

# The Cities of Frankenstein: Graphic Scenarios of Looming Urban Horror

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## Abstract

The famous literary work *Frankenstein*, by Mary Shelley (1818), seems to forecast the potential future of urban life in the Modern Age which is replete with an ongoing environmental crisis. Using a theory of critique and forecast as established by the Literary Method of Urban Design, some of the core thematic lessons of *Frankenstein* are used as pathways to predict the character of European cities as they have developed and evolved under the stresses of ecological disaster over the near future (up to about twenty or thirty years hence). These core *Frankenstein* themes are as follows: 1) technological hubris, 2) alienation, 3) monstrosity, and 4) abandonment. In this paper, these themes are each overlaid with some of the many socio-environmental problems now challenging a set of fourteen sample cities (each drawn from the original *Frankenstein* novel) utilizing both scenario art and interpretive eco-ethical thought.

## Keywords

Gothic horror, science fiction, Mary Shelley, Frankenstein, scenario art, urban design

## Introduction: the recurring themes of Frankenstein

Mary Shelley penned her *Frankenstein* novel as a Gothic romance with an overflow of emotional turmoil and in awe for foreboding landscapes. Since it was first published in 1818, the Frankenstein story has been refashioned many times for stage and screen adaptations – often losing its romance and becoming a science fiction horror tale. All versions, though, involve a monster being pulled into life by the heinous cobbling together of dead and dying bits of humans – and sometimes animals -- and then zapping the conflated mass with electrical energy. After being electrified into life, the monster then suffers a series of rejections, firstly from his creator, the scientist Dr. Victor Frankenstein, and then pretty much from the entire human world altogether. These rejections drive the creature into despair and then onwards into a destructive and murderous campaign of revenge.

The practice adopted for this analysis comes from the theoretical impetus contained the Literary Method of Urban Design<sup>1</sup>, a design method that encourages the utilization of works of literature in order to reflect upon, plan for, and predict the future challenges and opportunities befalling the world's urban settings. For those reflecting upon the Frankenstein story<sup>2</sup> the following themes are usually held to be important:

- 1) *Technological hubris*. The fervent labors of Dr. Frankenstein -- as he obsessively pursues his goal of creating life -- is a cautionary tale against the bubbling arrogance of techno-scientific discovery. Shelley's novel exhorts inventors, discoverers, and explorers not to become so mesmerized by the apparent heroic importance of their projects that they overstep the bounds of Nature or of Morality. For his part, Dr. Frankenstein is so deeply immersed in hubris that he is unable or unwilling to imagine or predict the unexpected consequences of his vile research.
- 2) *Alienation*. After casting his creature onto the world, Dr. Frankenstein assigns various offensive titles to it: 'the thing', 'the beast', 'the abomination', 'the fiend', 'the demon'. The people that encounter Frankenstein's monster usually want to beat it away with a stick. The creature becomes alienated from humanity (and any form of social care) just because of its frightful visage. Despite this alienation, Frankenstein's creature exhibits many a human trait. He yearns deeply for love and companionship and he takes great delight in the charms of nature and in the many patterns of sociality and familial bonds he observes in the human world.
- 3) *Monstrosity*. Dr. Frankenstein's creation is monstrous, an inartistic unwieldy assemblage whose figure is humungous and whose strength and stamina superhuman. But the theme of monstrosity is not confined to the monster itself. As the story unfolds, the 'monstrosity' theme is bounced back to Dr. Frankenstein, whose irrepressible feelings of horror and hatred slowly transform him into a metaphorical monster as well. Frankenstein ends up stalking his creature across the whole of Europe so as to kill it. In the beginning, Dr. Frankenstein was crazily obsessed to create a new human being from scratch but, midway through the story, he's done a rude about-face to become obsessed with terminating that life.
- 4) *Abandonment*. Dr. Frankenstein's creature is lost and lonely. It is heaved into the world without much guidance, with no education, and with a complete absence of love or care. Perhaps, if we are charitably inclined, we can forgive Dr. Frankenstein for the overwhelming apprehension that leads to him disown his invention. Alas, though, Dr. Frankenstein never summons the courage to take responsibility for the creature in any caring manner.

What follows is an application of these 'Frankenstein themes' to the urbanization. I do this in the belief that Shelley's *Frankenstein* -- though two hundred years old -- may well provide a pathway to predict the character of our cities as they change into the near future. Cities have been labeled the 'greatest invention', the 'height of human technology', the 'epitome of modern civilization' (for example, see Glaeser, 2011). If this is so, then the lessons of *Frankenstein* may grant us an insight into the oncoming social and environmental ramifications of this celebrated human artifact.

To accomplish this, I might have selected a series of cities noted for their global importance to serve as case studies. Or a series of cities noted for their influence in the invention and adoption of new technologies. However, a series of cities have been selected from those that appear in Mary Shelley's *Frankenstein*. This is fitting, in a way, since *Frankenstein* is not only a science fiction horror but is also a travel story with a keen geographical sense. Like other writers in the English romantic tradition, Shelley provides eloquent descriptions of real places through which she had toured or within which she had lived. All these environs are now suffering the ravages of various grievous environmental woes and the four themes of Mary Shelley's *Frankenstein* story may be a potentially instructive way to speculate upon how these ravages may grow even worse in the future.

## Franken-Naples

Victor Frankenstein was born in Naples in the late 18<sup>th</sup> century, the son of a distinguished Swiss family<sup>3</sup>. His parents were supposedly residing in Naples as part of an extended tour around the Italian peninsula. This fictional history is consonant with the true-life travels of Mary Shelley and her husband, the poet Percy Bysshe Shelley, who together travelled extensively around Italy that included a stay in Naples.

Shelley's time in Naples coincided with the emergence of the Camorra, a once secret society turned into an openly-visible organization devoted to gambling and 'protection' in the city. Since then, the Camorra has become the region's predominant mafia group.

Today, the Camorra are generally acknowledged to be the culprits of the environmental problems of Naples. It is estimated that over ten million tons of toxic and/or radioactive waste are illegally disposed of each year in Italy by the mafia -- all with suspiciously little response from the authorities. In some places where the Camorra operate, the garbage is piled high and set alight to create a horrific inferno<sup>4</sup>. During the burning years of 2007 and 2008, the entire region north of Naples was headlined in Italian papers as 'Terra dei fuochi' or 'Land of Fires' with toxic fumes swirling over Naples' outlying suburbs.

Looking further back into history, a long time before these fiery incidents, and throughout all of Naples' many rises and falls, the rumbling Mount Vesuvius has lain in the background. The volcano is most famous for being the destroyer of Pompeii but before and since, it has devastated numerous towns nearby. Over the millennia, Vesuvius' explosive rocky fires and gas flows have often been accompanied by massive dark clouds that expand over thousands of miles of the Mediterranean, sometimes blocking out sunlight for weeks. Luckily for the Shelleys, the mountain erupted with mere gentle displays during their stay in the city, but Vesuvius then and now is one of the most dangerous volcanoes in the world both because of its volatility and because of its proximity to such a large city<sup>5</sup>. Naples is now home to four million people.

So, let's get to the scenario presented here for a Naples of the near future: Franken-Naples (see figure one). Here, an unfortunate disaster has hit the city in recent years. Columns of thick deadly smoke have inundated the streets for days, then retreated, then come again, before slowly dissipating and arising episodically once more. As well as this, enormous inflamed clouds have exploded around Vesuvius sending incandescent balls across the cityscape. The disruption is so severe that Naples' citizens must choose from one of three terrible options; 1) to ignore the fires and the smoke -- and carry on as usual -- and hope not to be hit by a hot gas cloud, 2) to relocate to somewhere else, or 3) to start living underground. In Franken-Naples, these options are pursued in roughly equal proportions by the four million citizens.



*Fig 1: Franken-Naples by the author.*

As far as the third option goes, it should be noted that more than half of inner Naples is built upon a huge subterranean cave system. This underground labyrinth comprises acres of caverns, chambers, tunnels, passage-ways, vaults, safe-houses, crypts, catacombs, reservoirs, cisterns, waterways, sewers, subways and bomb-shelters. Some of them are natural, while most of them artificial. Naples' subsurface rock – a soft sufo made of volcanic ash -- has made the city suitable for the construction of this subterranean city, slowly hewn, dug-out, and mined over the city's multi-millennium history.

It is within these subterranean caverns and passage-ways, amongst the decayed or forgotten remains of old Naples, that many citizens of Franken-Naples will escape to avoid the fuming toxic horror of the surface. Over the course of a few years, here in the underground, they develop a new troglodyte safety zone. Initially meant to be temporary, it ends up becoming a permanent home for many since it is the only place for their skin, eyes, and lungs to survive the unpredictable noxious clouds drifting over them.

