Chapter 11
The Nuclear Mundane: Geology and the Unthinkable

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Abstract This chapter explores a set of conceptual tensions in aesthetic and discursive economies of nuclear risk management by analysing Trevor Paglen's *Trinity Cube* (2016), Taryn Simon's *Black Square XVII* (2015), Michael Madsen's *Into Eternity* (2010), and the International Energy Agency's GEOSAF project. It examines the tactical positioning of geology in waste management and the attempt to work through the figure of the unthinkable that persists in nuclear aesthetics. Building on Frances Ferguson's idea of the nuclear sublime, the chapter identifies a newly emerging analytic: the nuclear mundane, which describes contemporary techno-political mechanisms through which the unthinkable timescales of nuclear energy become banalised and figured as regular industrial risk. The chapter considers how this nuclear mundane gets played out on a geologic register and what this means for the way nuclearity gets figured into an energy future.

Keywords Nuclear energy · Nuclear aesthetics · Energy humanities · Geology

11.1 Introduction

Two radioactive cubes, recent artworks by two U.S. artists—Taryn Simon's *Black Square XVII* (2015) and Trevor Paglen's *Trinity Cube* (2016)—are currently suspended from public exhibition. One is placed in the Fukushima Nuclear Exclusion Zone, in the so-called Difficult-to-Return Zone to which entry, lodging, and commerce are prohibited indefinitely. The other is contained in the Radon Nuclear Waste Disposal Plant, 90 km from Moscow. Paglen's and Simon's cubes are both made out of what would be considered by most international regulations as radioactive materials. They are vitrified into solid cubes through an industry technique called GeoMelting, whereby nuclear waste is mixed with glass-forming elements to immobilise radionuclides and prepare them for long-term storage. Common to both cubes is that they will only be available for public viewing once either the site's or the object's

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M. Mišík and N. Kujundžić (eds.), *Energy Humanities. Current State and Future Directions*, https://doi.org/10.1007/978-3-030-57480-2_11

radiation levels have diminished to a level safe enough for humans, a 1,000 years for Simon's cube and a still unknown amount of time for Paglen's. Encounters with these objects are deferred through the temporal pressures that radiation exerts on the bodies through which it moves. On the one hand, their prolonged absence presses against an imaginary that presents radiation as a threat consistently out of reach. On the other, the cubes' radioactivity puts pressure on what it is we might imagine an artwork's geological presence to license, invite, and promise.

Simon's and Paglen's cubes materialise the temporal and spatial pressures that align with some of the oppositions that have long defined nuclearity as an aesthetic economy: presence and absence, site and non-site, exclusion and inclusion, and visibility and invisibility. Thinking about nuclearity in these terms has a way of resisting concretisation. The cubes inherit the ongoing project of 'making tangible' the threat of radiation, which often turns out to be, paradoxically, not that different from the project of reasserting its intangibility. Simon's *Square* will inhabit its intended site (titled *Void for Artwork*) in the Garage Museum of Contemporary Art in Moscow in the year 3015. Its extreme displacement through time invades the viewers' temporal framework and stupefies their actual and imagined relation to time. Paglen's *Cube* similarly entertains the notion of spatial and temporal deferral, but also attempts to congeal the ahistorical and the historical. Made out of both Trinitite, the glass-like residue left after the Trinity nuclear bomb test on 16 July 1945 in Mexico, and Fukushima's melted glass, Paglen's *Cube* melts together the deep times of radioactive threat and the almost anachronistic historicism of the event of explosion.

These temporal and spatial tensions invited by the cubes play into the category of the unthinkable and reflect on what Frances Ferguson identified in 1984 as the nuclear sublime, in which nuclearity is presented as the ultimate and final threat. As the absolute totality of destruction, the nuclear sublime becomes the primary invocation of the unthinkable. Yet, as much as the cubes invoke this aesthetic mode of the nuclear sublime, they also mark a definite turning point in thinking about the unthinkable. The unthinkable is also presented as geologically condensed and contained, even if it must remain absent. Its volatility is subsumed in a predictably simple geometric shape. I argue that this manoeuvre that makes a nuclear threat that is thought of as unthinkable, volatile, and sublime into a concrete knowable substance is a new dynamic of 'making tangible' that persists in both artistic responses to radiotoxicity, as well as the nuclear industry's risk management discourse.

