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**REPRESENTATIONS OF DISASTER RESPONSE IN
SCIENCE FICTION**

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Professor José Manuel Mendes and Professor Maria José Canelo, submitted to the
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REPRESENTATIONS OF DISASTER RESPONSE IN SCIENCE FICTION

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RESUMO

Representações da Resposta ao Desastre em Ficção Científica

A modernização teve um impacto significativo na maneira como a sociedade se percebe a si e aos processos sociais, explicado por uma mudança significativa na natureza do risco e do desastre no contexto da globalização e do rápido desenvolvimento tecnológico. A ficção científica desempenha um papel central na reflexividade, assumindo a gestão de riscos e valores culturais fora do contexto histórico para que os leitores possam abordar a modernidade de diferentes ângulos, mantendo a produção de críticas sobre as mudanças sociais, culturais e económicas. Ao estudar o modo como a ficção científica aborda os temas do pânico em massa, colonialismo e heroísmo, conclusões e novas perguntas podem ser feitas sobre como o género influencia o comportamento institucional e social com as suas narrativas. É por essa razão que quatro romances populares na ficção científica ocidental foram selecionados para estudo, pois estão carregados de percepções latentes e explícitas do gerenciamento moderno de riscos. A abordagem deste estudo será baseada na análise de conteúdo de quatro obras : *The Kraken Wakes*, de John Wyndham; *A Guerra dos Mundos*, de H.G. Wells; *Do Androids Dream of Electric Sheep?*, de Philip K. Dick, e *World War Z: Uma História Oral da Guerra dos Zumbis*, de Max Brooks. As quatro obras de ficção científica foram submetidas a uma análise minuciosa e à subsequente produção de comentário crítico. O comentário foi então distribuído pelas subcategorias dos temas em estudo e desenvolvido numa discussão que articula as observações e a literatura científica sobre resposta a desastres.

Palavras-chave: Desastre, Ficção Científica, Pânico, Heroísmo, Sociedade do Risco

ABSTRACT

Representations of Disaster Response in Science Fiction

Modernization has had a significant impact on the way society perceives itself and the social processes, which is explained by a significant change in the nature of risk and disaster in the context of globalization and accelerated technological development. Science fiction plays a central role in reflexivity by taking risk management and cultural values outside of historical context so that readers can approach modernity from different angles, therefore maintaining the production of criticism over social, cultural and economic change. In studying the way science fiction tackles the subjects of mass panic, colonialism and heroism, conclusions can be drawn and new questions made over how its narratives influence institutional and social behaviour. It is for this reason that four popular novels in western science fiction have been selected for study, as they are charged with latent and explicit perceptions of modern risk management. The approach to this study will be based on content analysis of the following works of fiction: *The Kraken Wakes*, by John Wyndham; *The War of the Worlds*, by H.G. Wells; *Do Androids Dream of Electric Sheep?*, by Philip K. Dick, and *World War Z: An Oral History of the Zombie War*, by Max Brooks. These four science fiction works were subject to thorough analysis and critical commentary. The commentary was then distributed by the thematic subcategories under study and developed into a discussion that articulates the observations and the scientific literature on disaster response.

Keywords: Disaster, Science Fiction, Panic, Heroism, Risk Society

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Acronyms

- CCP - Chinese Communist Party
- DADES - Do Androids Dream of Electric Sheep?
- TKW - The Kraken Wakes
- TWOTW - The War of The Worlds
- WWZ - World War Z

Introduction

Science fiction has both failed and succeed at making predictions of the future. Indeed, the futurology found in the narratives of the genre are a source of endless entertainment, but there is a greater value that is not immediately visible. The well known works of science fiction are not merely a prediction of the future but a reflection of objective reality in the time they were written. Through a careful analysis it becomes possible to understand the mindsets of authors who thought critically about society.

The focus of this dissertation is to analyse the critical reflections in four novels of science fiction as concerns the subject of Risk Society and the representations of panic, heroism and references to colonialism. It is also intended as a starting point for a larger research project into the way science fiction represents the topics above. The analysis is based on four works of science fiction. These are (and their original publication dates): 1) *The War of The Worlds* (1897/2000), 2) *The Kraken Wakes* (1953/2001), 3) *Do Androids Dream of Electric Sheep?* (1968/2017), 4) *World War Z: An Oral History of the Zombie War* (2006). The novels were chosen based on their popularity and the time when they were published. The well known *The War of The Worlds* is a story told by an unnamed narrator, who describes the invasion of Woking by Martians. The invasion is described as a battle with both sides attacking each other (aliens versus the authorities). Published half a century later, *The Kraken Wakes* follows the same formula as TWOTW in how the plot is centred on an alien invasion. The process of invasion, however, is not described as an active battle as in TWOTW. Instead, the invasion and the attacks take several months and much more emphasis is placed on the strategies employed by the world's many authorities. *Do Androids Dream of Electric Sheep?* Is the starting point for the Blade Runner series and one of the