However, the crisis of Franken-Naples is not volcanic. Vesuvius rumbles gently off into the distance as it has done for millennia sending the occasional smoky plume high into the air but the disaster wrought upon Franken-Naples is anthropogenic. As the Camorra keep abandoning dangerous waste all around Naples' countryside, and as the authorities also abandon their own civic and professional responsibilities, eventually some flammable component of the dump mixes with various toxic and radioactive components, and an ensuing inferno sweeps uncontrolled over the city in repeated terrifying onslaughts. In response, Naples' citizens are continually driven to panic -- running or crawling like the nearby ancients of Pompeii -- into their tunnels and crypts too terrified to re-emerge.

## Franken-Ingolstadt

The monster in *Frankenstein* is ripped, stretched, and stitched into being by Dr. Viktor Frankenstein at a university in the Bavarian city of Ingolstadt after he spent years experimenting with dead bodies and with various chemicals and energies. We are led to believe by Mary Shelley that Dr. Frankenstein is so aggrieved by the idea of death rampaging with cruel consistency over humanity -- and that he is so obsessed with staking out a name for himself in the world of science -- that he countenances no shame for his criminal and sacrilegious dealings with human corpses.

Dismissing any qualms, Dr. Frankenstein seeks to create a scientific marvel. But he gets it very wrong. At the very moment when the monster flickers into the life, Frankenstein suddenly realizes the monstrous nature of his experiments and the monstrous nature of his newly-made creature. He flees from his creation, from his laboratory, and seemingly from science and technology, altogether. He then suffers a nervous breakdown and is nursed back to health over many months by his best friend, Henry, in an Ingolstadt apartment.

Nowadays, Ingolstadt is a city of nearly 200,000 people on the banks of the Danube in southern Germany. Funnily enough, it has evolved into a city with technology at its base, filled with a multitude of technical institutions. The largest single industry in Ingolstadt is the Audi car company, which has its slogan 'Advance Through Technology' glossily emblazoned on its Headquarters for all the city to see. Audi prides itself, much like Dr. Frankenstein did, on pushing the boundaries of technology. Audi was the first carmaker to use aluminum chassis and it also pushed forward the development of water-cooled engines.

Audi's most notable technological achievement in recent years, though, has been the invention of 'cheat software' to run riot around the emissions laws in Europe and North America<sup>6</sup>. In 2015, when the emissions scandal came out into the public, Audi admitted that over two million of its cars had been sold with cheat software installed. Audi's cars then went on to spew nitrogen oxide into the air well beyond healthy limits.<sup>7</sup>

Though Audi promised to quickly find a technical solution and to upgrade their cars, their Head of Research was fired for his part in the scandal. A modern-day Dr. Frankenstein, Audi's technical guile trumped its ethical reflection. (Maybe, however, this comparison is unfair since Dr. Frankenstein's monstrous invention killed but three or four people whilst the illegal software of Audi, and their parent company Volkswagen, has been estimated to have killed hundreds or thousands<sup>9</sup>).

According to an oft-told story in Ingolstadt's industrial history (see, for example, see Audi ,2013) the name Audi is held to be a translation into Latin of the surname of the founding engineer of the company, August Horch. When he was hosting a dinner party for investors in 1910 to celebrate the launch of a new car company, he and his guests were digging around for a suitable name. They could not use his own surname 'Horch' as it was already trademarked to a previous car company which he had just resigned from. From the backdrop of the party, August Horch's young son, who was doing his Latin homework, spoke up to suggest 'Audi' since it is a rough Latin form of Horch, both of which mean 'to listen' or 'to hear' in their respective languages.

Surrounding the city of Ingolstadt is a lovely riverside forest. After Dr. Frankenstein fled from his laboratory, his abandoned monster eventually got to its feet and made an ungainly tour of the city's streets. The folk of Ingolstadt who came across it would either yelp or yell or thrash it or throw rocks. The sturdy creature could come to little harm from sticks and stones but nevertheless it could not endure the constant social rejections of the townspeople. Therefore, the creature dismissed the city for the riverside forest.

Here, with only a few small village communities, the river, plus an expansive woodland, the monster makes a home -- hiding out in a tiny run-down storehouse next to a small cottage. The cottage's tenants are not Bavarians but a French family. They themselves are alienated from their own society, living in Bavaria as exiles from the tumultuous French Revolution.

During these months, the monster carefully and clandestinely studied the French family for whom it grew an affection. Through keen observation, and with no face-to-face interaction, the monster manages to learn the French language. By the year's end, the monster becomes so good a reader of French that it eagerly scrutinizes the array of books left in the cottage when the family were out working.

We learn, also, that the creature has grown adept at transforming its feelings and emotions into eloquent passages. For example, the following involution upon springtime in the forest is given:

*The pleasant showers and genial warmth of spring greatly altered the aspect of the Earth. Men, who before this change seemed to have been hid in caves, dispersed themselves, and were employed in various arts of cultivation. The birds sang in more cheerful notes, and the leaves began to bud forth on trees. Happy, happy Earth! Fit habitation for gods, which, so short a time before, was bleak, damp, and unwholesome. My spirits were elevated by the enchanting appearance of Nature; the past was blotted from my memory, the present was tranquil, and the future gilded by bright rays of hope and anticipations of joy. (Shelley, 1818: Chapt. 12).*

What we see here in the river forest nearby Ingolstadt is that the monster made by Dr. Frankenstein is not entirely monstrous. The monster can appreciate the arts, admire Nature, and is capable of affection and good will to fellow villagers.

The monster also acts to collect firewood and harvest crops in the dead of night for the cottage family, laying the wood and the harvest neatly outside their cottage. The family awakes each morning knowing not who helps them. Maybe a 'forest angel' they conjecture.

As a 'forest angel', the monster is briefly lifted above humanity and in celebration of this moment, we arrive at the following scenario: Franken-Ingolstadt. Here (see figure two), inspired by the creatures of the forest, the engineers of the city take responsibility for the pollution of their machines as they design and construct a bat-faced highway noise barrier.



Fig 2: *Franken-Ingolstadt* by the author.

In some places, German roads authorities have sometimes erected thin concrete barriers to limit automobile noise and they have also studied the efficacy of vegetation to cut down the sound levels. The scenario presented here goes a few steps further. The bat-face noise barrier draws inspiration from those monstrous-looking bat species whose ornate facial organs, adorned with multi-lobed ears and fluffy whiskers, have been fashioned by evolution to disseminate and collect sound waves via bio-sonar. In *Franken-Ingolstadt*, the bat-faces are scaled-up in size, sculpted into 3D relief, and then mounted on the inside of an earthen barrier. From the outside, amongst the surrounding forest and villages, the auto traffic is hardly audible. But on the inside the obnoxious rumbling traffic noise is reflected straight back upon the automobiles that produce the noise.

For those drivers who may regard the bat-faces as monstrous, they also serve as a symbolic visual reflection of the grotesque noise their cars throw out onto the environment. If Audi means 'to listen', then let those who drive these polluting machines hear every decibel of their thundering cacophony.

### **Franken-Geneva**

When he recovers from his many months of anxiety, Viktor Frankenstein heads back to his family in Geneva. His return to the city is not enjoyable, though, since immediately after arriving he learns that his kid-brother, William, has just been murdered. Frankenstein instantly suspects his monster is involved but he ignores any notion of exposing it as the perpetrator since to do so would expose his own creepy experiments and sacrilegious labors.

As this sad affair settled over his family, Dr. Frankenstein calmed and consoled himself by returning to his local haunts in nature. During the long quiet Swiss nights, when his guilt would flair-up, Frankenstein would set sail all alone in a small yacht out into Lake Geneva. During the daylight hours, he rid his horse to the foothills of the Alps, before dismounting to walk into the snowy highland environs. The beauty of the mountains and of

the lake were never enough for him to find resolution but they did appear to numb the pain of regret and loss.

Mary Shelley had scribed the first draft of *Frankenstein* in the summer of 1816 in a villa on the shore of Lake Geneva<sup>8</sup>. Therefore, we can easily imagine how these words reflect her own romance with the landscape. Shelley was in fine literary company in Geneva, sharing the villa all summer long with her husband Percy, with the celebrated British poet Lord Byron, and with the writer of the world's first modern vampire novel, John Polidori.

With Shelley's horror story acting as a guide, let's visit Franken-Geneva, a scenario for near-future Geneva (see figure three). Here, a monstrous specter is moving over the city and upon the alpine environs nearby. The forest pines of the highlands are being eaten away by a plague of beetles and by newly-arrived fungal diseases. The beetles and the fungi find the warming winters of Geneva much to their liking for it makes it much easier for them to acquire food and to reproduce quickly and abundantly. As the pines get eaten away, the forest begins to decay. The disappearing forest means that the alpine soil is also destabilized, prompting an outbreak of landslides and mudslides and avalanches. The Alps, themselves, begin to fall apart.



Fig 3: *Franken-Geneva* by the author.