These artworks coincide not only with renewed aesthetic and cultural interest in nuclearity after the Fukushima Daiichi disaster in 2010, but also with a new imagination of a nuclear energy future in the Anthropocene. Decarbonisation plans that increasingly include larger shares of nuclear as a 'green' alternative to carbon, paired with a heightened awareness of humanity's geological presence, create a discursive and moral space in which a nuclear-fuelled culture that regularly operates on and manages nuclear timescales no longer seems that unthinkable. On the left, debates about energy transition also often include nuclear as a temporary solution, a 'stepping stone' in the transition to renewable energy, or even as a final goal. What often gets downplayed in these pragmatic accounts are the powerful cultural lives and

afterlives of nuclear power. Nuclear trauma and fear of contamination get presented as irrational responses that form barriers to a new nuclear-fuelled modernity.

Approaching nuclearity from an energy humanities perspective helps bring into view how nuclear energy *imaginaries* are not a separate force acting upon an energy industry, but deeply interwoven on the institutional, corporate, and infrastructural level. Perhaps more so than oil, nuclear power has had, and continues to have an intense cultural presence. This continues to impact legislation in ways that are radically different from fossil fuels, although pressure from the market increasingly erodes that legislation. Nuclearity signals a robust tradition of cultural work throughout the second half of the 20th century. It has become imperative to revisit and revise nuclearity now that it becomes, for better or worse, an element in the transition to a sustainable energy future. Heeding the call made by Imre Szeman and Dominic Boyer in 2014, the humanities should no longer be seen as an afterthought to technology and politics, but instead a forerunner in imagining the relationship between energy and society. When life on Earth is threatened not so much by natural forces but by a mix of capital, climate, and technology, interdisciplinary cultural work on energy is an essential step to imagine an otherwise.

When it comes to nuclearity, we might start by asking what are some of the discourses, analytical practices, and imaginaries surrounding the nuclear that emerge from the pressures of a warming world? Considering nuclearity's multiple traumatic lives and afterlives, how do we talk about nuclear power after oil? What is important to me in this chapter is how geology, as a modern science and material category, gets positioned as the stable discursive and material grounds to support nuclear energy safety discourse, and works to diminish the so-called radical uniqueness of nuclear materials and the nuclear sublime as the dominant form of nuclear aesthetics. Geology helps establish what I will call, building on Gabrielle Hecht's (2012, 2016) work, the *nuclear mundane*, which describes contemporary techno-political mechanisms through which the unthinkable timescales of nuclear energy become banalised and figured as regular industrial risk. Paglen's and Simon's cubes are not alone in invoking a geologic index to nuclearity; the 2010 documentary film *Into Eternity* (dir. Michael Madsen) shows similar tensions between the aesthetics of the sublime and the mundane in nuclear waste risk management, in which geology performs the mundane. In what follows, I track the nuclear mundane and the nuclear sublime as analytical categories as they surface in Simon's and Paglen's artworks, *Into Eternity*, and the official risk management discourse of the Nuclear Energy Agency (NEA) and the International Atomic Energy Agency (IAEA).

11.2 Mistimed and Mislocated: The Nuclear Sublime

The genre of the unthinkable persists as the dominant response to the nuclear, even if in its contemporary form it is less about the moment of explosion than the perpetual management of excluded materials and sites. Correspondingly, a major aesthetic weight of both cubes hinges on the awe one feels faced with the 1,000-year suspension

