Written by: Lauren Hutchinson

Fire Education: Exploring Different Approaches To Domestic Fire Safety

Written by: Lauren Hutchinson

Fire Education: Exploring different approaches to domestic fire safety

By Lauren Hutchinson

Contents Page

Written by: Lauren Hutchinson

Abstract

This dissertation examines three design approaches focussing on a speculative time of the past, present and future, in the context of fire safety education, extracting concepts from Avanessian & Malik's Speculative Time Complex (2016). It analyses the incessant focus on future oriented visionary approaches whilst examining a need for the re-centralization of the present, through an amalgamation of reactive responses to current crises and disasters, with preventive measures informed by past disasters. This research emphasizes the complexity of differentiating the temporal design strategies of the past, present and future emphasizing that our lived experience is firmly planted within the present. The key finding within this research divulges the necessity for regulatory adaptations to facilitate a cyclical design structure, enabling incremental changes and responsive solutions. Ultimately this work advocates for a design mentality shift to refocus and prioritize present-centred approaches to construct healthier and safer environments for communities, acknowledging that present decisions directly influence future realities.

Introduction

Avanessian & Malik (2016) explore the concept of a Speculative Time Complex which examines the temporal states that are no longer considered 'linear'. The framework holds significant implications on architectural design, particularly regarding domestic safety. Avanessian & Malik (2016, p.7) suggest that we are living in a time where:

'The future happens before the present; time arrives from the future.'

Times have changed from linear states of perceiving time as an unswerving horizontal line followed in a sequential order, to increasingly complex temporal sequences for the present-day. Time has been disrupted from its traditional state due to the human experience losing its priority (Avanessian & Malik, 2016). This is demonstrated through the way we design within architecture and construction. This research will explore three design approaches which will focus on the past, present and future within the framework of The Speculative Time Complex. Exploring this concept is essential in understanding how a lack of education and appropriate knowledge impacts these three design approaches, which defines the subject's parameters of design and how we react to specific issues. Avanessian & Malik (2016, p.11) state 'what happens in the present is based on a pre-emption of the future'. Within their work, constructed as a conversation, the present itself is a speculative relationship to a past that we have already exceeded.

To clarify the subject there will need to be clearly defined terms to gain a comprehensive understanding of the topic. It will be important to determine the differences between accident, disaster, natural disasters, man-made disasters, and catastrophe. If we consider this a scale from accident to catastrophe, with accident representing the initial marker and catastrophe representing the end marker this allows for a clear guide to gauge the ramifications within each approach.

As specified by Suchman (1960, p.241) 'accident is a term used to describe an unforeseen or chance event that produces bodily or property damage'. Heinrich also highlights (as cited in Hosseinian & Torghabeh, 2012, p.54) that accidents are 'an unplanned and uncontrolled event in which the action or reaction of an object, substance, person, or radiation results in personal injury or the probability thereof'. Heinrich and Suchman concur (1960, p.241) that an accident is an 'unanticipated turn of events that takes the unfortunate and innocent victim by surprise'.

The next term to be identified is disaster. Disasters are abrupt circumstances that cause substantial levels of harm and human suffering. To understand these terms natural disaster and man-made disaster must be rigidly distinguished as separate. Natural disasters are communicated as tragic events over which we have no control, resulting from natural causes such as earthquakes, volcanic eruptions, tornadoes, hurricanes, etc. (Shaluf, 2007). According to Zibulewsky (2001) 'man-made disasters are war, pollution, nuclear explosions, fires, hazardous materials exposures, explosions, and transportation accidents' that can be sudden or more long-term. This is corroborated by The International Disaster Database EM-DAT (2023) characterizing man-made disasters as circumstances or states that can saturate local capacity, compelling a necessary appeal for national or international level assistance. 'Also possible are combined natural–man-made disasters, as would occur if an earthquake destroyed a nuclear power plant' (Zibulewsky, 2001). Both disaster terms will

be of significance when choosing an approach to utilize within design.

The final term that will need to be established for context within this essay is catastrophe. Catastrophe is a complex term to define. Dupuy (2022, p.X) denotes that catastrophe is an abstract concept that has been suggested as an idea of 'something utterly insane' and inconceivable, that intrusively brings the 'possible into the realm of the once impossible'. The term is the space where a 'transition from the abstract to the concrete' transpires. This denotes a sudden and impactful circumstance imposing on society with such swiftness that the ramifications will be felt much further and wider than the original parameters. This is reinforced by Von Peter et al., (2012) who found that there were substantial and subsequent negative effects on economic activity as a result of grave natural catastrophes, which began at preliminary impact and continued post-catastrophe for long periods. This is reflected similarly in defining catastrophe as an event, a happening that 'surges forth suddenly arising out of nothingness' (Dupuy, 2022, p.XI). Gulliver-Garcia (2019) from The Centre for Disaster Philanthropy states that catastrophe is a type of disaster that is vast in scale and completely overwhelms the local community to the point where it ceases to function. Relating to the previous definitions, catastrophe is at the extreme end of the scale indicating the most intense version of an accident has occurred. Catastrophes are 'calamitous event that causes widespread destruction and suffering.' (Dupuy, 2022, p.X) implying that the term Catastrophe is used very broadly as an all-encompassing term. Similarly Dole et al., (2015) portrays catastrophe as a series of 'exceptional events of such a magnitude that worlds and lives are dramatically overturned', a consequential incident 'that admits no uncertainties with regards to its timing', proposing no indication certainty of when or where a catastrophe will occur. It is important to highlight there is often a blurred differentiation between disaster and catastrophe as they have a unique entangled relationship with one another reflecting the world and situations we live in.

Within this essay the three states influenced by the speculative time complex are past, present and future, predominantly in relation to architecture, construction, and design. To clarify these terms, the author, in discussion with another professional, has applied appropriate approaches to represent each temporal state.

The first temporal state that will be defined is the past, with a preventive design approach applied (Hutchinson & Rettondini, 2024). This proposal is characterized as eliminating risks as primitive as possible. Reflection on previous man-made disasters will give insight into preventing issues from occurring in the future.

The second temporal state to be discussed is the present, with a reactive design approach applied (Hutchinson & Rettondini, 2024). Reactive design delivers an approach for the present as a method of reacting and responding to predicaments including natural and man-made disasters.

The third and final state is the future, with a visionary design approach applied (Hutchinson & Rettondini, 2024). This entails designing and discovering solutions for the future by predicting and pre-empting what will go awry. This is explained by Avanessian & Malik (2016) we are focused on the 'prefix of pre' such as 'pre-emptive strikes, pre-emptive policing'. Both man–made and natural disasters will be of significance when choosing upon an approach to utilize within this design.

These states and approaches highlight a need to increase educational awareness of issues relating to domestic fire safety across the whole spectrum: from concept to inception and from professional to tenants. The present is most important as we react to incidents suddenly occurring in the here and now that we cannot prevent or pre-empt. We tend to develop solutions to immediate problems without considering the possible long-term consequence of that solution. This flaw has cost time, money and most importantly lives. This transpires across industries creating a unique crossover that affects both professional and public. The concept of neglect trickles down to the source, including to the regulatory framework, designers, and construction industry.

Written by: Lauren Hutchinson

Section 1
Section 1A: Preventive Approach: looking back at past mistakes

Section 1: Approaches
Section 1A: Preventive: looking back at past mistakes
The Great Fire of London
Preventive Medicine
Accident Prevention
Preventive Dentistry

The phrase 'prevention is better than cure' is often attributed to the Dutch philosopher Erasmus in 1500 (Leistikow, 2017). This way of thinking is foundational to societies way of thinking in a preventive way. Erasmus has arguable set a precedent for a preventive approach that went well over 500 years into the future we now call the present. This is highlighted through Erasmus' philosophy now being 'a fundamental principle of modern health and social care strategies across the UK (Department of Health & Social Care, 2024). The preventive approach influenced by Avanessian & Malik (2016, p.14) suggests the present can be perceived as 'a future of the past that we are already exceeding' implying analysis of historical experiences and extracting knowledge and insight can facilitate innovation of new ideas to inform future approaches. This is reinforced through the speculative time complex, by suggesting that the past is not a fixed state, but a resource for the future. This preventive approach has been applied across various industries since the time of Erasmus. Within the context of domestic fire safety issues preventive measures are applied, for example through fire retardant materials developed as a response to past domestic fire disasters.

The Great Fire of London

One example of the execution of preventive design was the catastrophe of The Great Fire of London. The aftermath of the great fire resulted in a shift from reactive approaches to preventive. The building regulations were developed to help prevent fire from spreading spontaneously through the city and the education of the wattle and daub formed walls needing to be assembled and maintained correctly for it to remain fire resistant (Summerson, 2003). One of the root causes was the intimate proximity of houses and lack of maintenance which failed to resist flames from spreading (Chapman, 2016). Significant to note that the areas most affected were the poorest areas of London, suggesting tenants' insufficient income necessary to maintain their dwellings.

Preventive Medicine

If we apply this approach to various other industries, we can see the effects clearly. The medical industry is a useful example for preventive approaches. According to Clarke (1974) 'the aim of preventive medicine is the absence of disease' through 'preventing the occurrence of a disease or by halting a disease and averting resulting complications after its onset.' It is important to note that preventive medicine is typically divided between two distinctions: 'primary prevention, applied to prevent the occurrence of a disease', and 'secondary prevention, minimizing effects of disease by treatment'. Smallpox, one of the most fatal diseases has been eliminated by prevention, not cure, through development of the smallpox vaccine and worldwide vaccination programme (World Health Organisation, 2025). A safe cigarette appeared a better solution than curing lung cancer (Clarke, 1974).