In Mary Shelley's *Frankenstein*, and in some of its theatrical adaptations, the pivotal first 'face-to-face' conversation between Dr. Frankenstein and his monster takes place atop a giant glacier in the mountains near Geneva. Here, in a landscape of age-old ice and precipitous crevices, the monster suddenly and abruptly interrupts Frankenstein during his gentle sojourn.

The monster then assails his creator with questions: 'Why did you create me?', 'Am I human?', 'Do I have soul?', 'Whose brain do I have?', 'Whose body?' and, heart-wrenchingly, 'Why did you abandon me?'"<sup>14</sup> Dr. Frankenstein stumbles through his words and does not come up with of any satisfying answers—a telling judgment of his lack of imagination and empathy.

Mary Shelley was very familiar with the actual landscape of this glacial scene, writing lyrically about it not only in the *Frankenstein* novel but also in her travel books (Shelley, 1814-1844).

Here's how she wrote of it from Dr. Frankenstein's perspective:

*I remembered the effect that the view of the tremendous and ever-moving glacier had produced upon my mind when I first saw it. It had then filled me with a sublime ecstasy that gave wings to the soul and allowed it to soar from the obscure world to light and joy. The sight of the awful and majestic in Nature had indeed always the effect of solemnizing my mind and causing me to forget the passing cares of life.* (Shelley, 1818: Chapt. 11).

Alas, in the coming decades of global warming, and as depicted here in Franken-Geneva, these glaciers are set to degenerate and erode year by year, until their icy scenes are no more. Anthropogenic climate change is violating nature in a scaled-up Dr. Frankenstein-like manner: destroying the entire environment of the Alps and rendering it but an alien and monstrous version of itself.

As the glaciers of the Alps die, the health of Lake Geneva will also decline since the normal flow of meltwater into the lake will be disrupted, as reported in OCCR *et al* (2014). Soon, in a few short years, the meltwater runoff into Lake Geneva will increase during the peak period of glacial retreat before a sharp decline comes about in a decade or two. This pattern -- whereby there's too much meltwater run-off and then none -- has been observed in the Andes and in the Himalayas, so it will probably be repeated sometime soon in the Swiss Alps.

Global warming will also have a more direct impact on Lake Geneva. In the early 19<sup>th</sup> century, when Mary Shelley was journeying around Europe, Geneva had 45 summer days per year. Now it has 65 summer days per year and they are expected to become even more common in the next few decades. In a few dozen years from now, Lake Geneva's water temperature is likely to rise by three degrees centigrade. This warming, accompanied by the increase in pollution from Geneva, means that a deathly series of algal blooms and toxic contaminations is likely to further disrupt the lake's ecology.

One day, in the coming decades, the ecology of Lake Geneva is increasingly prone to collapse altogether<sup>9</sup>. Important insect species and freshwater crustaceans will disappear, the indigenous fish may become extinct, and the native lake flora could be extinguished as well, all in rapid succession. Where Dr. Frankenstein (and Mary Shelley, too) once could sail gently upon Lake Geneva for rejuvenation and tranquility, the lake of Franken-Geneva is not only dead but also toxic and dangerous.

### **Franken-Darmstadt**

After the monster leaps out at him in the Alps, Dr. Frankenstein is escorted by the creature into an isolated mountain hut. Here, the Doctor is forced to listen to lengthy tales about the creature's loneliness and abandonment and about how the creature's despair is liable to spill-over into rage in 'despicable' and 'uncontrollable' ways.

To placate his creature, Dr. Frankenstein agrees to engineer more dead bodies into a 'she-monster' which would then serve as the monster's single companion on Earth. The monster in turn makes a promise to journey far away from 'civilized society' and to live alone with the she-monster in some remote wilderness.

To concentrate on this new project, Dr. Frankenstein decides to migrate far away from Geneva, choosing an isolated island north of the British mainland, where he might set to work unobserved and undisturbed. The monster, for its part, warns the doctor that it will be following Dr. Frankenstein discreetly to make sure the scientist meets his end of the bargain.

And so, Dr. Frankenstein begins a long expedition, heading up the river Rhine from Switzerland through Germany, a route which echoes the journeys that Mary Shelley took herself when she travelled through Europe with her husband, Percy.

When the Shelleys cruised through Darmstadt, they could spy a medieval castle named 'Frankenstein' upon the hill above the city. Literary historians postulate that this is where Mary brought the name 'Frankenstein' from. Whether or not this is so, Gothic haunts like that of the Frankenstein castle have appeared many a-time in movie versions of the Frankenstein monster story.

Nowadays, Darmstadt prides itself as a 'City of Science' (Emmrich, 2007) notable especially for its large chemical industry. This association with -- and glamorization of -- the industry of science is bound to shine on brightly into the near-future, as seen in figure four, when Franken-Darmstadt is brought into being over the next few decades.

The city governors of Franken-Darmstadt boast that 'we are not a city like others' but instead 'we are an industrialized ecosystem'. In Franken-Darmstadt, all the industrial elements of the city are integrated into an intricate system so that the waste that comes from one factory is used as a resource for another. In fact, Franken-Darmstadt has done this so well that there are very few wasted materials. Each factory by-product -- be it solid, liquid, or gas -- is recycled by other factories repeatedly with minimal energy and zero emissions.

However, there's nothing natural about Franken-Darmstadt. Every person in the city is alienated from social life and from the natural world as though they are but a cog within a vast machine landscape. Here, the ecosystem is almost totally artificial: water, oxygen, carbon, silicon, methane and ethane are all cycled and recycled with high efficiency and with little garbage. Yet there is nothing much alive, save for a few human technicians and neglected ornamental shrubs.



*Fig 4: Franken-Darmstadt by the authors.*

For industrialists, the idea of a ‘city as an industrial ecosystem’ is attractive (as explained in Marshall, 2002), since it pretends that our global industrial civilization can be converted into an eco-friendly state if we just find technical solutions to the problem of recycling materials and energy.

Apart from turning cities into machines, this model of city development ignores the fact that some products cannot be made without giving rise to waste materials that are so noxious and destructive that they can never be used by another industrial process. Many chemical products, which are a mainstay of the Franken-Darmstadt economy, belong to this category and there are many huge lifeless structures all over the city dedicated to their transport and containment.

### **Franken-London**

In Mary Shelley’s novel, Dr. Frankenstein is in no hurry to embark upon his new ‘she-monster’ project as promised, so after crossing the English Channel he stops off in London to spend some time to take in the sights of the English Capital. If Dr. Frankenstein were to tour London of the near-future, the picture in figure five would depict what he might see. London has gone ‘Steampunk’; celebrating the industrial aesthetics of 19<sup>th</sup> Century Britain.



Fig.5. *Franken-London* by *Unholy Vault Designs* (reproduced with permission)

Steampunk is a science fiction style that fetishizes the Steam Age, mixing it with various 19<sup>th</sup> century motifs, as it revives and reenacts the technology of steam in both folkly craft and at raucous conventions. As an openly anachronist genre, Steampunk fans imagine a universe in which the steam engine is still nowadays the major form of energy and transport<sup>10</sup>.

Since Steampunk primarily relies on an Earth-destroying fuel, that is coal, it seems rather anti-environmental. However, Steampunk fans often point out that they are trying to demystify and democratize technology by asserting control of a type of machine that can be materially-handled and manipulated by any suitably enthusiastic individual. Steampunk devotees see themselves as romantically reacting against the unseen algorithms churning away silently in globally connected computers controlled by multinational corporations and surveilled by national security agencies. In a pushback against 21<sup>st</sup> century technology, Steampunk valorizes the physical, the tangible, the visible, and the audible machines of the olden days. And, of course, Steampunk fans like their machines billowing with steam.

The Age of Steam is usually associated with the Victorian era, but it had its formative period a little earlier<sup>11</sup>, about the same time Mary Shelley began writing. In the 1810s, William Trevithick built the first steam locomotive for both road and rail. The first steam ship, the SS Savannah crossed the Atlantic and arrived in Liverpool from the USA in 1814. Soon after, a plethora of factories around the world adopted steam machines in their production processes, including steam-driven printing. By this method, a five-fold increase in production helped make the novel a widely-available and wildly-popular genre. (So, while it might be regarded as a romantic backlash against industrialism, *Frankenstein* may owe some of its success to industrial-scale publishing.)

Looking back, the social repercussions of the burgeoning industrialism of the 19<sup>th</sup> century are nowhere near as glamorous and democratic as Steampunk fans might like to imagine. The Industrial Revolution is remarkable for producing smoky slum-filled cities across the British landscape, and for British imperial war machines rampaging across the

globe, and for new and unfair social stratifications based upon widening cleavages between capital and labor.<sup>12</sup>

Despite these enormous social divisions, British conservatives these days usually look back fondly on the 19<sup>th</sup> century as a period of great national power and prestige as well being a time of great industrial innovation. In Franken-London these nostalgic sentiments boil over and mesh with the aesthetics of Steampunk so that London's conservative authorities turn the city into a giant lavish Steampunk theme park.