of the artwork. For Ferguson's (1984) conception of the nuclear sublime, suspension catalyses the specific experience of nuclear threat. Thinking the unthinkable, she argues, while provoking "considerable difficulties", nevertheless, like other forms of the sublime, "imagines freedom to be threatened by a power that is consistently mislocated" (1984, p. 9). It is mislocated not only because of the spaces, bodies, and materials that the threat inhabits that are not our own—but are hopefully always contained and excluded—it is also mislocated through time. At least in so far as the threat these cubes induce operates on a timescale at variance with the human rationalisation of threat. The event of mislocation, both spatially and temporally, does not only indicate an unthinkable power that hides from understanding, but also makes it unthinkable as such. If the nuclear sublime continues to figure radiation as a threat that is consistently mislocated, both spatially and temporally, then, sure enough, thinking the unthinkable becomes a cognitive loop that maintains distance from the 'concept' of radioactivity, so we will be perpetually unable to pinpoint the times and places of nuclearity. Still, mislocated the cubes will be, for a 1,000 years, if they are left to remain as intended. In a nuclear-fuelled culture, art must now also take a long time.

Nuclearity messes with our thinking about time and space. The important point here is that a transition from fossil fuels to nuclear energy, even as a temporary, 'in-between stage', has unforeseeable social and cultural repercussions. A nuclear transition means a transition in what we deem thinkable and knowable, and how we come to acquire that knowledge. In other words, to manifest itself, nuclearity needs its own temporal and epistemological framework that can calculate and justify certain registers of risk. Of course, those frameworks are modulated on all sides by the nuclear industry's vested interests, which constitute a complicated web of geopolitics, finance, and geology. What is considered a nuclear risk practically is more about dexterous management discourse than about the absolute and ultimate threat of nuclearity we find in the nuclear sublime.

In the cubes, this risk management unfolds on a geological register. Taryn Simon's *Square* is made of medium-level radioactive waste from Russia's State Atomic Energy Corporation's (ROSATOM) Kursk Nuclear Power Plant formed into a solid cube through GeoMelting. She describes her project in an interview with *Aperture*: "I wanted to make a work not for my generation, nor my children's generation, but for a distant future to which I have no tangible relationship. The process of vitrification converts radioactive waste from a volatile liquid to a stable solid mass, which resembles polished black glass" (Fowle 2016, [n.p.]). The process of vitrification is introduced as a stabilizer for the spatio-temporal ambiguity of radioactivity. Making tangible here is thought less as an imagined emancipation from the abstract realms of the unthinkable, than through the concrete technique of GeoMelting, which is at once a process of materialisation—in the sense of converting the material from a "volatile liquid to a stable solid mass"—and one of rationalisation, in the conversion of the idea of radioactive waste qua hyperobject to a single geometric shape.

Similarly, Trevor Paglen's project is also a vitrified cube, made from irradiated glass from Fukushima on the outside and Trinitite on the inside. In an interview about his project, he explains: "For me it is a gesture that's thinking about geology,

thinking about man-made minerals, and thinking about that history of nuclear power slash nuclear weapons that began, perhaps, in New Mexico and continues to this day through places like Fukushima" (The Creators Project 2015, [n.p.]). Paglen, like Simon, puts forward geology both as an epistemic mode and measure to think through this mislocation and mistiming of the threat in the nuclear sublime. The mistimed is an ahistorical threat—just as geology was considered to be an event unfolding on ahistorical scales—that Paglen wants to concretise, make historical, by putting the geologic on the same plane as the materials produced by human events. By melting together the Trinitite mineral with the irradiated glass from the Fukushima Exclusion Zone, Paglen's *Cube* congeals history with what is the ahistorical quality of the perpetual mislocation and mistiming of nuclear threat. The process of vitrification is a mechanism to convert dangerous material output of a specific energy regime into an ahistorical materiality (Carpenter 2016; Yusoff 2019). This ahistorical materiality dislodges the radioactive waste from real historical systems of extraction and consumption, and the political mediations that sanction them. In other words, what Paglen calls a "man-made mineral" is put forward as the figure by which the tension between the intangibility of radiation and the actuality of nuclear materials is resolved through a turn to geology, as a relay between history and ahistory.