most well known novels in science fiction. A thriller, besides its broader genre, DADES is about the task Rick Deckard is set to do - hunting down six androids that are borderline impossible to distinguish from a human being. The focus is set on the questions of what is to be human and whether empathy is a purely human ability. Moreover, it also lacks a disaster-driven narrative, but it does have representations of heroism and panic that are comparable to those of other novels. Finally, WWZ is the most recent novel of those selected, and the one of the four with greater complexity in representing disaster response. The novel consists in a series of interviews that describe the chain of events that lead to humanity's near downfall, from the first verified living dead to the overpowering of most countries on Earth and the painful recovery that followed.

The methodology chosen for the analysis of the four novels is based on two phases. The first corresponds to the literature review and the development of the key concepts in each subject group. The second and most important phase is the creation of one spreadsheet per novel where I registered citations and commentary during the read-throughs. The spreadsheets were divided in: setting, characters and narration. The "setting" category was split into: physical setting, temporal setting, social setting, and technological setting. The "characters" category was split into: main characters, antagonists, and secondary characters. The categories helped extract more information from the novels rather than just the four main subjects being studied. Commentary in the category columns was colour coded as follows: green - panic; red - colonialism; yellow - heroism; blue - Risk Society. A final, single spreadsheet was used to make comparisons between the novels. It included four groups of columns for each of the subjects, and each group contained four columns for the novels. Finally, the commentary produced during the analysis was then rewritten with the support of the comparison sheet.

The analysis and comparison between the selected four novels make this research very specific and without precedent in risk sociology. However, due to the limitations of the

analysis process, this dissertation functions more as a starting point and literature support for a dedicated effort in the making of risk sociology applied to the analysis of science fiction. There are also subjects like environmental and linguistic studies that would be of vital importance in this type of analysis. As a sociologist, however, these fall outside my area of expertise and together with time constraints a decision was made to take broader approaches to some of the main subjects like panic and heroism. This is the main reason for the exclusion of certain topics in these subjects, like looting associated with panic.

As a last note, the novels were read in the epub format, and do not have fixed page numbers. Formats for ebooks adapt the number of words per page to the size of the screen of the device so that it can always be read comfortably. All ebook-reading software, for any device, has a find function and so any citation can be found very quickly. Citations of ebooks on this dissertation will not have a page number reference, but they will be tagged appropriately.

1.1. Risk Society

This section is dedicated to an overview of the theory behind Risk Society and reflexivity, which are critical for an undertaking of the analysis of science fiction. Namely, I discuss the theory in the works of Ulrich Beck and Anthony Giddens, who have made significant contributions to the recent field of sociology of risk.

In between the publishing of the first and the latter selected works of science fiction there were major shifts not only in the structuration of society but also in our understanding of structure as well. Increasingly efficient communication technologies, better and more accessible education and a larger number of people working on research has resulted in different approaches to risk management for the first time in history. We become aware faster than ever of the darker side of any technological development that is made, and because communication is now more efficient than ever we're able to constantly review our progress and re-assess risks. As a result, one of the fundamental principles that govern the functioning of modern society has become, paradoxically, constant doubt and sustained criticism of even the hardest facts. Modern science is, in fact, ruled by this principle, that even the most consecrated authors are subject to the challenging of their theories by the criticism of an ever growing global population of researchers. This discourse is essentially that of Reflexivity and the Risk Society, concepts developed by Ulrich Beck (1992) and Anthony Giddens (1990/2003) in their approach to modernity.

In his earlier work, Beck focuses on the construction of his concept of global Risk Society. Technological development is an important starting point to his arguments as it has led to a significant increase of risks for modern society. Moreover, the nature of risk has also changed with the coming of modernity:

a) risk as is now originating from very specific fields of science that are beyond the scope of most people, resulting in their “invisibility”;

b) overproduction is not the basis for modern hazards whereas “In the past, the hazards could be traced back to an undersupply of hygienic technology.” (Beck, 1992, p.21);

c) modern risks are now able to have the whole world within their area of influence - entire ecosystems, the health of populations and international markets. An increasingly interconnected world brings the consequences of risk to all the corners of society.

