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The multiple temporalities of infrastructure: Atomic cities and the memory of lost futures

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Abstract
Nuclear power plants, with their promise of boundless cheap energy, are archetypal figures of progress modernity. As we acknowledge the limits of industrial progress and growth-based capital, places for where the dream is now over, and whose inhabitants are finding ways of living through its transition, offer emergent practical ontologies based on maintenance, bricolage and necessity. Through the case study of the atomic city of Visaginas, Lithuania, this paper addresses the question of how to account for forms of life that emerge in the aftermath of high modernity. Here, infrastructures operate as residual cultural and material resources for practical ontologies and world building after progress. Building on emerging scholarship on the political aesthetics of infrastructure, I suggest that their ontological transition involves what Fisher describes as the 'memory of lost futures', a future anterior that, through the remains of material connections, technocultures and cultural memory, provide limits and conditions for emergent ways of living 'after progress.'

Faust's unfinished construction site is the vibrant and shaky ground on which we must all stake out and build up our lives. (Berman, 1983: 86)

When we lose certain people, or when we are dispossessed from a place, or a community, we may simply feel that we are undergoing something temporary, that mourning will be over and some restoration of prior order will be achieved. But maybe when we undergo what we do, something about who we are is revealed, something that delineates the ties we have to others, that shows us that these ties constitute what we are, ties or bonds that compose us. (Butler, 2004: 22)

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Introduction

In the face of structural change and upheaval, where macroeconomic decisions bear down on our lives, and over which we are largely powerless, we find ways of world-making and attaching to possible futures. Grand projects emerge, make cities, forge dreams and move on as the State gives way to the trade bloc. On the ground, things carry on as best they can. We love, we dream, we medicate and we shore up our lives as means of living on.

Visaginas, Lithuania, was an atomic city, an *atomgrad*: its monoindustry weaves its way through playgrounds where children climb on structures shaped like sub-atomic particles, through the huge pipes that took hot water from the nuclear plant to the town from when they 'used our bodies to cool the reactors,' and through the radiators in every apartment that you could never turn off. It is apparent in the coming together of bodies to remember colleagues and friends lost in the Chernobyl disaster and to feel connected to the danger and the promise of their work, in the childhood memories of emergency drills, in the sirens on the sides of buildings and in the wide roads designed for a quick getaway in case of an accident. And it is present as spent fuel and low-grade waste stored nearby while the ongoing work of decommissioning continues, the reactor core as yet untouched.[1]

In Visaginas, nuclear power is meshed through the town. As the satellite town of the Ignalina II nuclear power plant, it is inscribed in the space and the bodies of those who live there. The plant was built in the late 1970s and 1980s, and had ambitions to be the largest in the world. Its decommissioning was ordered as a condition of Lithuania's accession into the European Union. The Lithuanian State agreed to close the plant in 2000: the first reactor shut down in 2004, the second in 2009.[2] The decommissioning process is ongoing and will continue for the next 30 years. In 2001, 34% of the inhabitants of Visaginas worked at the plant and the average salaries were 1.9 times higher than the Lithuanian average (Baubinas and Burneika, 2001). Since the announcement of the plant's decommissioning, the population of the town has decreased by a third. While a large number of the town's residents left Visaginas to explore the opportunities offered by the free movement of labour with the EU, many remained to work on the decommissioning, or lived off redundancy money, pensions and the piecemeal alternative work available (Šliavaitė, 2015).

Nuclear power plants, with their promise of boundless cheap energy, are archetypal figures of progress modernity.[3] In his elegiac opus to modernity, *All that is Solid Melts into Air*, Marshall Berman describes how the Faustian impulse of large infrastructure was made material in the radical and utopian dreams of the socialist planned economy (Berman, 1983: 393). As cycles of creation and destruction characterise the modernist drive, so Berman charts their erasure of life, love and labour through the figures of *Faust's* Phelemon and Baucis, an elderly couple living happily in a grove of Linden trees before Faust orders their property to be seized, leading to their murder. This couple, derived from Ovid's *Metamorphoses,* become, for Berman, central figures of the creative destruction of modernity: they are 'the first embodiments in literature of a category of people that is going to be very large in modern history: people who are in the way – in the way of history, of progress, of development; people who are classified; and disposed of, as obsolete' (Berman, 1983: 67). Visaginas is testament to those grand schemes of socialist modernity, but also to their afterlives. These chosen people of the Soviet Union, the custodians of the 26-year reaction, the technicians, physicists, controllers, trainers and orderlies who powered the Western expanse of the USSR are now seen as settlers and abject by independent Lithuania, and retired, made redundant or doing the ongoing, slow work of taking apart the plant they and their families had built. Visaginas is almost entirely Russian-speaking, and its inhabitants' originate from throughout the former Soviet Union. Lack of Lithuanian

language proficiency has made it hard for older residents to find other work, and there is much talk of unfair treatment by Lithuanian authorities.[4] Yet, despite the making-obsolescent of a place and its inhabitants, those who remain are finding ways of making meaningful lives in the aftermath of the failing promises of progress modernity. Rather than being 'in the way' of progress, they are responsible for its active dismantling, and carrying the burden of its broken promises. And despite the dismantling, fraying and material unmaking of the infrastructural telos of the town, it holds itself together. This suggests that the temporality of progress and its afterwards can be more complex than the creative destruction and abandonment of Berman's figures. By avoiding temporalities of progress and decline (see Dawney, 2020a), we can address the specific geographies of progress modernity's afterlives, and how past narratives and imaginaries are folded through the creative and multiple ways in which places are remade. Here, I offer an account of infrastructures in transformation; foregrounding their changing ontologies as economic, social and political changes trigger creative and emergent infrastructural relations.

