸ The ash changes colour, from glowing white and blue ash to black upon touching the citizens, in a visual marker of contamination, as if receiving a dark mark.

When intra-action is applied to the scene, the glow of the Cherenkov effect and the falling ash do more than interact, they co-constituting one another's meanings.⁸⁹ The scientific reality of radioactivity's visibility intertwines with cultural beliefs and visual expectations, creating a tragic irony: people's epistemological desire to see radioactivity clashes with radioactivity's ontological reality. These intra-actions blur boundaries between the human, cultural, and environmental spheres, emphasising the entangled nature of existence in the face of technological and ecological crises. Following Anders, it illustrates the Promethean discrepancy between our capacity to create technologies and our inability to truly comprehend their consequences.⁹⁰ Indeed, the imagination of viewers, and that of the citizens depicted, cannot fully grasp the scale of the disaster or the relentless, invisible threat that will contaminate life for generations to come, but the difference is that the viewers know, since this scene is a portrayal created long afterwards.

The Bridge of Death scene thus employs signs and symbols, and by following the concept of intra-action we can subtly foreshadow the consequences of a nuclear disaster. By playing on our cultural knowledge, it leaves the viewer wanting to scream at everyone to escape, while being so invested in their naivety that it is impossible to look away. This is where the first experience of the sublime emerges. Akin to watching a shipwreck from the shore, the viewer is safely distanced behind a screen, watching the disaster unfold. The second hinges on the experience of the citizens. They are watching a fire, which they are aware is dangerous to those close by. Some may worry for the fire fighters and power station workers, but meanwhile the blue column is just too captivating in its otherworldliness. It exceeds human comprehension, and our rationality allows us to categorise it as something beautiful because it is unlike an ordinary fire; it is an exceptional visual event. In other words, the sublime is conditioned by the composition and sediments of the scene. Interestingly, the scene does not portray the efforts to mitigate the unfolding disaster. Keeping their distance from the power plant is enough for the citizens. The absence of any saving grace among the ash amplifies the prevailing sense of helplessness for the viewers. The citizens on screen appear naive, as they are unaware of the true danger they face, while, as viewers, our foreknowledge of nuclear catastrophe only heightens our unease as we continue to watch the citizens being contaminated. Had we been placed on the bridge, we may, as Mazin hypothesises, have been too afraid because we know of the swirling radiation

affecting our bodies.⁹¹ But because we are forced to perceive the misery of the other by giving form to the formless, we are too stunned by our inability to act beyond rationality.

The Bridge of Death scene does more than foreshadow the tragedy; it puts the viewer in an ethical impasse between awe and terror. By striking up a visual dialogue between ordinary objects – a streetlamp, ash, clothes, hair – and the glow, while simultaneously leaving the citizens blissfully unaware of the true danger, the narrative heightens the excruciating tension, which is caused by the fabulously sublime. In this way, the scene operates on two levels. The citizens think they are watching a shipwreck; however, as viewers, we know that they are breathing in harmful particles. Ironically, it is we, the viewers, who can see the real shipwreck, as we are safely ashore, on the other side of the screen.

Visually, the way of portraying radioactivity through light, ash, and air succumbs to an ironic twist, albeit one that is, ultimately, most natural: radioactivity is everywhere, mediated by nature, though it can only be portrayed as such through manipulated graphics and media techniques, which is truly fabulous.

GAMING THE FABULOUS SUBLINE: ARRESTED DECAY

The video game Chernobylite offers something many other visual representations of Chornobyl cannot: it allows players to freely explore the Exclusion Zone. 3D-scanning has turned the deserted apartment blocks, pine groves, and even the sarcophagus of Reactor 4 and its cooling towers into an eerily precise playground.⁹² When I ran a Games in Research workshop at the KTH Royal Institute of Technology in 2025, a colleague who had toured the Zone in 2019 remarked on the startling accuracy of the game's depiction and then delighted in being able to stray beyond the strict paths and boundaries that had confined their real-life experience.

The digital freedom behind Chernobylite grew from a desire to preserve the Exclusion Zone.⁹³ Though often described as frozen in time, the Zone is in fact highly vulnerable, especially in the face of climate change. Recent wildfires, exacerbated by a drying climate, have devastated areas such as the Red Forest and destroyed such sites as the Emerald Summer Camp.⁹⁴ Without maintenance, many structures will collapse.⁹⁵ Chernobylite therefore operates as both a video game and a digital archive, a kind of time capsule that captures the Zone in its current state while simultaneously staging a post-apocalyptic future. Yet, as the creative director Wojciech Pazdur insists, the intention was never to create spectacle:

When you come to Chernobyl you usually expect something like 'I will be in a video game scenario' or 'a real, post-apocalyptic environment which I can explore and have adventures in'.

And eventually you realise it's something opposite. Whatever you think a video game is that you are doing something in it and in Chernobyl there is nothing going on. It's all empty, abandoned, and most of all very silent.

Nothing is going on there, and you walk around these empty buildings, see all these leftovers of people who used to live there. And you realise that it's not fear you feel, but it's the feeling of sadness and emptiness. For our game, we decided to somehow recreate this feeling.⁹⁶

Chernobylite includes the possibility of 'touring' the Zone without encountering monsters and paramilitaries, yet it retains the game's signature green-glowing substance 'chernobylite'. The game gives players the chance to encounter scientists who will tell you the history of the area and the Chornobyl disaster. In this mode, you assume the role of a 'stalker' rather than the default scientist, and you are tasked with uncovering the history of the Chornobyl disaster by simply roaming the terrain. I have included images that show the game compared to authentic photographs of the Zone taken by the photographer Carsten Olsen in 2019 (Fig. 30–35). By a stroke of luck, many of the screenshots I had already taken during my exploration of the digital Zone fit neatly with Olsen's real-life pictures.



Figure 31
Inside an apartment in Prypiat,
2019. Courtesy of Carsten Olsen.



Figure 30
Inside an apartment in Prypiat,
screenshot from Chernobylite.



Figure 32
Kindergarten in Kopachi, screenshot
from Chernobylite.



Figure 33
Kindergarten in Kopachi, 2019.
Courtesy of Carsten Olsen.



Figure 35
View from the top of an apartment
complex in Prypiat, 2019.
Courtesy of Carsten Olsen.

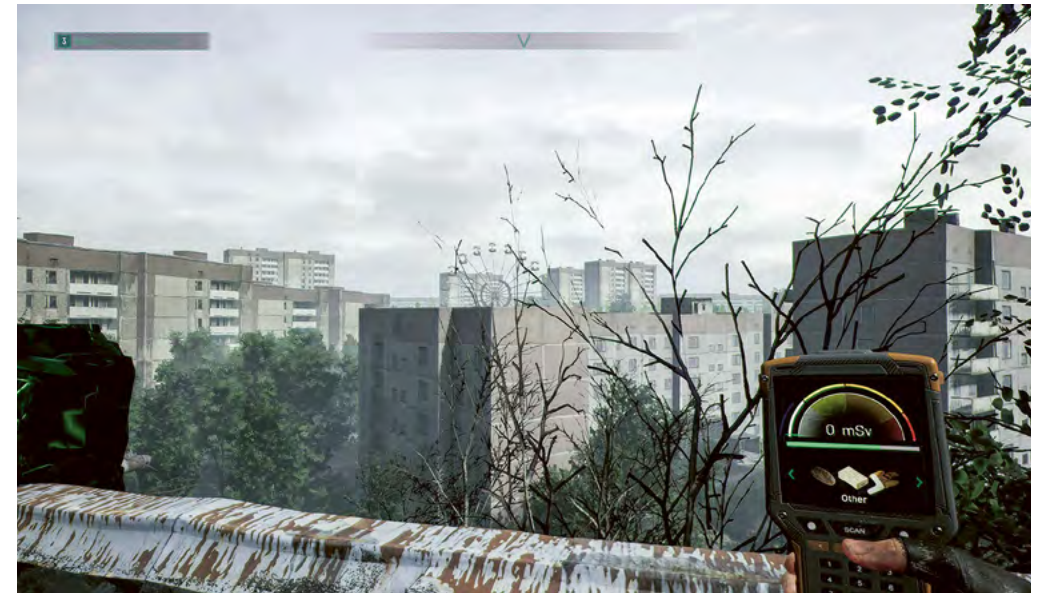


Figure 34
View from the top of an
apartment complex in Prypiat,
screenshot from Chernobylite.

In this context the term 'stalker' has a layered meaning and history. In contemporary usage it describes thrill-seekers who slip illegally into the Chernobyl Exclusion Zone to experience its ruins first-hand. The word itself, however, originates from a 1972 novel by the brothers Arkady and Boris Strugatsky, where 'stalkers' venture into a forbidden and highly 'toxic' area to scavenge alien artefacts.⁹⁷ The book was adapted into the Soviet science-fiction film *Stalker* in 1979, directed by *auteur* Andrei Tarkovsky. It quickly became a cult favourite and is still referred to today.⁹⁸ Decades later, in 2007, the company GSC Game World revived the term for its cult shooter game, *Stalker: Shadow of Chernobyl*, cementing stalker as a shorthand for rogue explorers of the Zone.⁹⁹ Today, a handful of tourist companies advertise four-day stalker tours, in which they guide backpackers on foot through the Zone, in spite of its illegality. Other, less official versions happen as well, documented in YouTube videos, showing obvious illegal entries into the Zone.

Despite the original intention of the word stalker, which is to scavenge things from the Zone, this specific part has seemingly disappeared in recent years. In conversation with Carsten Olsen, he told me that most of the Zone is in tatters from all the stalking (Fig. 36). The tourist agency Chernobyl Explorer insists that visitors:

Figure 36
In an abandoned shop in Prypiat, where scavengers have broken the televisions for the scrap metal to sell on the black market, 2021. Courtesy of Carsten Olsen.



Respect the places you visit. No tags, no vandalism, no senseless destruction, no theft. Do not forget that people will visit the place after you do, so let them experience it just as you did! We always try to leave the place untouched and use the motto: 'take only pictures, leave only footprints'.¹⁰⁰

In real life, taking objects from the Zone is strictly prohibited due to the risk of radioactive contamination.¹⁰¹ This recalls the Trinitite example, which was made illegal to distribute after 1953 out of concern for unregulated contamination and the potential health risk posed to those who possessed it (Chapter 2).¹⁰² It is interesting to note, though, that the Chernobyl Exclusion Zone has already been scavenged on multiple occasions over the years, for things such as Soviet memorabilia.¹⁰³ In older YouTube videos of the Zone, things such as firefighters' helmets can be seen in the basement of Hospital 126, whereas in more recent videos, they are gone.¹⁰⁴ Perhaps today there are fewer valuable items to scavenge, too. However, one thing that remains is the image. The latter is something many tourists treat as a kind of substitute souvenir, since through photographs it is easier to capture and take home a piece of the Zone. The tourist DuncanH304's review of their Chernobyl experience affirms this:

The whole area was just amazing and the fact that it was not very crowded meant you got a real sense of how deserted and eerie it is. Surprised we were able to get as close to the reactor as we did and certainly obtained many excellent photographs.¹⁰⁵

The photograph is evidence of having been there, but also a form of aesthetic possession. In a space defined by restriction, the very act of seeing becomes a privilege. It offers a sanctioned form of contact, a means of knowing the Zone without touching it. Through the lens, the Zone becomes consumable – framed, captured, and taken home in pixels rather than particles. Ironically, the desperation to obtain photographs echoes a more intimate sense of loss. As one evacuee recalls:

They sowed our land with corn. Our house is lying there, and our school and our village council office. My plants are there and two albums of stamps, I was hoping to bring them with me. Also I had a bike.¹⁰⁶

The impossibility of retrieval is palpable. What is left behind – plants, stamps, a bicycle – is irretrievable because it is radioactive. Set against DuncanH304's quote, where the Zone is a source of awe and 'excellent photographs', one person's loss quite literally

becomes another's treasure. The evacuated Zone, emptied of its inhabitants but somehow framed by their things, becomes available for visual consumption – captured and claimed by others. Yet, as the historian Nick Yablon notes, 'Filtered voyeuristically through the camera's mediating lens, the violent destruction could be distanced or contained', suggesting that the act of photography is also a way of 'domesticating' catastrophe.¹⁰⁷ While Yablon develops his argument in relation to the San Francisco earthquake and fire of 1906, his claim about the cultural power of photography can be extended to nuclear disaster.¹⁰⁸ In this way, photographing catastrophe can become a mode of processing it, akin to how people used to buy objects and jewellery made of Trinitite.¹⁰⁹



Figure 37
A Geiger counter showing 22 mSv. The radiation marker can be seen by the health bar and the screen is beginning to show static. Screenshot from Chernobylite.

It is precisely this process that Chernobylite draws on when it invites players to assume the stalker identity. By adopting the label, the game invites players to join that lineage of illicit explorers. To become a stalker is to navigate the blurred boundary between witness and trespasser. The game channels the urge to see, to know, and to preserve, but it also implicates the player in the same logic of aesthetic possession that governs tourist encounters. As players move through the Zone's landscape, the act of seeing becomes both a mode of access and a form of claim. While Chernobylite offer the fantasy of survival it also offers the fantasy of return, of moving through what others had to leave behind, while capturing it as your own.

Even in stalker mode, radiation remains pervasive. The game simulates the unpredictability of real-world contamination through invisible hotspots, where entering smaller zones of high radiation triggers visual distortions such as a static that creeps across the screen and drains the colours to greyscale (Figures 37 & 38). Here disorientation sets in. It becomes difficult to find one's way out of a

hotspot, and in the end, the player must just choose a direction and hope for the best. The sounds of the forest have also gone; instead, all that can be heard is the sound of the busy crackling Geiger counter. These effects mirror the way radiation in the real Zone defies sensory detection, making the borders of danger difficult to navigate. The resulting 'anxiety' reflects the real challenge of navigating a contaminated landscape without ever truly 'seeing' the threat, something which the historian Kjell Abrahamson noted in his own visit to Chornobyl in 1998. When he listened to his recordings from the Zone, he heard himself cough a lot. He spent a sleepless night, wondering how many radioactive particles he had breathed in.¹¹⁰



Figure 38
In a space with high levels of radioactivity. The colours are muddled, the screen is shaking, and there is a static with visual snow, screenshot from Chernobylite.

What then makes playing Chernobylite a potentially sublime experience? Radiation is invisible until the game forces you to feel it, through audiovisual distortion and sudden disorientation (Fig. 38). This slow building of tension paired with the s of harm activates a self-awareness of vulnerability, which, according to Kant, is a key part of the sublime.¹¹¹ Yet this self-awareness may also foster a dangerously naive confidence about inhabiting radioactive zones, where the line between thrill-seeking and hubris is thin – much like real stalkers of the Chornobyl environment – meaning that while I can *go* anywhere, without a dosimeter I am not aware of how I can safely *be* anywhere.

The glowing crystals function as both aesthetic markers and environmental cues of contamination in the game (Chapter 2). Here, they return as part of a broader visual strategy that neutralises radioactivity. Highly stylised in hues of green, the radiating crystals and gas clouds make radioactivity alluring. Their visibility deters and attracts at once, creating a visual contradiction that



99 m



Navigate to:



Other

SCAN

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mirrors the sublime: fascination in the face of danger.¹¹² The game's very title, Chernobylite, refers to the material residue that formed naturally inside the reactor post-disaster. As the journalist Adam Higginbotham notes, in real life chernobylite is:

a new substance ... a beautiful, but deadly, blue crystal silicate composed of zirconium and uranium, which they chipped from the ruins. It could be examined safely only for short periods of time, and samples had to be removed from Unit Four in lead-lined containers.¹¹³

The Chernobylite game director Artur Fojcik also describes chernobylite in the game as a 'green substance'.¹¹⁴ However, he goes on to explain how it is reimagined in the game, and instead of portraying a stone, it looks more like a living plant-like substance that slowly overtakes the Zone (Fig. 39). It can even enable space-time travel for the protagonist.¹¹⁵ This stylisation of the chernobylite stone blurs the line between the natural and the monstrous, reinforcing the point that not even nature has been left untouched.

In the end, Chernobylite allows players to access a space that was once wholly inaccessible – a Soviet Atom City (*atomgrad*) sealed off by a catastrophe that could not be held back by the Iron Curtain. It offers the illusion of intimacy, of unmediated access, while relying on sedimented layers of digital simulation and stylisation. While we can comprehend and gaze at an abandoned landscape, the experience becomes especially haunting because of what can never truly be known: the invisible harm, the lives left behind, the histories flattened into terrain, and ultimately a landscape that never moves.

Perhaps this is where the sublime power resides – in the act of viewing itself, rather than the spectacle. To see the Zone is to stand at the edge of something lost to technological hubris. In its stillness and distortion, Chernobylite invites us to reflect on what we are seeing, but also on the why we want to look at all.

What is striking is how these glowing elements normalise contamination. The crystals, while beautiful and otherworldly, rarely present immediate danger. They blend into the landscape, appearing so frequently as to become part of the scenery. In doing so, Chernobylite visualises the long-term condition of environmental exposure, where toxicity can be everywhere, while normalising it. This aesthetic strategy mirrors real-world perceptions of the Chornobyl environment, where borders between clean and contaminated, safe and unsafe, are often blurred.¹¹⁶ In Chernobylite, however, these borders are traversable. The player is allowed to look everywhere: one can step past trefoil warning signs, test the glowing mist, and simply see how much radiation their avatar can withstand. This is markedly different from the *Chernobyl* TV series, in

which a sublime experience arises from sympathy with knowing and being unable to help, while observing a life-changing event that may ultimately affect the people on the bridge and their lives.

This freedom from real-world limitations lends the player a peculiar agency. In designated tourist routes through the Exclusion Zone, experiences are tightly managed to maintain a safe physical (and psychological) distance where the tourists are never actually endangered.¹¹⁷ As the environmental scholar Shannon Cram notes: 'nature is used to rethink and remake post-nuclear future – transforming nuclear wastelands into manageable, aesthetically potent, scientifically productive, and economically efficient spaces'.¹¹⁸ In contrast, Chernobylite invites players into an immersive, open-ended environment where danger is felt gradually through signs that appear only after it is already too late: sudden static, washed-out colour, and disorientation at radioactive hotspots. These moments simulate the unease of realising you have crossed an invisible line, and you can choose whether to continue or go back to see what will happen.

Importantly, Chernobylite is a horror game, and with horror comes the expectation of terror.¹¹⁹ Yet the monsters that appear are not the true source of sublimity because their visibility is too symbolic and visceral (Chapter 4). As players explore the digital landscapes of devastated buildings, forests, and cooling towers, they are met with a world both mesmerising and indeterminate. Like watching a shipwreck from the shore, there is beauty in the ruin, but also a sense of helplessness and detachment.

This is where the fabulously sublime takes hold: in a way Chernobylite renders nuclear reality visible, not through accuracy but through exaggeration. The green glow and sudden bursts of distortion all serve as 'fabulous' embellishments that give form to what is otherwise unseen. These visualisations prompt a deeper awareness of how exposure operates, rather than pure spectacle. In this way, the game engages Anders's critique of nuclear unrepresentability by offering a substitute image, one that approximates the emotional and epistemological dissonance of living with invisible catastrophe.¹²⁰

The player's ability to roam freely adds to this dissonance. You are never told exactly where is safe; you must find out for yourself. This autonomy can foster an awareness of vulnerability, but it can also cultivate a false confidence. Because your avatar survives, since radiation can be 'walked off' or cured by natural medicine, the game risks reproducing the illusion that radioactive spaces are knowable or navigable – conquerable even – through the image, much like DuncanH304 on TripAdvisor. Still, it is this contradiction that keeps the experience sublimely unstable: you are aware of danger, but never fully feel its weight; you see the signs, but the harm remains distant, deferred, aestheticised, fabulous.

Ultimately, Chernobylite offers something deeply personal: it grants entry into a place marked by secrecy, abandonment, and restricted access. For many players, it simulates an experience that remains physically out of reach. But more than that, it aestheticises a kind of longing to see what should not be seen, to feel what is otherwise unfelt – the aftermath of a nuclear disaster. In doing so, it cultivates the fabulously sublime as an imaginative encounter with what lies beyond understandings of the real world. It becomes more than the radiation, monsters, glow, crystals, loneliness, or ruins. Rather, it becomes an experience of standing in a world you cannot fully grasp, and feeling, if only for a moment, as if you have been there.

Figure 40
Walking through the forest,
screenshot from Chernobylite.



THE CHORNOBYL SHIPWRECK

Does the way we perceive the Chornobyl disaster resemble the way people watched shipwrecks in the nineteenth century? Or does the mediated distance between ourselves and the event distort the very possibility of such a comparison? While I have argued that the fabulously sublime emerges where the classical sublime cannot, a discrepancy remains. At first glance, visual representations of Chornobyl appear to invite the same gesture as the shipwreck: they allow viewers to witness a technological unravelling and the

suffering of those who trusted in the technology. Yet the analogy falters under scrutiny. A ship's hull eventually becomes harmless driftwood, its danger finite, comprehensible, and visible. The radionuclides released at Chornobyl, by contrast, seep through soil, water, and food chains for millennia. Their threat is enduring and invisible.

Nye reminds us that a genuine apocalypse abolishes the spectator's sense of safety, placing a 'structural limit on the sublime'.¹²¹ Chornobyl *should* produce this rupture were it not, paradoxically, for the screens that mediate it. Television, game engines, and cameras re-inscribe a protective distance: gamma rays cannot pierce the screen, and disaster becomes something we can consume with popcorn in hand, much like the nineteenth-century spectators who watched sailors meet their end from the safety of dry land – likely with a drink in hand. The real question, therefore, is not whether perceiving Chornobyl resembles watching a shipwreck, but how mediation transforms an ongoing disaster into something sublime we can safely enjoy, and what forms of knowledge, memory, and responsibility are lost in this exchange.

As we have seen, representation has already rewritten the Zone's memory. Scenes from *Chernobyl* and *Chernobylite* slowly seep into 'reality', producing new layers of supposed facts, such as the Bridge of Death. Despite the producer Craig Mazin's insistence on its historical accuracy, I have found no evidence confirming it actually took place. The closest accounts, collected in Svetlana Alexievich's extensive oral testimonies, describe residents watching the fire from their balconies, not gathered on a bridge bathed in a mysterious blue glow.¹²² A similar problem arises with the ethereal pillar of blue light – the Cherenkov effect. Reports of this phenomenon are sparse and inconsistent. One of the few witnesses to describe such a sight was Alexander Yuvchenko, a nuclear engineer on duty at the time of the explosion, who recalled in an interview conducted 20 years later in 2006:

From where I stood I could see a huge beam of projected light flooding up into infinity from the reactor. It was like a laser light, caused by the ionisation of the air. It was light-blueish and it was very beautiful. I watched it for several seconds. If I'd stood there for just a few minutes I would probably have died on the spot because of gamma rays and neutrons and everything else that was spewing out. But Tregub [a fellow nuclear engineer] yanked me around the corner to get me out the way.¹²³

The journalist Adam Higginbotham's *Midnight in Chernobyl* reproduces Yuvchenko's experience in a heightened, cinematic prose, leaning heavily into the imagery of the 'shimmering',

‘ethereal blue-white light’.¹²⁴ Yet in his own notes, Higginbotham concedes the scientific implausibility of it: ‘this phenomenon is visible only in mediums with high refractive index, such as water – and unlikely to have been possible in the open air above Reactor Number Four’.¹²⁵ In conversation, the nuclear physicist Kristina Stenström too stresses that witnessing the Cherenkov effect at Chernobyl would have been extraordinary.