Beck also takes a position more centred in the discussion and analysis of social inequalities as major risks to modern society. He claims that risk is not distributed equally across the social strata, with those lower in the order having fewer means to mitigate risks directly affecting them. This translates into, for example, being unable to afford proper healthcare, or to purchase a house in high ground to defend against floods. As concerns modern risk, however, there is a *boomerang effect*, as described by Beck. The effect is deeply related to the characteristic of modern risks as seen in Beck (1992, p.23): “Risks of modernisation sooner or later also strike those who produce or profit from them.”. This is because modern risks do not respect national borders and have a widespread environmental impact as well as an impact on international trade and migration, ultimately affecting the propriety and legitimacy of those higher in the class system. This is, in fact, an important point to explain why the *boomerang effect* also applies to countries. The global waste trade is an example of how first world countries export toxic waste to third world countries and therefore significantly increase their environmental-related risks. However, because even these risks aren't limited to the borders of said receiving countries, in the long term, the damage of improper waste disposal will eventually hit back the senders, who may, for instance, have to deal with polluted waters from waste importing countries that are brought by sea currents. The management of risk in modern society has thus become a political priority, which can be a motor for change. The fact that modern risks are so widespread and

can have many unforeseen and diverse consequences forces politicians to dive into risk management that used to belong to the private sphere, by, for instance, regulating health hazards or waste disposal. This intervention from the realm of politics creates debates on the management of risk itself. Beck considers this to be inappropriate because there is not scientific monopoly on the subject. Furthermore, interdependencies between specialists in law, agriculture, business and politics result in a general complicity for these risks at the same time that there is no shared responsibility. “Everyone is cause and effect, and thus non- cause.” (Beck, 1992, p. 32). The vulnerability of people to modern risk is tied to how much they know about the said risks. While with class, position in the order determines consciousness, with risk it is consciousness that determines how well one is positioned to defend against danger. Ultimately, with modernity and the fundamental change in the nature of risk, environmental problems become social problems. Nature is no longer a force to be opposed by civilisation but a part of it now - something that is inherent to the proper functioning of economic and social systems. As such, it is no longer seen as something to subdue or as a “given”. It must instead be protected from any risks produced by modern society. Beck comes back to this discussion in *The Metamorphosis of the World* (2016). Beck expands on the idea that, in modernity, risk is no longer confined to national borders and that nations no longer enjoy the centrality in world politics. On one hand, technology has given a grand scale to pre-existing risks and created entirely new ones; on the other hand, globalization has “entangled” national economies in such a way that small, local decisions have meaningful impacts in other parts of the world. Nation-centered narratives for risks are being replaced by new cosmopolitan narratives in the process Beck calls *metamorphosis*. National borders do not offer protection against global risks but they can externalize them and dilute national blame and concern, thus affecting risk-perception. However, a key moment in metamorphosis is that there is a shift in perspective. In a cosmopolitan perspective, people are seen less like victims of a disaster and more like citizens whose

rights must be defended. The focus in the narrative of a disaster shifts from the point of origin and the victims towards who and what was impacted. There is also the “why” question being raised in the cosmopolitan perspective that focuses on the causes of disaster and the inequalities seen after disaster:

“Global risks are of a completely different nature; they are socially constructed in knowledge -- anticipations, imaginations, probabilities, possibilities, aspirations corresponding to different kinds of imagined apocalyptic catastrophes.” (Beck, 2016, p. 96)

Politics of global risk in cosmopolitan societies are based in knowledge, as stated in the citation above. Beck leaves us with the question of who, in the international community, gets to be the authority in determining: the harmfulness of products and technologies; who can be held responsible for global risks; when knowledge is or is not contested; who gets compensation for disaster losses, and how much? Consensus and cooperation between the nations of a global Risk Society will be an inevitable necessity as new technologies are developed and greater risks arise.

Like Giddens, Beck also discusses identity in the context of modernisation. As a result of the processes of individualisation, individuals are blamed for the failures of the system, taking them as their own. One could argue that unemployment is a good example of this aspect of modernisation. People are labelled as lazy by society when they cannot find an adequate job , that is not provided for them in the first place. The flip-side is that individuals search for their own identity outside of the moulds imposed by traditional society, and thus new social movements are born, often as a way to protest against the invasive regulations intended for the control of new risks. In other words, this also means that the biographies of individuals are subjected to the idea of reflexivity. Scientific knowledge no longer remains a dogma to individuals and is instead criticised by them as they too have their own interpretations.

Three basic characteristics define Risk Society according to Giddens. Firstly, that which I have mentioned briefly in the previous paragraph, which is: disruption. This idea of transition is present in some form or another in the narratives of the four selected works of science fiction. The characteristic of disruption is best explained by three aspects:

1) That the rapid development of technology disrupts people's expectations with its subsequent changes in production systems and new and more effective ways of maintaining relations of power. The ability to adapt practically becomes an indispensable factor in the curriculum of any worker, especially those in the non-traditional industries. The overall pressure to adapt stresses people as even their most basic expectations and aspirations are put into question.