Because Britain's coalmines are all closed-down, this Franken-London of the near future overflows with *faux* steam engines that puff around upon imported petroleum. These 'monuments to the machine' roll all throughout London, ferrying tourists and commuters back and forth, and feeding a nationalist nostalgia for a once 'Great Britain'. (To add to the public spectacle, the steam machines might also be charged with the role to mow down environmental protesters and the trees they are hugging).

### **Franken-Oxford**

Oxford is a famous university town north of London along the river Thames. In 1811, Percy Bysshe Shelley got kicked out of the university for distributing atheist pamphlets around campus. His expulsion from Oxford meant he had to pursue his studies privately and he ended being an intellectual apprentice to the famous political theorist William Godwin. This is how Percy came to meet Mary, since William Godwin was Mary's father.

When Mary wrote about Dr. Frankenstein visiting Oxford, it is in admiring and expressive tones for the 'ancient and picturesque' college buildings and their 'lovely riverine environs'. Two hundred odd years later, neither Shelley nor Dr. Frankenstein might be so romantic about the city for now it is daily swamped with traffic jams and overcrowded with tourist hordes.

South of Oxford, about 20km into the Oxfordshire countryside, there is the massive Harwell Science Park. Little known to the residents of Oxford, there is within this park a gigantic store of leftover radioactive waste -- a legacy of Britain's first atomic bomb and nuclear energy projects of the 1950s (Hance, 2006).

One of the facilities of the park is the 'ISIS' particle accelerator, an older smaller version of the famous Large Hadron Collider in Switzerland. The Large Hadron Collider attracted concern when it was turned on since it was feared it would soon create an artificial black hole into which the whole world might be sucked. In Britain, many are also anxious about the particle accelerator near Oxford – but this is because it sucks up so much research money.



*Fig 6. Franken-Oxford by Petrafler (reproduced with permission).*

In the near-future, the Science Park feels obliged to save money as austerity continues to be enforced on the national budget by various governments. The Science Park attempts to save money not by sacking scientists but by getting rid of the fire station at the park. The result is rather predictable: eventually a small fire breaks out which escalates quickly and, within a few hours, just about all the park's buildings are in flames, including the nuclear waste storehouse. The waste is incinerated, and radioactive smoke and ash blow in the wind to envelop the city of Oxford.

As shown in figure six, Franken-Oxford is the result, a city so doused with fiendish radiation that its 200,000 residents have had to be evacuated. For the people of Oxford, the world might as well have fallen into a black hole.

### **Franken-Keswick**

After Percy Bysshe Shelley had been banished from Oxford University, he embarked upon a literary pilgrimage around Britain. One place he landed upon was Keswick, Cumbria, a small town in the Lake District. The Lake District is often associated with famous romantic poets, such as William Wordsworth and Samuel Coleridge, who are known for their rapturous lines celebrating the lakes and landscape of Cumbria – all so far removed from the industrialism overtaking much of the rest of England<sup>13</sup>.

In Keswick, Percy started a friendship with Robert Southey, another poet ejected from university for radical views. It was Southey who pushed Shelley to become a student of William Godwin, Mary Shelley's father, in order that Percy might continue an education beyond the circles of academia.



*Fig. 7. Franken-Keswick by the author.*

In the Shelley's time, Keswick might be called idyllic. And nowadays, too, it is a pleasant little town. However, there is a miscreation looming and it has the same character as Franken-Oxford for it is 'nuclear' in nature.

Just a dozen or so miles west of Keswick is Europe's largest nuclear plant, Sellafield. Every now and again, headlines bleat aloud that a bunch of cancer clusters are forming in the towns around the plant. Sellafield is no stranger to accidents of all shapes and sizes<sup>14</sup>, whereby indeterminate amounts of radioactive leakage have spilled out from broken pipes and cracked tanks.

The Sellafield operators admit to some problems but declare it impossible to close-down the plant since the plutonium and uranium stored there must be taken care of night and day and cannot be disposed of elsewhere. Since Sellafield is a major employer in Cumbria, many families rely upon it for their income. This means that nuclear workers in the plant proffer all manner of science and statistics to suggest it is 'safe enough'.

The cancer clusters adversely affect children most of all and the upshot is a series of family psycho-dramas not unlike that of Dr. Frankenstein and his 'son', the monster. The parents of the children of Cumbria, most especially the mothers, have had to constantly weigh up the benefits and risks of living near in Sellafield's scary shadow. By the time of Franken-Keswick, a Keswick of a few decades hence (see figure seven), many mothers conclude that Cumbria and the Lake District, as peaceful and serene as they may seem, simply are not safe for their children. The fathers, though, are loath to give up their high-paying nuclear jobs and stubbornly refuse to leave. They are also confident that their engineering skills can mend the broken pipes and leaky tanks.

However, even if the mothers find it within them to trust the fathers of their children, they do not trust the nuclear companies at all. Nor do they believe the government will fund the plant well enough to ensure full safety. In this way, families are broken apart and children move away to live in less risky places. Franken-Keswick is thus a town without the noise and smiley faces of youngsters. Only stubborn older folks, and the technicians of Sellafield, dare to stick around.

### Franken-Stromness

Eventually, after losing himself in an interesting series of sidetracks in the British landscape, Dr. Frankenstein finds a place to start work on the new ‘she-monster’. He sets up base in the Orkney Islands north of the mainland of Scotland where he can work unobserved and undisturbed. Many months pass by. Frankenstein digs up dead bodies. He then labors away in a make-shift lab in a forgotten cottage on the outskirts of a rundown village.

However, when Dr. Frankenstein reaches the final stages of the process, just moments before he gives his new patched-together she-creature the spark of life, his first-made monster forces a dramatic entrance into the laboratory—so keen was it to inspect proceedings.

At this moment, though, Viktor is overtaken by one of his moody outbursts. And as he spies the monster waiting with anticipation in the doorway – lit from behind by lightning bursts – Dr. Frankenstein contemplates how terrible a future he could be unleashing upon humanity. Could a male and female monster go on together to produce lots of little baby monsters that would then terrorize the world? As fear coursed through him, Dr. Frankenstein took a cleaver and hacked the body of the she-creature to bits. The monster wailed in agony in the doorway shrieking a vow to seek revenge in the cruelest way possible.

Within a few days, the monster murders Viktor’s friend, Henry, whilst framing Frankenstein for the crime. Viktor spends months in a dark dirty jail cell in the northern Isles of Britain in a state of near madness before being released for lack of evidence to travel back to Geneva.

With this geographical link between *Frankenstein* and the Orkneys in mind, we move towards Franken-Stromness, a port town in the Orkneys, as it will appear some twenty or so years from now (see figure eight). Today, Stromness has a charming rustic character with buildings made of local stone and streetways adorned with authentic 19<sup>th</sup> century maritime artifacts. The 2,500 Orcadians who inhabit the town earn a living either through tourism, through fishing, through sheep farming, or through various wind energy and wave energy projects.

Despite being perched on the exposed shores of the Atlantic and with an abundance of fresh oceanic wind, the climate of Stromness is quite mild. It never gets much above 20 degrees centigrade in the summer or much below 5 degrees centigrade in the winter. Visitors to the Orkneys are sometimes frustrated by the changeable daily weather but, according to Dawson (2013), the climate tends to stay within a mild and predictable long-term pattern.

All this is about to change: Franken-Stromness is a stormy place. Under the influence of global warming, as the Atlantic airs and seas simmer up, the atmospheric and oceanic energy grows and grows. This excess energy may only dissipate via ever-increasing storms which originate as tropical cyclones in the mid-Atlantic but travel northwards upon the gulf stream all the way to the British Isles with increasing regularity. Before long, Stromness has entered a perma-storm climate whence the site of blue sky is confined to folklore, and winds and rains pummel the town incessantly. These storms are much wetter and rainier than those of the past since the hotter Atlantic air absorbs and releases much more moisture<sup>15</sup>. An umbrella, or any kind of rain canopy, is useless in this weather – they’ll just be torn apart by the winds.



Fig. 8: *Franken-Stromness* by the author.

As storm after storm hits the Orkneys, its coastal seas become too violent to run fishing boats. The islands also become too tempestuous for tourist ferries. Even the wind turbines and wave-power machines are ripped from their bases and tossed around like broken ornaments. Probably, as well, transport to and from the island will be made nigh-on impossible, as the sea plays havoc with docks, whilst aircraft also dare not take off or land on the island. Where, nowadays, Stromness stands as a vibrant center of activity on the Orkneys, soon it will be alienated from the rest of Scotland and the rest of world. Then, its lonely residents must eke out a dark and stormy existence all alone and abandoned.