It is usual to reach for visual vocabularies to make sense of the non-sensible (Chapter 2). While I do not wish to discredit Yuvchenko’s testimony, I want to draw attention to how quickly journalism and popular culture translate such moments into familiar, if scientifically suspect, imagery to render the invisible legible, even fascinating. This does not necessarily make it wrong. As Zander argues, the poetic translation of historical events can also aid in its understanding.¹²⁶ The glow therefore becomes a seductive shorthand and a visually appealing solution to the problem of representing radioactivity. It makes the visible legible both as an experience of nuclear disaster and as a means of grasping the otherworldliness – of witnessing it.

Remembering that *Chernobyl* was television drama, I am compelled to conclude that the Bridge of Death, at least as depicted in the series, almost certainly did not occur. Still, it has become one of the most powerful symbols of Chernobyl in modern times – a myth grafted onto the real disaster in its aftermath, then sustained by appeals to ‘historical accuracy’ and the emotional force of the fabulously sublime. The myth gained traction to the point where the bridge became a tourist destination in the Zone’s pre-war tourism, and later an Easter egg in the 2025 game, *Stalker 2: Heart of Chernobyl*. Landscape and landscape now feed into each other in a feedback loop until the physical Zone risks becoming an understudy to its own mythology.

I argue that this mythology is anchored by the glow: emerald mist, pixelated static, or dusty ash that artists use to make radiation visible. The glow becomes a substitute image, materialising the imperceptible menace and allowing outsiders to recognise, fear, and admire it. In this union of dread and attraction, the fabulously sublime is born. The word ‘fabulous’ thus comes to mean artifice, as if a deliberate crafting of a visual metaphor atop fact. Sublimity, likewise, is doubled: it terrifies through knowledge while consoling us by positioning us as safe witnesses. As Ferguson observes, nuclear dread can become a psychological defence; imagining annihilation affirms our own survival because it is only that – imagined.¹²⁷

At the same time, it seems that distance is treated as inconsequential. Even Derrida, when he wrote of the ‘fabulously textual bomb’, did so from the position of safety. He was not a *hibakusha*; he was in a place where nuclear destruction could be framed as textual, metaphorical, even fanciful. Such framing becomes

possible because one is not living through the consequences first-hand. I share that distance, and I cannot pretend otherwise. My work depends on it: theorising, writing, and observing from elsewhere, protected from radioactive matter by layers of mediation and privilege. Acknowledging this does not resolve the ethical tension, but it draws it into view. It forces me to question what it means to participate in a discourse that can so easily transform contaminated landscapes into aesthetic objects for distant observers. This is where the irony of the fabulous sublime becomes unavoidable: how can we claim to understand nuclear disaster when what we encounter is already fabulously visualised, shaped, filtered, and aestheticised to meet our expectations of what ‘the nuclear’ should look like?

Observing nuclear environments from afar offers a curated version of the sublime: a shock that briefly heightens perception while demanding nothing of us, like a spectacle we can admire before returning, unscathed, to our daily lives. Does this fabulousness sharpen attention to nuclear matters, or does it anesthetise it by aestheticising contamination itself? Sublimity, I argue, is rare because it overwhelms. Mediated sublimity risks becoming a commodity, something we pursue as an experience to collect rather than a rupture that changes us.

In this chapter, I have considered stalker culture and how it is often perceived as a harmless pastime. But what does it mean to flirt with death in landscapes where others had no choice but to evacuate or live with radioactive exposure as a daily condition? Such practices risk becoming a cruel inversion of privilege. Where disaster is converted into ambience for those who can leave whenever the thrill wanes. I think here of the children of Chernobyl, sent temporarily to Scandinavian countries to give their bodies a break from chronic low-dose radiation, only to be returned weeks later.¹²⁸ The gesture, well-intentioned but ultimately superficial, shows how bodies come to be extensions of landscapes, something I will return to.

Myths and visualisations also have consequences. YouTube stalker vlogs frame trespassing as heroic exploration, their popularity signalling to game developers that stalker fantasies still sell. Before Russia’s 2022 invasion, Chernobyl had become a popular tourist destination, complete with Geiger counter rentals and souvenir stands.¹²⁹ Interestingly, in 2025 the Chernobyl Nuclear Power Plant (ChNPP) and Slavutych, the city built 45 kilometres east of Chernobyl in 1986 to rehouse evacuated power station workers, signed an agreement to work together to develop tourism in the region once the war is over.¹³⁰ This to an extent upholds the idea of Chernobyl as an important site in Ukraine, not just financially, but also as part of the country’s heritage. I wonder if, when radiation is treated as ambience rather than toxin, the

contaminated landscape risks being curated as a permanent monument rather than being remembered as a cultural, political, and geographical wound. But I will leave that for another study.

Visual representations of Chernobyl's environment risk monumentalising the disaster in ways that simplify radiological reality. Games such as *Chernobylite* embellish the Exclusion Zone with an omnipresent glow, even though nothing can fully replace the genuine sublimity of standing there: the wind, the silence, the flicker of a dosimeter, the knowledge that invisible hotspots can undo our safety at any moment. Images like these nonetheless shape even that indirect experience, preloading visitors with expectations of emerald shimmer, heroic trespassing, and the Bridge of Death. The real place – its liquidation, its histories, its affected communities – risks becoming secondary to the fantasy required to keep spectators engaged and markets alive.

Recognising the glow as a double-edged sword means acknowledging that mediation is both descriptive and world-making. The glow offers an image to grasp, and yet it aestheticises the very danger it purports to signify, disciplining perception and organising the complexity of radioactivity. As representations transform the Zone into a stylised landscape, they reshape the expectation of the terrain more than they depict it. The viewer, safely distanced, experiences a meta-sublime in which tragedy becomes spectacle and the sublime itself becomes fabulous.

To accept this landscape uncritically is to risk mistaking image for reality, and entertainment for empathy. For future contaminated environments, this is not a trivial concern. If images become the dominant system for understanding radioactive pollution, they may also dictate how such spaces are managed, remembered, or glamorised. Confronting the gap between the visualised Chernobyl environment and its radioactive actuality is therefore bordering on an ethical and political imperative. Because by looking at it, we may begin to tell stories and craft policies that honour the ongoing hazards and the lives entangled in the aftermath. In that sense, reality risks slipping from beneath our feet when imagination hardens into fact. Chernobyl's reality is already so fantastic that adding another layer of myth does not make the space sink any deeper; it is already on the seabed, like a wreck encrusted with coral. But what grows on its battered hulk is not necessarily clarity but the many-layered sediment of myth.



4

RADIOACTIVE SILHOUETTES

See him glowing in the shadows
Running from the pain he's in
He got too close for comfort
He discovered the governments' sins
And they didn't care what they did
To the radioactive kid

The Meteors, 'Radioactive Kid', 1981

While the citizens of Prypiat were supposedly watching the fire at the Chornobyl nuclear power station from a nearby bridge, nearly 200 firefighters battled the flames on site. Much like the oblivious citizens, the firefighters were unaware of the invisible fallout that was far more lethal than the fire itself. Lyudmilla Ignatenko, the wife of the firefighter Vasily Ignatenko, recounts the story her husband had told her of that night:

The smoke was from the burning bitumen, which had covered the roof. He said later it was like walking on tar. They tried to beat down the flames. They kicked at the burning graphite with their feet.... They weren't wearing their canvas gear. They went off just as they were, in their shirt sleeves. No one told them. They had been called for a fire, that was it.¹

The first sign of contamination came when many of the first responders began to show symptoms of Acute Radiation Syndrome (ARS) – reddened skin, nausea, and vertigo. In the days that followed their symptoms worsened. Skin disintegrated into sores, organs began to fail, and for many, a slow, agonising death.² Those who survived, along with the evacuees, became known in the vernacular as 'Chernobylites', a name that was (and still is) tainted with the stigma of being radioactive, and in some cases led to marginalisation and exclusion.³ One evacuee, Nadezhda Petrovna Vygovskaya, spoke of her son's experience of social isolation: 'Our son was in the fourth grade, and he was the only one from Chernobyl in the class. The other kids were afraid of him, they called him "Shiny".'⁴

Though the radioactive body is an extension of the landscape (Chapter 3), unlike the sublime experience, which traditionally depends on observing an awe-inspiring threat from a position of distance and relative safety, the radioactive body is mobile and often visually indistinguishable from our own and other bodies. In most instances, radioactive harm does not appear instantly, rather it materialises later in life, in the shape of illness and cancer – even in our genetic lineage. Because radioactivity is not apparent on the surface, the derogatory nickname 'Shiny' invents a visible marker that collapses the spatial and symbolic distance, in turn reducing 30 kilometres of radioactive devastation into a single 'glowing' child. When a person 'glows' whether through literal 'shine' or

through rhetoric, they too, are brought into dialogue with the long iconological tradition, as outlined in previous chapters. How does this precarious line between scientific reality and cultural imagination subtly enable the radioactive body to be seen and understood in visual representations of Chornobyl?

Here, I extend my earlier arguments to the radioactive bodies that inhabit the landscape – the static visual framing of the disaster, which reduces an otherwise dynamic environment to a fixed image.⁵ The question is no longer where disaster resides, but *who* or *what* is deputised to uphold its borders. If the glow can both make radiation tangible and understandable to some degree, while risking obscuring its reality, what then of radioactive bodies? The real bodies of victims of radiation rarely have any obvious visual clue, so how can we determine, or imagine, a radioactive body? In what ways does its representation deter or encourage sympathy with the victim? How does the visual representation of the radioactive body not only bear witness to the Chornobyl disaster, but also process its cultural meaning?

Of two examples that directly engage with the question, the first is the 'Death' hospital scene in HBO's miniseries *Chernobyl*. Vasily Ignatenko is portrayed in the final stages of ARS, drawing heavily on Lyudmilla Ignatenko's account along with documentary evidence of other first responders.⁶ The case is particularly relevant in the discourse of victimisation and the right of representation in light of the recent lawsuit brought by Lyudmilla Ignatenko against HBO.⁷ The second example is in the video game *Chernobylite*, specifically the Shadow and Chernohost creatures, who are extreme visualisations of the human body after exposure to radioactivity. As a counter-image to *Chernobyl*, they represent the broader 'monster tendency' in the popular visual discourse of Chornobyl.

Both examples reflect the visualisation of radioactive contamination in the body, but also the broader theoretical implications of the viewers meeting with its aesthetic. To disentangle them, I apply the theory of abjection – Kristeva defines abjection as the reaction we experience when confronted with something that threatens the boundaries of the self.⁸ The abject provokes disgust, revulsion, or the desire to flee because its meeting is disturbingly familiar: it reminds us of our own materiality and vulnerability.⁹ What happens when the glow enters the visual discourse of the body, seemingly linking the familiar self with nuclear iconography? I have argued that the glow functions as a catalyst for the sublime (Chapter 2), and here I suggest that, in relation to bodies, it becomes a culturally sanctioned means of processing, dismissing, and perhaps normalising the threat of radiation's effect on the body.

I use the term 'radioactive body' to refer to a human perceived to be contaminated or altered by radiation. The dual meaning is deliberate. The concept can signify physical exposure to radiation

and its bodily effects, or it can refer to a body that is (branded as) socioculturally radioactive by stigma. These attributes do not always align since radiation is rarely legible on the body's surface, but it reflects a cultural need to process what happens when invisible radiation begins to walk among us. Indeed, for that reason I begin with a brief overview of how actual radioactive harm is manifested visually in the body, and how latency can become a tool of both virtue and for contesting the extent of that harm, before considering the public visualisation of the radioactive body in the popular media and the political tools with which to discipline imaginaries of the radioactive body. Their visibility may be particularly relevant today, as nuclear power is once again welcome in some quarters. While nuclear power holds out the promise of low carbon emissions, the risk of human consequences and potential disaster is not zero. We are even more reluctant to leave bodies behind than landscapes, so what happens when the glow is bestowed upon spouses, parents, friends who are like us?

LATENCY AND THE PROBLEM OF VISIBILITY

Radioactive contamination of the body is especially perilous because its effects can unfold on radically different time scales. Exposure may be internal, by inhaling or ingesting radioactive particles – for example, via contaminated dust or food – or external, when radiation originates from a source outside the body – for example, X-rays or bomb testing.¹⁰ One historical example was the filming of *The Conqueror* in 1954, which was shot some 137 miles downwind of the Nevada test site.¹¹ Large fans were reportedly used to blow (radioactive) sand across the set in order to simulate desert storms. By 1980, 91 of the 220 cast and crew members had developed cancer, and 46 had died from it, though the relationship between the filming location and these illnesses remained difficult to prove conclusively.¹² Some of the actors involved also attributed their illnesses to other causes, such as their own heavy smoking.¹³

This latency period, between exposure and visible signs, can last years or even decades before cancers become detectable.¹⁴ Yet at sufficiently high doses, above 0.7–1 Sieverts, the body may develop ARS, in which its contamination becomes immanent and starkly visible through the body's physical deterioration.¹⁵ As Olga Kuchinskaya reminds us:

The imperceptibility of radiation with the unaided senses thus means that radiation danger and its possible health effects might not be spontaneously obvious to those who experience them¹⁶

In short, bodily exposure cannot usually be determined by sight alone. In most cases, it requires sensitive instruments and skilful

interpretation – radiology, microscopes, blood work.¹⁷ Radiation-induced illness is therefore far removed from ordinary diseases that may announce themselves through visible rashes, fever, or other immediately recognisable symptoms.

At the same time, the traces of nuclear activity are not confined to the zones or people we imagine as 'contaminated'. Mid-century atmospheric nuclear testing until 1992, starting with the Trinity Test on 16 July 1945, altered the composition of the earth's atmosphere, producing a sharp rise in carbon-14, a curve known as the 'bomb pulse'.¹⁸ This 'signature' was absorbed into oceans, soil, and living tissue.¹⁹ Meaning that most people, born after 1945, carries a concentration of artificial isotopes in teeth enamel and bone that work like a timestamp, making it possible to determine whether a person was born before or after nuclear testing began, and marking virtually anyone born after as materially entangled with nuclear technology.²⁰ As with radiation, microplastics may likewise become a kind of timestamp for the present era. Maybe its material residue can help future researchers read our lifestyles and the environmental conditions of our time.

This contemporary ubiquity, however, can easily hide the fact that radioactivity was once experienced, in some contexts, as a form of privilege. Before nuclear technology became publicly associated with catastrophe and disease, radioactivity circulated among social classes and labour hierarchies: between medical practitioners, inventors, industrial workers, and consumers who could afford fashionable radium products.²¹ In middle-class circles, radium emanations and spa treatments promised health benefits and were sustained by the belief that exposure could improve quality of life and cure disease (Chapter 2).²²

Yet the medical miracle advertised to the public came with severe consequences for the body. Different radioactive substances have different effects. Radium, for example, is a bone-seeking element: it mimics calcium and is readily incorporated into bone tissue because it belongs to the same chemical family (the alkaline earth metals) on the periodic table.²³ The case of the athlete and socialite Eben Byers, who, between 1927 and 1931, consumed an estimated 1,000–1,500 bottles of the radium tonic Radithor, initially to treat a shoulder injury, makes radioactive harm particularly visible. The product was devised and sold by William Bailey, a self-styled doctor who falsely claimed to have medical degrees from prestigious universities.²⁴ Drawn by the lucrative radium market, Bailey purchased purified radium directly from US Radium in Orange, New Jersey (the same supplier that the radium dial painters used for their paint), diluted it in water, and sold it as 'Perpetual Sunshine', a panacea for everything from chronic pain to impotence.²⁵

Figure 42
Radioautograph of Eben Byers' teeth, glowing after 10 days of exposure, 1933. Courtesy of Alexander O. Gettler and Charles Norris.



In the radioautograph, Byers' internal exposure is visible (Fig. 42). His teeth can be seen as ghostly dancers on the X-ray film – the visual evidence of what remained largely unreadable until the end of Byers' life. When Byers died in 1931, his jaw had been surgically removed after cancer had destroyed it.²⁶ His family took legal action against Bailey, yet he proved difficult to prosecute, after proclaiming his own affinity to Radithor, taking the absence of visible signs of harm on his own body as proof of its safety.²⁷ Though Radithor was banned by the Federal Trade Commission in 1932, Bailey went on to create and sell other radium-laced consumer products.²⁸ Even today, some Radithor bottles survive, and according to the physicists Roger Macklis, some remain highly radioactive.²⁹ The case emphasises the recurring problem in nuclear history that radioactive harm remains vulnerable to denial for as long as it fails to manifest as immediately visible injury.³⁰

Even before the public scandals of the dial painters and Byers, medical practitioners had recognised radiation's harmful effects.³¹ The Swedish radiation pioneer Tage Sjögren developed cancers in his fingers after conducting experiments with X-ray photography, forcing him to amputate several of them in an effort to halt the disease's progression.³² However, as Jülich remarks, Sjögren's radiation-damaged hands became a symbol of his dedication and sacrifice in the advancement of X-ray research, at least among his colleagues, and a photograph was taken in his final days as a memento (Fig. 43).³³ This was physical injury culturally reinterpreted as professional virtue.³⁴ In 1896, Edison's efforts to develop a fluorescent lamp instead contributed to the development of the fluoroscope, a device that produced a dynamic X-ray image. His assistant, former glassblower Clarence Madison Dally, was initially enthusiastic about the technology's medical promise. However, prolonged exposure to X-rays caused injuries to his hands and fingers, as can be seen on the cover of this book.³⁵ Dally died in



Figure 43
'Sjögrens Händer einige Monate vor seinem Tode', the hands of the radiologist Tage Sjögren a month before his death. Source: Elis Berven, 'Tage Sjögren in Memoriam', *Acta Radiologica* 20, 1939. Reprinted by permission of Informa UK Limited, trading as Taylor & Francis Group, <https://www.tandfonline.com>.

1904, and the episode reportedly left Edison unwilling to pursue further X-ray experiments.³⁶

Returning to Chernobyl, exposure in the years after the disaster often took forms that were more difficult to attribute to a single source. Following the explosion, nearly every part of everyday life was contaminated: houses, wool for clothes, the food chain and even supplies that were officially described as 'clean'.³⁷ For example, Soviet authorities, reluctant to waste scarce food resources, attempted to manage contaminated meat through bureaucratic fixes, including the dilution method.³⁸ Butchers were instructed by Moscow agronomists to mince contaminated flesh and mix it with clean meat for sausage production; 'The experts in accident logistics were thinking along the belief that diffusion was the solution'.³⁹ One could also argue that further food scarcity, in a country marked by the memory of the Holodomor, the state-induced famine of the 1930s, and by recurring anxieties around food scarcity, dilution may have seemed the only option to avoid both waste and public unrest.⁴⁰ The meat was then packed and sold under ordinary labels across the USSR.⁴¹ However, the distribution rules drew sharp lines of privilege. The instructions stipulated that none of the meat should reach Moscow.⁴² In fact, Ukrainian officials restricted sales in Kyiv, while the KGB maintained separate 'special distribution' channels for leadership and key institutions, such as the military.⁴³ As a result ordinary people were exposed to internal radiation, whether they were aware or not, further complicating the number of actual deaths and diseases counted towards the Chernobyl disaster. Today this kind of (in)visibility persists in contaminated regions, although it is often shaped by necessity and tradition, for

example farming and foraging.⁴⁴ Using firewood to heat a house during the cold months may lead residents to inhale radioactive smoke from contaminated firewood. Although many residents are aware of this danger, Kuchinskaya reminds us that at-risk populations must be given tools to understand how to live and work with radioactive contamination.⁴⁵

The signs of radiation danger and its connection to actual or potential health effects have to be articulated: identified, explicated, and established as such. Radiation is not visible or observable to laypeople living in the contaminated areas without this work of articulation.⁴⁶

Despite efforts to communicate the radioactive risks, some people continue their traditional ways of life, as some news outlets have suggested, because they have become accustomed to living with radiation and its consequences.⁴⁷ In the areas contaminated by the Chernobyl disaster, radioactivity's everyday visibility is actively shaped by logistics, labelling, selective access, and risk behaviour.



Figure 44
A *hibakusha* with skin burned in a pattern corresponding to the dark portions of a kimono worn at the time of the explosion, 1945.
Courtesy of the US National Archives and Records Administration.

From actual embodied harm, contested legibility, and 'normalcy', it is a short step to the ways in which the popular media visualise the radioactive body, and to the political work that such visibility performs. In many ways, the radioactive body makes visible the disaster's lack of 'finitude' more forcefully than the landscape. Here, sickness occurs through genetic, cellular, and bodily transformations, making the radioactive body of Chernobyl a continuum of what might otherwise be regarded as a 'finished' historical event.

THE CULTURAL MANAGEMENT OF VISIBILITY

The visibility of the radioactive body has been managed in different ways over the years, shaped by secrecy about technological development, warfare, and accidents. What is particularly interesting, however, is how these factors have in turn affected the cultural representation of the radioactive body, and how such representations have shaped the public understanding of radioactive harm. For example, in the aftermath of the Hiroshima and Nagasaki bombings in 1945, Japan was under American occupation and was subject to censorship under the Press Code for Japan between 1945 and 1949.⁴⁸ Although the Press Code did not explicitly single out information about the bombing, censorship limited what could be said and shown publicly in Japan, while its existence was treated as a secret.⁴⁹ As Braw notes, when atomic bomb content was censored, the justification was often made on the grounds of not 'disturbing public tranquillity' in the process of 'democratising' Japan, an elastic category that, in practice, protected American interests and discouraged news that might cast the US as cruel or inhumane, a bad rep for the 'saviours from Nazism'.⁵⁰ The Press Code included repercussions that were 'both comparatively lenient, like confiscation, and harsh, like years at hard labour, although this was not publicized'.⁵¹ While the reality in Japan was one of mounting bomb-related diseases and the birth of *pica* babies, the country's press suggested there was no 'further fear of atomic diseases, and that the scars on those having had plastic operations had all but disappeared'.⁵² This, as Braw confirms, was obviously not true.⁵³

When images of the bomb victims finally began to trickle out past the censors and into the US, they caused public outcry.⁵⁴ Images such as the one of a civilian with the patterns of their kimono burnt into their skin (Fig. 44), together with those of barren landscapes, began to haunt the public imagination of the bomb's destructive potential.⁵⁵ In an effort to soften their political impact, the US government launched the much-publicised Hiroshima Maidens project in 1955, three years after the end of the Occupation, bringing twenty-five *hibakusha* women to America for reconstructive surgery.⁵⁶

The *hibakusha* or 'bomb-affected people' had long been stigmatised in Japan.⁵⁷ Many lived with visible scars and burns

Figure 45
Two Japanese women, Toyoko Minowa and Michiko Sako, examined by a plastic surgeon Dr Arthur Barsky and his student Eleanore Kupencow at Mount Sinai Hospital in New York, 1955.
Courtesy of John Lindsay.



from the atomic blast, or with chronic illnesses attributed to the subsequent fallout. It contributed to the widespread perception that they were physically and socially 'unreliable'. The stigma impacted the marriage, employment, and social integration of many people for years after the Second World War.⁵⁸ As Jacobs argues, by inviting the *hibakusha* to the US, they were transformed from survivors of an American attack into recipients of American benevolence.⁵⁹ This framing subtly echoes the Press Code:

The Japanese should be taught their place in the world, where they, as defeated, had no status and were entitled to no respect. They should be made to realize that any catastrophe that had befallen them, was of their own making.⁶⁰

The difference was one of tone. Where the Press Code was all about blame, the Hiroshima Maidens narrative was one of charity, projecting an almost religious virtue of forgiveness. This reframing was reinforced by rhetorical strategies that described the bombings as analogous to a natural disaster, in an interpretive move that neutralised the manmade, militarised character of nuclear violence.⁶¹ Rather than an apology, it was a recalibration of responsibility. The strategy was applied to the Hiroshima Maidens, whose scars were described as *akuma no tsume ato* ('the devil's claw marks'), a phrase that in Japan was long used to refer to the physical scarring of the land caused by tsunamis and earthquakes.⁶² In many ways, as Jacobs points out, this suggested that the women could be seen as victims of natural forces rather than of a deliberate act of warfare.⁶³ Given the censorship regime, these were loud statements of the self-professed ideals of democratisation, which the Americans wished to force on the Japanese, who had been seen as violent actors in the war – as if them being exposed to the nuclear bomb was natural ending to their aggression. At the same,

this rhetoric also pushed the nuclear violence into an ambivalence reminiscent of how Chernobyl is often discussed as a natural sanctuary rather than an (involuntary) act of human violence on the environment.