2) That the increasing range of media channels separate, as a result of technological development, the actions of people and their environments. This is what Giddens calls, in other words, the separation and extension of time and space. We become separated from the space and time we restrict our lives to, by having the information we absorb from the media elevate us to a level where every corner of the world and time is visible to us. This, in turn, shrinks our focus on our own realm. We become a tiny unspoken part of the world that we always hear about.

3) The third aspect is about the fragmentation of organisational forms of modern society. We may be easily led to believe that there is a simple continuity between pre-modernity and modernity when we have lost track of the multiple organisational forms of society that are created as a result of continuing globalisation. In addition, our own social networks are subject to fragmentation. Relationships are stretched all over the world with the advent of the democratically accessible phones, and to an even more extreme level with the widespread use of the internet. Family members, apart thousands of kilometres, are able to converse on a daily basis in both a text chat and a video chat. The fragments of our social networks are no longer together in the wholeness of our local, spatially restricted community.

Instead, they are cast upon many other communities, some of which extremely distant from our own as the space we live in expands to include the entire world.

The second characteristic of Risk Society is that of globalisation. Globalisation, according to Giddens (1990/2003), has four dimensions which I find relevant to the proper contextualisation of the selected works of science fiction. The world capitalist economy is the dimension which comes out the most. Modern life is impossible without a global economy where goods from even the farthest reaches of the world are present in the shelves of our close-by markets. Large enterprises have a degree of separation from the political power of the nation-state that allows them to operate with relative freedom in an international market, with their various functions (from management to production) being within different national borders at once. This is not to say that private companies rival nation-states in terms of power, even if some have greater profits than the GDP values of small countries. The monopoly of violence still belongs to the political power and it can ultimately be the means for the obliteration of private interests. The second dimension of globalisation consists in the nation-state system, of which reflexivity is a fundamental characteristic. The sovereignty of nation-states depends on the constant review and recognition of multiple other nation-states, so that unclear "frontiers" can be turned into geographical lines - "borders" - which define when one administration ends and another begins. The third dimension is that of the world military order, which is defined by the structure of alliances at a global level that condition nation states and overlaps their monopoly of violence over their territory. The example given by Giddens is that of the two opposing blocs of a bipolar system of military power - the United States and the Soviet Union. The final and fourth dimension of globalisation is the international division of labour. Following the Second World War, technological development has unravelled new kinds of specialised industry, whose chains-of-production are long and whose stages require very specific human and material resources to be profitable. Because of this, a large consumer public and cheap and efficient transport is necessary for these new

industries to thrive. Large modern enterprises have their functions, and their production units spread across the world, in an attempt to capitalise on the specific benefits offered by nation-states. Countries thus harbour very specific industries which cannot produce anything of key value by themselves but instead produce small pieces that are essential to the assembly of more complex products, like smartphones or laptops.

The third characteristic of modern Risk Society is that it's a double-edged phenomenon: "The development of modern social institutions and their worldwide spread have created vastly greater opportunities for individuals to enjoy a secure and rewarding existence than any type of re-modern system. But modernity also has a sombre side, which has become very apparent in the present century." (Giddens, 1990/2003, p7). While the founding fathers of sociology had a mostly optimistic view of modernity, little mention has been made in their time to the ecological impact, for instance, of the modern industrialisation and exploitation of additional natural resources. Totalitarianism is another example of the darker side of modernisation, which the founders of sociology identified as belonging to the despots of the past. Totalitarianism in the 20th century is different from despotism in the way that the system is more capable of connecting military, ideological and political power in a far more concentrated form than the latter. Thinkers at the beginning of the last century could never draw conclusions over the emerging industrialisation of war and the later invention of nuclear armament. There have always been risks to even the most basic technology but in modernity, communication allows society to be constantly aware of either the good or bad consequences of new discoveries. Since it is impossible to have a complete notion of all the implications of any innovation in all their continuous dynamic, we now become ever more cautious when observing risks.

Beck's and Giddens's theory on modern society shares the same notions of risk and of the mindset towards risk. There is the division of labour, specialisation and the globalisation of society and the economy and very efficient communication that made that

possible. Individuals are spared from many primary physical and biological threats to their life (such as infectious diseases and war), but then other risks of higher and more widespread consequences become commonplace in modernity. A myriad of scenarios describing possible risk in the future of the future determine the actions of the present, whereas the actions of the past based the deductions for deciding in the present. There is a constant climate of doubt on when the next disaster will take place and that reflects on the basic mindsets of society. No one is safe from a major catastrophe and there are no absolute truths when it comes to dealing with it. Biographies and the important decisions that are taken are not determined by tradition but by the adaptability of individuals as they adopt their own life choices.