This paper engages one instance of the material and experiential afterlife of modernity: what lives on when the mega-projects of State infrastructure retreat, and when technology phase-out and political transitions leave places in their wake. Recent scholarship on infrastructure from across the social sciences is refracted here through ethnography to argue that the infrastructural afterlives of the Soviet nuclear promise provide the conditions for emergent and often abundant ways of living on after the closing of the plant. In doing so, the paper addresses the question of how we account for forms of life that emerge in the aftermath of high modernity, without attaching redemption narratives, or frameworks of hope and despair to them.[5] In addition, it draws attention to the current juncture as transitional and aleatory: at the tail end of progress modernity and its discontents, yet perhaps prior to the formation of a new epoch. As we acknowledge the limits of industrial progress and growth-based capital, places for where the dream is now over, and whose inhabitants are finding ways of living through its transformation, offer emergent 'practical ontologies' based on salvage, bricolage and necessity (Papadopoulos, 2018). Here, the infrastructural remains of high modernity operate as residual cultural and material resources for practical ontologies and world building. They are refigured as material-semiotic, affective containers for life in flux, as the remains of political organisations, spatial architecture, material connections, technocultures and cultural memory provide limits and conditions for emergent ways of being.

It's inviting, when confronted with a situation like this, to tell a tale of decline and loss, or nostalgia. Or to look to postindustrial forms of life for redemption narratives, seeking emblematic instances of postcapitalist thriving in the ruins (e.g. Jones, 2019; Kirksey et al., 2013; Tsing et al., 2017). In Visaginas, as in other places, the story is complex and multiple. This is not a tale of loss and despair, nor redemption and hope. Rather, it is a tale of making sense, making do, and using what resources are available to forge lives and futures. The afterlives of infrastructure endure both in their material remains and the affective and experiential modes through which those whose lives were shaped by their promise make sense and meaning in the present. Operating as a gathering of human and non-human in the making of a place, infrastructures organise worlds through materiality, affect, and the imagination. They offer resources for what the anthropologist Felix Ringel has called practices of endurance: a practical politics that operates against the progress narrative: against the biopolitical ordering of life that renders some populations anachronistic and disposable, maintaining liveability despite the forces that try to prevent it (Ringel, 2014). These practices of endurance are manifest as a commitment to place: a will to remain, bolstered in this instance by belonging, attachment and cultural specificity.

I first visited Visaginas 15 years after the initial announcement of the plant's closure. During this time, those who live there have undergone shock, grief, a feeling of unravelling, and the experience of 'losing a mother,' as one participant described it. The town has witnessed waves of out-migration, as people take advantage of open borders to make lives elsewhere in Europe, taking advantage of the trade-off with EU accession into which the decommissioning of the plant was tied. Indeed, when the closure of the plant was first announced, a whole generation of young people left. Now, as my participants discussed, very few grow up with the idea that they will stay in Visaginas. Language learning is encouraged to prepare for study and work in other parts of Europe. This is a marked change from the earlier generation raised in the Soviet era, whose lives were mapped from school to nuclear plant.[6] Recently, some have now returned to the town to bring up children or to enjoy the relaxed pace of life it offers. Others migrate between Visaginas and urban centres in Germany and other parts of Europe. As a result, this work witnesses a particular temporal juncture in processes of deindustrialisation, post-Soviet transition and Europeanisation, tracing the afterlives of nuclear modernity, as experienced and felt by those living on through the failure of its promise.

This research project took place during four field visits to the town over the course of two years, during which I undertook ethnographic fieldwork and interviews and collaborated with two photographers, Laurie Griffiths and Jonty Tacon, and with a theatre project, *Green Meadow,* that was being produced with the Lithuanian National Drama Theatre.[7] I undertook interviews with 20 residents and 3 former residents of Visaginas, and accompanied research participants on their daily activities. Interviews and field research were conducted in Russian, Lithuanian and English, with the support of an interpreter. Access to interviewees was assisted by gatekeepers, and the research involved a cross-section of participants, with the majority falling into three main groups: older residents of the town who had been posted there from other parts of the Soviet Union, young people who were involved with the *Tochka* art space, and parents of young children. Overall, the younger participants were as invested in the town as the older residents, and certainly more hopeful about its future. The vast majority of participants had either worked at the plant or had family members who currently or historically worked there. The repeated visits enabled an iterative research process, involving continued conversations, reflection, analysis and reading between field visits. I make no claim for this paper as representative of the entire population of Visaginas: certainly, the research process self-selects towards those most committed and active in the community. My focus here is on the way in which those who remain actively create lives for themselves, and on the role of infrastructural remains and temporalities, and on the political aesthetics of infrastructure as material and imaginary grounds for the remaking of worlds after progress.

The political aesthetics of infrastructure

Recent scholarship in Human Geography, Science and Technology Studies and particularly in Social Anthropology has paid attention not only to infrastructures' material, technical and systemic articulations but to the cultural and political forms of life that they generate. Energy, water and transportation projects build nations: they border, territorialise and produce imagined communities: the electrification of the Soviet Union is one such case in point (Braun and Whatmore, 2010; Anand, 2018). As political technologies that do powerful work in forming collectivities and states, infrastructural politics are symbolic and affective as much as technical. As Brian Larkin makes clear in his seminal review of this infrastructural turn, infrastructural aesthetics produce experience, and our affective relation

to infrastructures is always part of their political effect (Larkin, 2013:334). Infrastructure has thus been discussed as 'lively': as mundane sociotechnicalities that 'inflect the politics of the foreground' (Amin, 2014). For Harvey and Knox, large infrastructure 'enchants' (Harvey and Knox, 2012). Its 'unbearable modernity' is as generative as the material flows it facilitates: as semiotic and material articulations of power, infrastructures signify progress, power and responsibility (Larkin, 2013).