Prevention allows for a temporary solution while the root cause can be identified illuminating the need for reflective practice and research to inform and educate accordingly. The educational element is vital for the preventive approach to succeed. We must be able to learn and grow from past mistakes. This idea of

pre-curing people for potential health conditions in contrast to searching for evidence and answers could prevent the cause as well as the symptoms. Alternatively preventive medicine can be 'aggressively assertive' through the management of individuals without symptoms whilst informing them how to stay healthy, as well as being 'presumptuous' that treatments on balance will do more good than harm (Sackett, 2002). This is spotlighted by Sackett (2002) who denotes a trial prescribing postmenopausal healthy women estrogen and progestin 'under the presumption that they will be protected against cardiovascular disease.' However, they found the women's risk of cardiovascular disease increased during therapy, halting the trial. The women treated with both hormones had '40 more coronary events, 40 more strokes, 80 more episodes of venous thromboembolism and 40 more invasive breast cancers than the 8102 women assigned to placebo' (Sackett, 2002). This clearly highlights potential negative effects of the preventive approach where 'health risks exceeded benefits' (Writing Group for the Women's Health Initiative Investigators, 2002). It can cause more harm than good, and other issues may occur due to pre-emptive prescription for a sole condition creating a catastrophe that could have been prevented. This treatment is still frequently prescribed to postmenopausal women worldwide, with potentially many thousands of healthy women having been harmed, reinforcing the idea that preventive medicine can be 'overbearing' (Sackett, 2002). Although being assertive and keeping a watchful eye could be considered positives due to the findings revealing issues with preventive approaches, it raises the question of the ethical value of acquiring said information without contemplating the potential for harm.

Accident Prevention

Other forms of preventive approaches include accident prevention to create a safe and protective environment. Safety prevention is typically introduced through legislation as 'significant prevention frequently depends on large scale government organized activity' (Sackett, 2002). This is accentuated through the actualization of seatbelts. The revolutionary three-point front seatbelts were legally placed within all new cars in the UK in 1965, yet legislation requiring drivers and front-seat passengers to wear their seatbelts came into force in 1983, whilst seatbelt wearing became compulsory for all rear-seat occupants in 1991' (Road Safety GB, 2018), a substantial number of years later. Due to this implementation there was 'an immediate decrease of 25% reduction in driver fatalities', with an estimated 241 drivers' lives and 147 front passengers saved in 1983 (ROSPA, 2013). This highlights that although there were well known issues and mortality rates they were not at a level of accident/disaster for the government to enforce legislation for a significant time period. It suggests there was a lack of education involved. The Department of Transport Think Campaign (2025) highlights you are twice as likely to die in a car crash if not wearing a seatbelt, reinforcing the query why vital preventive measures of legislation were not implemented sooner to protect lives?

Preventive Dentistry

The administration of fluoridation to prevent tooth decay and promote good oral health in water supplies is done to protect and prevent damage. Although there are advantages, numerous countries have withdrawn from the scheme due to emerging questions on the harms and benefits. A committee was formed in an

unbiased manner to determine the benefits and harms of such preventive tactics however 'the reviewers were surprised by the poor quality of the evidence and the uncertainty surrounding the beneficial and adverse effects of fluoridation' (Cheng et al., 2007). An ecological study from Taiwan found a high incidence of bladder cancer in women in areas where natural fluoride content in water was high. The authors attributed the findings to chance because multiple comparisons were made (Cheng et al., 2007). 'Testing the hypothesis that drinking fluoridated water increases the risk of bladder cancer would need to take account of errors in estimating total fluoride exposures; potential lack of variation in exposure; the probable long latency between exposure and outcome' which suggests that if the competency and level of knowledge were reflected appropriately there may be more concrete and valid reasonings which would in turn inform education (Cheng et al., 2007). In the case of fluoridation, people should be aware of the limitations of evidence about its potential harms and that it would be almost impossible to detect small but important risks (especially for chronic conditions) after introducing fluoridation. While immediate risks may not be apparent the potential for long-term adverse effects remains a concern. It is a similar conundrum to preventive medicine treating one symptom could cause adverse reactions and create additional issues.

This echoes Avanessian & Maliks (2016) thoughts 'that the change of the present, the shaping of the present is not necessarily determined by the past. The present can no longer primarily be deduced from the past' (Avanessian & Malik, 2016).

Written by: Lauren Hutchinson

Sub section 1B: Reactive Approach: Responding and reacting once there is a crisis

Sub section 1B: Reactive: reacting and responding
Covid 19
Reactive Guidelines and P.P.E
Social Distancing
Advanced Fire Safety Systems
Fire Disaster
Reactive Earthquake Systems

The second approach that will be explored based on Avanessian & Malik (2016) and the speculative time complex is the reactive approach based on the present. The present was traditionally the most important part of time where we experience everything first hand suggesting that this should be the most valued temporal state. However, Avanessian & Malik (2016, p.9) remind us that due to the contemporary era the 'future replaces the present as the lead structuring aspect of time' implying that the future is of more importance in shaping the 'here and now'. According to Avanessian & Malik (2016, p.34) the present is 'constructed by the uncertainties of the future and the absence of the past' inferring there is a diminished influence on the present from the past. Therefore, in application, reactive design occurs once there is a disaster, or catastrophe, necessitating quick and consistent solutions. Reactive approaches can be used in numerous circumstances not only within the realm of design. There is a differentiation between proactive and reactive approaches as stated by Rassmussen (2010, p.1) proactive approaches entail a 'means that planning and actions are initiated before a threat, or an opportunity occurs', whereas reactive approaches influenced by Avanessian and Malik's work (2016) are methods exploring solutions not based on the past but based on the response to situations developing in the present.

Covid 19

Some of the most innovative ideas have been assembled during crucial circumstances in the present for example; the Covid 19 vaccines developed during the pandemic (CDC, 2025). The pandemic had reactive systems put in place due to the instantaneous nature of the catastrophe. The volatile nature of the pandemic resulted in systems and guidelines rapidly evolving. The unexpected nature of the pandemic left little room for proactive intervention of other approaches. Being reactive and responding in the present was one of the only options to have a successful system due to a lack of national-level planning and preparedness. There was a need for immediate and reactive action to combat the fears of the unknown.

Reactive Guidelines and P.P.E

Guidelines were implemented once experts concluded how the virus was transmitted, and methods of testing became possible. This is emphasized by Avanessian and Malik (2016) suggesting immense circumstances create space for innovative solutions to be developed. Kits were created expeditiously to control the spread of the virus. The reactive solution also included vaccinations to fight against the virus. The implementation of guidelines and updated revisions created throughout the pandemic allowed for an improved structure of incremental solutions combating the spread of the virus. This is the same way in which we should be applying a cyclical structure in relation to domestic fire safety.

The implementation of P.P.E. masks was another reactive adaptation to the pandemic aimed at reducing the spread of coronavirus among the general population. There was also specific P.P.E allocated to healthcare workers as protection on the frontlines whilst caring 'for those who are ... highly vulnerable' (Public Health England, 2020). Although this was an appropriate reactive response due to the lack of preparedness globally

Sub section 1B: Reactive Approach: Responding and reacting

there was a shortage of critical resources including P.P.E and ventilators, etc. Highlighting, although there was a benefit to reactive approaches there are also negatives that must be addressed. Similarly, there was a lack of education for professionals to be equipped with handling a pandemic at such a large-scale, echoing similar issues related to education in fire and domestic safety.

Social Distancing

Another example of implementing reactive design approaches was social distancing to deter the population from spreading the virus at an increased rate. There were guidelines put in place for those who had contracted the virus, to protect themselves and others (Public Health England, 2020). The reactive approaches applied in parts of the world was done so 'to avoid the overwhelming of their national health systems while allowing the virus to spread' however, not all countries adopted this approach. It is important to note both approaches had a 'substantial impact on human activities' (Sacco et al., 2023). Theorizing an intertwining of more than one approach could be the new innovative way forward towards educating society.

Advanced Fire Safety Systems

An example of positive implementation through a reactive approach is the advancement of fire safety systems, including fire detectors incorporating the use of A.I. sensory systems such as cameras to differentiate harmless and dangerous forms of smoke (Vision Platform, 2024). This form of reactive and responsive approach is vital for the improvement of domestic fire safety as it allows for reactive systems to alert the residents and apply appropriate knowledge and education to the imminent disaster at hand.

Fire Disaster

Fire disaster is a critical example of reactive design as there is a need for immediate response to create a safe and healthy environment for society. This is emphasized by Grenfell Tower. The disaster occurred largely due to a lack of information, knowledge, and competency (Skelding, as cited in Martins, 2024). Once the disaster had taken place the authoritative figures discovered the issues and declared the rectification of replacing the cladding globally, inferring there are many ways to improve the present that will also improve the future. Although the reactivity to the cladding was determined swiftly, the responsive action required is still being implemented today suggesting we are not reacting as instantaneously as we should.

Reactive Earthquake Systems

Referring to the definitions within this essay earthquakes are a natural disaster that cannot be prevented. One of the only forms of information we can extract for earthquakes is the potential of where they will

occur and vaguely when they will happen (United States Geological Survey, 2023). All we can do is react to the event once it occurs and implement systems in the areas that will likely be affected. For example, the 101 building in Taipei built in earth-quake prone-Asia was constructed applying specific earthquake proof features. The flexibility of the structure assisted in the building allowing for neutralising the 'powerful motion of the quake' while 'this movement perfectly demonstrated how the skyscraper's single most important defence against earthquakes is the very material it is constructed from: reinforced concrete' (Holland, 2024). The most significant earthquake defence system was the '730-ton steel sphere' also known as the 'tuned mass damper, suspended between several floors at the top of the building' (Holland, 2024). The use of this reactive measure was put to the test during the infamous 7.4 magnitude earthquake in 2024 where the pendulum reduced the buildings movement by 40% and absorbed the kinetic energy. The earthquake took the lives of 9 people as well as injuring an estimation of 1,000 more Wingfield-Hayes and Ng (2024). The innovative design allowed the building to withstand significant magnitudes of earthquakes and other natural Disasters with minimal damage. Developing a building to respond to its natural environment in a reactive and successful way is no small feat. The reactive systems implemented were done in anticipatory way however the response was due to reactive systems.