Ulrich Beck is the author who originally coined the term *Risk Society* in the 1980s and maintained production of ideas on the themes of globalisation and global Risk Society until his death, in 2015. In Burgess *et al* (2017), some of Beck's inconsistencies are pointed out, mainly with the purpose of praising his work. In accordance to the article authored by Burgess *et al*, Beck often raised incomplete ideas to address points he wished to give emphasis to, ultimately to bring new questions and perspectives into discussion. His broad approach to history to highlight tendencies for the sake of clarity is not seen as academically conservative and thorough. Beck's work escapes thorough coverage of specific disasters to provide a more general understanding of risk and its recurring patterns in a global society. There are also some limitations to Anthony Giddens's theory. In Rossi (2015), it is pointed out that Giddens's concept of reflexivity can be too broad and is used as a link between his other concepts in a way that leads to contradictions: "Sin embargo, su ubicuidad resulta una de las debilidades más importantes de la teoría de la estructuración a menos que se consiga distinguir el uso que se hace de ella. Por ejemplo, la reflexividad en Giddens puede ser tanto la causa de la aceleración de la modernidad como el atenuante de sus efectos en la biografía individual." (*idem*). *Reflexivity* is a recent concept yet without a full consensus

from the academic community regarding its exact definition, but what has been set down to this point is relevant to the analysis of science fiction in the sense that it helps create new understandings and frameworks for future empirical studies.

Both authors make most of their discussion by distinguishing between the realities of the past and the reality of modern society. Although we now recognise the existence of the two paradigms of “pre-modernity” and “modernity”, they were always there in the 20th century and determined the mindsets of the fiction writers at the time. The work published at the earliest date - H. G. Wells' *War of the Worlds* (1897/2000) - was already in the period of transition between these two paradigms of society. It is thus crucial to make this thorough exposition of the theory on Risk Society by the two consecrated authors - Anthony Giddens and Ulrich Beck - so that the discussion further ahead in this Master's thesis is coherent and not bereft of scientific rigour.

1.2. On Heroism

The debate on agency versus structure has been the main topic of social scientists and, originally, also philosophers for many decades. It is indeed one of the classic and older goals to determine whether we, as individuals, are truly “free” from the structures we create to live in a functional society. The subject of agency, specifically heroism, is relevant to the discussion following that of Risk Society. While Risk society and reflexivity are approached in a macrosociological scale, as done in the previous section, heroism is a subject that relates more to individual behaviour than larger social processes, such as global risks. Individual behavior during disaster scenarios or as reaction to risk in general can be analysed in objective reality to underline the causes of effects of larger tendencies. It is not an objective of this thesis to study the links between microsocial and macrosocial processes in what concerns disaster response in either fiction or objective reality, however. In this section, the focus lies on the definition and classification of different approaches to heroism, so as to be able, in a later moment, to articulate representations of heroism with representations of panic, which is another type of response to disaster at an individual level. The work by the sociologist Anthony Giddens and philosopher Michel Foucault shows how the identity and agency of individuals is “determined caused and produced, by social forces that lie outside of themselves as individuals.” (Barker, 2003, p.236), which also implies that there is no action known to be totally original and uncaused. The same argument can be evoked to think about the concept of hero, which is recurrent in the narratives of fiction. Can a hero truly exist on its own? As in, would there be any heroics without any conception of values and the judgement of peers? The discussion of the concept of hero matters in the theoretical framework of agency because it is the bridge to the realm of science fiction literature as

regards the way people react to disaster. A display of heroics from the characters of a fictional novel show, through the lens of this thesis analysis, what values we reproduce in the crafting of innovative stories and, hopefully, help postulate whether they serve the common interest in mitigating the risks of disaster.

While some works of Science fiction might rely more than others on character heroics as central elements of their narrative, we can safely acknowledge that heroes play an important part in conveying information to the reader. There are heroes in our day-to-day, and we can ourselves become heroes if our merit and the circumstance leads the community to recognise us as such. Disaster is one such circumstance in which people prove their merit, and indeed tend to do so, as is explained in the following section dedicated to discussing the myths of panic. The definition of heroism has been both a complex and ambitious task, and although the field is relatively new with no more than two decades of research, several branches of the concept have been identified in literature, films and television. Even branches that can be confused as similar are shown to bear striking differences in the words of the people that use the concept. A recent in-depth study conducted in Hungary outlining the differences in the social representations of “Everyday Hero” and simply “Hero” points out that people make distinct associations between the concepts. The study shows the strongest links of “Everyday Hero” to be to the keywords “brave, helpful and selfless”, while simply “Hero” has its strongest links to “strong, brave and self-sacrificing” (File, et al., 2016).