Humans are not the only ones to suffer. The sheep find it challenging to survive the weather-battered landscape as well. Soon, the once fertile soil will be eroded away by rainstorms and the nourishing fields of native grass become rarer and rarer until they are scoured from the Islands entirely. The once great seabird colonies of the Orkneys are also decimated as the ecological regime of the sea is altered, as forewarned by Thompson and Ollasen (2001). The seabirds may well starve to death since the sand eels they feed upon are themselves starved of disappearing plankton—all killed off by altered ocean temperatures and messed-up currents.

### **Franken-Paris**

After jail-time on the British Isles, Dr. Frankenstein is intent to get back home to Geneva. To do so, he travels through Paris. In Frankenstein's time, as Shelley writes, Paris is a tumultuous place, recovering from the French Revolution and with an uncertain political future<sup>16</sup>. The same might be said about Paris in the present era of terrorism, labor unrest, mass migration, and global climate change.

But, as in the past, and so today, Paris seeks to rise above tumult whilst it is still enveloped within it. In the not-too-distant-future, after decades of research and development, the French space agency have built a space base in orbit and then un-reel an elevator cable

from it which comes all the way down to the surface of the Earth. The cable is 80 miles in length, made of nano-carbon, and descends from space to connect to France's national space center in Paris.

Before long, the first elevator car starts running up and down the cable, ferrying both passengers and cargo to and from orbit. The project is reported the world over as being 'an engineering marvel', as grand and iconic as the Eiffel Tower.



*Fig. 9: Franken-Paris by SDecoret (reproduced with permission).*

Alas though, something goes dramatically wrong (see figure nine). Either because of a design fault or due to some accident, the entire space elevator starts to vibrate and shudder, before falling spectacularly down in a horrific array all over the city. The engineers have over-reached once more and a monstrous future Franken-Paris opens its eyes.

### **Franken-Como**

Eventually Dr. Frankenstein manages to get back to Geneva. He strives to wipe the whole monster affair out of his mind by withdrawing to the protection of his family. He also organizes to wed his childhood sweetheart and heads off on a honeymoon near Lake Como in the Italian Alps.

However, on his honeymoon, he is alerted by locals that a grotesque beast has been seen lurking around the neighborhood. Frankenstein goes out to challenge the monster, but he cannot locate it. When he returns to the honeymoon suite, his new wife lies strangled to death in their wedding bed.

Como nowadays is a city of 90,000 people located on the scenic shores of the lake of the same name. It's a very old city. Around the 1st Century BC it became a dominion of Rome. At the time, the town center was situated on hills nearby but it was moved to its current location by order of Julius Caesar who had the swamp near the south end of the lake drained before ordering the construction of a walled city in typical Roman grid pattern (Masetti, 2015).

Caesar's city walls are now mere ruins but the town of Como is quite a delight -- nestled in between the lake and the mountains. However, this splendor hides the toxic nature of the lake water. Although a clear azure blue in tone, Lake Como is actually an unhealthy microbe-infested danger zone; the water unsafe for drinking or swimming. This dismal situation is the result of unregulated housing developments, especially those of the rich and wealthy wanting to show off with lavish lakeside houses. These luxury residences pump untreated sewerage straight into the lake.

In the future, when Franken-Como emerges, the lake water grows yet more poisonous. More than a few times, unwary swimmers are afflicted with all manner of diseases as they emerge from the lake covered in rashes, their eyes and mouths stinging and swollen, and their bellies engorged with deadly pathogens.



*Fig. 10: Franken-Como by the authors.*

Nobody -- neither the authorities nor the residents -- take responsibility to clean up the lake. Yet despite ghastly photos of victims occasionally appearing in mass media, Franken-Como fosters an image of beauty and tranquility by covering-up the vile nature of its water with pretty postcards (see figure ten).

### **Franken-Arles**

After he finds his new wife murdered in their honeymoon suite on the shores of Lake Como, Dr. Frankenstein becomes overwrought by grief and engulfed by anger. He ends up on a protracted quest for restitution, believing that he must exterminate the monster not only for the good of his family but for the entire civilized world. Dr. Frankenstein pursues the creature from Lake Como back to Lake Geneva and then along down the river Rhone from Switzerland into southern France. Shelley, herself, had travelled a number of times along this route on her way from Switzerland to the Mediterranean coast of Italy.

One of the cities that Frankenstein and his monster would have passed through is Arles. Arles is a city of Roman roots built upon a spot of raised dry land at the point where the Rhone forks into two parts as it flows from the Alps to the Mediterranean Sea. In between these two branches is Europe's largest wetlands, the Camargue.

In Shelley's time, the Rhone and the Camargue were pristine natural areas — yet to be sullied by the smokestacks and pollution of industrialized France. Here in the Arles of the near-future, the impacts of industrialization have worked together to create an unhealthy Franken-Arles plopped within an unhealthy Frankenscape. Dead birds and dead fish wash upon the shores of a river contaminated with oil residues, agricultural chemicals, and radioactive rare Earth metals.

Arles is well-known in tourist circles as the city where Vincent van Gogh drew many of his most famous paintings. In a crazy-active few years he churned out more than 300 paintings here. But his creative output was shadowed by a strained psyche. One evening, he mutilated himself by cutting off an ear and presenting it to the girl he loved. It was a prescient warning since his health deteriorated so much that he soon took a pistol to himself.<sup>17</sup>



*Fig 11: Franken-Arles by the authors.*

Alas, Franken-Arles is bound for the same fate as van Gogh (see figure eleven). After eating the fish and drinking the water, great numbers of Franken-Arles' citizens end up either depressed or psychotic as the pollution disrupts their metabolism in unpredictable ways. Some feel the need to enliven themselves by enjoying the natural beauty of the Camargue, but all they see there are the remains of poisoned animals and degenerated swampland.

### Franken-Aralsk

When Dr. Frankenstein follows the monster and makes it to the Mediterranean coast, he discovers the creature has boarded a ship sailing to a port on the Black Sea. Frankenstein waits for the next available vessel and does the same. In this way the creature and its creator end up somewhere in Russia, venturing northward as winter sets in. Mary Shelley did not describe the exact route, for this part of the story since she was now lost in a geography she had not visited. Perhaps, though, one of the towns that the monster trudged through was Aralsk, on the coast of the inland Aral Sea.

In Shelley's time, the Aral Sea was the fourth largest lake in the world. Since Soviet times, though, it has been dwindling in size year-by-year due to the overdrawing of water from the rivers feeding into it. This water has mostly been used to irrigate the huge cotton farms of Russia. The Aral Sea has shrunk so much during the past fifty years that it has become a series of near lifeless, polluted, slithery lakes. In the 1950s and 1960s, Aralsk was a significant port and fishing town. Now it is stranded some twenty miles from the Aral Sea and the dried-up lake is dotted with rusting ships. Meanwhile, the new land that has emerged from the receding lake has been renamed Aralkum, the Aral Desert (Breckle, *et al*, eds, 2011).

So often, a violent dust storm whips up the sands of the Aralkum, blowing them westward across Europe. As if this is not bad enough, the sand is laced with leftover chemicals from decayed pesticides. As the Aral Sea receded, Aralsk's economy was destroyed, and now the remaining residents must carve out a precarious existence however they can from their new desert.



Fig 12: *Franken-Aralsk* by the Esteban De Armas (reproduced with permission)

Luckily for future Aralsk residents, in Franken-Aralsk, a 'dark tourism' industry has sprung up as people from around the world travel to the town to gaze upon one of the world's greatest eco-tragedies and to view the Aralsk's haunting ship graveyard (see Figure twelve).

### Franken-Petersburg

Saint Petersburg is the city where the *Frankenstein* novel begins. From here, a British maritime explorer named Captain Watson is organizing a sojourn north to the port of Arkhangelsk before heading out into the ice-floes of the Arctic Ocean and then onwards to be the first voyager ever to make it to the North Pole. Little does he know that he will run into the monster and Dr. Frankenstein on the ice -- and be the person to recount their story to the world.

For our story, the St. Petersburg of the near future (see figure thirteen) becomes a Frankencity via an outbreak of calamitous sinkholes. A growing phenomenon for all northern Russian cities (as noted in Tennberg, ed, 2012).

The sinkholes come about from the melting of permafrost. As the ice in the soil melts, the earth becomes more easily eroded, especially as the expanded ice-melt swells subterranean waterways (as outlined in Larsen and Lindenberger, 2016). Some of the sinkholes are huge; swallowing not only fields and cars but entire farms and town blocks.



Fig 13: *Franken-Petersburg* by the author.

Another issue associated with the thawing permafrost is the reemergence of anthrax, which the Russians refer to as ‘Arctic Plague’.<sup>18</sup> When frozen subsurface becomes warm and soggy, the carcasses of long-dead reindeers can readily re-emerge to spew anthrax spores onto unsuspecting locals. In recent years, hundreds of reindeer-herders have been hospitalized and many thousands of their reindeer have had to be culled and burned.