When one of the women, Tomoko Nakabayashi, tragically died during surgery, the American media subsequently portrayed her as a vain woman who died in the pursuit of becoming an American 'bombshell', with one headline even proclaiming 'Beauty Hunt Fatal – Hiroshima Maiden Dies. In Surgery'.⁶⁴ This framing actively removed any blame from the American doctors or government and instead shifted it onto Nakabayashi's supposed pursuit of beauty.⁶⁵

As their stay in the US drew to a close, the Hiroshima Maidens were styled to reflect a distinctly American appearance, complete with Western hairstyles and clothing.⁶⁶ On their return to Japan, it was no longer primarily their *hibakusha* status that complicated their marriage prospects, but the perception that they had become too Americanised and were no longer aligned with traditional Japanese norms and values.⁶⁷ Their radioactive bodies were no longer only expelled from society due to fears of invisible illness and fragility; they were also rejected for their newly Westernised appearance, which was read as vanity and a departure from cultural tradition. In this sense, it seems that the Hiroshima Maidens were effectively penalised for attempting to re-enter society on their own terms.⁶⁸ Their revised *appearance* was reframed as a rejection of the very qualities associated with their identity as *hibakusha*, qualities that had once marked them out as distinctly Japanese.⁶⁹ Ironically, the values presumed to have been cast aside by their Americanisation were simultaneously reimagined as symbols of national resilience – the same visual markers that had previously contributed to their exclusion.

There were some similarities in how radioactive bodies were treated in the aftermath of the Fukushima Daiichi disaster in 2011. Although the historical and technological conditions differed, the bodies of those exposed to radioactivity, or merely suspected of being contaminated by it, were subjected to discrimination, much like the *hibakusha* and Chernobyl evacuees being excluded or bullied for 'embodying' radioactivity. One foreign newspaper reported a mother saying: 'Children who were in Fukushima may be unable to get married when they grow up, or their husbands may wonder whether they can have babies'.⁷⁰ Similarly, Decamous mentions how 'rumor purported that Fukushima women were now unmarriageable' because of radiation-caused sterility, 'as if Fukushima men were somehow left untouched'.⁷¹ Anxieties about the long-term effects of radiation persist, although they are often dismissed as radiophobia – an extreme fear of radiation, a label frequently utilised by officials to downplay public concern and anxieties about nuclear disasters.⁷²

The Japanese government's downplaying of the Fukushima disaster, including its repeated emphasis on the lack of confirmed health effects and warnings against 'rumours' much like in the Press Code, caused a public storm.⁷³ The political stakes of visibility were clear in the controversy about the food-themed manga *Oishinbo* (*The Gourmet*), which depicted a character experiencing a nosebleed after consuming food from the area.⁷⁴ Nosebleeds were said to be common among evacuees, yet *Oishinbo* received a public put-down from the authorities for representing subtle signs of radiation.⁷⁵ Japan's Prime Minister Shinzo Abe (2006–2007, 2012–20) stated, 'There is no confirmation that anyone's health has been directly affected by radioactive substances. The government will do its utmost to take action against baseless rumours'.⁷⁶ Again, the historical problem of visible bodily contamination: often invisible and delayed, it meant officials were able to gatekeep cultural and political visibility by treating bodily signs as rumour rather than evidence.⁷⁷

In another bureaucratic twist, the Japanese government raised the public exposure limit from 1 mSv/year to 20 mSv/year on 19 April 2011 following the Fukushima Daiichi disaster. As the political scientist Reiko Hasegawa notes:

Accordingly, the authorities, including the Fukushima prefectural government and several affected municipalities, began to emphasise that it was safe to return and live in areas with annual radiation dose [*sic*] of less than 20 mSv.⁷⁸

In practice, this meant that the former 20 mSv safe dose limit for an adult nuclear worker was now deemed the legal limit for adults and children alike.⁷⁹ When a dose limit is raised, the official recognisability of harm is redefined. It resets what can be seen and counted as overexposure and what cannot. This can leave experiences of exposure and its effect unaccounted for, and therefore representations can also be debated and debunked much more conveniently, as the revised dose limit becomes the new normal.

In the aftermath of the *Oishinbo* Fukushima publication, the longstanding manga was shut down. That was significant because it suggests that representing suffering can expose popular artists to public and professional backlash, while omitting such imagery risks participating in the erasure of nuclear victims. The precarious balance could help explain why some artists adopt exaggerated or fantastical forms, since it introduces a measure of aesthetic distance and therefore can be more easily dismissed as fiction. Interestingly, *Oishinbo* adhered to a very elusive way of representing radioactive contamination to the body. It is not fleshy, like the ones I mentioned in the previous section. Nosebleeds can come from many different things, not necessarily radioactivity. To imply that

radioactivity is the culprit is thus to acknowledge the lucid nature of radiation contamination to the body; that while it may look ordinary from the outside, the body's insides could be breaking down.

The (in)visibility of the radioactive body can be apparent in the most fleeting of everyday encounters. In my first year as a PhD student, I was unexpectedly approached by a man on a ferry. He introduced himself as a bus driver from Belarus. When I mentioned my research topic, he immediately lit up and told me that he was from the Gomel province, one of the most contaminated places.⁸⁰ He had been a child when the disaster occurred and recalled that doctors had attributed his eczema to radiation exposure from Chornobyl. It was only once he mentioned this that I truly looked at his skin, at the scars and the persistent dryness, and realised how easily such histories can remain invisible. Such encounters are reminders that those marked by Chornobyl's aftermath can be anyone, anywhere. And that while many visual representations give the impression of 'finitude', the human race is still having to cope with the consequences of radiation.

While people may look non-radioactive, Decamous argues that radioactive bodies, both human and non-human, are often the 'evidence' in highbrow artistic practices, enabling victims to reclaim narrative control through affective expressions such as imagery, poetry, and music.⁸¹ However, in her discussion of Chornobyl's representation, Decamous observes a tendency towards extreme depictions that frequently lack empathy – images that either exploit victims or ignore them altogether.⁸² She advocates instead for artistic approaches that emphasise respect and ethical engagement over sensationalism, drawing a distinction between such art and popular culture at large.⁸³ Yet, I would argue that the distinction between respectful representation and sensational entertainment is not always clear-cut.

At the time of the Chornobyl disaster in 1986, documentation was tightly controlled. Official imagery focused on the liquidators, the approximately 600,000 young men and women mobilised to remove radioactive debris, cull livestock, demolish buildings, and construct the sarcophagus under which Reactor 4 lay until the new construction was slid over it in 2016.⁸⁴ The late Soviet management of Chornobyl is a prime example of how visibility was determined by state priorities. As Vasilyevich Sobolev, then head of the Shield of Chornobyl Association, recalled, 'We don't have a chronicle of how they evacuated people, how they moved out the livestock. They didn't allow anyone to film the tragedy, only the heroics'.⁸⁵ Hence the photograph of a neat row of liquidators, dressed in complete protection gear (Fig. 46), whereas in reality they have frequently commented on the lack of sufficient protection gear and the need to make their own.⁸⁶ The state-sanctioned media framed the clean-up as efficient and complete, even when

Next double page:
Figure 46
Chornobyl liquidators, 1986.
Ukrainian National Chornobyl
Museum 20 April 2007
in Kyiv, Ukraine.
Courtesy of Francois Lochon.



reality contradicted that narrative. The result was a selective visibility atop the mounting evidence: radiation was only acknowledged insofar as it could be folded into images of sacrifice and control.⁸⁷ Meanwhile, contaminated sausages were shipped out across the Soviet Union.

Still, the liquidators and evacuees were not unaware of their exposure, and bodily anxiety circulated in jokes in an attempt to give shape to what could not be reliably seen. The liquidator Arkady Filin told Alexievich:

Want to hear a joke? This prisoner escapes from jail, and runs to the thirty-kilometer zone at Chernobyl. They catch him, bring him to the dosimeters. He's 'glowing' so much, they can't possibly put him back in prison, can't take him to the hospital, can't put him around people.⁸⁸

The result is a radioactive body made visible, or kept invisible, in the conflicts about evidence, responsibility, and public narration. Whenever institutions suppress images, reframe victims, or discipline testimony and publicity, they also create an informal vacuum – and popular culture steps in to fill it with familiar symbols of harm, radioactivity, nuclear risk, and abjection.

THE ABJECT BODY AND ITS ENVIRONMENT

Since the mid-2000s, the popular cultural imagery of the Chernobyl disaster has returned to the figure of the radioactive body as a symbol of contamination. Whether in horror games such as *Stalker*, *Shadow of Chernobyl*, and *Chernobylite*, films such as *Chernobyl Diaries* and *Chernobyl: Abyss*, or dramatised series such as HBO's *Chernobyl*, these depictions showcase bodies that are not simply harmed but fundamentally altered. Their transformation is often marked by visible, immediate mutation and the glow, making contamination instantly legible to the viewer. The question, then, is what it means when such images begin to function as a kind of cultural evidence, a way of knowing the radioactive body.

Abjection offers a framework for understanding how representations of radioactive bodies function in cultural narratives. For Kristeva, the abject is what threatens the boundary of the self: 'The abject is not an object facing me, which I name or imagine. ... The abject has only one quality of the object – that of being opposed to I.'⁸⁹ This opposition is experienced through the act and process of expulsion, rooted in early infancy when the child first separates from the maternal body and asserts its independence.⁹⁰ In short, abjection is about boundary crossing, in a way that becomes uncontrollable, and so we seek to control the narrative by expulsion. Abjection becomes a defence mechanism to protect us from

the things that disturb. Arguably, the radioactive body becomes abject because it remains recognisably human while disclosing a collapse of bodily integrity. For example, abjection does not have to be visceral, but can arise in ethical and social relations that obstruct or contradict the security of meaning, such as 'a debtor who sells you out, a friend who stabs you'.⁹¹ In the case of a radioactive body, abjection appears as the contradiction of a body that still looks intact yet is internally undone. It can manifest signs that usually evoke life, like a sudden nosebleed after ingesting (irradiated) food while the body's capacity for cellular renewal has begun to fail.

Popular culture invariably stages this encounter as a crisis of legibility. The viewer is invited to see the radioactive body as recognisably human, yet at the same time it is rendered through oppositional metaphors: wet burn victims, 'glowing' facial deformities, gliding but stuttering or stop-motion-like movement. These visual representations do not inspire awe in the same way as the sublime; instead, they disturb, and that disturbance becomes a desire for distance, or to 'flee' the radioactive body. As the art critic Hal Foster writes:

the abject is what I must get rid of in order to be an I at all. It is a phantasmatic substance not only alien to the subject but intimate with it – too much so in fact, and this overproximity produces panic in the subject.⁹²

In this sense, abjection, though violent and traumatic, is also the protection of the self.⁹³ The cultural theorist Rina Arya clarifies that abjection consists of 'two modalities: the action of expulsion (to abject) and the condition of being abject'.⁹⁴ Or, as the historian William Ian Miller puts it, 'It is usually supposed that fear leads to flight and disgust more to a desire to have the offending item removed'.⁹⁵ Both of these 'actions' are on display in *Chernobylite*, where mutated monsters blur the line between human and non-human. Their grotesque forms hint at a former humanity now rendered alien. More importantly, in the game we are given a choice: either we flee the monster or we shoot and kill it. In other words, we materially expel the radioactive body the way we see fit.

In reality, however, the radioactive body is hardly expellable. A body, a person, usually has relations. As exemplified in the dystopian novel *Roadside Picnic* (1972) by the Strugatsky brothers, the protagonist's daughter is nicknamed Monkey because of her growing animalistic behaviour and the coarse fur that grows on her body – a mutation caused by her father's exposure to the mysterious *Zone*.⁹⁶ Generally, it is known in the novel that when stalkers enter the *Zone*, their unborn children will be affected.⁹⁷ The visible mutation gestures towards the hereditary consequences of invisible

contamination. While Monkey is different, her father, the stalker, exhibits his love for his daughter.⁹⁸ Another example of this is the *Fallout* video game franchise turned TV series in 2024, where people contaminated by radiation slowly turn into Ghouls, zombie-like figures with melted skin and the loss of ears and noses – similar to a burn victim – which, in some instances, become feral, hunt for human flesh, and endure a life of suffering in which death is impossible.⁹⁹ Abjection here denies us the ability to do what our body is programmed to do on its own – die. Instead, it prolongs the living in the shape of a corpse's ongoing decomposition, which is beyond the stage at which it can repair itself.

By rendering the contaminated body as monstrous or grotesque, these narratives intensify a sense of social and existential otherness. The creatures in *Chernobylite*, for example, resemble haunting silhouettes of what was once human, in turn becoming bodies that visually embody the trauma of nuclear catastrophe. As Decamous notes, such portrayals often veer towards sensationalism and lack empathy for real victims.¹⁰⁰ Yet they also emerge from a long history of a visual vacuum, where censorship has suppressed images of nuclear damage, in favour of those of heroism.¹⁰¹ For example, Braw mentions that the Press Code of Japan ensured only scattered facts about the atomic bomb were made public in Japan and the rest of the world, and never the full picture.¹⁰² Decamous suggests fictionalised tropes have come to stand in for censored realities.¹⁰³ In this way, grotesque images can fill the gap left by silence and secrecy, functioning as speculative illustrations of what could or would not be shown. In many ways, these visual representations of radioactive bodies imply a degree of certain cultural knowledge: that radioactivity has a transformative agency, whether as sickness (Eben Byers, the dial painters), or as superhuman power (The Hulk, Dr Manhattan). The glow, in this sense, does not always serve as a positive bridge between scientific reality and cultural imagination; it can just as easily reinforce distorted fantasies of contamination and exceptionality, obscuring the slower, less spectacular forms of harm in favour of vivid and instantly recognisable imagery.

Where earlier representations were censored, suppressed, or circulated in limited form, today they are (mostly) available to anyone with a search engine. The radioactive body is now on display in ways that were previously unimaginable. A simple internet search can produce photographs of Chornobyl firefighters suffering from ARS, the bodily aftermath of nuclear testing in the Rongelap Atoll, and Hiroshima and Nagasaki survivors. This abundance of accessible imagery has created a new kind of proximity to the suffering body, one that transcends national and temporal boundaries, similar to the 2004 image release of the abuse in the Abu Ghraib prison. While violence is no longer contained to

the few, it can still be visually intimidating. Actual photographs of nuclear victims are available, but they can also enact abjection on a miniscule level by simply clicking away or by turning to cultural interpretations of suffering that can, in some cases, be more palatable. It is important to remember that these real-life images circulate alongside and often inspire fictional imagery, which could potentially create another layer of dissonance between fact and fiction. Interestingly, Decamous writes of nuclear imagery in popular culture that:

The genre elicits disgust and fright, but our feelings are sufficiently put at a distance thanks to cheap special effects and poor acting. In truth, this is the charm of the genre.¹⁰⁴

Decamous is referring to visual representations in the Cold War, but she also points to later examples such as the horror film *Chernobyl Diaries*. However, I would question the assumption that cheap special effects and poor acting necessarily produce emotional distance. In light of both *Chernobyl* and *Chernobylite* (Chapter 5), such aesthetic strategies can just as easily generate immersion and unease. While I acknowledge that none of my examples falls under what Decamous would classify as cheap, I still think that there is a catch in the idea that the 'charm' of the nuclear genre in popular culture lies in a safe detachment from nuclear violence. To observe any of these visual representations as charming implies a degree of self-detachment from the representation, allowing the power of the image to disconnect us from lived reality.

While abjection works as a defensive disavowal triggered by intimacy and over-proximity, there are also examples in which abjection to the radioactive body is done in miniature. Witness the work of the artist Cornelia Hesse-Honegger, whose delicate drawings and watercolours of insects and plants collected near nuclear sites make visible the vulnerability of living organisms to radioactive contamination.¹⁰⁵ In her images, flowers bloom in the wrong colours and insects are often smaller or inconspicuously malformed. In these organisms the environment has inscribed itself into their biology.¹⁰⁶ In view of the narratives of the Chornobyl Exclusion Zone as a space of nature's reclamation, such attention to minor deviations can be quietly oppositional. It insists that flourishing does not preclude mutation, and that life returning is not the same as the supposed ecological innocence of the Zone.¹⁰⁷ Nuclear ecological abjection therefore works on many levels, and is not necessarily confined to one type of 'violently visual' radioactive body.

When the glow appears in the represented radioactive body, it often seems to be more than a symbolic cue for danger, and rather becomes a visible residue of the intra-action between human and

technological catastrophe. If it were possible, we might seek to expel such glowing contamination as foreign, fantastical even. But by turning to intra-action, it is clear that this desire is impossible. The radioactive body is a co-constitution of past experiences, environment and flesh, and a material witness rather than an isolated entity. In this way (in)visible matters come to matter through their representation, because we cannot address the one without the other. This inability to separate the body from its contaminated surroundings invites an ecological understanding of the abject. Here human-made ecological crisis collapses into the biological matter of those who act in it, and the boundary between what can and cannot be seen is constantly challenged through the sociocultural fascination and fear of the glow.

While I could return to Derrida's notion of the fabulously textual bomb, I instead argue that the visual field surrounding radioactive bodies has been inverted. Even in Derrida's time, images of the Hiroshima and Nagasaki victims were readily available. Contemporary representations of radioactive bodies are less 'fabulous' when they are suspended uneasily between realism and fiction. It may be because many of those real radioactive bodies have long since died from exposure, or simply because they do not occupy a sustained place in the mainstream news cycle. In other words, today radioactive bodies are increasingly mediated rather than sustained by any real confrontation.

Their images now hover at the boundary of visibility and disbelief, and in doing so they unsettle our perceptual and ethical frameworks. Unlike the sublime experience of the environment, which gestures towards the unknowable, radioactivity is often exaggerated in the body. It becomes overwhelming because it is rendered too visible, too imbued with meaning, tied to past catastrophe and future energy policies, but also too difficult to look at and yet impossible to ignore.

Abjectifying the body might create a temporary sense of 'psychological' or cultural distance that allows us to compartmentalise or repress the reality of nuclear danger. That said, repression is always fragile because the material conditions it seeks to hold at bay – contaminated lands, bodies, and altered infrastructures – persist, even in its devastated aftermath.¹⁰⁸ The radioactive landscape of Chornobyl, with its wild regrowth, has achieved a kind of Garden of Eden-like status.¹⁰⁹ But this lush, serene environment turns against the body by its contamination. The radioactive body, the monster, is not simply the Other; it is what happens when environment and flesh coalesce in ruin. And in real life, some of these bodies (in)visibly marked have come to be described in fabulous irony as Shiny.

AN ABJECT WITNESS TO CHORNOBYL

The depiction of the Chornobyl firefighter Vasily Ignatenko's physical devastation in *Chernobyl*, according to the show's writer and director Craig Mazin, was as close to reality as possible.¹¹⁰ While the series aimed for historical accuracy, Mazin noted his reluctance to give these bodies extensive screen time. He feared that lingering too long on their appearance risked tipping into gore, which in turn could distance viewers from the sense of reality and encourage them to dismiss the horror as fiction due to the extremity of the bodily decay.¹¹¹

As a result, the almost deteriorated radioactive body appears on screen for only about 36 seconds across the entire five-and-a-half-hour miniseries.¹¹² In those few seconds, viewers are faced with the final stages of ARS, in which the body is imploding.¹¹³ When the human body is exposed to high levels of radiation, cells lose their ability to reproduce and repair themselves, leading to widespread cell death.¹¹⁴ As a result, human tissue begins to break down, ultimately causing organ failure and severe infection. ARS manifests in the visible degradation of the skin, which gradually transforms into a thin, liquefied layer that assimilates what was once living tissue.¹¹⁵

In the memoir *Voices from Chernobyl*, collected by the journalist Svetlana Alexievich, Lyudmilla Ignatenko, the wife of Vasily Ignatenko, describes the appearance of her husband in those final stages:

He started to change – every day I met a brand-new person. The burns started to come to the surface. In his mouth, on his tongue, his cheeks – at first there were little lesions, and then they grew. It came off in layers – as white film... the color of his face... his body... blue... red... gray-brown. And it's all so very mine! It's impossible to describe! It's impossible to write down! And even to get over. The only thing that saved me was it happened so fast; there wasn't any time to think, there wasn't any time to cry.¹¹⁶

When I applied to publish the stills from this scene, HBO declined my application without providing further details. A few days later, I learned that the same scene had been cited in a legal dispute connected to the series. Lyudmilla Ignatenko alleged that HBO had used her and her husband's story, names, and likenesses without her knowledge or consent.¹¹⁷ She claimed to have suffered harassment specifically because of the episode's portrayal of the pregnancy storyline. She described being confronted and followed by strangers who accused her of having 'murdered' her baby, which caused distress to both her and her son.¹¹⁸ In the lawsuit,

she requested that HBO remove all the scenes with her likeness.¹¹⁹ Around the same time as the case was settled, I noticed that the YouTube video I had previously used as a shortcut to watch the scene had been reposted under a different title. It was no longer called 'To Poison Pregnancy', but 'Death', removing blame, turning a poetically suggestive title into a literal description of the scene, and shifting the intention of the scene by removing the macabre layer – as if the continuation of suffering was no longer the incentive, but rather the gruesome passing of a firefighter. It was a clever reframing, because it seduces the viewer to look at death directly, while not entirely excluding the subtle death that is foreshadowed in Lyudmilla's womb. At the time of writing, the scene has been removed from YouTube altogether.

The lawsuit led me to look closely at how the images were constructed. What surprised me was the extent to which this specific scene resembled the Soviet Ministry of Defence's instructional film about ARS. It was filmed in the wake of the Chornobyl disaster and includes some of the firefighters and plant workers in various stages of ARS.¹²⁰ The most harrowing moments come at the end: a man lies in a hospital bed, struggling to breathe; a nurse tends to him, and a small turn of his hand is captured in a way that is eerily reminiscent, in likeness, movement, and camera angle, of the HBO scene.