Although Larkin's focus on the poetics of infrastructure is largely humanist (see Jensen and Morita, 2017), it is precisely those all-too-human affective relations with the cultural power of infrastructure that contribute to engagements between the matter of infrastructures and the forms of cultural life they generate. To underplay the aesthetic and figural force of charismatic infrastructure to its human inhabitants would certainly occlude many of the conditions through which infrastructure organises life, and through which emergent forms of life come into being. As material-semiotic objects, infrastructural forms can operate as figures, objects around which affects, ideas and forms of life coalesce, and which refer beyond themselves (Larkin, 2018; Dawney, 2013; Dawney, 2018; Schwenkel, 2013; Schwenkel, 2018). As figures, the visibilities and palpabilities of large infrastructure work as powerful aesthetic forms, referring to ideas of progress, power, modernity, hope or despair, meaning they cannot easily be separated from progress narratives nor, conversely, from the Others of these narratives. The material and human infrastructures in Visaginas once embodied the Soviet nuclear dream: they provided status, quality of life and pride in labour. Attachment and commitment to these 'ties or bonds that compose us' (Butler, 2004: 22), in the face of dispossession from livelihood, prestige and identity draw on the affective power of infrastructure: on the legacies of its promise.

In addition to this turn towards the political aesthetics of infrastructure, the operation of the term as a heuristic has also emerged, and with it an expansion of the concept, particularly within this journal (Berlant, 2016; McCormack, 2017). Lauren Berlant describes infrastructure as 'that which binds us to a world in movement and keeps the world practically bound to itself' (Berlant, 2016: 394), that produces a 'sense of belonging but more than that, of assembling' (Berlant, 2016: 403). Berlant expands the concept of infrastructure in response to the question of what holds a place together in the face of infrastructural decline, deindustrialisation and the shrinking of the welfare state. She invites us to view infrastructures through scenes of corporeal proximity that highlight participation in a shared world; a generative common that stands in for the loss of previous forms of life, as 'mid-twentieth century forms of expansive world-building toward the good life have little or unreliable traction' (Berlant, 2016: 409). Infrastructures taking shape after the decline of the post-war dream articulate loss: the sense that something that held us has gone, and the need to inhabit a space of ambivalence where this loss is lived through, made visible, patched over. Her infrastructures are makeshift, and very human: they enact forms of 'managing the meanwhile' (Berlant, 2016: 394), a clinging on to the idea of public, finding ways to stay 'bound to the ordinary.'

While Berlant expands infrastructural study into affective and the corporeal human formations, McCormack's expansion of the term incorporates the atmospheric and the elemental. He identifies three forms of elemental infrastructures ... firstly as milieu, secondly, as properties, capacities and affordances of matter and, thirdly, as an ontological proposition that speculates towards new entities and beings – as the force of the elemental, the wayward, more than human, more than object, liveliness of materiality (McCormack, 2017). These each, and together, are important provocations for thinking about infrastructures as gatherings, as articulations of materials, bodies, imaginaries and forms of life. Like Berlant, McCormack acknowledges how infrastructure emerges as an affective field, providing conditions for forms of collective life, yet he also pays attention to how such fields operate outside of and despite of the human. Understanding infrastructure thus decentres the

human: infrastructural formations are emergent communities generated through material, atmospheric, corporeal and planetary affinities and connections.

These expanded understandings of infrastructure certainly provide conceptual depth and richness to the infrastructural turn, as well as attending to the affective relations, atmospheres and corporealities that produce ways of being and living through the contemporary condition. Yet, redefining infrastructure as generative field runs the risk of expanding the concept so much that it becomes too broad to be precise. There is a danger in operating in so many registers that we flatten the political topologies of infrastructures out into glosses of entanglement and connection, and thereupon lose a grasp on the relative densities of power and temporalities through which they operate. Certainly, this broader concept enables a focus on what holds places together, but only if we bring out the specific histories and politics of the spaces they address.[8] Unlike Berlant's examples of the post-industrial United States, I argue that Visaginas' specific history and politics of nuclearity, post-Soviet identity and 'outsider' status in Lithuania provides the conditions for a specific recalibration of its infrastructures, moulding social, material and practical forms of life.[9] While the analogue dream of Larkin's 'unbearable modernity' may be fading as the town's residents come to terms with the plant's decommissioning, the forms of life that the dream affords remain as infrastructural assemblages that shape ways of living on and making do.

Echoing Jensen and Morita's call to think infrastructures as 'open-ended experimental systems that generate emergent practical ontologies,' the case of Visaginas can help us to think about the multiple temporalities of infrastructures. If infrastructures are seen as processual rather than fixed objects, we can attend to their shifting dynamics, pointing to the duration of some forms and the decline of others. Infrastructures, as objects in transition, are recast as practical ontologies in which we might 'tinker and interfere' (Jensen and Morita, 2017: 619). This call is also taken up by Dimitris Papadopolous, whose 'generous infrastructures . . . allow for communities to maintain and defend the ontological conditions of their forms of life even when instituted infrastructures break down' (Papadopoulos, 2018: 204). Thus, in the space left behind by decline of the instituted infrastructures through which Soviet modernity shaped lives and worlds, forms of making do emerge that, while less explicitly political than Papadopoulos' examples, respond to a need to live on through progress modernity's unmaking, drawing on the lost promises of the good life.