This problem is only going to get worse as rising numbers of cemeteries and burial sites, some dating back to the Middle Ages, are unearthed by growing temperatures. The bodies brought to the surface in this way may have microbial spores dwelling within them from previous epidemics from one of the many 19<sup>th</sup> Century Small Pox outbursts, maybe. Or, if the bodies date from earlier periods, they could hold the spores of medieval plagues. If

Franken-Petersburg manages to survive the sinkholes, it could still be stricken by a new Arctic Plague that sweeps down from nearby northern lands through the city to kill tens of thousands of its residents.

### Franken-Arkhangelsk

North of St. Petersburg, close to the Arctic Circle, is the town of Arkhangelsk, and here in the near-future the sinkholes have become so bad that the earth tumbles and falls around the city to leave isolated land bridges and anarchic bodies of water. Russian mining companies exacerbate the problem as they move in to excavate on the unstable land.



*Fig. 14: Franken-Arkhangelsk by the authors.*

As frightening and precarious as Franken-Archangelsk looks (see figure fourteen), the melting permafrost portends an even more horrific scenario. As the permafrost thaws, great loads of methane are released. Methane is a potent greenhouse gas and because the Russian permafrost is so huge – one of the largest terrestrial ecosystems on the planet – modern humanity might be knocking on the door of a ‘Methane Death Spiral’. If this door is opened, the melted permafrost will release great loads of methane into the atmosphere which then heats up the Arctic even more, leading to even more permafrost melting, and so on and so on.

Within a few decades, with all this extra greenhouse gas pumped into the atmosphere, an abrupt global climate change could soon overwhelm the Earth<sup>19</sup>. The upshot might be a five degree global temperature spike which, in turn, may raise sea levels by some five meters. Cities will be decimated. Agriculture will collapse. Many species will become extinct. Would humanity be one of them? Most climate experts opine that this worst-case scenario of ‘abrupt climate change’ will actually be stretched out over the next two hundred years rather than over the next two decades. But, like Dr. Frankenstein, perhaps their imagination and foresight is failing them.

Archangelsk in Shelley's time was called the 'Capital of the Arctic'. Countless polar prospectors, traders, hunters, and adventurers set off from here into the frigid Arctic Ocean -- as would Captain Watson, Frankenstein's monster, and soon-after, Frankenstein himself.

For much of the year, Arkhangelsk traditionally becomes a physical part of the Arctic ice sheet and it is hard to see where the city ends and the icy ocean begins. This ice cover forces the port to remain closed for many months every year. However, as a result of climate change, the ever-warming Arctic Ocean laps at the ice so that the port of Arkhangelsk will likely soon stay open all year round for every succeeding year into the future.

In *Frankenstein*, Mary Shelley set the final confrontation between Dr. Frankenstein and his creature upon the ice floes north of Arkhangelsk. Frankenstein walks and skids and skis and slips across the ice, toiling for hundreds of miles. Just as he spots a blurry figure off into the distance, Frankenstein collapses from exhaustion.

The monster then turns around to recover Dr. Frankenstein before the scientist freezes to death, an act that signifies the monster's conflicted feelings for its 'father'. Just then, from his ice-encrusted ship, Captain Watson spots the pair of them. The monster flees as Captain Watson takes Dr. Frankenstein onboard for recuperation.

At this spot, where the British explorers were stuck in ice-covered seas north of Arkhangelsk, it is likely that the ice will soon forever melt away. It is also possible that, in the decades to come, the Arctic ice all the way to the North Pole and all around the Arctic Ocean will have disappeared. Whatever the case, after communicating his tale about the monster to Captain Watson, Dr. Frankenstein succumbs to exposure and dies. Yet the Captain is so moved by Frankenstein's story that he gazes northwards to the pole for a few fleeting moments before ordering the ship to turn around, heading away from the North Pole, and back to the Arkhangelsk.

For two hundred years, Shelley's *Frankenstein* has been warning us of the wasteful arrogance of many techno-scientific adventures — and for two hundred years, few have listened. Will we, like Dr. Frankenstein, only realize the impact of our technologies after it is too late? Or will we turn the ship around?

### **Conclusion: 'The Grand Chamber of Dr. Frankensteins'**

Mary Shelley's *Frankenstein* novel follows the lives of individual characters but what happens if we scale-up the story to the size of a modern city? Well, Frankenstein's monster becomes the monstrous 'Cities of Frankenstein' we have talked about above, from Franken-Naples to Franken-Arkhangelsk, as well as all the other Frankencities that are looming around the globe.

And Dr. Frankenstein scaled-up and writ large? He would represent the entire institution of modern science and technology; a huge techno-industrial complex we may call 'The Grand Chamber of Dr. Frankensteins'.

The Grand Chamber of Dr. Frankensteins is -- from the outside -- a mysterious shadowy organization but looking at it from within, the links between members are strong and the discussions and deals undertaken are a matter of huge importance to both humanity and the planet. The Chamber's meetings are dispersed across the globe and are usually held in private, whilst the Chamber's membership is changing and often invisible.

Many industrial leaders will be on the membership list; the Audi management team would be there, as would the managers of all the other large auto-companies and auto-ancillary industries, including the oil and gas tsars, the rubber and steel bosses, the construction firms that build the roads, the pipelines, and the oil rigs, along with all their extravagantly-paid PR teams and lobbyists.

Political leaders would be honorary members of The Grand Chamber of Dr. Frankensteins since they are needed to encourage or discourage certain new technologies as per their ideology or with due regard to those who fund their campaigns. Of course, politicians are also highly motivated to use science and technology in the management of the State – to produce new military weapons, for example, and to surveil and control their own citizens.

University presidents would be part of the Chamber, too, as they court relationships with industry and government so as to hook both funding and scientific prestige.

Actual scientists will be allowed to join the Chamber only if their research program and political stance is helpful to some important industry leader or some important government agent. At the moment, the President of the United States is trying to micro-manage the membership of The Grand Chamber of Dr. Frankensteins as he attempts to evict climate scientists from agencies like NASA and the Department of Energy. Vladimir Putin took on a similar ‘gate-keeping’ role for the Grand Chamber of Dr. Frankensteins long ago when he got rid of environmental science from the Russian Government altogether by merging the Russian Ministry of Resources with the Russian Ministry of Environment -- effectively eliminating the latter.

Other members of the Grand Chamber of Dr. Frankensteins include:

-- nuclear bosses. These Dr. Frankensteins promise cheap Green energy but all we get from them is dangerous power plants spewing out expensive electricity plus the raw materials for atomic warfare. On top of that, they then abandon their radioactive waste near some politically powerless community, telling the residents not to be afraid of science and technology<sup>20</sup>,

-- the agro-chemical tycoons; who sell patented GMO seeds all over the globe, claiming they are helping to feed the world when, in reality, all they are doing is sucking farmers into buying their specific pesticides to grow their GMO crops<sup>21</sup>. If the farmers try to replant the next generation of seeds from the previous year’s crops, they are slapped with a lawsuit from the company; a practice forcing farmers out of business and which spreads chemical residues and mutant food into urban diets everywhere,

-- tobacco and food research labs; who spend millions of dollars developing the precise recipe of their cigarettes and junk food in order to make them as addictive as possible (especially to poor city kids and urban teens) whilst their bosses chuck money towards front groups campaigning for the sanctity of ‘personal choice’<sup>22</sup>. Dr. Frankenstein’s monster only killed one child (the scientist’s kid-brother) but these modern Dr. Frankensteins send millions of kids down a path toward death each year,

-- IT and AI gurus; the Bill Gates’, Jeff Bezos’s and Mark Zuckerburgs of the world. These master fetishists of technology spread job-stealing robots and designer-addictive apps and games around the world’s cities whilst avoiding taxes and colluding with governments to spy upon our every move<sup>23</sup>. Oh, also beware when Zuckerberg says he

wants to cure all human diseases<sup>24</sup> because that's exactly what Dr. Frankenstein said about death.

-- the 'sci-com' propagandists. In modern cities, TV scientists like Neil deGrasse Tyson and Laurence Krauss romantically extol the glory of science and technology whilst neglecting or hiding its dark side. If anything goes wrong with some scientific or technological project, they get all moody, like Viktor Frankenstein, loath to allow the reputation of science to slip. Instead they just turn around and blame politicians or religion or public ignorance—denying their involvement, as Dr. Frankenstein did.

Perhaps it should be noted that small independently-minded researchers working on non-applied research are liable to be excluded from The Grand Chamber of Dr. Frankenstein since their opinions and values are held to be inimical to both industry and to the security of the state. And maybe Dr. Frankenstein, himself, would also be cast out of the Chamber; not for ethical misconduct but for being remiss in channeling his monstrous creation for the commercial or military benefit of his university or his government.