At first, I tried painting the dying firefighters from the instructional footage to illustrate this book, but as I was finishing a portrait of one of the men, I felt increasingly uneasy. There was something about portraying the suffering of people who, in that moment, could hardly have given consent to be seen, let alone to be reproduced. The irony sharpened that discomfort. The TV series appears to have drawn on such imagery in the name of dramatic realism, yet my own request to produce stills for scholarly analysis was refused.¹²¹ So too was any possibility of painting their scene since their policy does not allow for reproduction of their images, even as fan art, for commercial purposes. I began to wonder whether including my paintings would insert me into the same vicious circle of tragedy as image and image as consumption. And for these reasons, I decided not to include my paintings to support my visual analysis of the radioactive body. I recognise there are many more levels of morality involved, but the outcome is the same: I describe the scene as I encountered it, in language that stays closer to the viewing experience than the detached vocabulary of a film analysis.

'DEATH'

Lyudmilla's gaze lingers on the body while a reassuring smile rests on her lips. 'Lusha, Lusha' – a voice keeps calling for her, coming

from a body that is covered in lesions, sores, and pus. The remainder of the body's skin is white and glistening with a thick, mucous-like film, a slimy, translucent layer that clings to the body but seems ready to slough off at the slightest touch. The body is reminiscent of an *écorché*, a figure drawn without the outer layer of skin to display its musculature. Strangely, the flesh appears to be both raw with sores, but also melting, as though it is dissolving from the inside out, the upper body covered in dark lesions and decaying flesh. The fingertips are beginning to rot; some nails are peeling away, taking with them the dying tissue beneath. Even the sterile hospital bed has been infected by its decay, stained with bodily fluids that leave yellow and dark marks on the white cotton.

The body is desperate to know what time it is, but instead of giving in, Lyudmilla reveals that they, her and the body, are going to have a baby. The news causes his laboured breathing to slow momentarily, and the corner of his mouth twitches, as if he is attempting to smile. In this moment, I am reminded of Ignatenko's humanity, even if his face quickly returns to the same hollow, expressionless state. Undeterred, Lyudmilla rests her hand on his, and he responds by weakly closing his fingers around hers.

Ignatenko's lips have darkened to a blue-black colour while his nose is a gangrenous mass. His teeth remain starkly white, and his mouth is open, and he is breathing hard and fast. Yellow eyes stare up towards the ceiling without blinking. His body looks too wet to be that of a burn victim, as it glows under the fluorescent light that gives a grimy green cast to his radioactive body, masking it as if it were a morbid display of a corpse in a mortuary.

The corpse (or cadaver: *cadere*, to fall), that which has irretrievably come a cropper, is cesspool and death; it upsets even more violently than the one who confronts it as fragile and fallacious chance. A wound with blood and pus, or the sickly, acrid smell of sweat, of decay, does not signify death. In the presence of signified death – a flat encephalograph, for example – I would understand, react, or accept.¹²²

For Kristeva, the corpse is the ultimate site of abjection.¹²³ It is a breakdown of the symbolic order that resists clear boundaries. Unlike clinical diagnosis, which frames bodily crises as medical categories and hygienic procedures, the corpse resists containment and sanitisation.¹²⁴ Instead, it confronts us viscerally with mortality. But Ignatenko is not a corpse. His body signifies more than death; it is the living death before actual death, in which bodily fluids *should* signify a functioning body, but here it is a body that can no longer heal. His body is a living abjection that unsettles the boundary between the animate and inanimate. Radioactivity, in this sense, cheats death of its function as closure, because signs

of decomposition set in even before life has gone, and the viewer is forced to encounter its dissolution as an ongoing process rather than an end.

The scene's very visual decomposition of a living being evokes a type of repulsion in recognition. In those brief seconds, the viewer is allowed a glimpse of the radioactive body: they are forced to witness a supposed corpse that performs its humanity by showing affection, smiling and holding his wife's hand in his disintegrating state. It brings to mind the nineteenth-century spectators watching the spectacle of a shipwreck, captivated by the unfolding disaster but capable of empathy for the drowning sailors.¹²⁵ However, the experience of Ignatenko's body is anything but sublime, since it is not just the sight of decay, it is the intimacy of his tragedy and the ability to recognise his terror as potentially our own. In this intersection, a boundary is crossed. While this Ignatenko is televised, his person and death were actually real, as the TV series reminds us by its claim to 'historical accuracy'.

Kristeva suggests that the abject is not something we eliminate, however hard we try to expel it.¹²⁶ Ignatenko's body is materially entangled with the nuclear power station – a site that was once imagined to be the source of clean energy. In a cruel inversion, that very promise of cleanliness transforms those who serve it into something socially and biologically unclean. His body appears to melt into the bed below, slowly contaminating the hospital, a place traditionally associated with the utmost cleanliness.

In the same episode that features the scene, Lyudmilla is told that her husband is dangerous and that she must not go near him.¹²⁷ He has become a source of contamination and a threat to her own body, rather than the person she has known. Ignatenko's body thus defies a clean separation between past catastrophe and ongoing risk. Ignatenko is, in many ways, the very embodiment of nuclear disaster, which has brought contamination outside the bounds set by policy, such as the Exclusion Zone. And even here, he leaks radiation.

When death finally comes to Ignatenko, he is not treated as a corpse. The radioactive body is expelled from our set social systems because it contaminates. Medicine cannot 'cure' it; mortuary practices cannot contain it. His bodily breakdown exceeds normative narrative. Even the hospital struggles to deal with him; his body must be contained behind plastic, nurses are wearing lead-clad uniforms to attend to him, and when finally, he dies, his coffin is sealed in lead and buried beneath a thick layer of concrete.¹²⁸ Ignatenko exceeds every expectation, since he is no longer a man, not yet a corpse – he is a biohazard, an ecological threat to boundaries. His body, like Kristeva's corpse, is 'a cesspool' – not because he is dirty, but because he unmasks the horror beneath both the nuclear imaginary and the real.¹²⁹ In Alexievich's account,

Lyudmilla remembered that 'I didn't leave him anymore after that. I escorted him all the way to the grave site. Although the thing I remember isn't the grave, it's the plastic bag. That bag.'¹³⁰

By perceiving Ignatenko's body as abject, a site of decay and ecological horror, the viewer is, in a sense, invited to turn away, to classify him as something beyond human. Although the series tried to resist goriness, as Mazin said, the visual language of Ignatenko's transformation mirrors real-world tendencies to ignore or silence those suffering from long-term radiation exposure, whether survivors, liquidators, or entire contaminated populations. Exhibiting Ignatenko's radioactive body shatters the comforting illusion of a safe, controlled nuclear present. But because the image is staged in the frame of a TV series, it can also be metabolised as a spectacle, an extremis we survive by watching. In that sense, the scene participates in a baroque logic in which catastrophe is rendered visible by excess, and where witnessing risks becoming a mode of entertainment rather than a demand for response. Thus, by containing the irrationality of the radioactive body within the recognisable frame of the extreme or exaggerated representation, the scene raises a troubling question: does such visibility ultimately serve the logic of the nuclear renaissance, where disaster can be safely assigned to the historical past?

Abjection, in this context, becomes a precondition for social and political violence. Once a body is rendered monstrous or disgusting, it becomes easier to ignore, contain, or dispose of, both literally and symbolically. As the literary scholar Sara Ahmed writes: 'The object that makes us "sick to the stomach" is a substitute for the border itself, an act of substitution that protects the subject from all that is "not it".'¹³¹ The abject displaces anxiety about contamination onto the visible figure of the radioactive body. In other words, disgust becomes a defence mechanism that can dismiss what threatens it.

To return to the glow, consider how Ignatenko's irradiated body is illuminated by the hospital's fluorescent lighting. It casts a sickly light over the sterile hospital setting that one would expect to be white. His skin glistens; it is glowing as it comes apart, as if revealing the nuclear from within the flesh. The glow here is inseparable from abjection. It *seduces* the viewer visually, even as it repels. In this way Mazin may be right: there is a tension that carries the risk of particularisation, by numbing the viewer with too much visual information, turning it into gore.¹³² Or, in a baroque staging of light, it overwhelms the senses to the point where it makes us more prone to remember that the disaster is dramatised for our sake.

The glowing radioactive body could therefore be read as a form of evidence: a visual marker that insists on the disaster's reality. However, its very extremity also makes it vulnerable to dismissal as implausible or merely spectacular. It is both too much and not

enough; too contaminated to identify with yet not clean enough to be safely assimilated. Thus the glow stages the fragility of representation and the deeply political function of disgust. Ignatenko's condition resists glorification. Despite his efforts as a liquidator, we are not shown heroism, but horror and tragedy. His body is a testimony to technological mishaps and state secrecy, in the shape of the grotesque and unwanted.¹³³ He is the condition of nuclear disaster, hidden away in a hospital room. In that sense, it is as much the excess of bodily discretion that is baroque as the situation.

The cruel twist is that the glow secures legibility by re-objectifying what is fundamentally abject. By translating diffuse contamination into a readable visual cue – the green grading of the scene – it produces a trace of the fabulous, the mediated myth that becomes sublime via the distance of visual representation (Chapter 3).

Figure 47
Shadow graffiti in the Chornobyl
Exclusion Zone, part of a larger
collection in the same style, and
likely those that inspired
TheFarm51.
Courtesy of Suzanne Easton/
'Meandering Wild'.



Figure 48
Promotional image of the monster
Feral Chernohost in Chernobylite,
2021. Courtesy of TheFarm51.



The fabulous is produced by the glow, seizes the viewer's attention before the meaning is lost in the recognition, and turns it. Ignatenko's body becomes bearable to the gaze because his suffering is converted into an aesthetic metaphor, which can be consumed, contained, and set aside. As if his body was never really real, but rather a film that can be turned off or a painting that was just another piece of fan art.

PROCESSING THE SHADOW MONSTERS' SILHOUETTES

While the intimate realism of HBO's *Chernobyl* confronts viewers with the radioactive body, the video game *Chernobylite* achieves a similar sense of bodily unease but by different means. Decamous might classify its aesthetic as an 'extreme mediation' of the aftermath of Chornobyl.¹³⁴ Yet the game simultaneously roots its fiction in a hyperrealistic rendering of the Zone using 3D-scanning technology (Chapter 3). Consequently, while the Zone itself is recreated with documentary precision, its terrain is populated with monsters that bear little to no resemblance to Vasily Ignatenko's radioactive body. The result is a tension between the photorealistic landscape and the overtly fantastic creatures, which drives the player towards a type of abjection that is very different from the one experienced in *Chernobyl*.

In *Chernobylite*, the radioactive bodies are not only deformed or burned; they have metamorphosed into monsters that haunt the player's path. Some move with terrifying speed like predatory animals, while others shuffle along like ordinary humans. A few appear animated in a disjointed manner, evoking the eerie feeling of a stop-motion animation gone wrong. These creatures are referred to as Shadows or Chernohost, which implicitly suggests that they are the reflection of something else – something which I, as a player and researcher, interpret as human.

The developers, TheFarm51, have said the creatures were inspired by a piece of graffiti art in the real Zone (Fig. 47). It appears in the in-game area known as Moscow Eye, where it has an almost mythical presence – like encountering cave paintings from a vanished culture, it serves as both warning and evidence. On the internet forum Reddit, TheFarm51 team writes:

The living shadow motif is known in virtually every culture and is due to imperfections in the interpretation of the image of our brain: when we are tired, it is quite dark, we may think that we can see a character's movement that looks like a 'shadow', or something has moved on the edge of our eyesight.¹³⁵

The fleeting, half-perceived thing which blurs reality and imagination resembles Freud's uncanny.¹³⁶ The developers wanted to preserve that elusive quality, but the game engine could not

support a creature that was truly 'formless'.¹³⁷ They therefore settled on the tangible Shadow model (Fig. 49), a compromise that I still think hints at something just beyond clear sight by its odd movements. The other monster, the Chernohost (Fig. 48), resembles the Shadow and graffiti in its colours and basic human likeness. However, unlike the Shadow, its body evokes a disintegrating human form, closer to the descriptions of the Chernobyl firefighters in the late stages of ARS. Its skin appears thin and burned, yet beneath it the same green glow pulses through the body. Clothed in rags, the Chernohost's distinctly human ribcage protrudes from its decaying flesh (Figures 48 & 50).



Figure 49 Two dead Shadow monsters, screenshot from Chernobylite.

The game never clarifies whether every monster is born entirely from chernobylite, the mysterious substance whose crystal-like formations litter the landscape, or is a human transformed by it. Some encounters in the game seem to imply the latter. Sometimes a blow from a Shadow inflicts radiation damage on the avatar, sometimes not. Visually, however, they remain stubbornly anthropoid: they walk upright, swing their arms, and turn their faces towards you. They recall Frankenstein's monster, a technological experiment run amok, in which, much like Anders's Promethean discrepancy, there is a distance between what we can create and what we can imagine.¹³⁸

But importantly, most of the monsters' flesh glows. A slow emerald fire courses through exposed muscle like an anatomical *écorché* lit from within. Where Kristeva would expect blood, pus, or sores, the monsters exude pure radiance. Rather than a natural side-effect of fallout, or a slow grimy light of a hospital room, the

fluorescence is a curated choice that turns radiation's invisibility into spectacle, making the Shadow a literal beacon in the dark.

For all their otherworldly sheen, the Shadows stay recognisably humanoid, occupying an uneasy space between the classic visual interpretation of radiation victim and full-blown alien. I read their design as a quiet homage to those permanently altered by real exposure – the chernobylite now haunting the Zone in the distorted silhouettes of the people it expelled. Yet this may also be the final othering: by following abjection's rules so closely, we move from rejecting the people who disturb us to gazing at creatures that feel wholly separate from us.¹³⁹ We should perhaps ask if such images



Figure 50 Attack by a Chernohost, screenshot from Chernobylite.

would have been tolerated in the disaster's immediate aftermath, or suppressed, as in the case of the manga *Oishinbo*, which was not tolerated because it depicted someone suffering a nosebleed after eating contaminated food from Fukushima. An answer will have to wait on a more detailed investigation of the Soviet-era media, censorship, and public sentiment, but there are hints about how the disaster's visibility was processed in visual discourse almost immediately after it happened. One such example appeared in a Usenet conversation among scientists in the days following the disaster. The language was darkly comic and already rooted in visual caricature, with victims referred to as glowing:

How about [the consequences of the disaster are]:

- (1) Funny-looking babies
- (2) No need for a bed-lamp (your head's glowing)
- (3) Etc. etc. (-;'¹⁴⁰

Even in this early, informal exchange, we see that radiation victims were imagined in terms of exaggeration and spectacle, not empathy or concern. While the Usenet conversation ended abruptly after this final comment, it is plain that the radioactive body was referred to as deformed, luminous, and vaguely humorous, in an early foreshadowing of the kind of grotesque iconography that would later populate visual representations of Chornobyl. This suggests that from a Western perspective, Chornobyl's victims were already entering the realm of fiction and myth. Soviet bodies were mutated and shiny, not only in speculative fiction, but also circulating among scientists as jokes that echoed those from an interminable Cold War.¹⁴¹

The glow of the Shadows draws us in, yet is repellent once we recognise it as a sign of corruption and decay. In this way, the glow stages what Kristeva describes as the simultaneous 'attraction and revulsion' that defines the abject, forcing Chernobylite's player to confront the fragility of their own flesh.¹⁴² This mechanism resembles the sublime, and both is about the confrontation with uncontrollable experiences, however, the abject differs in its denial of the similarity to the self. In abjection, what we perceive is too terrible to be truly meaningful, and therefore we must get rid of it.¹⁴³

In Chernobylite, the luminosity of the radioactive body turns into a living toxic mineral that visually matches its environment. The literary scholar Leila Michelle Vaziri, writing on the Capitalocene in contemporary eco drama, argues that such images of abjection can cheapen our relation to the environment by turning ecological trauma into spectacle.¹⁴⁴ Eco-abjection, she warns, risks becoming a sell-out commodity, a horror we purchase for entertainment value, rather than a pathway to understanding how the world and its ecology work together.¹⁴⁵ It brings to mind Decamou's statement about how visual representations of Chornobyl veers into 'cheap special effects' that elicits a 'charm' over the genre.¹⁴⁶ And it raises the question of whether the body's visual continuity with its radioactive environment makes nuclear horror more legible, or whether it distances that horror from real bodily suffering. In many ways, this 'poetic truth' of history still elicits engagement with the radioactive body, instead the question is at what level that engagement can remain tied to real, individual suffering rather than to the body's absorption into the environment.

This 'eco-abjection' is mirrored in the objective of the game, which, aside from exploring the Zone and solving the mystery of chernobylite, is to shoot and kill the Shadows and Chernohost when they interfere with the game's missions. To 'kill' the radioactive body becomes a type of ultimate expulsion, as a clear-cut separation that places the observers above the monsters in terms of agency, even when the creatures move like us and vaguely resembles us. In this act, the player is also permitted to forget that

bodily consequences, though neither monstrous nor glowing, did befall the victims of Chornobyl. What is presented to us is more palatable than the invisible latency – and it holds our attention. As with Vasily Ignatenko's body, the glow in the Chernobylite monsters seemingly re-objectifies the body through instant visualisation, which allows us to process and leave it behind once and for all. The real question, though, is whether we really can do so, with the actual victims of Chornobyl in the back of our minds.

SILHOUETTE OF EVIDENCE

According to official statements, fewer than 50 deaths were directly attributed to the Chornobyl disaster, including first responders such as Vasily Ignatenko.¹⁴⁷ However, stigmatisation, forced relocations, accusations of radiophobia, and state-sanctioned solutions and narratives have reduced the voices of the thousands affected by cancer, chronic illness, and genetic mutation to a whisper.¹⁴⁸ The death toll is often estimated to be a great deal higher by some organisations, including Greenpeace, who have argued for a figure as high as 200,000.¹⁴⁹ The economic collapse in the late and post-Soviet era have led to fragmented research and limited access to health-care, producing uneven documentation and inadequate long-term follow-up.¹⁵⁰ In this assemblage of conflicting information, a simplified story could take prevail: that Chornobyl caused a small number of immediate deaths and a few cases of cancers later, and that the Zone, despite its contamination, now thrives ecologically.

Popular visual representations of the radioactive body risk reinforcing this simplification by offering a limited set of images that can stand in for victims, and by relying on tropes such as the glow they can be dismissed as fiction or an exaggeration of reality. Sontag cautions that photographs of suffering can objectify their subjects, because the images can be kept and revisited.¹⁵¹ While *Chernobyl* and Chernobylite differ formally from photography, they can still function as repeatable visual evidence within popular memory. Zander argues that even if a historical event has been popularised or mediated poetically, it can still carry and create meaning and understanding that circles back to the historical event.¹⁵² At the same time, Sontag remains wary of the aesthetic of such images, since their 'beauty' can make pain easier to consume and set aside.¹⁵³ The Hiroshima Maidens come to mind here, where injured bodies were reframed in a narrative of benevolence, but also vanity, designed to allay American guilt about the atomic bombings. However, the representations of radioactive bodies in the context of Chornobyl, operate differently. They are rarely apologetic, and they do not primarily aim to beautify the radioactive body. Instead, they draw viewers into the raw bodily materiality of nuclear disaster, and presents a sensationalised image. In this

way, their representations become silhouettes of the real-world victims whose stories are far from over.

At the same time, HBO's depiction of Ignatenko is especially interesting. While Mazin did not strive to turn his image into gore but rather that of evidence, it aimed to portray him as close to reality as possible, as can be seen in the Soviet Ministry of Defence instructional film on ARS that documented first responders after the disaster.¹⁵⁴ Yet when such clinical images are remediated into a TV drama, the purpose changes: evidence becomes narrative spectacle, and the viewer becomes a (sometimes unknowing) witness to the sensationalising of suffering. This raises an ethical problem that resonates with Sontag's warnings about images of suffering. Even when an image is grounded in reality, when it circulates, it can turn pain into something that can be consumed and moved on from. The difference is not only that HBO names and individualises what the instructional film leaves anonymous, but that it turns someone's tragedy into culturally sanctioned evidence. In this way, one can ask whether the abjection of such radioactive bodies is not part of taking their agency away from them, rather than plainly dismissing it.

Under the Press Code for Japan, images and accounts of atomic suffering were shaped by censorship. In Chornobyl's late-Soviet context, documentation was shaped by secrecy and the preference for heroic narratives over ones of weakness or failure.¹⁵⁵ In contemporary popular culture, the press code persists as a curatorial practice: what is shown, what is excluded, and how looking is organised. This becomes even more pronounced in fictions such as Chernobylite, which translate exposure into instantly legible bodies. These figures can be evaded, fought, and defeated. Realist and monstrous depictions may seem to differ, but both rely on immediacy and closure: a film or episode only has a limited amount of time to convey its message, and those qualities sit uneasily with the latency and uncertainty of actual radioactive harm.

In many ways, the representations operate with a baroque logic: catastrophe is staged as excess, illuminated, absurd, and carefully composed so that it can be endured as an aesthetic event. The radioactive body becomes intimate without becoming dangerous, producing an encounter that feels like witnessing while preserving the viewer's safety on the other side of the screen. Yet the radioactive body is not simply an image of danger or a representation of nuclear aftermath. It is also a reminder that what is often framed as geographically, temporally and politically distant remains materially and culturally present. Abjection reinforces this proximity even as it seeks to expel it. The persistence of the glow in nuclear visual culture marks it as an unstable attempt at containment, for these bodies hover between scientific reality and cultural imagination. It is never fully fictional. They can be read as

anticipations of a possible future and, at the same time, dismissed as too fantastical to register as real, leaving them suspended apart from the latent suffering of actual victims.

At the firefighters' monument inside the Exclusion Zone (Fig. 51), the bodies are not distorted. They are shown in motion, running towards the power station, while the two concrete pillars rising to the heavens, the gap between them changing colour with the sky in a quiet nod to the radiation that escaped the reactor and cannot be seen. Even here, they run towards the burning bitumen. However, the monument, *Those Who Saved the World*, a quiet homage to their unwitting sacrifice, stands inside the Zone, far from public gaze, saved for the privileged few who get to visit the Zone. Everyone else must be content with the culturally sanctioned silhouette.

Next double page:
Figure 51
Monument honouring the first responders who gave their lives on 26 April 1986, *Those Who Saved the World*, outside Fire Station 3 in Chornobyl, 2021. Courtesy of Carsten Olsen.



ТИМ, ХТО
ВРЯТУВАВ
СВІТ

ОМОГТИ



If only I were one of you,
 I'd no longer be ashamed;
 I'd happily learn to enjoy,
 My eternal return.
 I'd run on an appointed course,
 Attuned to machines,
 I'd do the same as yesterday,
 Tomorrow the same again.
 No one would know, who I am,
 No one would find out either,
 Who, in dark beginnings,
 My parents were.
 No one would know how I lay small in mother's lap,
 After swimming like a fish,
 That as a bloody lump of clay,
 My life on earth began.
 If only I'd have glowed in the oven,
 And been made by things,
 So as to spring among your ranks,
 With an armour plated disposition.