Written by: Lauren Hutchinson

Sub section 1C: Visionary Approach: Pre-empting and Predicting the future

Sub section 1C: Pre-empt and Predicting the Future
Pre-emptive Policing
Pre-emptive Strikes
Social Media Prediction
Visionary Flaws

The third and final approach influenced by the speculative time concept is the visionary approach which centres around developing solutions for the future, often pre-empting and anticipating potential issues before they arise. Avanessian & Malik (2016, p.18) characterize this as a form of 'future mining an extraction from the future in the present, but this mining of the future in the present changes what the present is' itself. This future-centred attitude is not only used within the field of domestic safety such as predictive fire modelling but also within law enforcement.

Pre-emptive Policing

Avanessian & Malik (2016, p.13) suggest that 'pre-emptive policing' as a visionary approach, seeks to apprehend individuals before they commit crimes, anticipating their actions rather than reacting to them. This implies the 'future-position promises more power', which develops a sense of 'future- paranoia' Avanessian & Malik (2016, p.13). This future-centred focus can lead to a neglect of present-day dilemmas, and create negative impacts, particularly on domestic fire safety.

Van Brakel (2016, p. 118) defines 'pre-emptive logic as something that 'can be recognized in many new surveillance practices, such as predictive policing' where this visionary approach applied to law enforcement sectors can be considered an asset in identifying potential challenges. This form of policing is utilized within the United States, according to Andrejevic (2017, p. 879) predictive policing is considered as 'the use of data-mining tools to predict and pre-empt criminal activity'.

Echoing the implications of The Speculative Time Complex in a comparable way to future-mining. According to Susser (2021 p.12) 'there is a focus on machine learning and other data analytics tools, which promise to accurately predict where crime will occur and who will perpetrate it'. These pre-emptive systems are activated through a range of factors including predicting 'where, geographically, to allocate enforcement resources; assessing flight risk and the potential for recidivism among arrestees' Susser (2021 p. 12). These systems identify potential high-risk areas by extracting past crime patterns into the future. Although these systems can be applied positively and yield beneficial results there is also room for ethical lines of questioning to be raised about the 'use of predictive analytics tools to identify potential offenders' (Susser, 2021 p. 12). This approach has room for drastic errors as it allows for 'wrongfully generalizing about individuals, making harmful assumptions about them ... and failing to respect them as full ethical persons' (Susser, 2021 p. 12).There is also a consideration for racial biases to obscure results due to higher crime rates in poorer areas, this is not an indication that all individuals in those areas are committing offenses highlighting challenges with predictive policing as well as its ethical implications. Mantello (2016, p. 12) insists the 'pervasive growth in predictive analytics for law enforcement signals a paradigm shift in criminal justice' this is explored through the same thread as the United States 'embracing in its logic of pre-emptive war and targeted assassination' (Eggbert & Krassman, 2017, p.879).

Sub section 1C: Visionary Approach: Pre-empting and Predicting the future

Written by: Lauren Hutchinson

Pre-emptive Strikes

This links to visionary approaches exploring the application of pre-emptive strikes. In agreement with Flyn (2008, p. 2) pre-emptive warfare including pre-emptive strikes 'is the practice of attempting to avoid an enemy's seemingly imminent attack by taking military action against them first. It is undertaken in self-defence'. This is further corroborated by Brailey (2004, p. 151) implying that pre-emptive warfare was based on a threat that was considered 'an instant, overwhelming' tactic of intimidation 'and leaving no choice of means and no moment for deliberation'. This form of visionary approach allows for a 'legitimate form of self-defence provided action is clearly linked to a defined threat of aggression' (Brailey, 2004, p. 151).

As maintained by Avanessian & Malik (2016, p.18) the act of a pre-emptive strike involves eliminating 'a possible enemy in order to prevent what might have happened—but which also may not.' It is considered an act that will consider the 'very proximate future into account as a condition of the act that should then be made' (Avanessian & Malik, 2016, p. 18). Rapid deliberations are made on whether the strike will benefit or whether it will result in substantial losses. This is highlighted through 'the future acting now to transform the present even before the present has happened' (Avanessian & Malik, 2016, p. 18). According to Flyn (2008, p. 2) 'Pre-emptive war is considered 'justified and honourable' due to the sequence of pre-emptive attacks. Although considered a justifiable response there are questions on the ethical implications and potential unforeseen consequences for acting on uncertain futures. This is linked to 'future paranoia' explored by Avanessian & Malik (2016) referring to the state of fear being driven by the pre-emptive nature of potential future threats. The application of pre-emptive strikes neglects the conversation surrounding issues of the present day.

Social Media Prediction

This visionary approach is prevalent in today's digital age as it is applied to various aspects of life. An example of this is algorithms and 'big data' utilized to predict consumer trends via social media (Avanessian & Malik, 2016, p.12). This form of the visionary approach is trend analysis, a way of predicting future trends and challenges through identifying patterns with data analysis and producing future outcomes. 'Yet, prediction is about agency, we predict the future to change' it where predictive algorithms are being utilised and 'replacing the art of human judgement in rapidly growing areas of social life' (RonaTas, 2020). This is accomplished by 'predictive algorithms mechanically projecting the past onto the future, embracing a peculiar notion of time where the future is different in no radical way from the past and present, and a peculiar world where human agency is absent.' Social media is not just used for passing the time it can also be used for 'predicting real-world outcomes' for example the information collated from the chatter on twitter.com has been exploited to 'forecast box-office revenues for movies' (Asur & Huberman, 2010) or applied to more substantial issues such as 'product sales ... stock market fluctuations ... and even electoral results' (Metaxas & Mustafara, 2016).

Visionary Flaws

Although it is important to consider the future when developing successful resolutions there is a tendency to centre our focus on groundbreaking moments of 'eureka' over practical and reactive responses suggesting there is a societal need for recognition and innovation over the resolution of existing issues. It's as if establishing a simple yet effective solution is not considered as lasting change in today's climate. Today's society appears to prioritize the pursuit of groundbreaking, and highly recognisable solutions over the development of practical and consistent strategies. This is highlighted directly by the application of domestic fire safety. There have been incremental changes applied through legislation and regulation however these tend to be reactive approaches based on failures highlighted in accidents and disasters in the past. Furthermore, the speed in which these changes are considered and implemented can be quite slow as they do not seem to be evaluated and updated on a regular basis which in turn would allow for an enhanced future with safety on its side. It could be said that it was visionary approach that designated that the ACM cladding should not be used in future high rises 15 years before the Grenfell disaster however, there was a lack of education and information passed over to the appropriate organisations regarding the ACM cladding resulting in disaster (Smith, 2002). There have been new and innovative solutions to fire alarms such as the wireless detectable smoke alarms allowing for more precise detection of dangerous smoke and non-fatal smoke (Aico, 2025) however there seems to be a lack of forethought for people not having access to such devices or the issue of simply not being able to afford such safety luxuries.

Written by: Lauren Hutchinson

Section 2: Systems within the architectural industry to prevent disaster.

Section 2: Architectural systems
Great Fire of London
Regulatory Response
Regulatory Framework
Incentive based regulations and political agendas
The importance of fire safety regulations and public education
Socio-Economic Factors
Regulatory Framework - Criticism of regulation by disaster
Challenges of misinterpretation and competency
Issues of loopholes and misuse

Great Fire of London

The type of disaster that will be focussed on in this section is man-made fire disasters. Fire has been a hazardous element affecting people, buildings, and construction for centuries. Numerous historical incidents have been recorded including fire catastrophes such as The Great Fire of London, 1666, known as an 'extraordinary event' (Garrioch, 2016) which began in a bakery, 'a domestic fire creating an inferno of historical impact' (ClickView, 2019) and 'destroyed some 13,200 buildings, around a quarter of the entire (London) metropolis' (Garrioch, 2016) with the loss of '400 streets, 87 churches, and 44 livery halls' (Green, 2016).

Regulatory Response

This was a turning point within British history for creating greater building regulations to improve and prevent the spread of fire in the future within the city of London. In response to the catastrophe, national regulations were promptly integrated, and by 1667 'A royal proclamation' declared the new regulations of the Rebuilding Act were being implemented in the interest of reducing risks and improving safety issues in the bounds of domestic dwellings (Chapman, 2016). These regulations have had a lasting impact on fire safety practices and the application of safety systems today. According to The National Audit Office (2017) 'regulations are implemented to protect people, businesses and the environment, and to support economic growth.' This is supported through communities and individuals thriving in protected and healthy domestic domains.

It is noteworthy to mention, although The Great Fire of London is an historical event known around the globe it was not the first great fire in London. There had been numerous previous disasters that Garrioch (2016, p. 319) divulged as a series of 'frequent and more dangerous' fires. The Great Fire of London was 'the worst in a long series of serious fires' and had a significant impact on all levels of society. Previous fires however were not deemed severe enough for there to be a real response from government officials or perhaps had not yet reached properties of the elite for there to be an outrage and reactive retaliation (ClickView, 2019). This could be inferred through Pepys's diary entry for Sunday 2 September 1666 (2025) where he wrote 'being unused to such fires as followed, I thought it far enough off; and so, went to bed again and to sleep'. Pepys enjoyed an initial sense of security until the inferno encroached, seeing the ensuing trauma for himself prompted him to call for regulatory action.