The Grand Chamber of Dr. Frankenstein's has become an institutional monstrosity in the modern world—thousands of times worse than Dr. Viktor Frankenstein ever was<sup>25</sup>. If Viktor Frankenstein did do wrong, he at least realized his mistake and quit his research project. Nowadays, the Grand Chamber of Dr. Frankenstein's continually evades responsibility as it gushes out risky science, industrial waste, and climate-destroying techno-horror.

In the end, Dr. Frankenstein came to his death on the polar ice, as though Shelley wanted us to believe that science, itself, has been consumed by cold stark nature. She hints that the creature died in the Arctic as well, throwing itself into the sea to drown in a desperate attempt to escape loneliness. Yet the final lines of the monster's demise are ambiguous. Maybe it just walked off northwards to live by himself on the ice at the North Pole with only the unprejudiced ice-scape for company.

Despite his best effort, Dr. Frankenstein never succeeded to slay his monster. But 200 years later, after two centuries of so-called 'technological progress' and two centuries of so-called 'social progressiveness', we (the smarter, kinder, people of 21<sup>st</sup> century) are set to slay the creature by melting away its last final refuge. What monsters have we become?

## End Notes

1. See Marshall (2018) and Marshall (2019). The Literary Method of Urban Design is an interdisciplinary step wise method that aims to predict the future social and technological forces impacting upon our cities and to design such cities in line with these predictions. The Literary Method of Urban Design advocates utilizing themes and narratives from important or relevant works of literature in order to expand our investigation of future urban life beyond technical parameters and across isolated spatial settings, and then to expose them to a world of enlarged cultural history, ethical complexity, social critique, and political possibility.

2. As acknowledged by the likes of Bertram (1973), Bann (1997), Turney (1998), Seymour (2002), Montillo and S.T. Hitchcock, (2007), Hay (2011), Johnson (2014), Gordon (2016), Michaud, ed (2013), Denson (2014), Horton (2014), and Kavey (2016).

3. See Shelley (1818). Incidentally, Mary Shelley writes of Viktor Frankenstein as being a medical student. He wasn't 'awarded' his doctorate and given the title 'Dr.' Frankenstein until the film versions of the Frankenstein story came to prominence in the 20<sup>th</sup> century. However, for our purposes, the title 'Dr.' is useful in conveying the respect Frankenstein was given by his peers in Ingolstadt whilst helping us to distinguish between the creature and the creator.

4. As reported by Liddick (2011), Walters (2013), Mayr (2014) Yardley (2014) and Livesay (2015).

5. As Lancaster (2009) and Astarita (2013) point out. For explorations of Vesuvius' history and geology, see: Scarth (2009) and Guerra (2015).

6. As reported by Barrett (2015) Boston (2015) Tomlinsin (2015), and Tuttle (2015).

7. For instance, see Cox (2017) and Ewing (2017).

8. The summer of 1816 was a dreadfully wintry season both in Switzerland and across the northern hemisphere. It was abnormally overcast, often drizzling profusely with rain and snow, and afflicted with frigid temperatures and violent storms. Over much of Europe, the crops failed and the price of food shot too high for many peasants and laborers to eat. The year 1816 was dubbed the 'Year Without a Summer' and it has since been attributed to a vast eruption of a volcano in Indonesia the year before, which sent billions of tons of dark dust and soot high into the atmosphere. This gloomy ambience is sometimes considered to have played a central role in the genesis of *Frankenstein*. Because the Shelleys were unable to spend a lot of time outside, the story goes, they instead spent many rainy and stormy days and nights indoors. Trapped in their villa, they entertained themselves debating with Byron and Polidori the various matters of the time, ranging over politics, art, and science. During one of these stormy nights, the group of writers retold many German ghost tales to each other but after they exhausted these stories, Byron issued a challenge to see if they could come up with an even more horrific story. For a full picture of 1816 'Frankenstein volcano', see such publications as: Klingamen & Klingamen (2014) and Behringer, E. (2019). Mary Shelley, herself, didn't know of the Indonesian eruption but I'd guess that even if the climatic connections were explained to her, it would've been of passing interest compared to her desire to convey the moral challenge that science and technology was pressing upon the world as the Industrial Revolution rolled on in Britain. And, beyond that, to regard the eruption as of central importance in the genesis of the *Frankenstein* story might seem far-fetched to those living in Central Europe where summer electrical storms are neither rare nor necessary for late night communal telling of ghost tales. For more on the dubiety of the volcanic inspiration of Frankenstein, see Marshall *et al* (2019).

9. As is indicated by the following publications about disturbed lakes in the Alps: Thevenon and Poté (2012) Borre, (2013), Lemmin and Amouroux (2012).

10. For explorations into the sub-culture and philosophy of Steampunk, see the 2010 Special Steampunk Issue of *Neo-Victorian Studies* (Bowser and Croxall, eds, 2010).

11. See, for example: T. Crump (2007) and Osbourne (2013).

12. See, for example: Stearns (2012) and Allen (2017).

13. See, for example, Smith (2010) and de Quincey (2014).

14. See Bolter (1996) and Davies (2012).
15. This and other massive oceanic impacts of climate change are explained in publications such as McIntosh (2008) and Hansen (2010), Cullen (2011), and Sobel (2014).
16. See Horne (2004) and deJean (2015).
17. As retold in: Bailey (2016) and Murphy (2016).
18. See, for instance: Luhn (2016), Guarino (2016) and Nilson (2016).
19. As predicted in the following scientific reports: *CCRC (2002)*, Cox (2005) and Alley (2014).
20. For explications of the monstrous nature of the nuclear industry, see the following works: Marshall (2006), Schrader-Frechette (2012) and Brown (2015).
21. For an explanation of the alienating features of the agrochemical and GMO industry, see Wilcox (2013), Cardillo (2013) and Shiva (2016)
22. For analysis of the unethical features of the food and tobacco industries, see Albriton (2007) and White (1988).
23. As reported by The Washington Post (2014); Ford (2015) and Alter (2017).
24. This is a stated goal of Zuckerberg as explained in Bernstein (2015) and Solon (2016).
25. Reflecting upon the utility of the Literary Method of Urban Design for this study of ‘Cities of Frankenstein’, a concomitant conclusion is this: to use fiction from the past for the study of urban forms in the future is not an escape into fantasy. Indeed, it is an active and nuanced response to the many technological and industrial fantasies -- both extravagant and excessive -- that are so copiously supplied by those with most power to influence our contemporary urban world.

## References

- Albritton, R. (2007). *Let Them Eat Junk: How Capitalism Creates Hunger and Obesity*, Pluto Press: London.
- Allen, R.C. (2017). *The Industrial Revolution*, Oxford University Press: Oxford.
- Alley, R. (2014). *The Two-Mile Time Machine: Ice Cores, Abrupt Climate Change, and Our Future*, Princeton University Press: New Jersey.
- Alter, A. (2017). *Irresistible: The Rise of Addictive Technology and the Business of Keeping Us Hooked*, Penguin.
- Astarita, T. (2013). *The Companion to Early Modern Naples*, Brill
- Audi. (2013). *Four Rings: The Audi Story*, Delius Klasing Verlag: Bavaria.
- Bailey, M. (2016). Uncovering Van Gogh's infamous Days in Arles, *Apollo: The International Art Magazine*, 17<sup>th</sup> December issue.
- Bann, S. (1997). *Frankenstein: Creation and Monstrosity*, Reaction Books
- Barrett, S.R.H. (2015). Impact of the Volkswagen emissions control defeat device on US public health. *Environmental Research Letters*, 10(11).
- Bernstein, S. (2015). What everyone's missing about Mark Zuckerberg's plan to 'cure' disease, *Advisory Board Daily Briefing*, Dec 8<sup>th</sup>.
- Behringer, E. (2019). *Tambora and the Year without a Summer: How a Volcano Plunged the World into Crisis*, Polity: Medford.
- Bertram, N. (1973). *Daughter of Earth and Water: A Biography of Mary Wollstonecraft Shelley*, Morrow.
- Bolter, H. (1996). *Inside Sellafield, Quartet Bks. and H. Davies (2012) Sellafield Stories*, Constable and Robinson.
- Borre, L. (2013). Alpine Lakes in Austria Reflect Alpine Change, *National Geographic* online, June 30<sup>th</sup>.
- Boston, W. (2015). Audi Engines Implicated in Volkswagen Emissions Scandal, *The Wall Street Journal*, November 27<sup>th</sup>.
- Bowser, R. A., & Croxall, B. (2010). Special Issue: Steampunk, Science, & (Neo) Victorian Technologies, *Neo-Victorian Studies*, 3(1).
- Breckle, W. (2011). *Aralkum: A Manmade Desert*, Springer: Dordrecht.
- Brown, K. (2015). *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disaster*, Oxford University Press.
- Cardillo, J. (2013). *The Dangers of GMOs*, Versatile Health: Melbourne.
- Cullen, D. (2011). *The Weather of the Future*, Harper Perennial; CCRC (2002) *Abrupt Climate Change: Inevitable Surprises. Committee on Abrupt Climate Change, Ocean Studies Board, Polar Research Board, Board on Atmospheric Sciences and Climate, Division on Earth and Life Studies, National Research Council. National Academy Press: Washington, D.C.*