Günther Anders, 'On Promethean Shame', 1956.¹

When two men sold scrap metal from a nearby abandoned radio-therapy clinic in Goiânia, Brazil, in 1987, the scrapyards owner Devair Alves Ferreira thought nothing of it. But as he examined the pieces, he noticed a round metal case with a glass pane through which something blue shone unlike anything he had seen before. He leaned closer, mesmerised. Whatever it was, it seemed valuable, perhaps supernatural. He poked a hole in the little window and scooped out some of the blue powder.² In the following days, Ferreira invited friends, family, and neighbours to witness the glow. They gathered around the blue powder as if around a relic. Some touched it, some painted their skin with it, and a few took a little with them to consecrate their own homes with its unearthly light.³

Meanwhile, the two men who had first sold Ferreira the scrap fell ill. One had several fingers amputated, the other an arm. At first, their symptoms – nausea, fever, swelling – were mistaken for food poisoning or an allergic reaction.⁴ But as more people in Goiânia began to sicken, doctors suspected something else, perhaps a tropical disease, something contagious and unseen.

It was not until 15 days later that one of Ferreira's guests brought a small sample of the powder to a local clinic, telling the doctor that they suspected it might be the source of their sickness.⁵ Radiation protection officials were called in and soon realised that large areas of Goiânia had been contaminated with radioactivity. The scrap metal turned out to be a teletherapy machine, and the blue powder, its source material, caesium-137.⁶

Previous page:
 Figure 52
 Trefoil sign within the Chernobyl
 Exclusion Zone, 2020. Courtesy of
 Raspopova Marina.



Figure 53
 The site of the Goiânia
 accident, where the houses
 had been demolished as part
 of the clean-up, 2010. Courtesy
 of Adelano Lázaro.

In the days that followed, several houses were demolished and their remains buried beneath concrete.⁷ Streets were cordoned off, topsoil removed, and 112,000 people were monitored for contamination.⁸ Four people died, and 249 more had been contaminated either internally or externally.⁹ What had begun as an act of curiosity, of wonder about the glow, had quietly turned into one of the most severe radiological accidents in history. Here, unlike most radioactive disasters, the glow was real, not metaphorical or imagined. A literal blue shimmer briefly allowed the invisible to be materialised. Yet it was precisely this visibility that misled the gaze.

Anders's poem 'On Promethean Shame' is close at hand.¹⁰ Promethean shame is the self-awareness that we, as humans, understand that we are fragile, imperfect, and painfully conscious of our own inadequacies in light of the technology we have built.¹¹ 'If only I had glowed in the oven', Anders writes, imagining the human voice that envies the machine; a being, not born but manufactured. The glow, in the poem, becomes the escape of the messiness of organic life that transcends the vulnerability of birth and decay. As if being one with technology is the real escape, because then, nothing would touch us. But the blue radiance of Goiânia is as much about a real-life tragedy as it is about the moment's wonder that preceded it – the brief time in which radiation appeared as a marvel, akin to the Radium Dancer's show in the glow's infancy. The shame perhaps does not arise from ignorance, but from recognition: from realising that what we loved, what we made, what we found beautiful was also what undid us.

I am again reminded of Marie Curie's words about radium: 'These gleamings, which seemed suspended in darkness, stirred us with ever new emotion and enchantment'.¹² She captures the

wonder that drew Ferreira and his friends and family to that blue glow. Once again, the glow appears as something beyond its material reality, as if sacral. We quiver before it, and it enchants us with promises of what it might do, as if a hierophany that turns our mundane life into something spectacular, in turn inviting us to approach what we cannot fully comprehend.¹³ The glow continues to give form to what cannot otherwise be grasped; it fills in where imagination falters, offering a visible substitute for an invisible danger. While the glow remains fabulous in representation, in Goiânia it was real. This brings me back to the question of (in)visible matters – radioactivity, landscape, bodies, time – all of which matter and yet remain hidden, even as they are paradoxically visualised in popular representations.

In writing this book, I often found myself grappling with the absurdities of nuclear culture and its multiplicity of contradictions. Although an academic book, many of the ideas that emerged in my research did not fit neatly into a conventional structure, and for that reason I have chosen to include this discussion as a kind of scholarly reflection or necessary space in which to articulate some of the questions that have shaped my thinking, set in the framework of (in)visible matters: how and why Western visual nuclear culture appears as it does, and what it means today. In short, why do (in)visible matters matter?

My main question is how visual representations of Chernobyl, in its various mediations, act as visual and conceptual metaphors at the intersection of risk and aesthetic sensationalism. As my findings show, fascination and fear are inseparable in representations of the nuclear; indeed, sometimes they are even actively sought out. The glow becomes a shorthand for scientific realism and imagination, while Chernobyl has evolved into a metaphor for technological failure, ecological revival, and the ambivalent modern conviction that life goes on regardless.

Imaginariness and visibility have always been closely intertwined with the nuclear. Anders argues that we must exercise our imaginations to make the nuclear threat more real, to translate the invisible into something perceptible (Chapter 2).¹⁴ Sontag, meanwhile, suggests that we need images of disaster to accustom ourselves psychologically to the idea of it, perhaps even becoming indifferent towards it.¹⁵ Both Anders and Sontag, in different ways, point to the contradiction of nuclear visibility: to see and imagine is both to understand and to distance ourselves from what we are perceiving.

Anders, though, does not seek any such distance. He insists that every nuclear decision – be it political, technological, or cultural – affects not only our environment but our continued existence, and that indifference towards nuclear matters is therefore inexcusable.¹⁶ In his *Ten Theses on Chernobyl*, he begins with: ‘Chernobyl is everywhere’. By this, Anders means that the real

danger of such a disaster lies in its silent entanglement with the everyday, rather than simply the radioactive fallout crossing national borders.¹⁷ Even a single nuclear accident or attack, he argues, has the potential to alter ecosystems, geosystems, social structures, and the political order.¹⁸ This does not necessarily mean total nuclear holocaust, rather it exposes how fragile our systems are to the destructive potential of nuclear technologies. For Anders, nuclear power stations are, as Jacobs also suggests, ‘born violent’.¹⁹ One cannot fully separate weapons from peaceful energy production, because even if all nuclear weapons were dismantled, the capacity to produce them would remain.²⁰ Today has taken a fresh turn, as nuclear power stations themselves have been weaponised either by intention or accident, such as the Zaporizhzhia nuclear power station in Ukraine.²¹ In many ways, it harks back to something Anders said in an interview in 1979:

Our perception is not equal to what we produce: how harmless the containers of Zyklon B gas seem – I saw them in Auschwitz – with which millions of men were destroyed! And how peaceful an atomic reactor looks with its domed roof!²²

I think that the aftermath of the Chernobyl disaster makes Anders’s reflections painfully relevant. The explosion of Reactor 4 did not merely contaminate land and bodies: it reshaped policies and perceptions across entire continents.²³ Its consequences rippled outwards. In Sweden, for example, it was made illegal to gather mushrooms and or eat game hunted in the region of Norrland because of the elevated levels of caesium-137.²⁴ Meanwhile, in Belarus and Ukraine, foraging and small-scale farming also became forbidden and discouraged, though they continued despite the risk, driven by poverty and necessity.²⁵

One of the most telling responses, however, was the political and bureaucratic redefinition of what counts as safe. In the Soviet Union, rather than lowering contamination, officials simply raised permissible levels of radioactivity in food and people, thereby redefining some contamination as normal.²⁶ This recalibration of danger exemplifies Anders’s first thesis:

No one is capable of constantly being aware of this invisibility. Such an achievement seems to be beyond our psychological capacity. If we want to survive, we must try to understand the invisible as if we had it right in front of us, and educate our fellow men with respect to this understanding and fear that it implies. Under no circumstances do we have the right to convince ourselves or anyone else that indifference constitutes proof of independence. Do not abandon your reason, do not opt for indifference just because it would be easier for you, or

because the irradiated dish that they offer you seems at first sight to be more tasty.²⁷

Visibility, in this context, is not just optical, it is epistemic. It concerns knowledge, critical thinking, and the ability to recognise danger even when its effects are not immediately perceptible. If one follows Anders's reasoning, humanity is fundamentally unable to fathom the invisible; this incapacity makes it easy to accept official assurances and to trust what is presented as truth. In many ways, it is similar to how a simplified story of Chornobyl is grasped for, rather than trying to grasp its ripple effects. But to resist this type of 'lazy' passivity, Anders urges us to cultivate an imagination strong enough to grasp the unseen, to give form to the invisible, and therefore make it accountable.²⁸

Anders's 'irradiated dish' becomes a fitting metaphor for today's media landscape: a warning against the temptation to consume information without reflection because it appears palatable or 'dazzling'. As I have already argued, because we now live in an age of deepfakes, AI-generated content, and algorithmic acceleration, it is harder to distinguish fact from fabrication. Today, we have to be even more critical about things that are not directly visible. The Goiânia glow, both material and metaphorical, captures this paradox perfectly; it illuminates just enough to entice us yet blinds us to the slow, systemic violence beneath its shimmer.²⁹ And to see its ripple effects, we must begin by asking what the representations actually represent. Who are they representing and what does their existence in the mediated landscape really mean?

One place where the dissonant information is particularly evident is in the nuclear renaissance. In art history, the Renaissance marks the rebirth of classical antiquity, but the nuclear renaissance seems rather to be marked by blissful ignorance or disregard of nuclear history.³⁰ Ironically, the phrase first gained traction in the 1980s, a decade defined not by nuclear optimism but by disaster and decommissioning. Back then, the nuclear renaissance was imagined as a return to a world without reactors.³¹ Today, it has come to mean quite the opposite: a future in which nuclear power is not only 'viable' but essential, even desirable, such as in the Atomic Age.³²

Of the representations I have discussed in this book, I wonder if they do not somehow emulate what Anders described as the 'delicious irradiated dish'. In an earlier text, Anders stipulates that art has a privileged vantage point on what otherwise exceeds ordinary perception.³³ But today 'imagination' might be more productively approached through nuclear imaginaries in the broader sense, where popular representations circulate in daily life.

Writing after the Cuban Missile Crisis in 1962, Sontag suggests that we need images of disaster because they can help us

achieve psychological distance from the real possibility of them happening.³⁴ For example, the 1964 cult film *Dr Strangelove*, a tragicomic satire of an accidental nuclear war, shows how such distance can be generated with humour.³⁵ However, this distancing can also function as an anaesthetic: repeated exposure may cultivate a cynical ease in relation to the prospect of annihilation. Read alongside the contemporary visual representations of Chornobyl, this raises a question for the present nuclear renaissance. Do these images help us think about nuclear disaster, or do they help us live with its potentiality by making it feel familiar?

It is true that the visual culture of Chornobyl has evolved from censorship to commodification.³⁶ The Zone has become a source of aesthetic experience – even from a distance. There are Chornobyl-themed video games, scented humidifiers shaped like the exploded reactor, and Instagram-able Soviet ruins once populated by tourists. But without its radiation, the Zone may just become a type of ruin pornography.³⁷ In order not to lose Chornobyl's defining character, these representations make use of the glow, whether in landscapes or in the radioactive body. The glow really solidifies the space as something extraordinary, exactly like Jacobs' concept of the cultural talisman.³⁸ This brings to mind the case of the resettler Ivan Ivanovic and his T-shirt about metaphorically glowing because of his former radiation diet (Chapter 2).³⁹ Interestingly, in the same video, as with the T-shirt, Ivanovic asserts that he can feel radiation, and he is not alone.⁴⁰ The photographer Aleksander Kupny, who once stood above the Elephant's Foot to capture its existence, insists that radiation in real life is not entirely imperceptible:

The most common truism about radiation is that humans cannot sense it, ... but that is not true. With a dosimeter, you can hear radiation. With a camera, you can see it. If the levels are high enough, you can taste it on your tongue. It tastes metallic.⁴¹

After four decades spent documenting the Exclusion Zone, Kupny claims that he, too, can sense decaying atoms.⁴² Even though neither Kupny nor Ivanovic describe 'sensing' radioactivity, it suggests that radioactivity can be a visceral experience; you feel it in your gut. It can seemingly be triggered by other environmental factors in areas known to be radioactive, suggesting that anything outside the visual norm might provoke this response. It is similar to how a small child, on realising they have hurt themselves, may suddenly feel pain they had not previously registered, or that drinking hot chocolate out of an orange cup makes it taste better.⁴³ Most people will never have felt radioactivity, nor have they been in a place where it lingers at dangerous levels, but at the same time I do not want to dismiss the experiences of those directly affected, because I can imagine their gut feeling.

In 2022, during a visit to the Forsmark nuclear power station north of Stockholm, I found myself standing at a small orange window. The glass was so thick that it distorted my view. I saw a room filled with a tangle of pipes, which my guide explained was the most radioactive area in the plant. Instantly, I felt uneasy. Was I too close to the glass? Was this barrier sufficient to protect me? I could not help but wonder whether staring too long could burn my eyes, like Thomas Edison during his fluoroscope experiments.⁴⁴ This moment made me reflect on the unsettling reality of radioactivity's invisibility. Although I was physically safe, the knowledge of what lay behind that glass brick was enough to make me feel vulnerable. In some ways, this made the weight of knowledge, fear, and the power of imagination, as well as the radioactivity, disturbingly tangible, amplifying the sense of threat even when there was none. My experience was sublime, not fabulously so, but sublime nonetheless and the closest I can come to what some tourists may feel when visiting the Chernobyl Zone.⁴⁵

Kate Brown noted in 2017 that the Ukrainians were far less concerned about Chernobyl and the Exclusion Zone than the more immediate threat of incursions from their Russian neighbour. She observed that:

Anxieties about invisible, intangible radiation were luxuries only foreigners could afford. That's what foreigners do: they go to the Chernobyl Zone to imagine disasters. They pay money to do that.⁴⁶

Brown's remark magnifies my own sense of unease, exposing it as a privileged fear, one that feels shamefully disconnected from the lived realities of those for whom radioactivity is a constant, unavoidable presence. It also reminds me that, while fear and unease may be common gut reactions among Westerners, the visceral experiences of radioactivity felt by Ivanovic and Kupny are fundamentally different. My fear is abstract, a luxury of distance and ignorance, while theirs is shaped by a relentless normalcy I can never truly comprehend.

Yet it is precisely from that distance that Chernobyl has become so compelling. The site now functions as a visual fantasy, a place where tourists can flirt with danger, where games such as *Chernobylite* and *Stalker 2* simulate radioactive horror from the comfort of our homes. It is a privileged position that allows the viewer to make their own decisions in a space that is usually restricted by law, expense, and geographical distance. And this brings up a new question. What role do visual and popular representations of nuclear disaster play in the switch from reality to mediation? What if they do not simply expose the violence of nuclear disaster, but subtly mediate it as something fascinating,

even beautiful? Rather than conveying danger, perhaps these aesthetic experiences, the sublime or the abject, serve to distance us from the real consequences of nuclear catastrophe. In doing so, they may be complicit in Nixon's 'slow violence': the gradual, invisible forms of harm that seep into bodies, environments, and cultures, only to reveal themselves when it is too late.⁴⁷ Certainly, Nixon's theory is uncannily attuned to the temporal and corporeal realities of radioactivity, for as he writes:

Chemical and radiological violence, for example, is driven inward, somatised into cellular dramas of mutation that – particularly in the bodies of the poor – remain largely unobserved, undiagnosed, and untreated. From narrative perspective, such invisible, mutagenic theatre is slow paced and open ended, eluding the tidy closure, the containment, imposed by the visual orthodoxies of victory and defeat.⁴⁸

Nuclear exposure makes this abundantly clear. Just as radiation is invisible to the human senses, it is impossible to determine when and how much exposure one has had. Likewise, its damage does not develop immediately, but happens gradually in the shape of cancer or other illnesses.⁴⁹ By its very latency it fits neatly into Nixon's definition.

Yet, in the case of Chernobyl, something even larger is at work. There is a double latency: one in the biological exposure that precedes symptoms, but also one in our cultural reckoning with the aftermath. Contemporary visual representations of the Chernobyl disaster are thoroughly distanced from the event itself, both by time and its mediation. Perhaps we only ever 'see' the violence of nuclear disaster retroactively, or worse, only when a new one forces us to look again. Nixon, like Sontag, turns to cultural representations as a possible solution to understanding the consequences of slow violence, noting 'The representorial challenges are acute, requiring creative ways of drawing public attention to catastrophic acts that are low in instant spectacle but high in long-term effects'.⁵⁰ He continues by asking:

How can we turn the long emergencies of slow violence into stories dramatic enough to rouse public sentiment and warrant political intervention, these emergencies whose repercussions have given rise to some of the most critical challenges of our time?⁵¹

If violence must be 'dramatic enough' to be politically and publicly legible, I want to ask what forms of harm remain unaddressed, since they either resist dramatisation or are too easily dismissed



Figure 54
Sergei, Katya's partner, with vodka in
the village of Smolegov, Belarus,
inside the Chornobyl contaminated
area, 2009. Courtesy of Andrej
Kremenschouk.



Figure 55
Chernobylite promotional photo,
2021. Courtesy of TheFarm51.

as excessive? Slow violence risks being racked up to a scale so vast that it can easily resemble a 'nothing more than' logic of the imagination.

Imagination collapses before the representational mechanisms that seek to contain what exceeds them. In that collapse, the sublime, in all its affective force, risks masking rather than revealing slow violence. Nixon's appeal to representation and political intervention thus sits uneasily with a visual culture that has already extracted 'entertainment' value from Chornobyl. The issue is not just about making images strong enough to spark action, or dramatic enough to cause attention; it is also about dealing with the glowing and often indifferent systems of visibility by which those images circulate. In this sense, slow violence is not just physical; it is representational, too. It unfolds in images that aestheticise pain, sanitise or 'beautify' catastrophe, and create emotional distance. In this way, violence is sanitised, and the violence of these images lies in their subtlety, in how they make the unacceptable appear not only acceptable but appealing.

This brings me back to the rhetoric of the nuclear renaissance and its connection with visual culture. In art history, the Renaissance marked a rebirth of classical ideals; the baroque, by contrast, was the era of the misshapen pearl: excess, asymmetry, theatricality, and fascination with finding beauty in the imperfect.⁵² The nuclear renaissance is widely framed as a rational, forward-looking time: a technical solution for decarbonising societies.⁵³ Yet the visual and cultural narratives that accompany it are anything but serene. They are suffused with radioactive post-apocalyptic drama, decaying landscapes, and sick bodies.

Unlike the atomic age, when children received 'atomic rings' in their cereal boxes and Trinitite could be worn as jewellery, contemporary nuclear imagery rarely depicts optimism or progress. Instead, it tells stories of endurance: surviving with, or even within, radioactive environments. In this sense, our present moment is less a renaissance than a nuclear baroque. Its dream does not power straight ahead; it stalls, turns back, and stages elaborate scenes on the edge of environmental collapse. Its energy is sacrificial rather than emancipatory.

The nuclear baroque is also lavish, economically and culturally. Today, over a hundred different small modular reactors are under development worldwide.⁵⁴ Interest in nuclear engineering is resurgent, including in Sweden, where institutions such as the KTH Royal Institute of Technology now train engineers for a domestic industry once thought impossible.⁵⁵ Nuclear energy is bound to a flourishing economy of promise and prestige, even when the rest of society is slowly slipping into a recession. Culturally, imagery once hidden behind censorship is now endlessly reproduced. Tourism, video games, television, art, photography all attempt to make sense

of disasters in hindsight. What defines this moment is enthusiasm alongside a growing acceptance that we can live in conjunction with nuclear power, normalising its risks, and even its waste.

But if this is the case, then, does nuclear exceptionalism remain? As Hecht has argued, nuclear technologies have long been regarded as uniquely special, distinct from other industrial energies and risks.⁵⁶ But how exceptional can nuclear risk appear when set against the toxic blues and green pools of lithium extraction that pollute drinking water?⁵⁷ Or cargo ship fires are triggered by electric vehicle batteries, as happened in the summer of 2025?⁵⁸ I do not intend to play down the gravity of the nuclear by this comparison; however, there is a broader landscape of toxicity in various fields of renewable energy that demand their own invisible victims. In such a landscape, the nuclear claim to exceptionality becomes both politically useful and morally ambiguous, especially when nuclear power is framed as our saviour in the climate crisis, while, as Ramana, Nuttall, and others note, its real capacity to mitigate global emissions is limited, slow, and disproportionately costly.⁵⁹ Today, nuclear power accounts for roughly 10 per cent of global electricity production. However, when full life-cycle emissions are considered, that number drops closer to 4 per cent of the global energy grid.⁶⁰ According to the World Nuclear Association, reaching carbon neutrality by 2050 would require roughly tripling the world's nuclear capacity.⁶¹ But on a full life-cycle basis, tripling 4 per cent would only take it to 12 per cent, and to reach 30 per cent would require roughly 7.5 times today's capacity.

As I sit here writing there is a flyer on the desk in front of me: 'Nuclear Weapons – Never again!' Of course I do not want nuclear weapons, and of course I do not want them to be used. But almost immediately that feels naive. There is a small, insistent voice saying 'You're wrong'. Not in what you want, but in assuming that your wanting it will make a difference. 'Never again' is not secured by my conviction or my signature, but by infrastructures, institutions, and political decisions far beyond any one individual's reach.⁶² Moreover, these structures feel increasingly fragile. In recent months, the US has returned to publicly discussing the possibility of renewed nuclear weapons testing.⁶³ 'Can you hear me? Did you read this too?' The flyer is designed to give my moral compass a shake, but the history I have traced in these pages suggests that the problem is not a lack of well-informed individuals, but the ways in which nuclear violence is systematically normalised and sanitised by its aestheticisation.

According to Kate Brown, after the Chornobyl disaster the IAEA announced that there were no 'proven' illnesses attributed to the fallout, and that the biggest health consequence was psychological stress aka radiophobia.⁶⁴ But, as Brown shows, that relief was synthetically engineered: the IAEA's conclusion rested on a method

that counted only extreme, acute cases and the most optimistic ones, and disregarded the slow, dispersed suffering of villagers whose cancers, immune disorders, and chronic illnesses did not fit the narrow criteria of proof.⁶⁵ In one of her final chapters, Brown describes how, in light of the failing Soviet economy, officials tried to manage populations by reassuring people with bromides.⁶⁶ But scepticism was growing, and when official reassurances rang hollow, many Soviet citizens turned elsewhere. In search of remedies, many looked to the TV hypnotists Anatoly Kashpirovsky and Allan Chumak, media 'healers' who claimed that they could cure ailments through their broadcasts, offering solace for those desperate for relief.⁶⁷ Kashpirovsky even travelled to Slavutych to conduct mass healing rituals in person. For the authorities, this recourse to supernatural cures had an obvious advantage. As Brown notes, miracles were cheaper than medicine: televised salvation cost far less than acknowledging and treating widespread contamination.⁶⁸ The glow of the television screen became a new, domesticated kind of nuclear light. A psychic illumination synchronised with the hypnotist's gestures and projected onto already exposed bodies.

In his later years, Anders's rhetoric about nuclear issues turned radical. He refused any comfort in official reassurances that better management and improved technologies could ever make nuclear power truly safe.⁶⁹ For him, Chornobyl was the ultimate example of this betrayal of the public, because it was abstract threat made real.⁷⁰ Therefore, 'those who support nuclear power can be considered a source of terrorism', and therefore violence (even murder) against those could be considered rational.⁷¹ For my part, I find Anders's radicalism less interesting than his insistence on resisting hypnosis; his flat refusal to let reassurances, whether scientific or political, dull the recognition of the structural violence.⁷² In that sense, the flyer on my desk belongs to the same regime of representation as the IAEA report about Chornobyl. All of them promise, in different ways, that we can be reassured; that the danger can be contained, that 'never again' is a slogan we can trust will have effect; and that the past disaster can and should remain safely behind our screens, available for contemplation rather than action. The bodies that 'do not count', the illnesses that are not 'proven', the landscapes that remain quietly toxic despite liquidation, these are deliberate products of representational and institutional choices, rather than failures of information.