Using the example of the changing 'material configurations' of a silk mill in Derby, UK, Papadopoulos argues that infrastructural ontologies are 'stacked materially and temporally', with each iteration providing the conditions for what comes after (Papadopoulos, 2018: 163). These configurations (ontologies) enable how infrastructural objects can and cannot change. While there is no way of knowing the precise forms that these practical compositions may take, they emerge as a new ontological configuration, where 'each new ontology sets constraints against which the next one develops . . . every development is contingent on the frictions that happen as new ontologies emerge' (Papadopoulos, 2018: 162). Paying attention to the multiple temporalities of infrastructure, and their shifting ontologies, reveals the role they play as condition, gathering and ground for forms of life after progress. As Harvey and Knox assert, infrastructure's promise, and therein its political force, endures, even when it fails, falters or decays, and the shape of that promise is held in its material remnants: 'it is through an articulation with the lived, material encounters of stasis, rupture and blockage that infrastructural promises become invigorated and recast' (Harvey and Knox, 2012: 534). Hetherington, too, points to the operation of infrastructural promises that position presents as futures perfect (Hetherington, 2016). While this holds true for the promise of infrastructure to come, when transposing these ideas to Visaginas, where infrastructural promises will never come to fruition, and the source of the promise is no more, the invocation of the future perfect

is here inverted, whereby the anterior future, or the 'memory of lost futures', to use Mark Fisher's term, becomes a means by which the future promise of infrastructure maintains its affective charge (Fisher, 2014; Knox, 2017). In other words, the remains of the lost promise that is the hallmark of this faded Soviet utopia provide foundations for the practical carving of new infrastructural ontologies, and a toolkit for creative bricolage in the present.

In *Ghosts of my Life*, Fisher recasts Derridean hauntology as a cultural genre that reclaims and reappropriates the memories of the lost futures of the post-war consensus, drawing our attention to those promises (of a welfare state, of affordable housing, of the idea of the public) that have been eroded in the UK since the 1979 Thatcher government (Fisher, 2014). Hauntology is nostalgic and melancholic, sampling vinyl crackle and analogue synth. The analogue dream haunts the present, resurfacing and performing this loss and providing resources for new forms that can help us to recompose what matters. He writes, 'In hauntological music there is an implicit acknowledgement that the hopes created by post-war electronica or by the euphoric dance music of the 1990s have evaporated – not only has the future not arrived, it no longer seems possible. Yet at the same times, the music constitutes a refusal to give up on the desire for the future' (Fisher, 2014: 21). Fisher's world is haunted by 'the *not yet* of the futures that popular modernism trained us to expect, but which never materialised' (p. 27) and in doing so, reproach a nostalgia through an active re-presenting of lost promises. Transposed to this very different field site, I argue that the memories of lost futures are central to the practical recomposing of Visaginas' infrastructures. The material, affective and practical traces of the Soviet nuclear promise are recast to allow for emergent articulations of life and matter, and practical orientation towards the present, which is put to work in forging alternative, post-progress life projects that replace dedication towards the project of Soviet nuclear modernity.

Atomic bonds

While the plant is decommissioned, the town and its plant remain as legacies not only of the Soviet atomic dream, but also of the commitment to place of those who remain there: their willingness to endure and find ways of living on. This attachment to the town can be parsed further by considering some of the specificities of the town's construction. The town, and the plant, was built by its residents, or their parents; the dream was theirs, inscribed on their bodies through years of labour and devotion to the project. This history, and the relatively closed space of the town has led to powerful affective attachments to place, and to the memory of its promise.

As a new town, built in the 1970s and 1980s, most people, or their parents, were living in Visaginas during the building of both the town and the nuclear plant. Many of them were involved in the construction process, as people were posted to the town to build it, then work in the plant afterwards. The town and the plant were still undergoing rapid construction and expansion until the collapse of the Soviet Union.

The stacked histories of the town also help to explain how some of the current practices of mutual support and commitment have gained traction. Maria, a woman in her eighties who was posted here from Siberia in the 1970s describes the early days of construction, when she and her husband lived in a tent before their apartment was built:

> You see, many people . . . came to us to take a shower, a bath, because it was difficult for them as in some places there were no public baths. After, people from different postal closed towns[10] came to live here, they lived on Lake Visaginas in kind of communes according to their home town: here – the ones from Tomsk, there – from Krasnoyarsk, Chelyabinsk, etc. People made friends, were trying to help each other in household and everyday life.

The streets of Visaginas offer a literally concrete reminder of the hard work, hopes, and investment in the making of a place where once there was a lake, forest and marshland, and a sense of custodianship and nostalgia for the transnational nuclear cultures that actualised the Utopian socialist dream.

> It's 1 in the morning. I'm staying in a flat in the centre of Visaginas lent to me by a friend of a former resident who comes from the same home town as me. My phone beeps and wakes me up. There's a message from a guy who lives in the town, and a photograph. The photograph is of the old sign for Sniečkus (the former name of Visaginas), with the friendly atom and a crane (the emblem for Lithuania). He writes, "I found this. I'm looking at it and it makes me feel proud". Earlier that evening, a group of us had walked through the woods to the former training centre a few kilometres out of town, to swim in the "white lake". The training centre is now run by the municipality, and is used as occasional tourist accommodation. It houses a replica of the control room used to test workers' vigilance and reaction speed. On the way back from the woods, this time walking along the road, we passed the new sign to the town. The old sign, a modernist concrete block, featured the name of the town and, again, the friendly atom. This has since been replaced with a solar-lit sign for Visaginas, (although the photovoltaic panel is too small to actually operate the light). The group were less than enthusiastic about the new sign, lamenting the erasure of the atom as the symbol for the town and its heritage (field notes).

In addition, the relatively insular community in Visaginas fosters global attachments and connections to place. Migrants living in other parts of Europe and the United States find each other using social media.