Regulatory Framework

Regulations are implemented to promote a safer environment, whereby simultaneously creating 'a thriving community' (National Audit Office, 2017), which in turn creates spaces people want to protect and take great care of to share the prosperous developments with future generations. Effective community safety relies on comprehensive knowledge and public education regarding potential hazards especially within domestic settings. However, due to the political agendas of policy makers, 'regulations are also exercised by the government as a primary action to accomplish policies and agendas' (National Audit Office, 2017). This suggests

Section 2: Systems within the architectural industry to prevent disaster.

that although there is a pure notion of wanting safer spaces for the population there is also leeway for policy makers to ignore certain issues in favour of their personal agendas.

Incentive based regulations and political agendas

Another definition of regulation is to rely 'on using incentives to drive behaviour change in individuals and organizations outside of government's direct oversight' (National Audit Office, 2017) highlighting that regulations can be interpreted and applied with a degree of flexibility, allowing for the use of incentives to influence public behaviour. Regulations are utilized to allow for safe growth however, there is always space for political agendas to overtake the need for safe and competent legislation. Fire safety regulations are vital and help provide clear instructions on the health and wellbeing of professionals and the public (National Audit Office, 2017). However, there is a need to reflect on the nature of the knowledge and expertise applied within the industry, as well as better education for the public to have a greater amount of knowledge for fire issues so that everyone can recognise and rectify dangerous situations as and when they occur.

The importance of fire safety regulations and public education

According to Spinardi et. al (2016, p. 1011) the implementation of fire safety measures and understanding of the underlying processes have strong social components. 'The ways in which this shapes the provision of fire safety will help scientists and engineers to more effectively use (and improve) their technical knowledge'. Spinardi et. al (2016, p. 1011) continues to suggest that all aspects of fire safety are inherently social issues in nature, how people react and escape 'hinge(s) on human behaviour and social organization'. An example of this is witnessed firsthand in the Japan Airline crash at Tokyo's Haneda airport where all 367 passengers and 12 crew were evacuated safely while the plane was on fire. Dr. Pignata (2024) 'praised the passengers on board for swiftly following directions' signalling 'in Japanese culture, people really respect authority'. This compliance saved lives, 'there was also a cultural aspect that enabled the evacuation to be undertaken so smoothly ... if this incident had happened in a more Western country, where people aren't so [inclined to] adhere to rules, regulations and commands' and pre-flight safety briefings, the outcome could have been fatal (Sweeney & Armitage, 2024). This implies that there is a strong need for people to have comprehensive knowledge and understanding of fire safety and regulations to prevent life threatening situations. Focusing on sociological aspects of fire safety highlights the need for more education within professional and public settings. Fire safety has been questioned on solutions including sociological concepts and environmental factors (Jennings, 1999). Although fire risks can be minimized through a regulatory framework the use of technical and industry language can pose as a challenge for 'social distribution and communication of fire safety knowledge and expertise' to the public (Spardini et. Al., 2016, p. 1011). This bolsters the consideration for developing a clearer and more thorough education and understanding on fire safety for all.

Regulations are occasionally amended to address emerging challenges and rectify past preventable issues with the common goal of enhancing public safety in relation to domestic fire safety. Unfortunately, fire safety knowledge tends to be reviewed retrospectively rather than proactively. Amendments are made to make the accountable parties aware and highlight issues that need specific and necessary attention. This preventive approach by learning from the past has allowed us to gain valuable knowledge and create change. However, for this regulatory framework to succeed the conducting and managing of the construction process must implement, respect and be held accountable to the regulatory framework at every step of the process, from inception to completion. If this is not adhered to, there is the potential for breakdowns in communication where we will not be able to protect the present from the past or the future from the present. This was distinctly accentuated by the fatal tragedy of Grenfell Tower, 2017. Many regulations were disregarded or misinterpreted and/or poorly interpreted, alongside a lack of correctly documented quality checks and inspections during the construction process, resulting in tragic circumstances that could have been avoided (Hackitt, 2018).

Socio-Economic Factors

Exploring further into the socio-economic factors according to the Home Office (2024) 75% of fire deaths happen within a domestic setting. This clearly outlines the need for further accessible direct literature and information for the public to educate themselves on prominent issues in this regard. Interestingly there was a study in London and Birmingham concluding that 'fire incidence is lower in close-knit communities' in which the population have stayed together and provided appropriate mutual support when needed (Merrall, 2007, p.38). Studies of urban areas such as London and two other places in England discovered that fire rates correlated with 'age of housing and socioeconomic status.' Jennings (1999, p.7). However, fascinatingly the findings presented were that one area had high rates of unemployment but low fire rates (1999, p.7). Suggesting that people have competent understandings of the effects of disasters but not logically how things can be avoided. This implies the notion that where respect of regulations and expertise through education are in place, this results in a healthier and safer environment where the public themselves can identify risks and use the knowledge gained for their benefit and safety.

Regulatory Framework - Criticism of regulation by disaster

As stated by Spinardi (2019) fire safety regulation history is driven by disasters that become the catalyst for significant change. This is also known as regulation by disaster that has been severely critiqued for assembling 'stable door' regulation, fixing problems 'after the horse has bolted' in 'fixing the specific cause of the latest major disaster, but not necessarily addressing systemic failures in the broader fire safety system' (Spinardi, 2019). Regulation is applied and enacted within industry in a way that could be considered 'not fit for purpose' sequentially allowing space for people to circumnavigate the regulations according to their own designs. This highlights the idea that hidden agendas and misinterpreting regulations could lead to a misrepresentation of standards and quality with a loss of respect within the industry. Regulations cannot operate efficiently if individuals purposely misuse or manoeuvre around the standards set. Therefore 'consideration

should be given to establishing a methodology for integrating the use of a range of evidence in fire safety policy governance' (Spinardi, 2019).

Challenges of misinterpretation and competency

A further avenue to consider in relation to fire regulations are, that although there is sufficient fire safety legislation and guidance, it is not always accessible to the appropriate parties who will benefit most from that specific fire safety knowledge. This can be exasperated dependant on the competency, experience and training of the organisations/ individuals that are providing consultation and construction services (Hutchinson, 2025). A supplemental issue is the language of the information supplied needing to be appropriate for the target audience. For example, having access to a wealth of knowledge and guidance, designers and consultants would have a deeper level of understanding of technical terms and conditions as opposed to tenants/ end users who need language relevant to the setting to minimise room for error and misinterpretation. This could be accentuated by the implications explored in the speculative time complex.

Issues of loopholes and misuse

We are in an era where many things are accessible at our fingertips at inexpensive prices thanks to the likes of Amazon/eBay that our view as a society has shifted to 'a primary motivation. .. to do things as quickly and cheaply as possible rather than to deliver quality' (Barham, 2024). This has applied especially in the construction field due to the pressures and demands of the industry. Safe spaces for people to inhabit have been demoted in priority level, in favour of building as 'quickly and cheaply' as possible having more value than the health and safety of our population. Dame Hackitt (2018, p.5) states this transfer of priorities is implied though some organisations/individuals involved in construction are using 'the ambiguity of regulations and guidance to game the system'; 'that there is ambiguity over where responsibility lies'; and regulatory oversight and enforcement is inadequate with enforcement 'often not pursued', and penalties 'so small as to be an ineffective deterrent'. She continues to highlight that 'when concerns are raised, by others involved in building work or by residents, they are often ignored' and that the 'above issues have helped to create a cultural issue which can be described as a 'race to the bottom' caused either through ignorance, indifference, or because the system does not facilitate good practice'. The priority should return to the present of 'delivering the best quality building possible, in order to ensure that residents are safe, and feel safe' (Dame Hackitt, 2018, p.5).

The issue of misinterpretation and exploiting regulatory obscurity goes hand in hand with the rising issue of professional competency. There could be a space where individuals are cheating the system to sidestep the regulations due to a lack of competency in understanding what standards need to be met, or lack of expertise or experience in their field.

Section 2: Systems within the architectural industry to prevent disaster.

Written by: Lauren Hutchinson

Section 3: Case Study: Grenfell Tower Disaster

Section 3: Case study: Grenfell Tower
Preventive Measures
Reactive Measures
Visionary Measures
The Swiss Cheese effect

This section of the dissertation is examining the application of preventive, reactive and visionary approaches to the Grenfell Tower Disaster of June 14, 2017. It is important to explore this case study as it highlights the preventive, reactive and visionary systems put in place and allows for the exploration of benefits and hindrances of each approach. This case is particularly valuable as it effectively explores these topics and underscores the necessity of appropriate regulations and improvements to the education of public and professionals. Understanding the procedure in the event of a disaster is key as well as being hypervigilant within domestic settings in identifying signs of fire risk. Using this knowledge will empower individuals to confidently and appropriately seek guidance. This case study accentuates the severe consequences of authorities disregarding legitimate concerns from its residents resulting in catastrophic events that could have been avoided.

Grenfell Tower was a disaster that rapidly escalated into a catastrophic event. The Grenfell Tower blaze was 'caused by an electrical fault in a domestic fridge freezer' ignited in flat 16 on the 4th floor, important to distinguish that the tenant in flat 16 was not at fault whatsoever (Moore-Bick, 2019, p.4). The disaster unfolded minute by minute creating a larger scale disaster that could no longer be contained.