The mislocation and mistiming of nuclear threat that these cubes both address and attempt to condense through this transmutation from nowhere to somewhere is a mechanism that is part of the political project of making nuclearity tangible. As a scientific mode and material category, geology emerges as a stabiliser for radiation that is always already mislocated and mistimed, is volatile, and subject to a nuclear sublime that consistently pulls away from, if not an essence or truth, then a stable measure for decision-making. It comes perhaps as no surprise then that Simon worked in collaboration with ROSATOM on *Black Square XVII*, while Paglen's *Trinity Cube* is part of the *Don't Follow the Wind* project, which explicitly aims to provide a counter-narrative to the pro-nuclear agenda of the Tokyo Electric Power Company (TEPCO) and the Japanese Government. When the Garage Museum of Contemporary Art in Moscow, which exhibits the space Simon's *Square* will take 1,000 years from now, frames the cube as evidence of the process of stabilisation of volatile material, it effectively becomes a poster child for GeoMelting and waste 'neutralisation'.

Simon also included a personal letter to the distant future in the vitrified cube, as if radioactive waste is somehow supposed to safeguard our connection to the future, giving it positive value, associating nuclear timescale with permanence and stability in a volatile world. Andrew Moisey has suggested that permanent nuclear commemoration, such as the Waste Isolation Pilot Plant's marking designs from 1989 intended to cover the entire surface of the Plant with awe-inspiring spikes, spirals, and basalt, were not meant to be a hiding place or warning about nuclear danger for a thousand future generations, but a celebration of the moment in history when humans reinvented fire, the ultimate achievement of modernity (2017, p. 892). While celebrating nuclear waste as our ultimate permanent mark on the world seems too abstract for a direct motive, ROSATOM's interest in emphasising GeoMelting as a waste neutralisation process is not at all abstract in how it helps to demystify what continues to be perceived as an invisible and ungraspable threat. As I will argue next,

the banalisation of nuclear materials, both on the front- and back-end of the nuclear fuel cycle, and both in the public imagination and in international safety regulations, is the core mechanism by which the nuclear industry hedges against public criticism and keeps policy restrictions at bay.

11.3 Nuclear Banalisation

The attention of both cubes to human-made geology—their attempt to think about the future from a non-human perspective through the epistemic mode of geology—signals a re-contextualisation of nuclearity from the Cold-War atomic sublime to Anthropocene-inflected arts and humanities discourses. This shift is important to note because it is the discursive and ecological envelope through which the aesthetics of nuclear energy gets materialised in more recent artworks that turn radioactive materials into an artistic medium. Very different is this aesthetic gesture than the conceptual matrix through which nuclear criticism in the 1980 s oscillated between the unthinkable and unrepresentable ultimate destruction of nuclear war on the one hand, and the very specific image of explosion on the other. Thus, what is made available by attending to the presentation of geology in Paglen's and Simon's artworks are, among other things, the modes by which the geologic index of the human becomes both a problem for climate change and a solution to it.

The shift is just as visible in the industry's discourse about itself. Although the nuclear industry witnessed a plunge in reactor capacity since the early 2000s through the decommissioning of old reactors built in nuclear's 'golden age' (roughly between 1950 and 1970; Betts 1986–87), some are speaking of a second coming of the nuclear industry, in some parts fuelled by tech start-ups (Johnson 2018), or as international nuclear agencies and associations have been marketing it, "a nuclear renaissance" (Bird 2008; International Energy Agency 2007; Wang and Hansen 2007). The Nuclear Energy Agency (NEA) is calling for new policy frameworks that would allow for a growing share of nuclear in decarbonisation plans (2019). That means easing restrictions on trade, processing, and disposal of nuclear materials that currently obstruct the movement of nuclear materials out of safety considerations and subject them to the forces of the market instead. Elsewhere, ecomodernists, in a truly Promethean manifesto, argue that a 'good' (or even great) Anthropocene is possible if only humans would be willing to use their economic and technological powers to stabilise the climate (Asafu-Adjaye et al. 2015). Nuclear power is one of their proposed solutions in further "liberat[ing] humanity from nature" (ibid., 17). Human civilisation will be able to flourish for millennia on unlimited power generated by a closed uranium—or thorium-fuel cycle, as argued in the *Ecomodernist Manifesto* (ibid., p. 10). Indeed, in the U.S and across Europe, new grade 4 reactors are being built, 12 underground disposal sites are currently in the early stages of construction, and the current U.S. administration is adding large funds to private-public partnerships in advanced reactor developments to revitalise its domestic nuclear industry. It seems that the nuclear industry is making its way back into at least some official

imaginations of energy futures. The cubes, each in its own way, signal that, parallel to this, nuclearity is returning as an aesthetic problem, one that attempts to grasp the times and spaces of a nuclear energy future. This time around, not as the instigator of the end of the world, but as its solution.