The nuclear disaster has become fabulous as an object of morbid fascination that can be aestheticised, fetishised, used up, and left behind. Images that should expose the inadequacy of our concepts have instead become mechanisms for containing what exceeds them. The abject reassures us by keeping horror at a safe and dismissible distance, attached to other bodies, other places.

The glow guides our attention but does not give us stable values. In its tangibility, it is painfully ambiguous.

To end, then, with 'Never again!' is to risk repeating the very gesture that I interrogate in this book: the gesture that turns an ongoing, sanitised violence into a closed chapter, a lesson supposedly learnt. Here, a more difficult task emerges, to ask what kinds of images and reading practices might refuse hypnosis without lapsing into magical thinking. How can we look at Chornobyl without relegating it to either a manageable spectacle or a distant, already 'resolved' tragedy? The responsibility of the image, and of those who produce and circulate it, is not only to 'dramatise' slow violence, but to resist the pressures that keep insisting, against all evidence, that the danger is minimal, that the worst is over, that 'never again' has already been secured. In our dawning nuclear baroque, visibility is staged through excess and the bombastic. The glow becomes a political aesthetic, rendering nuclear danger spectacular and seemingly unreal, as if something that can be dismissed as 'far from reality'. Yet this excess also holds a troubling power. Its lingering 'what if' may draw the viewer into a sublime encounter, only for rational distance to transform that encounter into reassurance. Disaster becomes history, history becomes evidence of progress, and new nuclear power appears safer because the past has supposedly been overcome.

(In)visible matters matter because they quietly shape what we are willing to see, fear, be fascinated by, and ignore. They function as anchors and guides as forms of energy and harm perceived as too abstract, too technical, or too overwhelming to grasp directly. In the event of a new disaster, we might just fall back on the representational tools and vocabularies we have already been given, often without our full awareness, to make sense of what is happening.⁷³ Many of us might like to think that we know better than those whose stories I have discussed here. I hope instead that you leave these pages with this caution: that even if the nuclear is difficult to understand, terrifying on some level, wonderful on another, and fantastically fascinating, its glow, however enchanting, demands critical attention and an ethical vigilance that does not end when the screen goes dark.

Next double page:
Figure 56
The Chornobyl Nuclear Power Plant
in 2019 with its new sarcophagus.
Courtesy of Carsten Olsen.



What of my research question? How *do* popular visual representations of nuclear disasters navigate ongoing risks and aesthetic sensationalism? And my six sub-questions. Why is radioactivity often depicted as glowing? What visual tropes distinguish images of radioactive landscapes from generic ruin imagery? How does the aesthetic experience of radioactivity, especially from a mediated distance, evoke a sublime experience? How is the radioactive body imagined, and how does its image shape cultural understandings of it? In what ways do these visual representations evoke our perception of nuclear risk? How does this frame the cultural memory of the event itself?

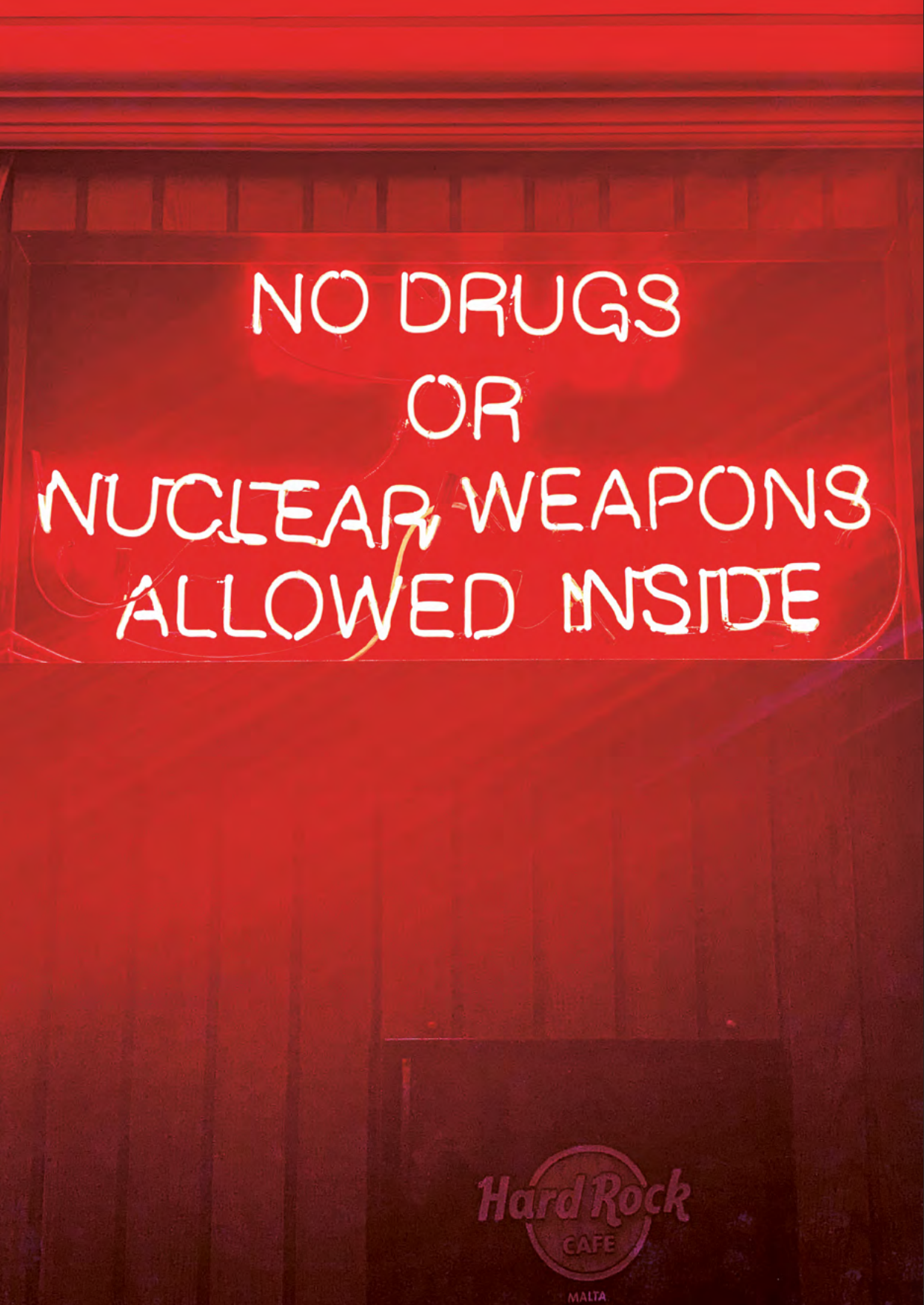
Popular visual representations of nuclear disaster navigate the tension between ongoing risks and aesthetic sensationalism by introducing the glow as a visual shorthand between scientific realism and cultural imagination. The glow has been tied to the visibility of radioactivity since the nineteenth century, and has developed iconologically through recurring tropes, symbols, and metaphors associated with the nuclear. As such, it functions as a visual marker that distinguishes radioactive landscapes from generic ruin imagery by rendering otherwise invisible matter visible, even when it is widely understood that this image is not empirically accurate.

The aesthetic experience of radioactive environments, particularly from a mediated distance where said landscape turns to landscape, can evoke a sublime experience. The glow signals danger, fascination, and distance, producing an experience in which the viewer is confronted with the feeling of risk through knowing while remaining safely removed from it. In this way, the sublime emerges through mediation, reinforcing the unsettling recognition that nuclear danger can never be fully contained or rendered completely harmless.

The radioactive body, meanwhile, cannot be sublime. Visual representations of the radioactive body tend to foreground visible excess such as mutation and deformity through the glow, while obscuring the latent, often unverifiable progression of radiation-related illness. As a result, radioactivity's bodily harm is simultaneously acknowledged and culturally dismissed by abjectionification,

which turns to objectification that structurally obscures the real-life consequences.

Through these representational strategies, visual depictions of nuclear disaster shape perceptions of nuclear risk by aestheticising danger and translating it into legible, consumable forms. Consequently, the cultural memory of nuclear disasters is formed through images that reassure as much as they warn, allowing disaster to remain safely positioned in the past or at a distance. And in turn, nuclear culture does not simply reflect nuclear reality, but actively participates in its construction.



NO DRUGS
OR
NUCLEAR WEAPONS
ALLOWED INSIDE

In many ways, I challenge the nuclear renaissance. I do not argue for or against nuclear power, because I do not see that as my role as a researcher, but I have tried to show how much of our nuclear legacy has left us with a toxic heritage and empty promises that often hinge on structural betrayal. Communities, ecologies, and even our atmosphere have all been polluted by their slow violence. I want to turn the conversation away from the larger umbrella of nuclear politics and technology, and towards the images that bombard us in our daily lives. But from the perspective of images, we are embraced by the subculture of the Renaissance in which glow, excess, and spectacle make our nuclear culture all the more baroque.

Today, much discussion of nuclear imaginaries and visuality is shaped around nuclear heritage, in terms of waste disposals and deposits, mainly in terms of its safe-keeping for future generations.¹ I have mentioned two in this study: the proposed warning message and the Ray Cat Solution, in which house cats will change colour in the presence of radioactivity. But there are others who believe that simply leaving the waste beneath the rock is the safest thing to do, to forget about it, and if it is ever found again, future generations may have developed the technology to understand its danger.² Robert Jacobs, however, suggests that the best way of communicating the danger of our nuclear heritage is simply to apologise for it.³ The act of humility will deter fascination.⁴

I am sympathetic to Jacobs' suggestion, but I also think that among the many ideas about how to communicate the danger of our toxic legacy, we may actually forget the very tool that the nuclear baroque uses so well. Images communicate. Vast digital landscapes, objects and radioactive bodies, popular culture, the glow – even word of mouth. They all contribute to keeping our toxic heritage alive. I do not think the legend of powerful nuclear technology will just disappear, and perhaps I am ignorant in my conviction, but I believe that nuclear culture does not simply reflect nuclear reality but actively builds it as long as we keep it on the tip of our tongues, as long as we keep reproducing, viewing, talking about, and circulating its image, even at the sacrifice of the Shiny, and then even if it does not glow, its legacy surely will.

Left page:
Figure 57
Neon sign at the Hard Rock
café in Malta, 2019. Courtesy
of Christopher Farrugia.

ILLUSTRATIONS AND COPYRIGHT ACKNOWLEDGEMENTS

Frontispiece Prypiat fairground, Ukraine, 2019. Courtesy of Yasemin Atalay. <https://unsplash.com/photos/abandoned-cars-inside-building-y6Tr4hsOD5w>

Frontispiece Chornobyl nuclear power plant, 26 April 1986. Source: IAEA Imagebank, used under CC BY-SA 2.0. <https://creativecommons.org/licenses/by-sa/2.0/deed.en>. No changes made.

Fig. 1 'Chernobyl disaster humidifier', 2026. Reproduced with permission from Alpaca3D/Nastya via Etsy. www.etsy.com/de-en/listing/1741704973/chernobyl-nuclear-power-plant-with-smoke

Fig. 2 Ionising particles in a cloud chamber, photographed in 1912 by Wilson. Source: C. T. R. Wilson, 'On an Expansion Apparatus for making Visible the Tracks of ionising Particles in Gases obtained by its Use', *Royal Society Proceedings A* 87 (1912), 355–371. Sourced from Wikimedia Commons, used under CC-BY-SA-4.0. <https://creativecommons.org/licenses/by-sa/4.0/deed.en>. No changes made.

Fig. 3 Prypiat residential area, 2021. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 4 Google Trends Statistic, 'Chernobyl' searches in Sweden, 2004–2026. Source: data from <https://trends.google.com/explore?q=chernobyl&date=all&geo=SE> processed by Kehrer Verlag.

Fig. 5 Alpaca3D/Nastya's father holding the Chornobyl humidifier, 2026. Courtesy of Nastya.

Fig. 6 'Radioactive' sign in Kyiv, 2021. Courtesy of Ana Petrenko. <https://unsplash.com/photos/yellowand>

Fig. 7 Uranium glassware in a shop window in New Orleans, 2021. Courtesy of Moa Petersén.

Fig. 8 The bones of Anna Bertha Röntgen's hand in an X-ray. Print by Wilhelm Röntgen, 1895. Reproduced with permission of the Wellcome Collection.

Fig. 9 The bones of the author's hand in an X-ray, 2023. Reproduced with permission of author and Region Skåne.

Fig. 10 Radium razor blades at Musée Curie, Paris, 2023. Authors own photograph.

Fig. 11 Batschari radium cigarettes, 2015. Source: Alf van Beem/tincollectors.nl. Used under CC0.

Fig. 12 Dial painters at work in the factory of the United States Radium Corporation in Orange, c.1922. public domain.

Fig. 13 The Gilbert U-238 Atomic Energy Laboratory. Source: Tiia Monto, 2015, used under CC BY-SA 3.0. <https://creativecommons.org/licenses/by-sa/3.0/deed.en>. No changes made.

Fig. 14 The Encore Test, Nevada desert, released 16 March 1953. Source: National Museum of the US Navy, public domain.

Fig. 15 Cherenkov radiation surrounding the advanced test reactors core, 2009. Source: Idaho National Laboratory's ATR, used under the CC BY-SA 2.0. <https://creativecommons.org/licenses/by-sa/2.0/deed.en>. No changes made.

Fig. 16 T-shirt with 'Enjoy Chornobyl – die later'. Souvenir from the official Chornobyl Shop. Reproduced with permission from Chornobyl Shop. <https://chornobyl.shop>

Fig. 17 131-Iodine isotope, as white spots on the grass leaves because radioactive fall-out particles stick to plants, 14 May 1986 (the dark round spot was a coin used to generate a contrast area). Source: ViolaceinB and Tyno Abdul-Redah, used under CC-BY-SA-4.0. <https://creativecommons.org/licenses/by-sa/4.0/deed.en>. No changes made.

Fig. 18 The area of 'Moscow Eye', showing remnants of infrastructure in the Zone, including the Duga Radar. A green mist is appearing form on the right, in Chernobylite, TheFarm51, 2024. Screenshot: author's own.

Fig. 19 Dolls placed in an abandoned building with working TV despite the lack of electricity, in Chernobylite, TheFarm51, 2024. Screenshot: author's own.

Fig. 20 Doctors' lab coats hanging abandoned in Prypiat Hospital no. 126, 2019. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 21 Inside Prypiat's residential area, in Chernobylite, TheFarm51, 2026. Screenshot: author's own.

Fig. 22 Théodore Géricault, *Le Radeau de la Méduse, The Raft of Medusa*. © GrandPalaisRmn (Musée du Louvre)/Michel Urtado.

Fig. 23 A barber's in Prypiat, 2021. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 24 Rassokha Field with abandoned trucks and helicopters used in the Chornobyl disaster clean-up, 15 October 2000. Laski Diffusion/Liaison via Getty Images.

Fig. 25 Bags of radioactive waste from the radioactive decontamination process, 23 May 2016, after the Fukushima disaster in Japan. Eric Lafforgue/Art in All of Us/Corbis via Getty Images.

Fig. 26 The Red Forest, 2021. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 27 Prypiat swimming pool Azure, 2019. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 28 Prypiat swimming pool Azure, in Chernobylite, TheFarm51, 2026. Screenshot: author's own.

Fig. 29 The Bridge of Death with the roof of the Chornobyl sarcophagus in the background, 2019. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 30 Inside an apartment in Prypiat, in Chernobylite, TheFarm51, 2026. Screenshot: author's own.

Fig. 31 Inside an apartment in Prypiat, 2019. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 32 Kindergarten in Kopachi, in Chernobylite, TheFarm51, 2025. Screenshot: author's own.

Fig. 33 Kindergarten in Kopachi, 2019. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 34 View from the top of an apartment complex in Prypiat, in Chernobylite, TheFarm51, 2025. Screenshot: author's own.

Fig. 35 View from the top of an apartment complex in Prypiat, 2019. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 36 In an abandoned shop in Prypiat, where scavengers have broken the televisions for the scrap metal to sell on the black market, 2021. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 37 A Geiger counter showing 22 mSv. The radiation marker can be seen by the health bar and the screen is beginning to show static, in Chernobylite, TheFarm51, 2025. Screenshot: author's own.

Fig. 38 In a space with high levels of radioactivity. The colours are muddled, the screen is shaking, and there is a static with visual snow, in Chernobylite, TheFarm51, 2025. Screenshot: author's own.

Fig. 39 Prypiat fairground, chernobylite crystals are growing on the abandoned dodgems, in Chernobylite, TheFarm51, 2024. Screenshot: author's own.

Fig. 40 Walking through the forest, in Chernobylite, TheFarm51, 2024. Screenshot: author's own.

Fig. 41 A Chernohost monster appearing from a rift in space–time in Kopachi, in Chernobylite, TheFarm51, 2024. Screenshot: author's own.

Fig. 42 Radioautograph of Eben Byers' teeth, glowing after 10 days of exposure, 1933. Courtesy of Alexander O. Gettler and Charles Norris, public domain.

Fig. 43 'Sjögrens Händer einige Monate vor seinem Tode', the hands of the radiologist Tage Sjögren a month before his death. Source: Elis Berven, 'Tage Sjögren in Memoriam', *Acta Radiologica* 20, 1939. Sourced from Taylor & Francis, 2026. Reprinted by permission of Informa UK Limited, trading as Taylor & Francis Group, <https://www.tandfonline.com>.

Fig. 44 A *hibakusha* with skin burned in a pattern corresponding to the dark portions of a kimono worn at the time of the explosion, 1945. Photographer unknown. US National Archives and Records Administration, public domain.

Fig. 45 Two Japanese women, Toyoko Minowa and Michiko Sako, examined by a plastic surgeon Dr Arthur Barsky and his student Eleanore Kupencow at Mount Sinai Hospital in New York, 1955. Credit: John Lindsay.

Fig. 46 Chornobyl liquidators, 1986. Ukrainian National Chornobyl Museum 20 April 2007 in Kyiv, Ukraine. Francois LOCHON/Gamma-Rapho via Getty Images.

Fig. 47 Shadow graffiti in the Chornobyl Exclusion Zone, part of a larger collection in the same style, and likely those that inspired TheFarm51. Courtesy of Suzanne Easton/'Meandering Wild'. <https://meanderingwild.com/street-art-prypiat/>

Fig. 48 Promotional image of the monster Feral Chernohost in Chernobylite, 2021. Source: TheFarm51. <https://thefarm51.com>

Fig. 49 Two dead Shadow monsters, in Chernobylite, TheFarm51, 2026. Screenshot: author's own.

Fig. 50 Attack by a Chernohost, in Chernobylite, TheFarm51, 2026. Screenshot: author's own.

Fig. 51 Monument honouring the first responders who gave their lives on 26 April 1986, *Those Who Saved the World*, outside Fire Station 3 in Chornobyl, 2021. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 52 Trefoil sign within the Chornobyl Exclusion Zone, 2020. Courtesy of Raspopova Marina. <https://unsplash.com/photos/yellow-andblack-star-signage-dFzV5iL7wy0>

Fig. 53 The site of the Goiânia accident, where the houses had been demolished as part of the clean-up, 2010. Adelano Lázaro, public domain.

Fig. 54 Sergei, Katya's partner, with vodka in the village of Smolegov, Belarus, inside the Chornobyl contaminated area, 2009. Courtesy of Andrej Krementschouk.

Fig. 55 Chernobylite promotional photo, 2021. Source: TheFarm51. <https://thefarm51.com>

Fig. 56 The Chornobyl Nuclear Power Plant in 2019 with its new sarcophagus. Courtesy of Carsten Olsen. <https://carsten-olsen.dk>

Fig. 57 Neon sign at the Hard Rock café in Malta, 2019. Courtesy of Christopher Farrugia. <https://unsplash.com/photos/no-drugs-or-nuclear-weapons-allowed-inside-neon-light-b1pgvBsp9HI>

NOTES

- 1 Kostin, *Chernobyl*, 8–9.
- 2 Ibid., 9. When I first presented this photograph to my publisher, they tried to tell me it was of low quality and could not be printed in the size I wanted. I thought it was funny, considering that this was exactly the point.
- 3 Plokhy, *Chernobyl*, 207–210, 216–219.
- 4 Alpaca3D, ‘Chernobyl Nuclear Power Plant’.
- 5 Ibid.
- 6 Ramana, *Nuclear is Not the Solution*, 62–63.
- 7 Martin, *Baroque*, 11.
- 8 Ibid., 11.
- 9 In the field of art history, the concept of the baroque as an era in time is highly disputed, and for many, it belongs to a sub-category of the Renaissance. I acknowledge this, but my intention with using the term is not one rooted in classical art history, but rather as a way to indicate a way of moving forward from, or alongside, what is called the ‘nuclear renaissance’.
- 10 ‘The Screaming Blue Messiahs, ‘Bikini Red’, *Bikini Red*, Elektra, 1987.
- 11 Martin, *Baroque*, 13.
- 12 Jorgensen, *Strange Glow*, 7–8, 33–37, 43–44.
- 13 Flakus, ‘Detecting and Measuring Ionizing Radiation’, 32, 34.
- 14 Hetherton, ‘How to Make Your Own Cloud Chamber’.
- 15 Boland, ‘Difference between Radiation and Radioactivity’.
- 16 Nuttall, *Nuclear Renaissance*, 3–4, 17–19.
- 17 Brown, *Manual for Survival*, 40–41.
- 18 Ibid., 304–305.
- 19 International Atomic Energy Agency (IAEA), ‘Update 17’.
- 20 Reuters, ‘Unprotected Russian Soldiers’.
- 21 Grossi, ‘Two Years of IAEA Continued Presence’.
- 22 See, for example, Waterhouse, ‘Zaporizhzhia Nuclear Workers’; Sokolski, ‘Zaporizhzhia’.
- 23 ‘The Book of Revelation 8:10–11.’
- 24 Higginbotham, *Midnight in Chernobyl*, 75–76.
- 25 Plokhy, *Chernobyl*, 82.
- 26 Ibid., 83–86.
- 27 Galindo, ‘What is Nuclear Energy?’.
- 28 Ibid.
- 29 Higginbotham, *Midnight in Chernobyl*, 60–63.
- 30 Ibid., 12.
- 31 Ibid., 20.
- 32 Ibid., 20.
- 33 Ibid., 12.
- 34 Plokhy, *Chernobyl*, 347.
- 35 Ibid., 347; Ramana, *Nuclear is Not the Solution*, 30.
- 36 Brown, *Manual for Survival*, 7; Plokhy, *Chernobyl*, 154.
- 37 Ibid., 154.
- 38 Ibid., 154.
- 39 Ibid., 191.
- 40 Ibid., 1–3.
- 41 Ibid., 16, 233–270.
- 42 Ibid., 233–270.
- 43 Higginbotham, *Midnight in Chernobyl*, 368–369.
- 44 Brown, *Manual for Survival*, 154–159, 165, 171–172.
- 45 Ibid., 155.
- 46 Ibid., 59.
- 47 Plokhy, *Chernobyl*, 249–253, 342, 345.
- 48 Plokhy, *Atoms and Ashes*, 223–224.
- 49 Ibid., 24.
- 50 Brown, *Manual for Survival*, 3–4.
- 51 Mairs & IAEA, ‘INES’.
- 52 Ibid., 3–4.
- 53 Ibid., 5.
- 54 Ramana, *Nuclear is Not the Solution*, 49.
- 55 Ibid., 21–22.
- 56 Herran, ‘From Military Surveillance to Citizen Counter-Expertise’, 142.
- 57 Ibid., 142.
- 58 Ibid., 142.
- 59 Nuttall, *Nuclear Renaissance*, 13; BBC, ‘Japan Confirms first Fukushima Worker Death’.
- 60 Jacobs, *Nuclear Bodies*, 101.
- 61 Ibid., 100–101.
- 62 Tokyo Electric Power Company Holdings, ‘Status’.
- 63 See, for example, Real Fukushima, *Real Fukushima*.