> There are Facebook groups and flash mobs and new year's greetings people greeting each other wherever they are. People are crazy about it, and they have this idea it is better to spend the money in our native Visaginas than Vilnius when they come here as tourists, they'd rather have fun here than in other places.

> My friends in Munich have good jobs. The husband works for google but they are drawn back to this place and are planning to build a house here and to return. It's a bit different. They manage to find each other in the different cities of Europe. It's always "Visaginas Visaginas": they find each other, they are drawn to each other and create a family somewhere (Nina, a professional woman who herself returned from the UK to Visaginas while in her thirties, and has recently moved to Vilnius).

As a Russian-speaking enclave in Lithuania, Visaginas' inhabitants have tended to stick together. The town is seen as strange by many Lithuanians because of its ethnic makeup and because of its nuclearity.

> We are a very insular community – we hold onto each other, we are not Russians for Russia, we are not Lithuanians for Lithuania, we are kind of a very special place, and speaking of the last questions, even when the power plant was still operating, people from Vilnius and Kaunas thought that we were green people, shining, radioactive (Katya, a woman in her twenties who has returned to Visaginas to raise a family after university in the UK).

> They called us invaders here, although we came earlier, built it all. We had not invaded anything. But we stopped objecting to this, if you want to call us invaders, be our guest. We are just going to live our lives (Maria).

One woman I spoke to, now living in Vilnius, described how she would lower her voice when she told people where she was from – she felt shame, and fear of being judged, which made her shy away from speaking about it. But this insularity and suspicion from outside creates strong affective ties between those who come from the town, and these attachments offer support and social capital when away, and a powerful sense of homeland that nurtures investment and care for the town.

Cultures of nuclearity

Dreams of progress live on in the visibilities of Visaginas' energy infrastructures and urban design. Indeed, to walk inside the Ignalina Nuclear Power Plant is to encounter at first hand the technological sublime. The site is huge, covering around 4 square kilometres, and its iconic ventilation stacks, reaching 50 m high, are visible from the town itself, over 8 km away. These magisterial spaces are testimony to Soviet ambition: the life-giving and life-destroying power of its two RBMK-1500 reactors permeates the vast, vertiginous space of the turbine hall, the honeycomb of the reactor chamber floor and the dials of the control room. Described as a 'big dead dragon' by one of my interlocutors, its pervasive presence haunts the everyday, a ubiquitous background to quotidian life in Visaginas.

Signs of everyday nuclearity pervade the town. Highly visible conduits run between plant and town – overground pipelines, power cables and roads make the indivisibility of people and plant apparent. These infrastructural routes follow lines of human and material activity, as bodies moved between the sites, and hot water from the plant's cooling system provided heating for the apartments. Now, the residents have to pay for their hot water and heating (a significant financial burden), but these pipelines remain as evident reminders of the abundance and stability of the time before.

Street names, too, echo this nuclear telos: Energetikų gatvė – or Energy Street, is one of the main thoroughfares. There are sirens on the sides of buildings, and roads are wide in case of the need to evacuate in a hurry. Children play on slides that resemble neutrons leaving an atom. People gather every year to mark the anniversary of the Chernobyl disaster. Gabrielle Hecht understands nuclearity as the technopolitical inscription of nuclear exceptionalism on particular spaces (Hecht, 2012). But these articulations of nuclearity also produce a *cultural* nuclearity: where nuclear industries and their accompanying formations of safety, power and practice lead to forms of life. A showcase for socialist forms of living, Visaginas was built on the promise of the good life afforded by nuclear energy for the elite, chosen and vital members of the Soviet Union who worked at the plant (Šliavaitė, 2015). As such, its residents were embodiments of the dream of progress: their lives testament to the promise of nuclear energy and the abundance of the Soviet Republic.

The high proportion of engineers, physicists and technicians living in Visaginas mean that cultures of science and technology are apparent throughout the town, in the quizzes held every week at the café, in the robotics institute in the technology college, and in conversations in the street. The school is one of the highest achieving in Lithuania, and its pupils regularly win national maths and science competitions. Kristina, a manager and lone parent describes her own and the school's ambition thus:

> Kristina: We always had this idea that you know, our school is the best school, and, maybe also the fact that when, you know they do those Olympiads, for example maths, Olympiads, physics, or chemistry, and when kids from our school went to the national level they sometimes got high

places so we kind of think, yeah, we're good, cos when you kind of compare with Vilnius schools, and you see that Visaginas is not that low down. We are doing alright.

Leila: did you feel proud of that?

Kristina: Yeah, of course.

The local municipality has clung to this provision, maintaining funding for excellent facilities and staffing, a legacy of Soviet approaches to childcare and education, and to the technocultures of the town, which they are loath to leave behind. Many of those who grew up in Visaginas remember an idyllic childhood providing freedom of movement and exceptional opportunities for intellectual, personal and creative development. Soviet forms of social life remain in the abundance of sports, cultural and leisure facilities in the town. Visaginas offers a huge variety of extra-curricular activities for children and young people, often supported by the voluntary work of people who live there. These are all highly subsidised, and enable children to participate in sports, arts, maths, science, games and technology activities on a daily basis after their formal schooling ends. As a result, many of those who had moved away initially move back to bring up children here, keen for them to benefit from these spatial, cultural and educational infrastructures. Indeed, childrearing has become an alternative life project for those for whom the certainties of work at the plant, or the promise of fulfilling lives elsewhere have not been realised. As a hatchery for creative, sporting, and intellectual excellence, the schools, clubs and cultural and leisure facilities of Visaginas provide enduring infrastructures for social and cultural reproduction, arming young people with skills, knowledge and expertise for late modern, mobile life. As one interviewee in her early twenties told me, "it's natural to have high aspirations here".