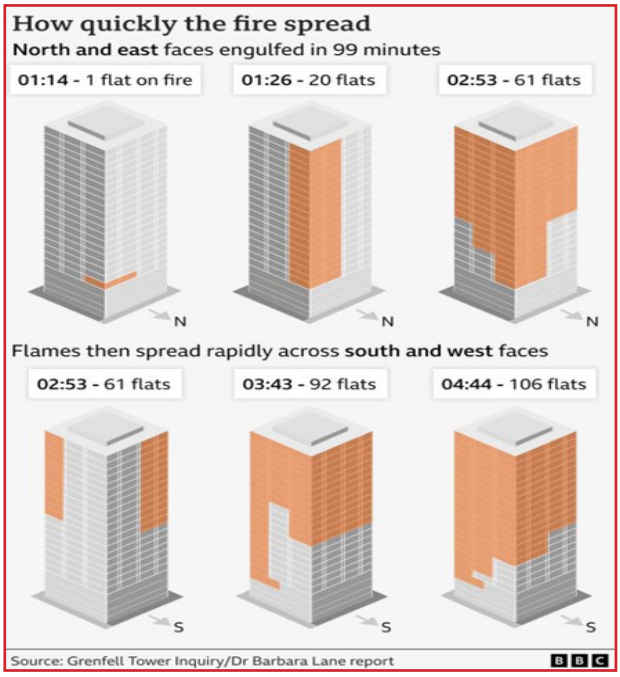

Figure 1. 'How quickly the fire spread' Rogers (2018A)

Preventive Measures

There were preventive fire safety measures in place in Grenfell Tower. The initial preventive approaches were health and safety procedures pertaining to the building. These preventive systems were implemented in the tower due to the laws and regulations on high-rise buildings. The building's safety measures included refurbishing 120 fire doors in 2011, however according to Symonds (2018) 'neither the original nor the replaced doors complied with fire test evidence'. Furthermore the residents disclosed that the door 'self-closers were missing or broken causing toxic smoke to pour into the lobbies and stairwells' during the fire,

rendering them inevitably useless in the event of fire prevention (Apps, 2018). This is corroborated by the police inquiry findings which identified that the doors 'did not meet the legal minimum standard of 30 minutes' fire resistance – despite having been tested to this standard before being sold to the building' (Apps, 2018). This raises questions on the responsibility for such discrepancies.

Implementing smoke control systems was indispensable for the health and safety of the building's tenants and keeping the single evacuation stairwell usable. Regrettably during the fire 'the smoke control system did not operate correctly, reducing the ability to improve both escape and firefighting conditions' (Symonds, 2018). This was intrinsically down to the original and replaced doors failing as mentioned previously, although this could easily have been prevented through adherence to the regulations and correct maintenance.

Reactive Measures

Another integral reactive approach safety feature was the protected stairwell. This was the only escape route throughout the whole building, making it vital that it should always be kept clear and accessible. Unfortunately, this was not the case. According to Preston (2018, p.34) the stairwell was frequently blocked, and became unusable in the fire due to the issues with the smoke systems and a 'failure to use a sprinkler system'. Lifts were put in place to allow for other safe accessible exit routes however the lifts 'failed to perform effectively, hindering the transportation of firefighting equipment, and creating an "unnecessary risk" to residents who could not use it to escape' (Symonds, 2018). There had also been numerous reports from tenants on the condition of lifts 'not being commandeered properly' (Booth, 2018) and other safety issues that had been disregarded by the relevant authorities. This is another example of a lack of education and understanding, emphasizing the hinderance of preventive and reactive measures if they are not implemented appropriately.

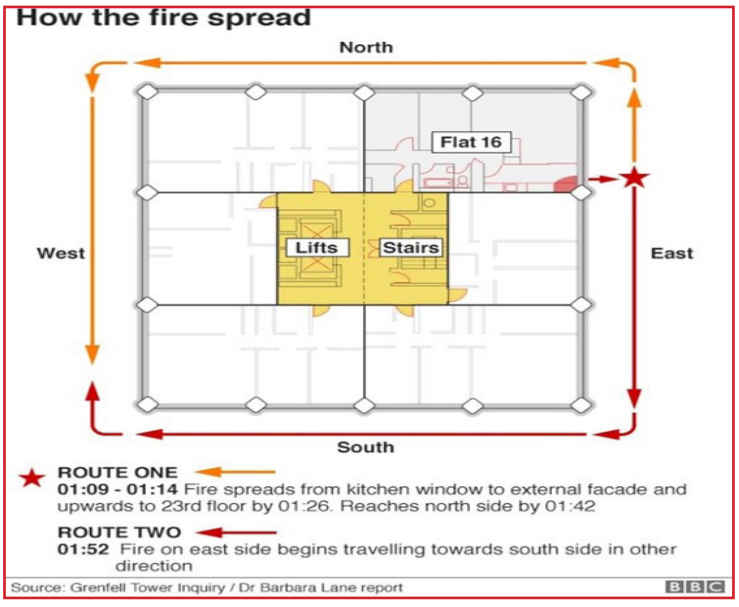

Figure 2. 'How the fire spread' Rogers, (2018B)

During the fire, the fire services had preventive and reactive procedures applied. As a result of the building's "dry fire riser" being "non-compliant" with guidance at the time' the fire services had to reactively 'pump their own water into Grenfell Tower' at each level of the building. (Symonds, 2018). This was an added challenge to a complicated unfolding disaster. Another display of educated thinking falling through the cracks of the competency within the building's construction.

There were also displays of reactive systems after the fact. The reactive approach responding to the disaster is the decision to remove all dangerous cladding from all high-rise buildings in the UK. This created a knock-on effect that created historical and cultural significance. The disaster created a global shift in fire safety and design. The spotlight on these issues created space for accountability and responsibility to be at the forefront of designs. The numerous reports as a result of Grenfell Tower highlighted the lack of competency and knowledge of people in powerful positions. Another form of reactive approaches applied to Grenfell was the shift in evacuation strategies during the fire. The stay put method was assigned as the strategy for residents from fire safety officials however, due to issues with the building and the firefighters not being able to get to people the strategy was abandoned and residents were encouraged to escape via the sole staircase within the building.

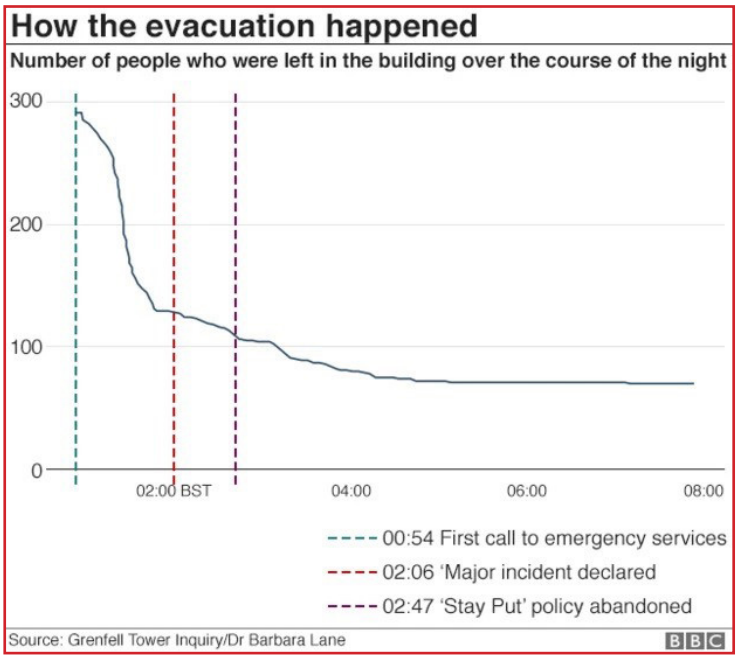

Figure 3. 'How the evacuation happened' Visual Journalism Team (2019)

Visionary Measures

The largest factor for the fire spreading through the internal and external areas of the building was the ACM (Aluminium Composite Material) cladding (Barker, 2022). The type of cladding that was applied to the London high-rise should have 'never ever be used" on high-rise buildings' specified by Smith (2002) and the government was informed and equipped with this information '15 years before' Disaster struck (Barker, 2022). This troubling discovery raises questions regarding why this type of cladding was even accessible to the

construction industry if it was not deemed safe. The cladding was 'subject to a government-funded safety test in the summer of 2001' where the tests revealed 'the panels failed dramatically, and the test had to be stopped early as 20-metre-high flames rose from the test rig after just five minutes' (Barker, 2022). It is important to note that this is not the first time a fire has occurred due to faulty cladding. In 2009 there were 6 fatalities at Lakanal House in Camberwell due to a serious fire. This was a smaller scale version of the Grenfell Tower fire. Similarly, the fire travelled quickly up the cladding and filtered through the internal gaps, subsequently confining residents with no escape route. Lakanal House also breached building regulations, disregarding the safety of its residents. This once again raises important questions on the use of ACM cladding as late as 2017 on a '24-story' high social housing project (Tower Blocks UK, 2024). This clearly displays examples of wilful incompetency, highlighting a lack of ethical implementation whilst putting preventive approaches in place. These findings raise questions about potential systemic issues that go beyond incompetence, justifying further investigations into factors that attributed to the regulatory failures and lack of attention to detail throughout the entire process, suggesting an agenda of gentrification (Stevenson, 2024). Following the Grenfell Tower the government reactively implemented new regulation known as the Building Safety Act 2022 for Highrise buildings in order to prevent future disaster occurring and to uphold accountability on all fronts. These regulations were heavily influenced by the recommendations and findings of Dame Judith Hackitt (2018). The legislation provides entities overseeing existing regulations and creating 'lasting change' on the clarity of construction. It also provides the necessity of a paper trail to allow for accountability to be upheld appropriately.