- 64 President of Ukraine, ‘Head of State Signed a Decree’.
- 65 Hunder, ‘HBO Show Success’.
- 66 Addley & Convery, ‘Chernobyl Writer’.
- 67 See, for example, Ramana, *Nuclear is Not the Solution*.
- 68 Ramana, ‘Infeasible: The financial and temporal costs of nuclear energy’, 62–70, in Ramana, *Nuclear is Not the Solution*.
- 69 Lehtonen, ‘Taking Stock of the SMR Promise’, 18–21.
- 70 Joyce, *Future of Nuclear Waste*.
- 71 IAEA, ‘Two Years of IAEA Continued Presence’.
- 72 Ramana, *Nuclear is Not the Solution*, 31.
- 73 Ibid., 17–61, 245 n. 16. I also learned a lot of this during my participation at the 2024 Teknik och Vetenskapshistoriska Dagarna in Stockholm.
- 74 Internet Movie Database, *IMDB*, ‘Chernobyl’.
- 75 Schwatz, ‘Craig Mazin’s Years-Long Obsession’.
- 76 Hunder, ‘HBO Show Success’.
- 77 Google Trends, ‘Interest over Time “Chernobyl 2004–2026”’.
- 78 The Farm 51, ‘Chernobylite’.
- 79 Ibid.
- 80 ‘What is Chernobylite?’, YouTube.
- 81 See, for example, Jacobs, ‘Radiation as Cultural Talisman’.
- 82 E. Carpenter, ‘Nuclear Culture Research Group Email List’, *Nuclear Arts Catalyst* [website], Nuclear Culture, 3 Feb. 2019, <https://nuclear.artscatalyst.org/content/nuclear-culture-research-group-email-list>, accessed 30 Jan. 2026.
- 83 Ramana, *Nuclear is Not the Solution*, 17–61.
- 84 See, for example, Lehtonen, ‘Taking Stock of the SMR Promise’.
- 85 Hecht, *Being Nuclear*, 10.
- 86 Hughes, ‘What is British Nuclear Culture?’, 495.
- 87 Ibid., 495.
- 88 Willis, ‘Origins of British Nuclear Culture’, 89.
- 89 I understand that this distinction is flawed, but many of these representations are generated outside their local origin.
- 90 Hughes, ‘What is British Nuclear Culture?’, 517.
- 91 Ibid., 505.
- 92 Ibid., 517.
- 93 Ibid., 497.
- 94 This is an iconological observation of mine. See, for example, Mitchell, ‘Iconology 3.0’.
- 95 Hughes, ‘What is British Nuclear Culture?’, 518.
- 96 Ibid., 506.
- 97 Hughes, ‘What is British Nuclear Culture?’, 497.
- 98 Willis, ‘Origins of British Nuclear Culture’, 61.
- 99 Skelcher, *Vaseline Glassware*, 8.
- 100 See, for example, ‘Arts and Craft Movement, 1880–1920’, in Sparke, *Design och Postmodernitet*.
- 101 Schroy, *Warman’s Depression Glass Field Guide*, 2.
- 102 King, ‘Clarence Dally’.
- 103 Ibid.
- 104 Decamous, *Invisible Colors*, 4.
- 105 Ibid., 204–208.
- 106 Ibid., 362.
- 107 Knowles, ‘Slow Disaster’, 299.
- 108 Zander, ‘Historiens Mångfald’, 11–12.
- 109 Ibid., 14.
- 110 Jülich, *Skuggor av Sanning*.
- 111 Rentetzi, *Seduced by Radium*; Hein Rasmussen, *Den Kolde Krigs Billeder*.
- 112 Weart, *Rise of Nuclear Fear*.
- 113 Braw, *Atomic Bomb Suppressed*.
- 114 Schuppli, *Material Witness*, 44–46.
- 115 Kuchinskaya, *Politics of Invisibility*, 86.
- 116 Ibid., 85–88.
- 117 Blouin et al., *Silence of Fallout*.
- 118 Lippit, *Atomic Light (Shadow Optics)*.
- 119 Ibid., 92–93.
- 120 Sontag, ‘Imagination of Disaster’, 224–225.
- 121 Knoblauch, ‘Pixilated Apocalypse’, 129–130.
- 122 Mirzoeff, *Introduction to Visual Culture*, 31–32.
- 123 Anders, ‘Ten Theses on Chernobyl’, thesis 1.
- 124 Ibid., thesis 1.
- 125 Jacobs, ‘Radiation as Cultural Talisman’, 2.
- 126 Hecht, *Being Nuclear*, 6–8.
- 127 Ibid., 10.
- 128 Ibid., 6–8, 10.
- 129 Ibid.
- 130 Nye, *Seven Sublimes*, viii, 162–165.
- 131 Ibid., 168–199.
- 132 Ibid., 111.
- 133 Ibid., 111–112.
- 134 Nye, *American Technological Sublime*, 235, 229.
- 135 Ibid., 235, 229.

- 136 Derrida, ‘No Apocalypse, Not Now’.
- 137 See, for example, Sontag, *Att Se Andras Lidande*.
- 138 Kristeva, *Powers of Horror*.
- 139 Ibid., 3.
- 140 Ibid., 3.
- 141 Nixon, *Slow Violence*.
- 142 Jorgensen, *Strange Glow*; Tuniz, *Radioactivity*.
- 143 Barad, *Meeting the Universe Halfway*.
- 144 Ibid.
- 145 Ibid., 170.
- 146 Ibid., 176–178.
- 147 Knowles, ‘Slow Disaster’, 302.
- 148 Mitchell, ‘Iconology 3.0’, 25.
- 149 Ibid., 26–27.
- 150 Lakoff & Johnson, *Metaphors We Live By*, 5.
- 151 Ibid., 4, 10.
- 152 *Cambridge Dictionary*, s.v. ‘trope’.
- 153 Zander, ‘Historiens Mångfald’, 14.
- 154 Ibid., 10.
- 155 Ibid., 11–12.
- 156 Ibid., 14.
- 157 A completionist gamer style entails that the gamer will spend extra time trying to complete every task and bonus task in the game.
- 158 See, for example, Mezha, ‘Ukrainian Director’.
- 159 Supreme Court of Ukraine, [Ruling in the Name of Ukraine], Case no. 752/7647/20.
- 160 Niva, ‘HBO to pay Vasily Ignatekno’s Belarusian Widow’.
- 161 Qvarnström, ‘Drawing Activities’, 83–84.
- 162 The paraphrases were drafted with an AI tool provided by Lund University and human-revised. All the research, arguments, and analysis are my own.

(IN)VISIBLE MATTERS AND THE EVERYDAY

- 1 Typography mine; Alexievich, *Voices from Chernobyl*, 51.
- 2 ‘1:23:45’, *Chernobyl*, Episode 1, HBO, 6 May 2019, 00:00:38–00:00:40.
- 3 Tuniz, *Radioactivity*, xv–xvi.
- 4 Weart, *Rise of Nuclear Fear*, 105.
- 5 Ibid., 105.
- 6 Elderfield, ‘Old Art Terms #5’.
- 7 Latini, ‘Hiroshima is Everywhere’, 75–76.
- 8 Ibid., 76.
- 9 Ibid., 76.
- 10 Ibid., 76–77.
- 11 Ibid., 76–77.
- 12 Marvel, ‘Hulk Biography’.
- 13 Nuclear bullying is a term that operates in many different ways. Coined in the Cold War when superpower leaders brandished the threat of nuclear annihilation, stoking public fear and diplomatic paralysis, it now also describes regional powers that deploy their smaller nuclear arsenals to intimidate neighbours and even the social exclusion of people or communities marked by radioactive fallout (*hibakusha*, people from Fukushima Daiichi, Chernobyl, etc.). Wilson & Funakoshi, ‘Japanese School Children’; Grossman, ‘Yes, I Glow in the Dark!’, Sawano et al., ‘Fukushima Daiichi Nuclear Power Plant Accident’; Alexievich, *Voices from Chernobyl*, 95.
- 14 *Oxford Advanced Learner’s Dictionary*, s.v. ‘glow’.
- 15 ‘Wagner, ‘Gloss for All’, 27.
- 16 Maffei & Fisher, ‘Historicizing Shininess in Design’, 231.
- 17 Ibid., 231.
- 18 Uranium ore can be mined and is not unusual. It shows as a type of yellow stone embedded in the rock. When extracted and processed, it turns into a dust ‘pigment’ called yellowcake.
- 19 Uranium compounds absorb UV radiation and re-emit it at a longer wavelength as visible green fluorescence. See Skelcher, *Vaseline Glassware*.
- 20 Ibid., 4–8.
- 21 Ibid., 8.
- 22 Ellervik, ‘Radioaktiv Låsk och Arsenikvatten’, 237; Rentetzi, *Seduced by Radium*, 5–9.
- 23 Woodham, *Twentieth-century Design*, 11–27.
- 24 Schroy, *Warman’s Depression Glass Field Guide*, 2.
- 25 Exact regulations vary. Sweden prohibits any private ownership above or below the trace level. See, for example, Strålskyddslag 2018:396.
- 26 Decorative Collective, ‘Beginner’s Guide’.
- 27 Bowey, ‘Uranium Glass’, para. 6, 14.
- 28 Ibid.
- 29 Czech Center, ‘Sodium Diueranate’.
- 30 Museum of Radiation and Radioactivity, ‘Vaseline and Uranium Glass’.
- 31 Vaseline Glass Collectors, ‘What is Vaseline Glass?’, para. 3.
- 32 US Department of Energy Office of Scientific and Technical Information (OSTI), Washington DC, United States Atomic Energy Commission, 20545, ‘Manhattan District History, Book VII’, 3 June 1970, 1.10, www.osti.gov/includes/opennet/includes/MED_scans/Book%20VII%20-%20%20Volume%201%20-%20Feed%20Materials%20and%20Special%20Procurement.pdf.
- 33 Baden, ‘#UraniumFever’, 193–194; Davis, ‘A “Glowing” Review of Uranium Glass’, para. 4.

- 34 @terrestrialtreasures, 'Someone Pinch Me'.
- 35 Curie, *Pierre Curie*, 49.
- 36 Jorgensen, *Strange Glow*, 22–24.
- 37 Ibid., 24–5, 33; Avery, 'New Kind of Rays', 63.
- 38 Jorgensen, *Strange Glow*, 24.
- 39 Ibid., 26; Avery, 'New Kind of Rays', 65.
- 40 Ibid., 62, 67.
- 41 Jorgensen, *Strange Glow*, 28–29.
- 42 Jülich, *Skuggor av Sanning*, 150–151.
- 43 Jorgensen, *Strange Glow*, 28–29, 293–309; Avery, 'New Kind of Rays', 68.
- 44 Jorgensen, *Strange Glow*, 47–49.
- 45 Skłodowska Curie, *Radio-Active Substances*, 6.
- 46 Jorgensen, *Strange Glow*, 47–49.
- 47 Ibid., 7–37; Huchette & Maiani, *Radium Saga*, 50.
- 48 Jülich, *Skuggor av Sanning*, 68: 'Fotografering av det osynliga sågs även som ett bevis för att det i Jusspektrets yttersta fält existerade fenomen och krafter av översinnlig natur'. Translations are by the author unless otherwise noted.
- 49 Ibid., 68.
- 50 Weart, *Rise of Nuclear Fear*, 3.
- 51 Decamous, 'Nuclear Activities and Modern Catastrophes', 129.
- 52 Review in *The Guardian*, 23 May 1904, cited in Museum of Radiation and Radioactivity, 'The Radium Dance, 2025'.
- 53 Ellervik, 'Radioaktiv Läsk och Arsenikvatten', 234; Rentetzi, *Seduced by Radium*, 5–9.
- 54 Jorgensen, *Strange Glow*, 120, 131–133.
- 55 Rentetzi, *Seduced by Radium*, 121–123, 126.
- 56 Ibid., 119.
- 57 Ibid., 126–127.
- 58 Ellervik, 'Radioaktiv Läsk och Arsenikvatten', 234.
- 59 Rentetzi, *Seduced by Radium*, 128.
- 60 Ibid., 5.
- 61 Museum of Modern Art, 'Peter Behrens'.
- 62 Huchette & Maiani, *Radium Saga*, 52.
- 63 Jorgensen, *Strange Glow*, 95.
- 64 Museum of Radium, 'A. Batschari Radium Cigarettes'.
- 65 Moore, *Radium Girls*, 57.
- 66 Jorgensen, *Strange Glow*, 86.
- 67 Moore, *Radium Girls*, 42–43, 56–57.
- 68 Jorgensen, *Strange Glow*, 86–88.
- 69 Lippit, *Atomic Light (Shadow Optics)*, 169.
- 70 Jorgensen, *Strange Glow*, 89.
- 71 Ibid., 90.
- 72 Ibid., 90.
- 73 Jülich, *Skuggor av Sanning*, 171.
- 74 Jorgensen, *Strange Glow*, 92.
- 75 Ibid., 87.
- 76 Boyer, *By the Bomb's Early Light*, 3–8.
- 77 Jorgensen, *Strange Glow*, 114.
- 78 Ibid., 114.
- 79 Ibid., 68–73.
- 80 Ibid., 68–73.
- 81 Boyer, *By the Bomb's Early Light*, 109, 10.
- 82 Ibid., 93, 122–124.
- 83 Ibid., 93, 111–112.
- 84 Hecht & Callon, *Radiance of France*, 1.
- 85 Ibid., 2.
- 86 This indicates that France was interested in developing nuclear weapons.
- 87 Hecht & Callon, *Radiance of France*, 2–3.
- 88 Ibid., 2–3.
- 89 *Belfast Telegraph*, 'Most Dangerous' Toy goes on Show'.
- 90 'Atomic Energy Lab I FROM THE COLLECTION', YouTube, 00:01:07.
- 91 Boyer, *By the Bomb's Early Light*, 10–11.
- 92 Ibid., 10–11.
- 93 Ibid., 10–11.
- 94 Ibid., 63.
- 95 De Groot, *The Bomb*, 1–3.
- 96 Rhodes, 'A Chunk of Trinitite', para. 7.
- 97 Ibid.
- 98 Wicker, 'Trinitite from Trinity Site'.
- 99 Boyer, *By the Bomb's Early Light*, 83–84.
- 100 Ibid., 83–84.
- 101 De Groot, *The Bomb*, 250.
- 102 Ibid., 248–249.
- 103 American Experience, 'Atomic Tourism', para. 8.
- 104 De Groot, *The Bomb*, 250–251.
- 105 Ibid., 250–251.
- 106 May, 'Explosive Issues', 105–108.
- 107 Ibid., 108.
- 108 Ibid., 105–108.
- 109 Ibid., 94.
- 110 Högselius, *Kärnkraften Misslyckat?*, 30–31.
- 111 Ibid., 30–31.
- 112 Ramana, *Nuclear is Not the Solution*, 167.
- 113 Jacobs, 'Born Violent', 25.
- 114 Ibid., 14, 26.
- 115 Latini, 'Hiroshima is Everywhere', 73.
- 116 Jacobs, 'Radiation as Cultural Talisman', 8; see, for example, *Them!* Gordon Douglas, Warner Bros., 1954; *Godzilla: King of the Monsters*, I. Honda & T. O. Morse, Toho Co. Ltd., 1956; *The Incredible Shrinking Man*, J. Arnold, Universal-International Pictures Co., Inc., 1957.
- 117 Jacobs, 'Radiation as Cultural Talisman', 9.
- 118 Ibid., 2.
- 119 Ibid., 14.
- 120 Knoblauch, 'Pixilated Apocalypse', 123.
- 121 Ibid., 123.
- 122 Ibid., 127–129.
- 123 Ibid., 133.
- 124 Ramana, *Nuclear is Not the Solution*, 248;10.
- 125 Ibid.
- 126 Nuttall, *Nuclear Renaissance*, 3–4, 17–19.
- 127 Bethesda, 'Fallout'.
- 128 Knoblauch, 'Pixilated Apocalypse', 129.
- 129 Call of Duty, 'Nuketown 2025'.
- 130 Call of Duty, 'Nuketown 2025'; however, much of this knowledge comes from watching my partner play and talk about the game.
- 131 @I_sodope, 'What I eat in a day'.
- 132 Isodope, *Isodope*.
- 133 @I_sodope, 'Happy valentine's day nuclear lovers'.
- 134 Boemeke, *Rad Future*.
- 135 'Influencer and nuclear advocate behind "Isodope" at IAEA', YouTube.
- 136 Joyce, *Future of Nuclear Waste*; Jacobs, *Nuclear Bodies*, 205–243 *et passim*.
- 137 @I_sodope, '5 unexpected secrets'.
- 138 United States Nuclear Regulatory Commission (USNRC), 'Background on Dry Cask Storage'.
- 139 Holtorf & Högberg, 'Nuclear Waste as Critical Heritage', 263–264.
- 140 Jacobs, *Nuclear Bodies*, 232–233; Ray Cat Solution, 'How to Send a Message'.
- 141 Ibid.
- 142 'Cherenkov Radiation in 60 seconds', YouTube.
- 143 Jorgensen, *Strange Glow*, 422 n. 72.
- 144 Watchmen Fandom, 'Jon Osterman'.
- 145 Rocha, 'Watchmen Secrets Revealed'.
- 146 'Searching for the Chernobyl Resettlers', YouTube, 00:05:17–00:08:00.
- 147 Jorgensen, *Strange Glow*, 8.
- 148 Ibid., 15–18.
- 149 Lippit, *Atomic Light (Shadow Optics)*, 26–29.
- 150 Ibid., 26–29.
- 151 Derrida, 'No Apocalypse, Not Now'.
- 152 Ibid., 24.
- 153 Ibid., 24.
- 154 Weart, *The Rise of Nuclear Fear*, 105.
- 155 Sontag, 'Imagination of Disaster', 225.
- 156 Ibid., 224–225.
- 157 Knoblauch, 'Pixilated Apocalypse', 129.
- 158 International Atomic Energy Agency, 'Radiation in Everyday Life'.
- 159 Lippit, *Atomic Light (Shadow Optics)*, 169.
- 160 Schuppli, *Material Witness*, 47.
- 161 Ibid., 47.
- 162 Jacobs, 'Radiation as Cultural Talisman', 2.
- 163 Ibid., 2.
- 164 Ibid., 14.
- 165 Ibid., 2.
- 166 Kuchinskaya, *Politics of Invisibility*, 69.
- 167 GoVilnius, 'Vilnius'.
- 168 'Please Remain Calm', *Chernobyl*, Episode 2, HBO, 13 May 2019, 00:51:38–00:52:20.
- 169 Higginbotham, *Midnight in Chernobyl*, 257–259.
- 170 Alexievich, *Voices from Chernobyl*, 35–36.
- 171 Worobec, 'Death ritual', 22.
- 172 *Cambridge English Dictionary*, s.v. 'artefact'.
- 173 Real Chernobyl, 'FAQ'.
- 174 Weart, *Rise of Nuclear Fear*, 105.
- 175 Fuller & Goriunova, *Bleak Joys*, 2–4.
- 176 Brown, *Manual for Survival*, 125.
- 177 Fuller & Goriunova, *Bleak Joys*, 4.
- 178 Ibid., 4.
- 179 Pezzullo, *Toxic Tourism*, 29.
- 180 Tello, 'Aesthetics and Politics of Aftermath Photography', 555.
- 181 Ibid., 555–556.
- 182 Campamy, 'Safety in Numbness', 192.
- 183 Tello, 'Aesthetics and Politics of Aftermath Photography', 556.
- 184 Reuters, 'Unprotected Russian Soldiers'; Ramana, *Nuclear is Not the Solution*, 48.
- 185 Atkinson, 'Russian Troops Suffer Radiation Sickness'.
- 186 Ingold, 'Landscape or Weather-World?', 126–127.
- 187 Ibid., 126–127.
- 188 I am aware that The Farm 51 has embellished certain aspects of the game to bring it in line with their theme. However, they do attempt to make the Zone as realistic as possible. See, for example, 'Chernobylite: Making Of 1 – Chernobyl Scanning Introduction', YouTube.
- 189 Johnstone, 'Watch: Hit TV Series'.
- 190 Brown et al., 'Reviews of HBO's *Chernobyl*', 1374.
- 191 '1:23:45', *Chernobyl*, Episode 1, HBO, 6 May 2019, -00:29:10–00:27:12.
- 192 'Chernobyl: Bridge of Death I HBO Replay', YouTube.
- 193 Sagal, '1:23:45', *The Chernobyl Podcast*, HBO, 7 May 2019, 00:48:30–00:48:50.
- 194 Ibid., 00:48:08–00:48:22.
- 195 Ibid., 00:48:55–00:49:11.
- 196 'Please Remain Calm', *Chernobyl*, Episode 2, HBO, 13 May 2019, -00:47:46–00:47:32.
- 197 Mazin, 'Chernobyl episode "1:23:45"'.
Barad, *Meeting the Universe Halfway*, 170.
- 198 Liu, 'What is Cherenkov Radiation?'.
- 199 Weart, *Rise of Nuclear Fear*, 97.
- 200 Atwood, *The Handmaid's Tale*, 385.
- 201 'Unwomen', *The Handmaid's Tale* [TV series], Season 2, Episode 2, HBO, Hulu 25 Apr. 2018.
- 202 Ibid., -00:46:22–00:46:17.
- 203 Jacobs, *Nuclear Bodies*, 232–233.
- 204 See, for example, 'Primary Evidence', in Brown, *Manual for Survival*, 163–168.
- 205 Brown, *Manual for Survival*, 241–245.
- 206 Ibid., 30.
- 207 Jorgensen, *Strange Glow*, 366; Kuchinskaya, *Politics of Invisibility*, 34–35; Ramana, *Nuclear is Not the Solution*, 43.
- 208 Barad, *Meeting the Universe Halfway*, 170.
- 209 Latini, 'Hiroshima is Everywhere', 65.
- 210 Sagal, '1:23:45', 00:48:55–00:49:11.