Infrastructural endurance

The close-knit community and networks of out-migration in Visaginas provide the conditions for mobility. As one informant discussed with me, the closure of the plant during early childhood meant that, unlike those from previous generations whose futures were mapped out through the plant, her and her peers' futures were foreclosed and replaced with a collective acknowledgement, firstly of the finitude of the nuclear dream as secure future life, and secondly of the necessity to look towards the opportunities offered by European expansion. A language school opened in the town, and young people were encouraged to plan beyond the nuclear industry for work.

Those who returned to Visaginas discussed how different life was here from working life in major European cities, where high rents and precarious work meant long hours, slow commutes and time away from family and friends. With its minimal living costs and slow pace of life, Visaginas was a place where they could take time out from precarious and hardworking lifestyles to study, be creative and hang out with other people. Like many other postindustrial spaces in the former eastern bloc, Visaginas has little gentrification value, and cheap housing is certainly a central economic factor contributing to the forms of life outlined here. In the summer, the town is full of young people and families with children staying in their familial homes. Indeed, many out-migrants keep a flat in the town to which they periodically return, often choosing to spend their summers in Visaginas. Some have found ways to work remotely from Visaginas, doing online content generation, moderating online forums, IT work and translation. This has been facilitated by a business incubator at the edge of town. Others move between bits of part-time work, relocating to

cities for short-term contracts, then back to Visaginas to live off the back of them, or pick up whatever work is available. The low cost of living means that there is time for the kinds of activity that constitute what Papodopolous calls 'more than social movements': practices that 'create the conditions for the articulation of alternative imaginaries and alternative practices that bypass instituted power and generate alternative modes of existence' (Papadopoulos, 2018: 198). These practices build life in common through shared engagement with creation and material practice. The youth/art space *Tochka*, where I focused my fourth stay in Visaginas, is a case in point:

> We're hanging out at the *Tochka*, which is housed in a five story building in the middle of town. The building was donated to the collective by the municipality, on the understanding that they pay for electricity and water. It is a hub for a few start-ups and small businesses, a meeting point, a musical rehearsal space and art space, and a base for the Live Action Role Playing Club. Mainly, people use the space to play music and board games, and to chat and drink tea. On my most recent visit to Visaginas, in August, the building was used from 10am to 10pm. Many of those hanging out there were studying or working away, and had returned for the summer. In the evenings, longer term residents of the town used the space to congregate before heading to the cinema, over the border for a beer run (50km away), or to the lakes for a barbecue.

> We go out to pick up some kebabs. The kebab van keeps erratic hours, so we end up in the service station buying pre-packed toasted sandwiches. On the way back to Tochka, we talk about the robotics institute in Visaginas, where one of them had returned from Germany to study. The others joined in the conversation, discussing the town as a permanent homeland, a place where they could return periodically. (Field notes)

These young people hanging out at the *Tochka* feel that there is something special about the culture of the town. They feel understood by others; they are interested in maths and science, talk about intellectual subjects and play 'geeky' board games. The familiarity, as well as what they feel is the specificity and 'special status' of the town makes them want to stay. Those who have the option of going and leaving find it relaxing to be there (although there are many who do not, and speak of finding it boring). Low housing costs and lack of consumer culture mean there is little pressure to work hard, nor to spend money. But because of the relatively high population density, abundance of public space and the maintenance of clubs and community spaces, there are places to go and hang out.

When I ask the older members of the community about the work that they do: the considerable civic duties, archival work, voluntary work and the investment of time and devotion into this work of making the present endure, many respond in terms of the motherland. Yet, this understanding of the motherland has no relation to contemporary Russia, nor to the European Union or to Lithuania. The motherland, as an object towards which striving is directed, is a deterritorialised and reterritorialised space, the exceptional space of the town. People here say that they do not feel Russian, nor Lithuanian. They are Visaginas. They feel a sense of belonging that they know will never happen elsewhere. This is exacerbated by the tension between Russian-speaking residents of Visaginas and Lithuanian ethnonationalism.

Visaginas as motherland forms a locus around which practices of commitment and endurance coalesce (Šliavaitė, 2015). Homeland becomes localised, drawing on the social resources that Visaginas' Soviet past offers, like the Cultural Centre and the gymnastics club, which are enabled in part by the commitment of residents to the maintenance of a vital community. Unlike Berlant's decaying infrastructures, these are thriving, partly because of

the local authority's continued investment in these places, partly because there is no incentive to sell anything off, and partly because of the time and dedication that those who live in Visaginas devote to these practices of endurance. A high proportion of retired and semi-retired people, as well as those who work part-time, combined with an ethos of duty and the availability of practical, modernist civic buildings all enable this. They are what Papadopolous calls 'more than social movements' – they involve the 'capacity to set up alternative forms of everyday existence and mundane practices' that operate to a certain extent outside of regimes of capital and power.

In part this takes place in the many creative and cultural spaces that are actively maintained by residents. Jelena, a woman in her late fifties who used to work at the power plant, sums up the desire to create these spaces for 'alternative forms of everyday existence' thus:

> When a person considers this country his/her home and is not indifferent to what happens around, he/she will act, either thanks to something or despite, because as we see, our authorities, any authorities, any government, in any country will never be fully supportive. Thus, when people act, move, come together, unite even out of state structures, into groups of painters, in theatres, this is also very good. In any case, this is beneficial for the town, creates another aura, and activates other life. Sports…some kind of energy. This is a question of patriotism. When you live in a country that you consider your second motherland, you will try to do a lot for it, if you decided to stay, you are not locked in your everyday routine and a narrow circle, and you have to demonstrate active citizenship. This will make you move, be active, do a lot of things…but what I am saying now is on quite general terms, it is not only about Visaginas, it is about any person on the earth.