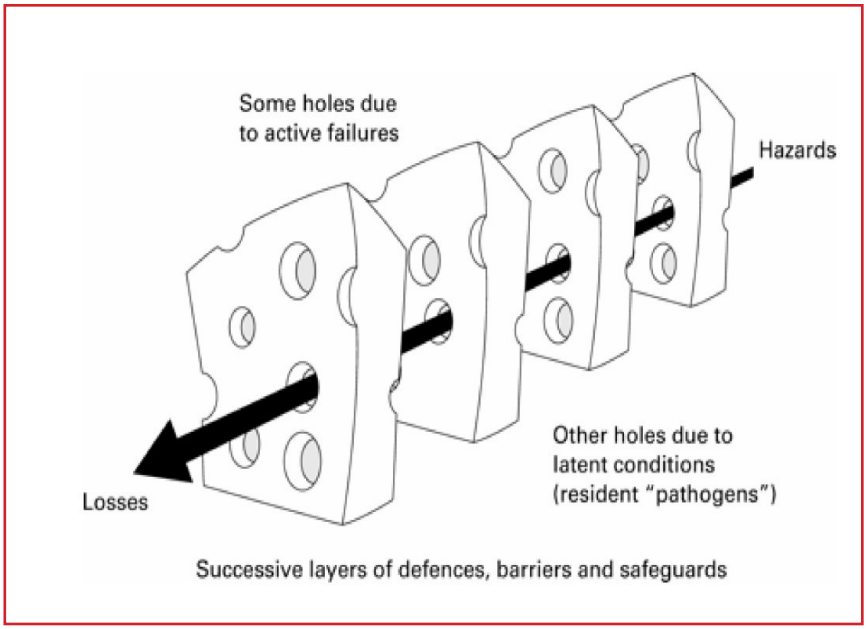

Figure 4. 'Swiss Cheese Model' Perneger (2015)

The Swiss Cheese effect

Use of various safeguards and systems are put in place as fail safes to prevent accident or disasters from occurring in the future. This is known as the Swiss Cheese effect due to the numerous holes within Swiss

cheese slices. When these systems are ignored or incorrectly implemented, the 'Swiss cheese holes' align creating a sequence of unfortunate events (The Decision Lab, 2023). This is an example of how preventive and visionary approaches requiring forethought and planning, prevent disaster. Learning from past mistakes helps innovate and implement safety systems that will prevent and/or reduce risk. This proactive nature suggests a visionary approach to predicting accidents and preventing their occurrence. This was witnessed through The Grenfell Tower Disaster where numerous fail safes were in place to prevent disaster, however failures in documentation control, design specification errors and lack of quality assurance information led to disaster (Hyett, 2020). The reactive approach can be seen to be used as the disaster was happening in real time: however, primarily the Grenfell Tower disaster revealed a failure of preventive measures.

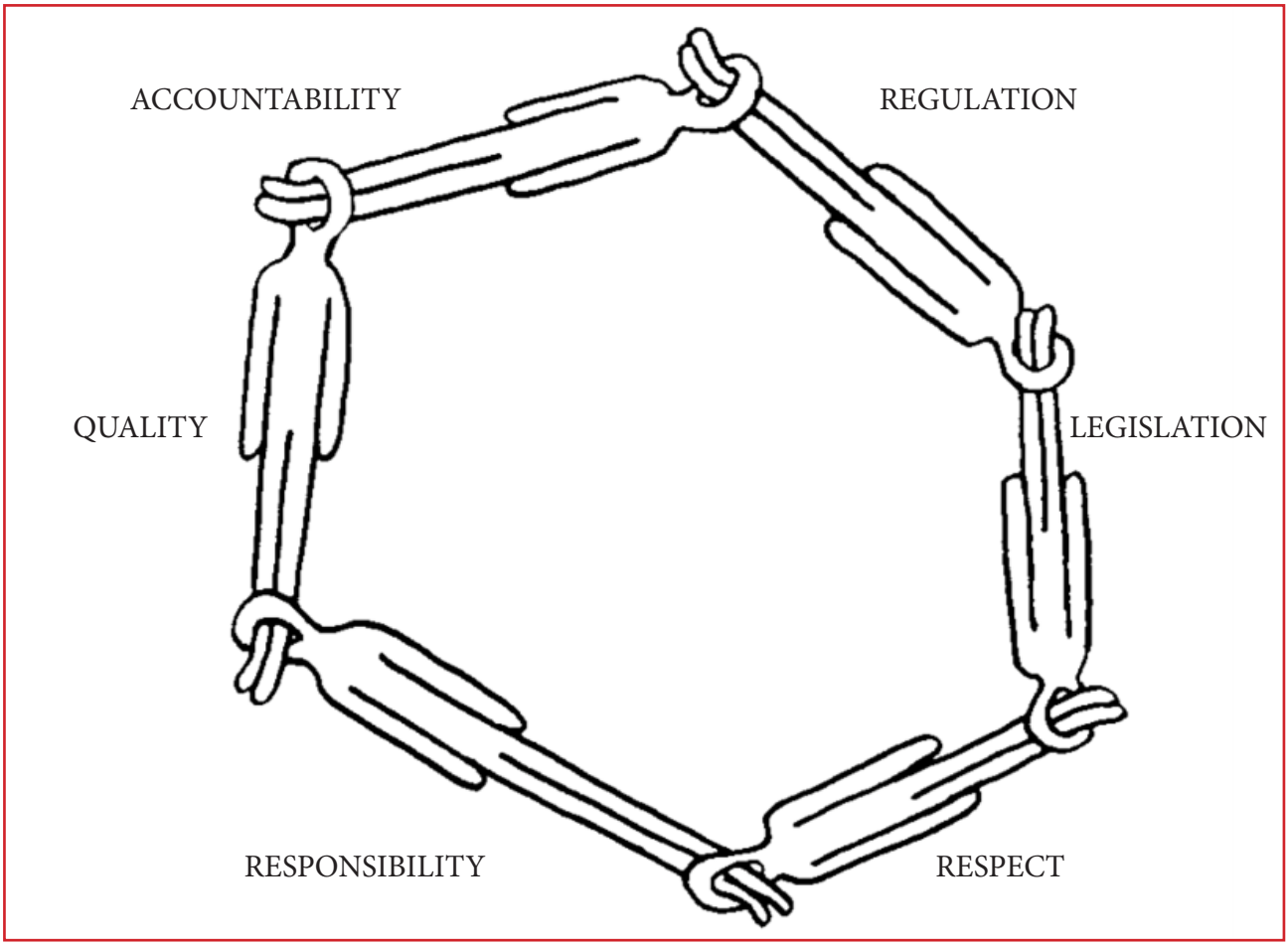

Figure 5. 'Present' by Töpfer (in Avanessian & Malik, 2016, p.9)

The author has adapted this depiction by Töpfer in The Speculative Time Complex (2016) to include 6 key findings from this research which highlight 6 key areas that contribute to the cyclical design structure and signify the importance of incremental changes necessary for the preventive and reactive approaches to succeed.

Section 3: Case Study: Grenfell Tower Disaster

Written by: Lauren Hutchinson

Conclusion

This body of work has been exploring the past, present and future influenced by Avanessian & Malik's Speculative Time Complex (2016). It is important to highlight that there is complexity in distinguishing between the preventive, reactionary and visionary approaches. There is a sense of interlinking between the approaches as time scale is a 'speculative complex'. We are living in a speculative time complex where 'time is no longer linear' and 'the future happens before the present; time arrives from the future'. This should not devalue the present. There is a struggle between pre-emptive and anticipatory solutions for the future and focusing on the present need for action.

While preventive and visionary systems have their benefits there is also a wealth of positives for learning from the past. There is a crucial need to refocus the attention on the present. While the present is the primary focus there is also consideration needed to balance the tension between immediate needs being attained and sustainability in the long term. The argument developed here explores the use of reactive and preventive approaches working harmoniously together to recentre the present. The constant within our lives is our lived experience within the now. Creating a necessity for reactive solutions to the here and now. The present will become the past and yet the future will become the present.

This suggests that we as designers should be working in a much more cyclical way implementing incremental changes to allow for a thorough understanding and impactful solution compared to averting attention solely to the future. We should continue to utilize the pasts lessons as well as consider visions for an improved future. However, we cannot create an enhanced future if we do not improve the present. We should be reserving energy and resources to exercise exploring resolutions for the present rather than attempting to pre-empt or predict the future.

The outcomes of present actions directly influence future realities. What changes within the here and now affects what the future will become. This indicates the level of importance that should be placed on the present, highlighting the necessity of regulatory adaptations that allow designers to work in a cyclical way. This could be done through new regulations and legislation such as the timely introduction of the Building Safety Act (2022) in response to the Grenfell Tower disaster which will 'create a clear, appropriate framework for the design, construction, and management of safer, high-quality homes in the years to come'. The implementation of all regulatory frameworks within the design and construction industry is vital to improve the current climate and will facilitate a cyclical method of designing which enables reactive and responsible results. This framework identifies a proactive and reactive approach to designing for the moment will simultaneously refine our responses to past accidents and disasters generating a preparedness for present issues in turn improving future generations' lives and surroundings. In contrast with waiting for a disaster or crisis to transpire and cultivate a solution there will be accumulative steps taken through innovative concepts, thorough knowledge and education allowing for gradual remedies. The regulatory failures accentuate the need for concentrated attention on present design. However, for this framework to succeed the people it is intended for must respect and be held accountable once there are breakdowns of communication. If this is not adhered to, we will not be able to protect the present from the past, or the future from the present. This was distinctly accentuated by the fatal tragedies such as Lakanal House and Grenfell Tower. Many regulations were disregarded or missed, resulting in diabolical circumstances that could have been avoided.