This new nuclearity is then less about controversy over reactor safety and more about the struggle between energy future and the apparent geological capacity of the human that the Anthropocene has revealed. The Anthropocene signals new ways of thinking about time and matter because it imagines the temporal and material capabilities of the human to have stretched massively. While for many this triggers an uncomfortable image of humanity exceeding its boundaries, for nuclearity, this geological index of the human is figured as a stable ground to base a new nuclear literacy on, an epistemic framework that thinks possible the stretching of risk management to geological timescales. A major case in which this development becomes clear is the deep geologic disposal for spent nuclear material. Storing radioactive waste deep within geologic formations relies on a 'safety analysis' of the area, which means evaluating the geological and hydrological structure and its evolution. In these disposal projects, much like both Simon's and Paglen's cubes, geology, as a modern science concerned with deep time, is put forward as the measure against which the temporalities of radioactive waste can be thought, managed, or contained. This constitutes a form of geologic mediation that modulates the bureaucratic and conceptual stakes of the Anthropocene.

In these deep geologic waste storage projects, geology becomes the discursive and materials grounds for a contemporary iteration of the process of nuclear banalisation that, in different ways, has characterised the nuclear economy since the 1960s. Bureaucratic reforms, rephrasing, and re-characterisations of the 'nuclear' have been aimed at reinventing nuclear risk on an international policy level from a specifically nuclear risk to regular industrial risk. This started with the denuclearisation of uranium at the beginning of the 1960s, meant to strip the mineral from its nuclearity—that is, the particular conditions that make nuclear material subject to international regulations. The set of bureaucratic reforms, mainly in defining separate stages of uranium exploitation constitutes what Hecht (2012) calls mechanisms of banalisation. These interventions were employed by the IAEA since the mid-1960s, in response to an international desire for a uranium market and hinge on the definition of "source materials" to transform nuclear things into ordinary commodities (Hecht 2012, p. 55). This created the techno-political conditions of possibility through which the distinctiveness of the state of being nuclear could be diminished. For deep geological disposal, these terms of banalisation are set by the IAEA's GEOSAF project and are based on geological research. GEOSAF, or the International Project on Demonstrating the Safety of Geologic Disposal, pursues the IAEA's general statutory objective: to "seek to accelerate and enlarge the contribution of atomic energy to peace, health, and prosperity throughout the world" (International Atomic Energy Agency 2015, [n.p.]) by making a safety case that "draw[s] together all of the safety arguments and demonstrate[s] and communicate[s] why the operator of the facility has confidence that safety in the long term will be ensured" (ibid., p. 0).

This five-year project (2012–2017) defines the terms and guidelines for what the IAEA calls "post-closure safety", the assessment of risk of leakage after final waste disposal as opposed to leakage during operation (International Atomic Energy Agency 2015). If the operator of the facility remains within the procedural guidelines set out by GEOSAF, post-closure safety is deemed assured. These guidelines prescribe a series of safety functions consisting of 'natural barriers', the 'host rock'—that is, the rock directly surrounding the waste containers and the geological formations overlying the underground facility—and 'engineered barriers', the waste packaging, buffer, and sealing materials. It is important to make a distinction here between ensuring the safety of geological repositories and GEOSAF's aims to provide the terms and parameters, the techno-political framework with which the safety of geological disposal can be argued for. The terms GEOSAF provides, such as post-closure safety, safety functions, and safety envelope (the set of boundary levels that must be maintained throughout the disposal facility's life cycle), to use geology to provide a way to talk about risk management on a 100,000-year scale, are mechanisms of banalisation that necessitate an analytics that is, in fact, the opposite of the nuclear sublime, it is a *nuclear mundane*.