LANDSCOPIC DISASTER AND THE FABULOUSLY SUBLIME

- 1 Högselius, *Döden på Stranden*, 54.
- 2 Associated Press, 'Excerpts from Gorbachev's Speech', A, 10.
- 3 See, for example, Podnieszński & McNeill, 'Fukushima'.
- 4 Jacobs, 'Radiation as Cultural Talisman', 8.
- 5 Högselius, *Döden på Stranden*, 54.
- 6 In earlier centuries, coastlines were often associated with natural hazards, shipwrecks, and death. The sea was feared rather than enjoyed. See, for example, Blei, 'Inventing the Beach'.
- 7 I chose *The Raft of the Medusa* as a visual representation of a real and, at the time, recent catastrophe where the French naval frigate *Méduse* sank. There were not enough lifeboats, and those of lower status were forced onto a crudely constructed raft. After nearly two weeks adrift few survived to be rescued. The painting therefore serves as a symbol of class violence and moral collapse, while also staging a fragile sense of hope in a turbulent political climate. See, for example, McCoy, 'Théodore Géricault'.
- 8 I understand that this is contested and that some people live in the Zone.
- 9 Brown, *Manual for Survival*, 306.
- 10 Högselius, *Döden på Stranden*, 54–56.
- 11 See, for example, Storm, 'Atomic Sublime and non-Sublime'; Ferguson, 'Nuclear Sublime'; Nye, *Seven Sublimes*, 50–51.
- 12 Ferguson, 'Nuclear Sublime', 5.
- 13 Kant, *Critique of Judgment*, 98–99.
- 14 Ibid., 121.
- 15 Ibid., 119–121.
- 16 Ibid., 110–112.
- 17 Ibid., 98.
- 18 I acknowledge that there can be a form of mathematical sublime in terms of knowing the size of Chornobyl and that its abandoned landscape continues beyond the

frame of a photograph. However, here I am concerned with the visualisation of radiation.

- 19 'Chernobylite: Making of 2 – The Silent Rooms', YouTube, 00:00:55–00:01:00.
- 20 Bellows, 'This Place is not a Place of Honour'.
- 21 Derrida, 'No Apocalypse, Not Now', 23–24.
- 22 Ibid., 23–24.
- 23 Abrahamsson, *Vitryssland*, 29–37.
- 24 Nye, *Seven Sublimes*, viii.
- 25 Nye, *American Technological Sublime*, 241.
- 26 Ferguson, 'Nuclear Sublime', 6.
- 27 Ibid., 6.
- 28 Much in line with Günther Anders's nuclear philosophy, for example Anders, 'Ten Theses on Chernobyl'.
- 29 Hecht, *Being Nuclear*, 6.
- 30 Kant, *Critique of Judgment*, 100.
- 31 Burke, *Philosophical Enquiry*, 12–13.
- 32 Nuttall, *Nuclear Renaissance*, 14.
- 33 Ibid., 14.
- 34 Herran, 'From Military Surveillance', 142.
- 35 Kant, *Critique of Judgment*, 182–183.
- 36 Ibid., 182–183.
- 37 Ibid., 98–99.
- 38 See, for example, Fritz, *Experiencing Gameworlds*.
- 39 Königsberg was Kant's hometown in Prussia which he is rumoured to have rarely left. The city is now Kaliningrad and is part of Russia.
- 40 Kant, *Critique of Judgment*, 98.
- 41 Latini, 'Hiroshima is Everywhere', 64.
- 42 Ibid., 69.
- 43 Anders, 'Theses for the Atomic Age', 188–189.
- 44 Latini, 'Hiroshima is Everywhere', 75.
- 45 Ibid., 75–76.
- 46 Ibid., 75–76; Anders, 'Theses for the Atomic Age', 189.
- 47 Another example of the promethean discrepancy could be the use of the smartphone, which some argue is making us less intelligent. The smartphone may have seemed a revolutionary invention, but imagining a future where everyone is disconnected from reality because they are submerged in the digital world has less appeal, and were, to some extent, unimaginable.
- 48 Sontag, 'Imagination of Disaster', 224–225.
- 49 Alexievich, *Voices from Chernobyl*, 28.
- 50 Ibid., 40.
- 51 'Chernobyl Robotic Vehicles Graveyard', *Chernobyl Story Tours*.
- 52 Jacobs, *Nuclear Bodies*, 59–60.
- 53 Ibid., 59–60.
- 54 Ibid., 59–60.

92 'Preserving The Zone – Chernobylite Dev Stories #01', YouTube, 00:12:34.
 93 Ibid., 00:12:34.
 94 Jacobs, *Nuclear Bodies*, 120–121; Joosse, 'Emerald Summer Camp'; Abdurasulov, 'Chernobyl'.
 95 Real Chernobyl, 'Rules'.
 96 'Chernobylite: Making of 2 – The Silent Rooms', YouTube, 00:00:17–00:01:21, 00:01:35–00:01:53.
 97 Strugackij & Strugackij, *Roadside Picnic*.
 98 Sutton, 'Stalker'.
 99 Fuller, 'S.T.A.L.K.E.R.'.
 100 Chernobyl Explorer, 'Chernobyl Urbex Adventurer'.
 101 Ibid.
 102 Boyer, *By the Bomb's Early Light*, 10–11.
 103 Abrahamsson, *Vitryssland*, 34–35.
 104 See, for example, 'Alone in the Zone footage – radioactive basements – hospital in Pripyat', YouTube; and a previously available video (www.youtube.com/watch?v=pzjJNu-jYM now private) from approximately ten years before the first, which showed the same basement with more relics.
 105 @DuncanH304, 'Great Experience'.
 106 Ibid.
 107 Yablon, *Untimely Ruins*, 193.
 108 Ibid., 192.
 109 Boyer, *By the Bomb's Early Light*, 10–11.
 110 Abrahamsson, *Vitryssland*, 36–37.
 111 Kant, *Critique of Judgment*, 120–121.
 112 Ibid., 120–121.
 113 Higginbotham, *Midnight in Chernobyl*, 344.
 114 'What is Chernobylite?', YouTube.
 115 Ibid.
 116 Abrahamsson, *Vitryssland*, 29–37.
 117 Mirnyi, 'How Radiation-Safe are Short-Term Trips'.
 118 Cram, 'Wild and Scenic Wasteland', 103.
 119 Carroll, 'Nature of Horror', 52–53.
 120 Latini, 'Hiroshima is Everywhere', 76.
 121 Nye, *Seven Sublimes*, 45.
 122 Alexievich, *Voices from Chernobyl*, 155–156.
 123 Bond, 'Cheating Chernobyl'.
 124 Higginbotham, *Midnight in Chernobyl*, 94.
 125 Ibid., 417.
 126 Zander, 'Historiens Mångfald', 14.
 127 Ferguson, 'Nuclear Sublime', 7.
 128 Kuchinskaya, *Politics of Invisibility*, 182 n. 29.
 129 Kalinina-Pohl, 'It's not Radioactive Disneyland'.
 130 World Nuclear News, 'Chernobyl Looking to Develop Tourism Post-War'.

RADIOACTIVE SILHOUETTES

1 Alexievich, *Voices from Chernobyl*, 5–6.
 2 Ibid., 5–6; Brown, *Manual for Survival*, 17.
 3 Alexievich, *Voices from Chernobyl*, 34, 79, 156–157; Kuchinskaya, *Politics of Invisibility*.
 4 Alexievich, *Voices from Chernobyl*, 156–157.
 5 Ingold, 'Landscape or Weather-World?', 126–127.
 6 Sagal, 'Open Wide, O Earth', *The Chernobyl Podcast*, HBO, 21 May 2019, 00:41:30–00:43:00.
 7 Supreme Court of Ukraine [Ruling in the Name of Ukraine], Case no. 752/7647/20.
 8 Kristeva, *Powers of Horror*, 10.
 9 Ibid., 10.
 10 Jacobs, *Nuclear Bodies*, 10–11.
 11 Jackovich & Sennet, 'Children of John Wayne'.
 12 Ibid.
 13 Ibid.
 14 Jorgensen, *Strange Glow*, 308–309.
 15 Centers for Disease Control, 'Acute Radiation Syndrome (ARS)'; Plokhly, *Chernobyl*, 146.
 16 Kuchinskaya, *Politics of Invisibility*, 21.
 17 Ibid., 20–34.
 18 Fisher, 'Atomic Bomb Marker'; Jacobs, *Nuclear Bodies*, 44.
 19 Jacobs, *Nuclear Bodies*, 44.
 20 Grimm, 'Mushroom Cloud's Silver Lining', 1434.
 21 Rentetzi, *Seduced by Radium*, 3–10.
 22 Ibid., 128–129.
 23 Jorgensen, *Strange Glow*, 90.
 24 Ibid., 96.
 25 Ibid., 95–96; Macklis, 'Great Radium Scandal', 98.
 26 Ibid., 98–99.
 27 *New York Times*, 'Death Stirs Action'.
 28 Jorgensen, *Strange Glow*, 95.
 29 Macklis, 'Great Radium Scandal', 94.
 30 Jorgensen, *Strange Glow*, 95.
 31 Ibid., 29, 100.
 32 Jülich, *Skuggor av Sanning*, 248–251.
 33 Ibid., 251.
 34 Ibid., 251.
 35 Jorgensen, *Strange Glow*, 30–32; King, 'Clarence Dally'.
 36 *New York World*, 'Edison Fears Hidden Perils of the X-Rays'.
 37 Brown, *Manual for Survival*, 104–105.
 38 Ibid., 104–105.
 39 Ibid., 99.
 40 See, for example, Applebaum, *Red Famine*; Plokhly, *Chernobyl*, 31–32, 40–41.
 41 Brown, *Manual for Survival*, 99.
 42 Brown, 'Eating at You'.
 43 Brown, *Manual for Survival*, 100–101.

44 Kuchinskaya, *Politics of Invisibility*, 25–28, 29–31, 46–47, 51.
 45 Ibid., 37.
 46 Ibid., 21.
 47 Ibid., 35, 39, 51.
 48 Braw, *Atomic Bomb Suppressed*, 12–15.
 49 Ibid., 107, 150.
 50 Ibid., 150, 151. The Geneva Protocol prohibits any use of chemical and biological weapons in international armed conflict. It is sometimes argued that nuclear weapons are worse than any of these, because of their temporal violence.
 51 Braw, *Atomic Bomb Suppressed*, 149.
 52 Pica is Japanese for 'glow' or 'lightening'. This refers to 'Flash-babies' born in the aftermath of the bombing. Pica babies often suffered from deformities or illnesses, and most died in infancy. See Wright, 'Impact of Nuclear Weapons on Children'; Braw, *Atomic Bomb Suppressed*, 107.
 53 Ibid., 107.
 54 Hecht, *Being Nuclear*, 8.
 55 Ibid., 8.
 56 Jacobs, 'Reconstructing the Perpetrator's Soul', para. 4.
 57 Ibid., para. 4.
 58 Ibid.
 59 Ibid., para. 16.
 60 Braw, *Atomic Bomb Suppressed*, 151.
 61 Jacobs, 'Reconstructing the Perpetrator's Soul', para. 12.
 62 Ibid., 12.
 63 Ibid., para. 12.
 64 Ibid., para. 13; Barker, *Hiroshima Maidens*, 137.
 65 Ibid., 137.
 66 Jacobs, 'Reconstructing the Perpetrator's Soul', para. 15.
 67 Barker, *Hiroshima Maidens*, 29.
 68 'Their own terms' is difficult phrasing. While I cannot find any information that suggests women were taken to America for surgeries against their will, they were in a vulnerable situation facing life-changing surgery. Therefore their 'own terms' is meant in the most extreme sense that they could say no, even if circumstances did not seem to allow it.
 69 While this analysis is close to Robert's, mine has similar results.
 70 Wilson & Funakoshi, 'Japanese School Children'.
 71 Decamous, *Invisible Colors*, 314.
 72 Jacobs, *Nuclear Bodies*, 98–99.
 73 Jorgensen, *Strange Glow*, 370–371; Braw, *Atomic Bomb Suppressed*, 58, 103.
 74 McCurry, 'Gourmet Manga'.
 75 Decamous, *Invisible Colors*, 295.
 76 McCurry, 'Gourmet manga'.
 77 Decamous, *Invisible Colors*, 295.
 78 Jacobs, *Nuclear Bodies*, 101.
 79 Ibid., 101.

80 Brown, *Manual for Survival*, 41, 44.
 81 Decamous, *Invisible Colors*, 317–329.
 82 Ibid., 261.
 83 Ibid., 261.
 84 Kostin, *Chernobyl*, 24–26.
 85 Alexievich, *Voices from Chernobyl*, 138.
 86 Kostin, *Chernobyl*, 24–26.
 87 Brown, *Manual for Survival*, 20–29.
 88 Alexievich, *Voices from Chernobyl*, 95.
 89 Kristeva, *Powers of Horror*, 1–2.
 90 Ibid., 3.
 91 Ibid., 3.
 92 Foster, 'Obscene, Abject, Traumatic', 114.
 93 Kristeva, *Powers of Horror*, 2–3.
 94 Arya, 'Abjection Interrogated', 52.
 95 Miller, *Anatomy of Disgust*, 25.
 96 Strugackij & Strugackij, *Roadside Picnic*, 73, 78–79.
 97 Ibid., 37.
 98 Ibid., 37.
 99 *Fallout*, Season 1–2.
 100 Decamous, *Invisible Colors*, 261.
 101 Alexievich, *Voices from Chernobyl*, 138.
 102 Braw, *Atomic Bomb Suppressed*, 254.
 103 Decamous, *Invisible Colors*, 245.
 104 Ibid., 203.
 105 Ibid., 316–320.
 106 Ibid., 316–320.
 107 See, for example, the 2011 documentary *Radioactive Wolves: Chernobyl's Nuclear Wilderness*.
 108 See pp. 98–100 where I argue that the Zone is often framed as 'static' or 'dead' in images of its aftermath; however, in reality its ecological development is that of ongoing devastation.
 109 Plokhly, *Chernobyl*, 225.
 110 White, 'HBO Miniseries "Chernobyl"'.
 111 Sagal, 'Open Wide, O Earth', 00:40:50–00:43:52.
 112 I am aware that the viewer is shown other stages of ARS in the series, but none are as extreme as Ignatenko's case in 'Open Wide, Oh Earth', *Chernobyl*, Episode 3, -00:24:25–00:23:56.
 113 Centers for Disease Control and Prevention, 'Acute Radiation Syndrome (ARS)'.
 114 Ibid.
 115 Ibid.
 116 Alexievich, *Voices from Chernobyl*, 11–12.
 117 Supreme Court of Ukraine, [Ruling in the name of Ukraine], Case no. 752/7647/20.
 118 Ibid.
 119 Ibid.
 120 *Acute Radiation Syndrome the Ministry of Defense of the USSR 1988 HD*, YouTube.
 121 Supreme Court of Ukraine, ruling, Case no. 752/7647/20, 5–6.
 122 Kristeva, *Powers of Horror*, 3.

123 Ibid., 3.
 124 Ibid., 3.
 125 Högselius, *Döden på Stranden*, 54–56.
 126 Kristeva, *Powers of Horror*, 3.
 127 'Open Wide, Oh Earth', HBO, -00:26:19–00:25:35.
 128 'Open Wide, Oh Earth', HBO, -00:05:04–00:02:49.
 129 Kristeva, *Powers of Horror*, 3.
 130 Kristeva, *Voices from Chernobyl*, 18.
 131 Ahmed, *Cultural Politics of Emotion*, 86.
 132 Sagal, 'Open Wide, O Earth', 00:40:50–00:43:52.
 133 Kristeva, *Powers of Horror*, 4.
 134 Decamous, *Invisible Colors*, 261.
 135 @TheZicky, 'Birth of the monsters'.
 136 Freud, 'The Uncanny'.
 137 @TheZicky, 'Birth of the monsters'.
 138 Latini, 'Hiroshima Is Everywhere', 65.
 139 Kristeva, *Powers of Horror*, 4.
 140 'Usenet Conversation 1986', *Usenet*, original no longer available, though there is a Reddit equivalent. www.reddit.com/r/chernobyl/comments/by364c/first_mention_of_the_chernobyl_disaster_in_usenet/
 141 See, for example, Webb, 'Laughter Louder than Bombs?'.
 142 Kristeva, *Powers of Horror*, 12.
 143 Ibid.
 144 Vaziri, 'Alienation, Abjection', 232, 242.
 145 Ibid., 232, 242.
 146 Decamous, *Invisible Colors*, 203.
 147 World Health Organization, 'Chernobyl'; Brown, *Manual for Survival*, 2–3.
 148 Ibid., 2–3.
 149 Yablokov et al., *Chernobyl Catastrophe*, 10.
 150 Kuchinskaya, *Politics of Invisibility*, 5–10.
 151 Sontag, *Att Se Andras Lidande*, Bromberg, Stockholm, 2004, 87.
 152 Zander, 'Historiens Mångfald', 14.
 153 Sontag, *Att Se Andras Lidande*, 80–81.
 154 *Acute Radiation Syndrome the Ministry of Defense of the USSR 1988 HD*, YouTube.
 155 Brown, *Manual for Survival*, 145–154; Alexievich, *Voices from Chernobyl*, 138.

(IN)VISIBLE MATTERS MATTER

1 Günther Anders, 'Über Prometheische Scham', tr. as 'On Promethean Shame' by Christopher Müller, in Müller, *Prometheanism*, 29.
 2 International Atomic Energy Agency, 'Radiological Accident in Goiânia', 23–24.
 3 Ibid., 2, 24–25.
 4 Ibid., 23–26.
 5 Ibid., 27–28.
 6 Ibid., 28–29.
 7 Ibid., 18.
 8 Ibid., 2.
 9 Ibid., 2, 48–49.
 10 This poem is one in a long line of poems on Prometheanism by Günther Anders.
 11 Babich, *Günther Anders' Philosophy of Technology*, 99–100.
 12 Curie, *Pierre Curie*, 49.
 13 Eliade, *The Sacred and the Profane*, 26.
 14 Babich, *Günther Anders' Philosophy of Technology*, 95; Latini, 'Hiroshima is Everywhere', 75–76.
 15 Sontag, 'Imagination of Disaster', 224–225.
 16 Anders, 'Ten Theses on Chernobyl'.
 17 Ibid.
 18 Ibid.
 19 Jacobs, *Nuclear Bodies*, 211.
 20 Latini, 'Hiroshima is Everywhere', 73.
 21 Ramana, *Nuclear is Not the Solution*, 30–31; Grossi, 'Two Years of IAEA Continued Presence'.
 22 Latini, 'Hiroshima is Everywhere', 66–67.
 23 See, for example, Brown, *Manual for Survival*.
 24 Livsmedelsverket, *PM 2024: Cesium-137*.
 25 Kuchinskaya, *The Politics of Invisibility*, 26–30.
 26 Brown, *Manual for Survival*, 68–69.
 27 Anders, 'Ten Theses on Chernobyl', Thesis 1.
 28 Latini, 'Hiroshima is Everywhere', 78–79.
 29 Which begs the question why was a teletherapy machine was abandoned in the first place.
 30 Honour & Fleming, *A World History of Art*, 416.
 31 Ramana, *Nuclear is Not the Solution*, 248:10.
 32 Ibid. 2–5; Nuttall, *Nuclear Renaissance*, 3–4, 17–19.
 33 Latini, 'Hiroshima is Everywhere', 75.
 34 Sontag, 'Imagination of Disaster', 224–225.
 35 *Dr Strangelove*, dir. Stanley Kubrick, Columbia Pictures, 1964.

36 Brown, *Manual for Survival*, 169–172; Alexievich, *Voices from Chernobyl*, 138.
 37 See, for example, Lyons, *Ruin Porn*.
 38 Jacobs, ‘Radiation as Cultural Talisman’, 8.
 39 ‘*Searching for the Chernobyl Resettlers*’, YouTube, 00:05:17–00:08:00.
 40 Ibid., 00:05:17–00:08:00.
 41 Brown, ‘Curie’s Fingerprint’, 42. The Elephant’s Foot, underneath Reactor 4 at the Chornobyl nuclear power station, is a large mass of corium formed from the melted reactor fuel.
 42 Ibid., 42.
 43 Carvalho & Spence, ‘Cup Colour Influences Consumers’, 158.
 44 *New York World*, ‘Edison Fears Hidden Perils of the X-Rays’.
 45 See, for example, Stone, ‘Dark Tourism’.
 46 Brown, ‘Curie’s Fingerprint’, G45.
 47 Nixon, *Slow Violence*, 6.
 48 Ibid., 6.
 49 Kuchinskaya, *The Politics of Invisibility*, 58; Jorgensen, *Strange Glow*, 309.
 50 Nixon, *Slow Violence*, 10.
 51 Ibid., 3.
 52 Martin, *Baroque*, Penguin Books, London, 1991, 11.
 53 Ramana, *Nuclear is Not the Solution*, 2–5.
 54 World Nuclear Association, ‘Small Modular Reactors’.
 55 Elias et al., ‘Pänyttgödd Forskning har Pengar’.
 56 Hecht, *Being Nuclear*, 6.
 57 Campbell, ‘In Pictures: South America’s “lithium fields”’.
 58 Saul, ‘Burning Cargo Ship’.
 59 See Ramana, *Nuclear is Not the Solution*; Nuttall, *Nuclear Renaissance*.
 60 Högselius, *Kärnkraften Misslyckat?*, 34.
 61 World Nuclear Association, ‘World Nuclear Energy Outlook’, 3.
 62 Anders, ‘Ten Theses on Chernobyl’, thesis 1.
 63 Matza, ‘Trump Directs Nuclear Weapons Testing’.
 64 Brown, *Manual for Survival*, 238.
 65 Ibid., 235–237.
 66 Ibid., 200–205.
 67 Ibid., 203–205.
 68 Ibid., 203–205.
 69 Latini, ‘Hiroshima is Everywhere’, 66, 78.
 70 Ibid., 66, 78.
 71 Ibid., 78–79.
 72 Ibid., 78–79; Anders, ‘Ten Theses on Chernobyl’, thesis 1.
 73 Weart, *Rise of Nuclear Fear*, 105.

AFTERWORD: OPENING OUR EYES TO IMAGE VIOLENCE

- 1 See, for example, Carpenter, *Nuclear Culture Source Book*, 70–75.; Joyce, *Future of Nuclear Waste*; Jacobs, *Nuclear Bodies*, 235.
- 2 Ibid., 221, 225.
- 3 Ibid., 238–239.
- 4 Ibid., 238–239.

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DOCTORAL DISSERTATIONS FROM THE NATIONAL GRADUATE SCHOOL OF HISTORICAL STUDIES

This thesis is wholly or partly funded by the National Graduate School in Historical Studies. The graduate school was founded in 2001 and is a collaboration between Lund University (LU), Linnaeus University (LNU), Malmö University (MAU), Södertörn University (SH), and the University of Gothenburg (GU), with Lund University as the host. Dissertations financed by the National Graduate School in Historical Studies:

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Published by
Lund University
Box 117, SE-221 00 Lund
Schweden

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This book is a revised version of the authors doctoral thesis.
Revised by author.

Text and Copy Editing
Charlotte Merton

Project Management
Kehrer Verlag (Pauline Vollpert)

Design
Kehrer Design (Susan Greszta, Nicole Gehlen)

Image Processing
Kehrer Design (René Henoch)

Production Management
Kehrer Design (Hannah Antes)

Cover Illustration: An X-ray technician's hand, multilated with dermatitis,
after habitual work with X-ray apparatus at the Royal London Hospital.
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This publication is also available as a print edition through Kehrer Verlag Heidelberg.

Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the
Deutsche Nationalbibliografie; detailed bibliographic data is
available on the Internet at <https://dnb.dnb.de>.

Printed and bound in Germany
ISBN (print) 978-3-96900-233-9
ISBN (PDF) 978-91-90206-19-5
DOI 10.37852/oblu.354

 Kehrer Verlag Heidelberg
www.kehrerverlag.com

GLOW AND VIOLENCE IN THE VISUAL AFTERMATH OF CHORNOBYL

978-3-96900-233-9