Conclusion: Fire Education: Exploring Different Approaches To Domestic Fire Safety

Written by: Lauren Hutchinson

As this exploration shows, disasters are a grave reminder for repurposing our attention and creating well thought out solutions. There will need to be a fundamental shift in mentalities and approaches to the methods of design. The harsh realities of disasters highlight the need to explore the way we design and the way we should be designing. This can be done through the use of reactive design responding to the issues of the present, allowing us to build safe and healthy spaces for communities to thrive in.

It should be emphasized that there is a need for acknowledgement that the past and the future will become the present. This is why it will be vital to adopt a hybrid approach in a much more cyclical structure. The incremental reactive and responsive measures including preventive legislation and regulations will in turn create an enhanced future and present. It is imperative that the education and spreading of accurate knowledge is made accessible to everyone from professionals to the public. This will allow for safer environments where we can respond and react appropriately to accidents, disasters and catastrophes.

There are more questions to be explored through this topic. The incremental and cyclical approach does raise some foundational queries: what is the best way to initiate this refocusing of the present with the essential considerations including the past and the future? What direction should design be taken? Should we be focusing so heavily on solutions for the future when we may never see or experience their materialization or existence? Should we potentially be creating a better subsequent future for later generations or is this a waste of resources? Can we truly predict future issues and solutions?

There is no definitive answer to resolve these questions. There is a need to examine and explore this critical conversation further. The application of the reactive and preventive approach will be determined through fine distinction of understanding of the complexities temporally, an honest willingness to continuously improve through knowledge development and a commitment to reprioritize the present. The future of the design industry's fate lies not in the past, present and future as separate entities, but depends on the collaborative usage of temporal understandings with an acute awareness of the power of the present.

List of Illustrations

Written by: Lauren Hutchinson

List of Illustrations

Figure 1. Rogers, L. (2018A). 'How quickly the fire spread'. The terrible speed with which the Grenfell fire spread. BBC News. [online] 8 Jun. Available at: https://www.bbc.co.uk/news/uk-44381387.

Figure 2. Rogers, L. (2018B). 'How the fire spread'. The terrible speed with which the Grenfell fire spread. BBC News. [online] 8 Jun. Available at: https://www.bbc.co.uk/news/uk-44381387.

Figure 3. Visual Journalism Team (2019). 'How the evacuation happened'. Grenfell Tower: What happened. BBC News. [online] 29 Oct. Available at: https://www.bbc.co.uk/news/uk-40301289.

Figure 4. Perneger, T. (2015). 'Swiss Cheese model'. The Swiss cheese model of safety incidents: are there holes in the metaphor? BMC Health Services Research, [online] 5(1). doi:https://doi.org/10.1186/1472-6963-5-71.

Figure 5. Töpfer, A. illustration in Avanessian, A. & Malik, S. (2016) 'Present'. The Time Complex. Post-Contemporary [online] research online. Available at: https://research.gold.ac.uk/id/eprint/21559/. (Accessed 20 November 2024)

References

Written by: Lauren Hutchinson

References

Aico. (2024). Ei3016 Optical Smoke Alarm | Aico. [online] Available at: https://www.aico.co.uk/product/ei3016-optical-smoke-alarm/ [Accessed 15 Mar. 2025].

Andrejevic, M. (2017). Digital Citizenship and Surveillance| To Pre-Empt A Thief. International Journal of Communication, [online] 11(11), pp.18–18. Available at: https://ojs3.ijoc.org/index.php/ijoc/article/view/6308 [Accessed 16 Mar. 2025].

Apps, P. (2018). Grenfell Inquiry Day 80: fire doors in tower differed from those tested by manufacturer. [online] Inside Housing. Available at: https://www.insidehousing.co.uk/news/grenfell-inquiry-day-80-fire-doors-in-tower-differed-from-those-tested-by-manufacturer-59271.

Asur, S. and Huberman, B.A. (2010). Predicting the Future with Social Media. 2010 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology, [online] 1(1). doi: https://doi.org/10.1109/wi-iat.2010.63.

Avanessian, A. & Malik, S. (2016) The Time Complex. Post-Contemporary [online] research online. Available at: https://research.gold.ac.uk/id/eprint/21559/. (Accessed 20 November 2024)

Barham, D. (2024). Guidance on Collaborative Procurement for Design and Construction to Support Building Safety – the need for urgent implementation | Feature from King's College London. [online] Kcl.ac.uk. Available at: https://www.kcl.ac.uk/guidance-on-collaborative-procurement-for-design-and-construction-to-support-building-safety-the-need-for-urgent-implementation [Accessed 15 Mar. 2025].

Barker, N. (2022). UK government knew Grenfell cladding was dangerous 15 years before fire, inquiry hears. [online] Dezeen. Available at: https://www.dezeen.com/2022/02/24/government-grenfell-cladding-15-years-inquiry/.

Booth, R. (2018). Grenfell Tower should not have been lived in, fire chief tells inquiry. [online] the Guardian. Available at: https://www.theguardian.com/uk-news/2018/sep/25/grenfell-tower-should-not-have-been-lived-in-fire-chief-tells-inquiry [Accessed 15 Mar. 2025].

Brailey, M. (2004).) THE USE OF PRE-EMPTIVE AND PREVENTIVE FORCE IN AN AGE OF TERRORISM SOME ETHICAL AND LEGAL CONSIDERATIONS. [online] Available at: https://search.informit.org/doi/pdf/10.3316/ielapa.200410357 [Accessed 9 Sep. 2024].

CDC (2025). Coronavirus disease 2019 (covid-19) vaccine safety. [online] Vaccine Safety. Available at: https://www.cdc.gov/vaccine-safety/vaccines/covid-19.html.

Chapman, H. (2016). How the Great Fire of London created Building Regulations | Buildingtalk | Construc-

tion news and building products for specifiers. [online] www.buildingtalk.com. Available at: https://www.buildingtalk.com/blog-entry/how-the-great-fire-of-london-created-building-regulations/.

Cheng, K.K., Chalmers, I. and Sheldon, T.A. (2007). Adding fluoride to water supplies. BMJ, 335(7622), pp.699–702. doi: https://doi.org/10.1136/bmj.39318.562951.be.

Clarke, E. (1974). What Is Preventive Medicine? [online] Available at: https://pmc.ncbi.nlm.nih.gov/articles/instance/2274388/pdf/canfamphys00344-0067.pdf.

ClickView. (2019). The Great Fire of London: Hour by Hour. [online] Available at: https://online.clickview.co.uk/exchange/categories/3631/history/videos/21801693/the-great-fire-of-london-hour-by-hour?referrer=https%3a%2f%2fwww.google.co.uk%2f [Accessed 14 Mar. 2025].

Department of Transport (2025). Seatbelts – THINK! [online]. Available at: https://www.think.gov.uk/themes/seatbelts/.

Dole, C., Hayashi, R., Poe, A., & Sarat, A. (2015) The Time of Catastrophe: Multidisciplinary Approaches to the Age of Catastrophe (1st ed.). London: Routledge.

Dupuy, J-P. (2022) How to Think About Catastrophe: Toward a Theory of Enlightened Doomsaying. Michigan: Michigan State University Press.

Eggbert, S. and Krasmann, S. (2019). Predictive policing: not yet, but soon pre-emptive? Policing and Society, 30(8), pp.1–15. doi: https://doi.org/10.1080/10439463.2019.1611821.
EM-DAT (2024). EM-DAT | The international disasters database. [online] Emdat.be. Available at: https://www.emdat.be/.

Flyn (2008) First Strike: Pre-emptive War in Modern History. 1st Edition. New York: Routledge.
Garrioch, D.T. (2016). 1666 and London's fire history: A re-evaluation. Historical Journal, [online] 59(2), pp.319–38. Available at: https://research.monash.edu/en/publications/1666-and-londons-fire-history-a-re-evaluation [Accessed 15 Mar. 2025].

GOV.UK (2022). The Building Safety Act. [online] GOV.UK. Available at: https://www.gov.uk/guidance/the-building-safety-act.

GOV.UK (2024a). The Building Regulations 2010 Amendments to the Approved Documents. [online] Available at: https://assets.publishing.service.gov.uk/media/66d57aaabdecebe01a18341b/AD_B_2029_amendments.pdf.

GOV.UK (2024b). Build Back Better: Our Plan for Health and Social Care. [online] Department for Health and Social Care. Available at: https://www.gov.uk/government/publications/build-back-better-our-plan-for-

health-and-social-care/build-back-better-our-plan-for-health-and-social-care.

Green, D.M. (2016). Lost in the Great Fire: which London buildings disappeared in the 1666 blaze? [online] the Guardian. Available at: https://www.theguardian.com/cities/2016/aug/30/great-fire-of-london-1666-350th-anniversary-which-buildings-disappeared.

Gulliver-Garcia, T. (2019) Disasters Versus Catastrophes: The Difference Matters. Available at: Disasters versus Catastrophes: The Difference Matters - Center for Disaster Philanthropy (Accessed 1 January 2025).

Hackitt, J. (2018a). Building a Safer Future Cm 9607 Independent Review of Building Regulations and Fire Safety: Final Report. [online] Available at: https://assets.publishing.service.gov.uk/media/5afc50c840f0b622e4844ab4/Building_a_Safer_Future_-_web.pdf.

Heinrich, H.W. as cited in Hosseinian, S.S. and Torghabeh, Z.J. (2012) 'Major Theories of Construction Accident Causation Models: A Literature Review', International Journal of Advances in Engineering and Technology, 4, pp.53-66.

Holland, O. (2024). How Taiwan's tallest skyscraper withstands earthquakes. [online] CNN. Available at: https://edition.cnn.com/2024/04/04/style/taipei-101-earthquake-design-intl-hnk/index.html.