The nuclear mundane is different from the nuclear sublime in that it gives a literal shape to the nuclear in order to stabilise a nuclear energy future, instead of foreground its unpredictability. What the mundane works on conceptually is the figure-ground relationship, where the environment as ground is turned into a passive stabiliser for the harmful actions of the human as figure. Rather than vice versa, where climate change becomes something that happens to the human, this nuclear mundane therefore works conceptually and aesthetically to distribute nuclearity as a distinctly human product back into the earth through geology. On the one hand, this is a facet of the Anthropocene that positions the human as possessing the ultimate and final agency; on the other, it allows the aesthetic of nuclearity to become banalised, unimportant, or insignificant. The nuclear mundane, needless to say, not only falls back into the idea of energy as fuel and its regimes as supportive—rather than constitutive of social and cultural worlds—but also obscures and diminishes the threats and violences specific to it. The nuclear mundane and the nuclear sublime are opposing analytics for nuclearity, yet, as I will argue in the next section, both economies bypass the idea of nuclearity as a unique energy regime.

11.4 Geology and the Mundane

Nuclearity manifests itself discursively, aesthetically, and ideologically either as the sublime or the mundane. This polarisation of the nuclear index, already signalled in Paglen's and Simon's cubes, returns more explicitly in the 2010 documentary film *Into Eternity*. It chronicles the early stages of the construction of Onkalo, Finland's deep geological repository for nuclear waste generated by the nearby Olkiluoto Nuclear Power Plant. This facility will be filled with spent nuclear fuel currently in interim storage and will continue to accept new waste before it is backfilled and

sealed around the year 2120. It is meant to stay sealed for as long as the waste remains radioactive, up to 100,000 years in the future.

In the film, we see the representatives of Onkalo arguing for its safety by storing the waste deep within the Finnish bedrock, which is, they state, "the most stable environment we know of", and where "time moves slower than on the surface" (*Into Eternity* 2010). Making this safety case relies on certain assumptions about the host rock, resonating with a view on geology going back to the so-called English Gentleman tradition of James Hutton and Charles Lyell, a time when gradual, uniform processes of change replaced previous ideas of the earth being changed only by spectacular sudden catastrophes. Lyell's most important work, *Principles of Geology* (1830–1833), is a polemic against the so-called catastrophists of his time and argues for a uniformitarianism: the idea that physical laws, and subsequently geologic processes, are stable and uniform, and thus the past can be studied through the present. James Hutton writes: "In examining things present, we have data from which to reason with regard to what has been; and from what has actually been, we have to conclude with regard to that which is to happen thereafter" (1788, p. 17). In these terms, a nuclear safety future can be constructed from the study of natural analogues—present-day geological formations as stand-ins for the distant future—and computational modelling based on these studies. It is no surprise then that the Onkalo representatives choose to adopt this language.

However, this study of natural analogues does not align with the safety parameters common to industrial risk, meant to guarantee safety by verification of future stability. For the IAEA, since post-closure safety cannot be "verified by direct methods", which means that because no IAEA member will be able to witness a successful radioactive containment for a 100,000 years, post-closure safety can instead be guaranteed by "indirect methods" of natural analogues (International Atomic Energy Agency 2015, p. 7). This tactical split in defining 'guaranteed safety' between indirect and direct verification makes it possible to argue for the complete safety of an open nuclear-fuel cycle. These indirect methods of verification move alongside the mechanisms of mistiming that gets associated with nuclear materials, because the Scottish uniformitarianist principle 'the present is key to the past is key to future' thinks all three on the same plane. Yet this time, GEOSAF's safety framework doubles down on the ahistoricality that gets associated with nuclear materials. This, again, is a mechanism of banalisation that attempts to diminish what Hecht (2012) calls the "radical uniqueness" of radioactive waste by creating a bureaucratically constituted, atemporal form of nuclear materiality that allows a nuclear risk to disengage from its time and place. This extraordinary move signals that there is nothing mundane about the nuclear mundane. Without this form of banalisation through the function of the ahistorical, nuclear energy and its 100,000-year legacy would become again about the current historical moment, and would endure a literally unthinkable and, as such, undefendable pressure on nuclearity.