- Cox, D. (2005). *Climate Crash: Abrupt Climate Change and What it Means for Our Future*, Joseph Henry Press.
- Cox, J. (2017). Volkswagen's Diesel Emissions Scandal To Cause More Than A Thousand Premature Deaths, MIT Study Finds, *The Independent*, March 3<sup>rd</sup>.
- Crump, T. (2007). *A Brief History of the Age of Steam: From the First Engine to the Boats and Railways*, Running Press.
- Davies, H. (2012). *Sellafield Stories*, Constable and Robinson.
- Dawson, A. (2013). *So Foul and Fair a Day: A History of Scotland's Weather and Climate*, Birlinn Ltd.
- deJean, J. (2015). *How Paris Became Paris*, Bloomsbury: London.
- Denson, S. (2014). *Post-naturalism: Frankenstein, Film, and the Anthropotechnical Interface*, Transcript-Verlag: Frankfurt.
- Quincey, T. (2014). *Recollections of the Lakes and the Lake Poets*, Cambridge Library Collection.
- Emmrich, E. (2007). *Darmstadt: City of Science*, Wissenschaftsstadt Darmstadt: Darmstadt.
- Ewing, J. (2017). *Faster, Higher, Farther: How One of the World's Largest Automakers Committed a Massive and Stunning Fraud*, Norton: NY.
- Ford, M. (2015). *The Rise of the Robots: Technology and the Threat of a Jobless Future*, Basic Bks.
- Glaeser, E. (2011). *The Triumph of the City*, Penguin: NY
- Gordon, C. (2016). *Romantic Outlaws: The Extraordinary Lives of Mary Wolstonecraft and Mary Shelley*, Random: NY.
- Guarino, B. (2016). Anthrax sickens 13 in western Siberia, and a thawed-out reindeer corpse may be to blame, *Washington Post*, July 28th issue.
- Guerra, C. (2015). If You Don't Have a Good Laboratory, Find a Good Volcano: Mount Vesuvius as a Natural Chemical Laboratory in Eighteenth-Century Italy, *AMBIX*, 62(3), 245–265.
- Hance, N. (2006). *Harwell: the Enigma Revealed*, Enhance Publ: Oxford.
- Hansen, J. (2010). *Storms of My Grandchildren: The Truth About the Coming Climate Catastrophe and Our Last Chance to Save Humanity*, Bloomsbury.
- Hay, D. (2011). *Young Romantics: The Shelleys, Byron, and Other Tangled Lives*, Giroux: NY.
- Horne, A. (2004). *Seven Ages of Paris*, Vintage: London.
- Horton, D. (2014). *Frankenstein: Cultographies*, Wallflower Press.
- Johnson, B. (2014). *A Life with Mary Shelley*, Stanford University Press: CA.
- Kavey, A.B. (2016). *Monstrous Progeny: A History of Frankenstein Narratives*, Rutgers University Press, NY.

- Klingamen, W., & Klingamen, N. P. (2014). *The Year Without Summer: 1816 and the Volcano That Darkened the World and Changed History*, St. Martins Press.
- Lancaster, J. (2009). *In the Shadow of Vesuvius: A Cultural History of Naples*, Taurus Parke;
- Larsen, E., & Lindenberger, H. (2016). *On Thin Ice: An Epic Final Quest into the Melting Arctic*, Falcon Guides.
- Lemmin, U., & Amouroux, A. (2012). The Influence of Climate Change on Lake Geneva, in *Climatic Change and Global Warming of Inland Waters: Impacts and Mitigation for Ecosystems and Societies* John Wiley & Sons: NY.
- Liddick, D. R. (2011). *Crimes Against Nature: Illegal Industries and the Global Environment*, Praeger: Santa Barbara: CA.
- Livesay, C. (2015). Europe's Biggest Illegal Dump — 'Italy's Chernobyl' — Uncovered in Mafia Heartland, *Vice News*, June 20<sup>th</sup>.
- Luhn, E. (2016). Anthrax Outbreak Triggered by Global Warming Kills Boy in Arctic Circle, *The Guardian*, Aug 1<sup>st</sup> issue.
- Marshall, A. (2006). *Dangerous Dawn: The New Nuclear Age*, Friends of the Earth Beyond Nuclear Initiative: Melbourne.
- Marshall, A. (2018). The Fantasy Method of Urban Design. *DISEÑA*, 12, 312-323
- Marshall, A. (2019). Using Beloved works of Literature to Predict the Futures of Cities, *The Conversation*, Mar 15<sup>th</sup> issue.
- Marshall, A. (2019). The Tambora – Frankenstein Myth: A Monster Inspired. *Humanities Bulletin*. 2(2), 217-235.
- Masetti, E. (2015). *Lake Como, Italian: Itinerarie*
- Mayr, W. (2014). Italy's Growing Toxic Waste Scandal, *Spiegel Online*, Jan 16<sup>th</sup>.
- McIntosh, A. (2008). *Hell and High Water: Climate Change, Hope and the Human Condition*, Birlinn Ltd: Athens.
- Michaud, N. (2013). *Frankenstein: The Shocking Truth*, Open Court: Chicago.
- Montillo, R., & Hitchcock, S. T. (2007). *Frankenstein: A Cultural History, The Frankenstein Archive: Essays on the Monster, the Myth, the Movies, and More*, McFarland & Co: NY.
- Murphy, B. (2016). *Van Gogh's Ear: the True Story*, Vintage Digital: London.
- Nilson, T. (2016). Yamal Anthrax Could Be Just the Beginning, *The Independent Barants Observer*, Aug 7<sup>th</sup>.
- Osbourne, R. (2013). *Iron, Money and Steam: the Making of the Industrial Revolution*, Vintage Digital: London.
- Scarth, A. (2009). *Vesuvius: A Biography*, Princeton University Press: NJ.
- Schrader-Frechette, K. (2012). *What Will Work: Fighting Climate Change with Renewable Energy, Not Nuclear Power*, Oxford University Press: Oxford.

- Seymour, M. (2002). *Mary Shelley*, Grove Press.
- Shelley, M. (1814-1844). *The Journals of Mary Shelley, 1814–44*. (P.R. Feldman & D. Scott-Kilvert, eds, 1995) Johns Hopkins University Press.
- Shelley, M. (1818). *Frankenstein*, Lackington: London.
- Shiva, V. (2016). *Seed Sovereignty, Food Security: Women in the Vanguard of the Fight against GMOs and Corporate Agriculture*, North Atlantic Books.
- Smith, G.D. (2010). *The Lake Poets*, Amberly Publ: London
- Solon, O. (2016). Priscilla Chan and Mark Zuckerberg aim to 'cure, prevent and manage' all disease, *The Guardian*, Sept 22<sup>nd</sup> issue.
- Sobel, A. (2014). *Storm Surge: Hurricane Sandy, Our Changing Climate, and Extreme Weather of the Past and Future*, Harper Wave.
- Stearns, P. N. (2012). *The Industrial Revolution in World History*, Westview Press: WA.
- Tennberg, M. (2012). *Governing the Uncertain: Adaptation and Climate in Russia and Finland*, Springer: Dordrecht.
- Thevenon, F., & Poté, S. (2012). Water Pollution History of Switzerland Recorded by Sediments of the Large and Deep Perialpine Lakes Lucerne and Geneva, *Journal of Water, Air, and Soil Pollution*, 223(9), 6157–6169.
- Thompson, P. M., & Ollasen, J. C. (2001). Lagged effects of ocean climate change on fulmar population dynamics, *Nature*, 413, 417-420.
- Tomlinsin, S. (2015). Audi Says 2.1 Million Cars are Fitted with Cheat Devices, *Mail Online*: September 25<sup>th</sup>.
- Turney, J. (1998). *Frankenstein's Footsteps: Science, Genetics and Popular Culture*, Yale University Press: Connecticut.
- Tuttle, H. (2015). Volkswagen Rocked by Emissions Fraud Scandal, *Risk Management*, 62(10), 4-7.
- Washington Post, The. (2014). *NSA Secrets: Government Spying in the Internet Age*, Diversion Books.
- Walters, R. (2013). Eco Mafia and Environmental Crime, in K. Carrington *et al*, eds, *Crime, Justice and Social Democracy*, Palgrave, 281-294.
- White, L.C. (1988). *The Merchants of Death: The American Tobacco Industry*, Beach Tree Press.
- Wilcox, B. (2013). *We're Monsanto: Feeding the World, Lie After Lie*, CreateSpace: Seattle.
- Yardley, J. (2014). A Mafia Legacy Taints the Earth in Southern Italy, *NY Times* online, Jan 30<sup>th</sup>.

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