Practices of endurance in Ringel's terms are a form of temporal agency, a 'practical reappropriation of the (near) future' (Ringel, 2014: 54) that actively resists the erosion of structures of liveability. Indeed, Ringel suggests that the indeterminacy of the present can actively encourage this kind of agency (Ringel, 2018). Others have discussed this through the concept of maintenance as a counterpolitics to progress narratives that position futures as otherwise (Mattern, 2018). Maintenance involves an active process of remaining, staying put, or what Povinelli has recently called stubbornness (Povinelli and Johansson, 2018). Maria puts it thus:

> I do not want to quit. How can I leave all this, that I created? When you know and feel every object. I am thinking, if I go, would there be anyone who will be interested in this and will take care of this or will all this be destroyed? So, while I am still here, all this stays.

> They are trying to help the mayor with heat networks, for example, what they can. They are various specialists, not necessarily experts in nuclear industry. At the moment he and some others are participating in a kind of an association of old specialists, they are trying to help the town. They need to be useful, this is very important.

> But the fact, that we were brought up with solid values, I think, gave us a possibility, helped us to stand the challenge, not to give up, to stay calm, we were all trying to find a way to live, exist.

More than just the work that keeps buildings functional, that keeps streets clean and the public spaces usable; this includes voluntary and community work undertaken to keep life liveable, or practices of care that maintain sociality and interdependence and ward off loneliness and depression. These practices enact a desire to hold on to what is good and

not let it go. Cultural, material and imaginative infrastructures endure through their maintenance, through ongoing relations with the promises of past, through a process of valuing, holding on to and adapting what came before against the becoming of the future. This politics of endurance is very much alive in Visaginas, in the time, devotion and dedication given to maintaining the town and its social and material infrastructures in the context of its unmaking as *atomgrad*. This is figured not so much in preserving a glorious past (although there are numerous amateur archivists and local historians), but in terms of identifying the value, the specificity and the good of a place, and striving to keep those infrastructures in place.[11] The memories of lost futures that haunt these practices keep the utopian dream of sociality and the good life alive, driving practices of endurance. Visaginas' generous infrastructures – its spatial articulation, strong social cohesion and municipal facilities – both enact those memories and provide the grounds for post-progress worlds. These worlds, however, are fractured and multiple: during my fourth visit, the mayoral elections were the talk of the town – and the politics of the conflicting visions for the town's future were clear. Modernisers wish to erase the nuclearity of the town – the radiation counter in the middle of town has recently been removed and replaced with a thermometer – and focus on entrepreneurialism, nature tourism and consumption.[12] Recently, metropolitan artists and other creatives have moved in, drawn by cheap accommodation, nuclear aesthetics and pleasing urban architecture.[13] Others are not so keen on these moves, finding ways to renegotiate Soviet forms of sociality and cultural specificity. Yet, the articulations of attachment, commitment and endurance that produce the shifting ontologies of Visaginas' infrastructure are all ghosted by its previous ontological forms, providing the conditions for these differential practices of the present.

Conclusion

While my interlocutors often drew on childhood memories, or family stories to describe their relation to the town, they also discussed how the material infrastructure of the town provides visible and tangible resources to bolster the effort required to persevere, to make this present endure. The town has shifted in form substantially, yet the memories of its promise, inscribed in material and cultural formations, offer conditions for the emergence of practical ways of living on. Central to the emergent ontological form that Visaginas has now taken – as safety net, training ground, place of respite and workshop for thriving in a pan-European, precarious, labour market – are the memories and legacies of the technocultures of nuclearity and Soviet sociality. I make no case for the objective exceptionalism of Visaginas – indeed, we can see echoes of these infrastructural affordances in other post-industrial places – nor for a causative relationship between decaying nuclear infrastructure and the emergent forms of life that I examine here. Instead, this is an examination of the ways in which a conjunction of economic, cultural, historical and material conditions (that we can gloss as infrastructure), interact with memory and future imaginaries to limit and shape life in the present.

In Visaginas, the ubiquity of its everyday nuclearity, its cultures of knowledge, science and technology, its planned pathways and carefully proscribed neighbourhoods, provide powerful resources for a politics of endurance. Cultural memory, too, is key: life in Sniečkus, as it was formally known, compared to other parts of the regional Soviet Union, was, for most, good. And the dreams of the good life – of equality, sociality, common public space, meaningful and purposeful work, liveable accommodation and excellent education – are figured in the infrastructural remains of the *atomgrad* on which the contemporary residents of Visaginas stake out their lives. The nuclear Anthropocene exists not only in fallout,

radiation and mutation, but in the ways in which those participating in its project carve out lives in worlds shaped by the splitting of the atom.

There remains, still, a nostalgia for the *atomgrad*, but years have now gone by, and loss and shock have morphed into a practical orientation towards the value of the place and its specificity. Infrastructure here operates as a gathering which is affective, material, atmospheric and corporeal. It clusters to an idea which is more than the sum of its people, and this idea is materialised through buildings, objects, trees and lakes. Infrastructures mediate and generate forms of life and experience that maintain a world against collapse, substantiating the means for living on. They provide a surface tension: a holding together despite forces that contribute to its unmaking. As figures, they offer material access to memory, and they refer to the ideas of technological progress, energetic dreams and public good. They make present the aspects of life worth holding on to, worth fighting for, an ongoing bolster for practices of endurance that work against the unmaking of the town.