Home Office (2024). Fire and rescue incident statistics: England, year ending September 2023. [online] GOV.UK. Available at: https://www.gov.uk/government/statistics/fire-and-rescue-incident-statistics-year-ending-september-2023/fire-and-rescue-incident-statistics-england-year-ending-september-2023#firerelated.

Hutchinson, R. (2025) Conversation with Lauren Hutchinson, 3 March.

Hutchinson, L. & Rettondini, L. (2024) Conversation with each other, 12 October.

Hyett, P. (2020). Grenfell Tower Inquiry. [online] www.grenfelltowerinquiry.org.uk. Available at: https://assets.grenfelltowerinquiry.org.uk/PHYR0000031_Section%206_%20Failures%20in%20Quality%20Control%20%28Paul%20Hyett%27s%20Amended%20Report%29.pdf [Accessed 16 Mar. 2025].

Jennings, C.R. (1999). Socioeconomic Characteristics and Their Relationship to Fire Incidence: A Review of the Literature. Fire Technology, 35(1), pp.7–34. doi: https://doi.org/10.1023/a:1015330931387.

Leistikow, I. (2017). Prevention is better than cure: learning from adverse events in healthcare. Boca Raton, FL: CRC Press.

London Fire Brigade (2019). Grenfell Tower Fire Preliminary Report. [online] Available at: https://www.london-fire.gov.uk/media/5087/gtirt19-01534_grenfell_tower_fire_preliminary_report_final.pdf.

Mantello, P. (2016). The machine that ate bad people: The ontopolitics of the precrime assemblage. Big Data & Society, 3(2), p.205395171668253. doi: https://doi.org/10.1177/2053951716682538.

Merrall, S. (2007). Anthropogenic Accidental Dwelling Fire: Incident Distribution, Theory and the Fire and Rescue Service. [online] Available at: https://livrepository.liverpool.ac.uk/3174870/1/418589.pdf [Accessed 15 Mar. 2025].

Metaxas, P.T. & Mustafaraj, E. (2016) Social Media and the Elections. Science 338 (6106), 472-473. doi: 10.1126/science.1230456. Science Magazine.

Mohamed Shaluf, I. (2007). Disaster types. Disaster Prevention and Management: An International Journal, 16(5), pp.704–717. doi: https://doi.org/10.1108/09653560710837019.

Moore-Bick, M. (2019). GRENFELL TOWER INQUIRY: PHASE 1 REPORT OVERVIEW REPORT of the PUBLIC INQUIRY into the FIRE at GRENFELL TOWER Chairman: The Rt Hon Sir Martin Moore-Bick. [online] Available at: https://assets.grenfelltowerinquiry.org.uk/GTI%20-%20Phase%201%20report%20Executive%20Summary.pdf.

National Audit Office (2017). A Short Guide to Regulation. [online] Available at: https://www.nao.org.uk/wp-content/uploads/2017/09/A-Short-Guide-to-Regulation.pdf.

Pepys, S. (2025). The Diary of Samuel Pepys Daily entries from the 17th century London diary. [online] The Diary of Samuel Pepys. Available at: https://www.pepysdiary.com/diary/1666/09/ [Accessed 8 Sep. 2024].

Pignata, S. as cited in Sweeney, L. & Armitage, R. (2024). When the Japan Airlines plane caught fire, passengers made one choice that may have saved them. ABC News. [online] 5 Jan. Available at: https://www.abc.net.au/news/2024-01-06/what-went-wrong-in-the-tokyo-runway-crash/103288712.

Preston (2018) Grenfell Tower: Preparedness, Race and Disaster Capitalism. Palgrave Macmillan.
Public Health England (2020). Coronavirus (COVID-19): personal protective equipment (PPE) hub. [online] GOV.UK. Available at: https://www.gov.uk/government/collections/coronavirus-covid-19-personal-protective-equipment-ppe.

Rasmussen, L. (2010). From a reactive to a proactive approach. [online] 20, pp.585–612. Available at: https://core.ac.uk/download/pdf/13737301.pdf.

Road Safety GB. (2018). How has the seatbelt law evolved since 1968? [online] Available at: https://roadsafetygb.org.uk/news/how-has-the-seatbelt-law-evolved-since-1968/.

Rona-Tas, A. (2020). Predicting the Future: Art and Algorithms. Socio-Economic Review, 18(3). doi: https://

doi.org/10.1093/ser/mwaa040.

ROSPA (2013). Available at: https://www.rospa.com/media/documents/road-safety/road-observatory/Vehicles-Seatbelts.pdf.

Sacco, P.L., Valle, F. & De Domenico, M. (2023). Proactive vs. reactive country responses to the COVID-19 pandemic shock. PLOS Global Public Health, 3(1), p.e0001345. doi: https://doi.org/10.1371/journal.pgph.0001345.

Sackett, D. (2002). Hormone replacement therapy: The arrogance of preventive medicine. [online] Canadian Medical Association. Available at: https://www.cmaj.ca/content/cmaj/167/4/363.full.pdf [Accessed 9 Sep. 2024].

Skelding as cited in Martins, A. (2024). 'Lack of competence' a key issue in Grenfell Report says trade association. [online] Healthandsafetyinternational.com. Available at: https://www.healthandsafetyinternational.com/article/1887752/%E2%80%9Clack-competence%E2%80%9D-key-issue-grenfell-report-says-trade-association [Accessed 15 Mar. 2025].

Smith (2002) as quoted in Apps, P. (2018). Grenfell Inquiry Day 80: fire doors in tower differed from those tested by manufacturer. [online] Inside Housing. Available at: https://www.insidehousing.co.uk/news/grenfell-inquiry-day-80-fire-doors-in-tower-differed-from-those-tested-by-manufacturer-59271.

Spinardi, G., Bisby, L. and Torero, J. (2016). A Review of Sociological Issues in Fire Safety Regulation. Fire Technology, 53(3), pp.1011–1037. doi: https://doi.org/10.1007/s10694-016-0615-1.

Spinardi, G., Baker, J. and Bisby, L. (2019). Post construction fire safety regulation in England: shutting the door before the horse has bolted. Policy and Practice in Health and Safety, 17(2), pp.133–145. doi: https://doi.org/10.1080/14773996.2019.1591040.

Stevenson, J. (2017). Neoliberalism, Abandonment, and Stigmatisation in Residents Understandings of the Grenfell Tower Fire. [online] Research Explorer The University of Manchester. Available at: https://research.manchester.ac.uk/en/studentTheses/neoliberalism-abandonment-and-stigmatisation-in-residents%C3%A2-unders.

Suchman, E.A. (1960). A Conceptual Analysis of the Accident Phenomenon. Social Problems, 8(3), pp.241–253. doi: https://doi.org/10.2307/798914.

Susser, D. (2021). 12. Predictive Policing and the Ethics of Preemption. In: Jones, B. and Mendieta, E. ed. The Ethics of Policing: New Perspectives on Law Enforcement. New York, USA: New York University Press, pp. 268-292. https://doi.org/10.18574/nyu/9781479803729.003.0013

Summerson, J (2003). Georgian London. https://www.amazon.co.uk/Georgian-London-Mellon-Studies-British/dp/0300089880.

Sweeney, L. and Armitage, R. (2024). When the Japan Airlines plane caught fire, passengers made one choice that may have saved them. ABC News. [online] 5 Jan. Available at: https://www.abc.net.au/news/2024-01-06/what-went-wrong-in-the-tokyo-runway-crash/103288712.

Symonds, T. (2018). 'Catastrophic' Grenfell failures outlined. BBC News. [online] 4 Jun. Available at: https://www.bbc.co.uk/news/uk-44351567.

The Decision Lab (2023). Swiss Cheese Model. [online] The Decision Lab. Available at: https://thedecisionlab.com/reference-guide/management/swiss-cheese-model.

Tower Blocks UK (2024). Grenfell Tower. [online] towerblocksuk. Available at: https://www.towerblocksuk.com/grenfell.

United States Geological Survey (2024). Can you predict earthquakes? [online] www.usgs.gov. Available at: https://www.usgs.gov/faqs/can-you-predict-earthquakes.

van Brakel, R. (2016). Pre-Emptive Big Data Surveillance and its (Dis)Empowering Consequences: The Case of Predictive Policing. SSRN Electronic Journal. doi: https://doi.org/10.2139/ssrn.2772469.
Vision Platform (2024). AI-Powered Fire and Smoke Detection Camera for Enhanced Safety and Security — visionplatform. [online] visionplatform. Available at: https://visionplatform.ai/fire-smoke-detection-camera [Accessed 15 Mar. 2025].

Von Peter, G., von Dahlen, S. and Saxena, S. (2012) "Unmitigated Disasters? New Evidence on the Macroeconomic Cost of Natural Catastrophes," BIS Working Paper No. 394.

Wingfield-Hayes and Ng (2024). Taiwan Earthquake:The mountain Rained Rocks like Bullets [online] https://www.bbc.co.uk/news/world-asia-68729048

World Health Organization (2025). History of Smallpox Vaccination. [online] www.who.int. Available at: https://www.who.int/news-room/spotlight/history-of-vaccination/history-of-smallpox-vaccination.

Writing Group for the Women's Health Initiative Investigators (2002). Risks and Benefits of Estrogen Plus Progestin in Healthy Postmenopausal Women: Principal Results From the Women's Health Initiative Randomized Controlled Trial. JAMA: The Journal of the American Medical Association, [online] 288(3), pp.321–333. doi: https://doi.org/10.1001/jama.288.3.321.

Zibulewsky, J. (2001). Defining Disaster: The Emergency Department Perspective. Baylor University Medical Center Proceedings, 14(2), pp.144–149. doi: https://doi.org/10.1080/08998280.2001.11927751.