It is possible, however, to outline approaches to the concept, one objective and the other subjective (Allison, Goethals, Kramer, 2017). Objectively, an heroic act - which would make the actor a hero - has to be: 1) morally good; 2) it has to be exceptional, as in, neither ordinary or minor; 3) something of great value must be sacrificed; and 4) taking a great risk. The subjective approach to heroism puts these four principles into question stating that what is considered morally good, or exceptional and so on, is always up to debate. This implies

that the heroes of some might not be heroes to others at all, and might even be considered villains. This is in fact a fundamental paradox explored in () *Conceptual Analysis and Differentiation Between Heroic Action and Altruism* , which describes both the elevation and negation of the hero in the eyes of the observers: “There is a constant tension between the desire to elevate and the desire to castigate the actions of heroes— especially social heroes because their actions are easily viewed as threatening, but also with physical risk heroes who have a checkered history.” (Franco, Z. E., *et al*, 2011, p.103) The second paradox in the same study further discusses the dynamic between the hero and the audience by exploring the dichotomy of publicly acclaimed heroes against interior and individual decisions to perform heroic acts. It states that action or behaviour ultimately stands as heroic regardless of whether there is an audience to revere (or not) the hero. There is a reference to the unsung heroes behind the most heroic actions in history. The argument for this is that one may act privately in such a way that their life is put at risk so as not to break values that are held as unquestionable. In that sense, a hero could be anyone willing to sacrifice their lives for what they believe in. In a logic of war - of conflict between parties where there are winners and losers - it is easy to see how heroes are most often found in the side of the victorious. The same study by Blau *et al.* (2011) shows survey results regarding the distinction participants made between the concept of “heroism” and “altruism”, with 97,5% answering that there was a significant difference. Although a qualitative approach was not undertaken by the study, the participants have claimed that “heroism” has an element of sacrifice that is not associated with “altruism”, in the same way that “sharing” isn’t present in the idea of “heroism”.

Conquerors are heroes to their people, but rarely heroes to those they conquer. Even the qualities of heroes are not necessarily their own as individuals, but as the social construct of hero, which includes proactivity, humility, intelligence, leadership, fearlessness, compassion and more.

In another perspective heroes can be seen as accomplishing particular functions in society by serving as "norms for social comparison where individuals can emulate or avoid their behaviour" (Igou, Kinsella, Ritchie, 2017, p. 25). Heroes are also described as heirlooms who constitute symbols and metaphors for values and codes that are passed between generations. In the same first chapter of the *Handbook of Heroism and Heroic Leadership*, three categories are given to map the functions of heroes, providing further valuable insight into the concept:

a) the function of *Enhancing* is that of motivating and boosting positive emotions in people such as awe, gratitude or admiration. People revel in the accomplishments of heroes and are motivated to aspire being better persons;

b) the function of *Moral Modelling* is that of acting as a role model by supplying virtuous norms and values within society so as to help the masses establish comparisons with themselves and ultimately have a more pro-social behaviour;

c) the function of *Protecting* is literally that of preventing harm to come to others, but there is a more subjective meaning to this function, it being the protection against problems related to uncertainty, existential dilemmas or meaning.

The interest in the concept of heroism lies in the way it is used in disaster management. Who appoints the hero? What do institutions expect the hero to do? Is he a professional like a fireman or a soldier? How are the heroes' deaths dealt with institutionally? Science fiction often answers those questions in its own narratives, the hero being a character of major importance, like a main character. These answers are interesting because, when analysed, they tell us how close the perceptions of heroism are to objective reality, and whether there are deliberate deviations from it in order to express criticism over a particular topic. Moreover, because the concept of hero, in its subjective frame as suggested by Alison *et al.* (2017), is highly dependent on a group of people to recognise particular individuals and acts as heroic, it can be safely postulated that the generalised perception of

heroes are deeply influenced by the institutions that promote them. In other words this means that institutions create and promote heroes in accordance to their values, meaning that they are cherry-picked by those who create the narratives of disaster. The point of this argument is not to promote the idea that institutions conspire to assert total dominion over common values by exhibiting their own heroes, but to suggest that heroes are not only created from the bottom up. People may be recognised for their extraordinary feats and hailed as heroes by the community, but the way they are portrayed (or not) to others through the channels of social media define their heroics to those who weren't present and are unknowing of what happened.