To return some of this pressure suspended by banalisation to present-day energy policy, some forms of nuclear aesthetics, like *Into Eternity*, demand an intervention in the ways in which these mechanisms represent the stages of the nuclear-fuel cycle. The critical weight of *Into Eternity* then lies in the doubt it casts on these terms of

banalisation. In his interviews, filmmaker Michael Madsen asks repeatedly, how can we guarantee that no future civilisation or life form will enter the repository? When asked about human intrusion, Peter Wikberg, credited as Onkalo's research director, responds: "If someone in the future is able to dig down to the repository—it will probably be a civilisation of the same kind as we have presently. In such a case they would also be knowledgeable—to know that this is radioactive material" (*Into Eternity* 2010). The woman sitting next to him, Berit Lundqvist, for a short moment smiles and after an awkward pause and a short intake of breath phrases carefully: "I think that is the most… probable scenario, but I'm not so sure. It could be—another situation. They might interpret it as something religious, a burial ground, a treasure" (ibid.). This conspicuous doubt is the central jarring gesture of this film. Perhaps because Lundqvist recognises the disastrous consequences of being wrong, not only for the humans of the future, but of the Onkalo project and the international nuclear safety agreements more broadly. In this awkwardness lies the strength of *Into Eternity*'s intervention. It is this shimmer of doubt that can destabilise the carefully constructed bureaucratic grid through which the doubts, dangers, and uncertainties of long-term nuclear risk get banalised.

By pushing the limits of this fear-management discourse and leading the engineers to dead ends in their arguments, *Into Eternity* returns some of the panic of the nuclear sublime to us. Aside from the interviews with the representatives, the film employs a series of aesthetic and narrative strategies that caused film scholar Andrew Moisey to dismissively name the film a "middle-brow spook fest" (2012, p. 103). This is not surprising, as Madsen's match-lit monologues, the stylised shots of waste containers set against songs from Kraftwerk's album *Radio-Aktivität*, the footage of poorly lit underground tunnels, the markings for the blasters that look like prehistoric cave drawings, and extensive embellished footage of construction machinery, are all tactically presented stand-ins for the 'unrepresentable future' of nuclear waste. In *Into Eternity*, Onkalo becomes a mythical place, far removed from the mechanisms of banalisation. The waste is not presented as ahistorical materiality, but as existing in a science-fictional sphere that is forever occupied with thinking the unthinkable.

The film's two opposing narratives are structured around nuclear waste. The IAEA reflected in the Onkalo representatives and Madsen's "spook fest" mirror this ongoing polarisation of the sublime and the mundane in nuclear energy discourse: the movement towards banalisation, a radical mundane of nuclearity and its countermovement towards the 'radical uniqueness' of nuclearity. Both spheres construct opposite futures—one of absolute predictability and one of no predictability at all—but engage a similar process through which nuclear materiality is disengaged from its discursive surroundings.

11.5 Conclusion

The futures invoked, or rather not invoked, by *Into Eternity*'s "spook fest" generate a fear of darkness, of nothingness, of the unknown, more than they generate a fear of nuclear threat. The IAEA's tactics of banalisation through misplacement and mistiming creates matter disconnected from history. It is this type of nuclearity that has less and less to do with radiation. Radiation only really manifests itself when it comes into contact with matter. Instead, here nuclearity becomes an aesthetic economy that mistakes the discursive process of 'making tangible' for the material process of making tangible. It is here that the tensions at the heart of Paglen's and Simon's cubes come together. The important point here is that both sides of this polarisation work to bypass the violence of nuclear energy regimes. *Into Eternity* also inhabits that same polarisation of the mundane and the sublime that is so central to Paglen's and Simon's cubes, and might be precisely what continues the illiteracy of representation of nuclear energy regimes. This is not to say that they defy representation; rather, it is to say that nuclear energy safety discourse is caught up in a web of competing temporalities that cannot be figured in existing conceptions of nuclear risk in the present, risk in the future, and what we have come to know about risk in the past.

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