For Berlant, infrastructures mediate the organisation of life: the material, social and affective structures – decaying, broken, cobbled together, immaterial, fantastical – that move us towards the bearable. They sustain a public, or find a new way of filling the aporia of its erosion. In her own example, US austerity capitalism opens up a loss in the present that needs to be plugged or patched in order to be liveable, and affective infrastructures point not to what is to come, but rather offer means to endure a broken world. Berlant's infrastructures of the commons and of corporeal proximity emerge in the fraying of those former support systems, as fragile arrangements of bodies attempting to survive in a precarious and damaged neoliberal world. In Visaginas, however, the picture is different: a confluence of embodied history, spatial arrangements, residual Soviet forms of sociality and cultures of nuclearity provide generous infrastructural formations that point towards emergent modes of living in 'Faust's unfinished construction site' (Berman, 1983).[14] This generosity offers a renewed focus on the political aesthetics of infrastructure, and the affective work that infrastructures do. The promise of infrastructure materialised through the hopeful building projects of Soviet state socialism during the 1970s and 1980s leaves a trace, both in the cultural memory of the inhabitants of Visaginas, and in the material and affective infrastructures that live on in the wake of the plant's decommissioning.

Against Berlant's description of a postindustrial landscape of ruination where bodies hanging together in a desperate attempt to endure in common are all there is left, the promise of sociality and liveable life remains in the materialities of Visaginas' generous infrastructures. In Visaginas, the shape of that promise holds not least because it was cast (like others in the former Soviet Union), through the labour of those who lived there and who created a town and a reactor and a plant in the middle of a forest. Visaginas is haunted by memories of lost futures, but this haunting is a powerful force in maintaining ties to place. Collective loss in such a closed community is experienced as love for its specificity, an enduring belief in what it offers its youth, and central in providing the conditions for its emergent ontological formation.

Those who have remained in Visaginas have undergone a series of changes that have fundamentally altered both the place they inhabit and the forms of economic, social and political life that they participate in. Through this process of dispossession, disorientation and unravelling, the infrastructural forms that hold the place together have – by necessity – had to change. The conditions for these emergent infrastructures, as practical ontological formations, are shaped by what has gone before. They generate ways of being and living after progress, offering containers for social reproduction, respite from precarious housing and work lives, time and space for creative projects and development of entrepreneurial subjectivities as a means of survival in late capitalism.

As resources for building worlds, these formations set limits to and condition the possible. The legacies of the Soviet nuclear promise, as embodied memory, cultural formations and organisations of matter are the raw materials through which lives are made. Neither utopian nor desperate, they build on what is available; recognising what can be held onto and what slips away. As generous infrastructures, they offer the conditions through which emergent forms of life can take place, and undergirding ways of being and living after 'progress.'

With the decline of progress narratives, and state-building projects, with the retreat of the state, in the technological phaseout that is characteristic of both the cycles of creation/destruction of modernity and the retreat of forms of state-led welfare and centralised planning, these infrastructural remains generate conditions for a bottom-up form of agency. They draw on the utopian dreams and modernist fantasies that gave birth to them but shift them towards new infrastructural ontologies. The remains of hubristic mega-plans live on: their material unmaking does not erase their promise. Infrastructural remains, both architectural and human, material and imaginary, are repurposed towards practices of duty, care and dedication to place. They tie together bodies, reactors, pipes, apartments, playgrounds, hopes, fears and solidarities. The vestiges of the nuclear promise and the remains of the good life persist in their legacies, offering resources for life in the present. They participate, as figures, in a politics of endurance: a politics that allows those who reside within the ruins of these fantasies to practise a kind of *bricolage*, to adopt a process of collective acknowledgement of what did and can hold a place together, and fight for the maintenance of a liveable life in the face of its slow decay.

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Notes

1. Other *Atomgrads* include Sosnovyi Bor, Kurchatov, Desnogors in Russia, and Energodar and Prypiat/Slavutych in Ukraine (Wendland, 2015). See also Brown (2013) for a historical account of purpose-built nuclear towns in the United States and the USSR.
2. In 2000, the Lithuanian government took the decision to close the plant, whose RBMK 1500 reactors were identical to those at Chernobyl.

3. For a comprehensive analysis of progress modernity see Berman (1983) and Wagner (2016). For a specific discussion of nuclear power and modernity, see Pitkanen and Farish (2018) and Masco (2014).
4. For a discussion of other former Soviet 'abject' communities, see Kesküla (2015, 2018) and Thompson (2009).
5. Winner (2010) clarifies this relationship between technologies and forms of life.
6. The school in Visaginas had, and still has, a technical adjunct that prepares students for work in the nuclear industry. Many young people take advantage of this, and see their careers as nuclear workers in other parts of Europe.
7. For more information about the theatre project, see Dawney, 2020b and https://www.teatras.lt/en/productions/a_green_meadow_a_play_based_on_stories_told_by_workers_of_ignalina_nuclear_power_plant_and_residents_of_visaginas/
8. In addition, an expanded understanding of infrastructure starts to erase the distinction between structure and infrastructure, particularly when articulated through Williams' structure of feeling, and its concomitant concerns with the residual, dominant and emergent within these structures (Williams, 1977).
9. For comparable examples, see Alexander (2020), Alexander and Sanchez (2018), Schwenkel (2013) and Yurchak (2013).
10. These were towns and cities that required specific permission to enter and leave, and during the administration of the USSR were referred to by the names of nearby places and a post office number.
11. C.f. Robbins (2013) on the anthropology of the good.
12. Balockaite (2012) provides an earlier discussion of this.
13. While an exploration of art and deindustrialised places lies outside of the remit of this article, see Kohn (2009). See also Fraser (2018) for a sensitive discussion of this in the context of Detroit.
14. See my accompanying paper Dawney (2020a) for further elaboration of these conditions.

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