1.3. On Panic

The previous section discussed the definition and approaches to the concept of heroism. Although panic is not an antonym to heroism, many of the keywords that define it, such as “alarm”, “confusion” or “frenzy”, are indeed antonyms to the keywords that describe heroic behaviour, which include “bravery”, “assurance” and “courage”. The two key concepts of panic and heroism can be used as counterpoint to one another in the analysis of the novels where they are recurring. In the current section, the focus will be on discussing the concept of panic and common mistakes that are made in defining it.

Disaster is always met with some form of reaction by the societies it affects. It brings about change to the environment of human life that violently breaks individual routines and aspirations. The first thought that springs to mind therefore, for the uninformed public, is that after disaster comes complete chaos - a situation where the norms we take for granted are disrupted, and so we have to revert to our primal, emotional and “reliable” individualistic instincts to be able to survive. Certainly, one cannot keep undisturbed writing a paper while the desk is on fire, so action is taken. Under these circumstances, research shows that the same uninformed public acts against its preconceptions by selflessly helping out others during a disaster, as well as following instructions and generally reasoning a lot more than they would believe. People rarely lose control (Clarke, 2002). Disaster analysts have tackled the belief that people panic during disaster, by proving that deaths are a result of ill prepared buildings and escape routes. This is not to say that people do not fear disaster, especially when it means a worst case scenario. They may run, scream and cry but whenever there is a way out they will not panic. By panic I mean the dictionary definition used by the Oxford Dictionaries website: “Sudden uncontrollable fear or anxiety, often causing wildly unthinking

behaviour”¹. Wildly unthinking behaviour is key here because it tells us that people are willing to, among other things, harm others and disrupt evacuation efforts in order to guarantee their perceived individual safety.

It is important to mention that the definition of panic was more ambiguous and not supported by empirical evidence at the start of the 20th century. It related to an idea of mass hysteria and chaos being the main expectable reaction of a group of people in a disaster scenario. Studies in the field began to dismiss many of those ideas as misconceptions, starting with the fact that most people don't panic during a disaster. This, however, doesn't mean it never happens. In a paper by Quarantelli (1954), published after several studies on the reaction of individuals to disaster, the conditions in which panic happens are explored and a much clearer idea is presented. The outstanding feature of what people describe as panic is flight, or in other words, an escape. No attempt is made to control the danger, to act toward it, or to manipulate it in any way. The particularity of flight when individuals are panicking is that it's not a rational response, as there is no weighing of options before the decision to flee. That which induces a panic is consistently a direct threat to an individual's physical integrity, as when one hears an explosion or sees a vehicle heading in one's direction. We don't think about escaping, we move out of the way, and in some situations that behaviour is not the most adequate. A panicked person is distinctively aware of the threat and that they have the possibility to protect themselves against it. There is no panic when one perceives to be completely entrapped without any chance of escape. In Quarantelli (2001), we're given the example of coal workers trapped underground, who don't show any signs of panicking because they are aware that there is no way out. This does not mean, however, anyone without hope of escaping a dangerous situation and without hope of doing so is not under stress. People can suffer from extreme anxiety and even require medical aid under extreme circumstances:

¹ A similar definition is given in Clarke's short article on panic (2002), belonging to the Oxford English Dictionary: "excessive feeling of alarm or fear...leading to extravagant or injudicious efforts to secure safety."

"[with panic] The threat is specific. (...) Anxiety is marked by an inability to designate any object in the environment (...). This inability prevents any attempts at flight, for physical withdrawal requires a specific object or situation from which an orientation can be taken." (Quarantelli, 1954, p. 271)

In addition, the direction of flight is not random, as the misconception would have us believe. People don't run into dead ends if they know of an exit they tend to use on their day to day; and, of course, if they see others escaping through an exit in an unknown place, they will want to flee in that direction as well.

Regarding others, the act of flight in a panic is not anti-social but non-social. A distinctive feature of panic is that in no circumstance is there articulate communication and coordination between panicked individuals. In a particular case portrayed in this paper, a woman overhears an explosion. Thinking a bomb had hit her house, she fled in panic, leaving her baby behind, and returned only when she redefined the situation as an explosion across the street. In the interview, the woman claimed that "running" was the only course of action, which she followed, before thinking about who she had left behind. Moans, screams and crying also have an effect on causing people to panic, as the individual perceives the entrapment of others and actively seeks to avoid it:

"When the responses of the others, however, indicate that they, too, are powerless or have even suffered the consequences, panic becomes probable." (Quarantelli, 1954, p. 274)

Previous experience of a situation where one has experienced panic can lead to hypersensitivity, where individuals are especially alert to the specific conditions that first led them to panic. In the interviews that based Quarantelli's paper (1954), a resident of Brighton stated that few days after the widespread gas explosions everybody was on alert and ready to leave the buildings when they smelt of gas, smoke or heard noises. This state of alert might influence people to panic but by itself it does not determine whether it happens or not.

Flight - as the main consequence of panic - appears to be a mechanic response, almost like a biological reflex, that happens under very specific circumstances. Since they aren't so often met, as studies show panic is rare, it is in the best interests of public safety that planning avoids at all costs to create these conditions in emergency systems. Planning must design common spaces that can fail gracefully, by providing clear instructions and a base for efficient communication, which informs the individuals and promotes their cooperation, but also count on some people panicking. Working with people's perceptions of the situation may go a long way in granting the safest and most efficient escapes. Notions of space, however, can be just as important as notions of identity in a disaster scenario and thus this is important to understand what the identities of people are and how they can affect disaster response. It is also relevant to ask questions and strive to understand how identities in fiction and real-life situations are interrelated.

An argument shared by both Clarke (2002) and Drury & Reicher (2010) is that people tend to behave altruistically as opposed to behaving selfishly. Disaster creates a point of unity for those that share the same threat to their lives and well being:

"In disasters, people are more likely to be killed by compassion than competition. They often tarry to help friends or family members." (Drury & Reicher, 2010, p. 60)

Selfless behaviour in disaster situations even goes as far as to result in greater loss of life than were individualism and selfishness to determine people's actions:

"(...) the men on American Airlines Flight 1420 were not exercising sound judgment when they helped free the woman whose legs were pinned. They could have used the time to save themselves" (Clarke, 2002, p. 24)

Decision makers and planners are no exception to those who believe in the misconception that people react to disaster by entering a panic. By underestimating people's awareness of the situation, as well as their willingness to think logically and communicate with authorities and each other, response systems are designed in a way that they become

inefficient. In Drury's article in *The Psychologist* (2004), we see how a practical example of this argument - design features on public spaces and buildings that include wide accesses and even coded language used by public safety agents to prevent a crowd from knowing what danger it is in: "(...) people in a crowd are treated as colliding billiard balls rather than as thinking agents. (...)" (Drury, 2004, p. 118)

The information people receive is vital in maintaining safety. Knowing what to expect from the situation they're in, as well as (following practical and direct instructions) how to behave is key in this endeavour. As the same author - John Drury - suggests in his 2010 article, even the subtleties of language make a difference in how efficiently people respond to disaster. Referring to people's identity, in the occurring disaster, as being "passengers" or "citizens" could encourage more cooperative and orderly behaviour, whereas referring to them as "customers" might incite selfishness and competitiveness, resulting in a possible rush to the exit. Giving people information on how they can cooperate and making that apparent is shown to be more efficient than merely giving incentive for escape, which promotes individuality and therefore creates systems more prone to "failing ungracefully". Failing gracefully is a concept used by Lee Clarke (2009) in his works to describe a system that - much like in computer software engineering - when it has to fail, does so while being able to restart and minimise losses. When applied to disaster, a "graceful failure" happens when a system is designed to minimise loss of life and propriety when destruction is inevitable. It is, in the aforementioned case, for example, better communication systems, rather than a wider exit to the burning building.

An interesting dynamic of the actual behaviour people take during disaster situations is that of families and friends. People tend to move in groups of family and friends and, as I've written before, go as far as to sacrifice their own well-being for that of the others in the group. Moreover, the same article (Drury, 2010) states that sociological studies indicate that individuals follow the same rules of conduct that govern their day-to-day. This means men

help out more than they're willing to be helped (the reverse being true for women) and the elderly being helped first. The conclusion of Drury's argument is that there is continuity between the behaviour people have in their normal daily lives and the behaviour they have in a disaster scenario.

Although the scope of this thesis does not include an analysis of film, there are arguments and ideas of interest in writings concerning the representation of panic and disaster on the silver screen. In Roddick (1980), the results of a film analysis are discussed in text and it is identified that in Northern American productions released around the 70s, chaos and panic acted as a precursor to unity, cohesiveness and order. There is emphasis on the group rather than individual and on the reaction rather than the disaster itself. It is the "general formula", as the article puts it, that the disaster kills off most of everyone around the main characters, leaving them and a random selection of people - the survivors - cut off from the outside world and threatened with death. There is then an organisation of this group of people, guided by a natural leader, that ceases panic and chaos and uses technology - through ingenuity or courage - to survive and escape mostly without damaging losses. When overcoming their divisions, the survivors adopt behaviours that are orderly and rational, with the strong helping out the weak and the wounded and the group uniting against the threatening danger that looms over them all. Even when there is nothing the survivors can do to help the situation, they do not panic and stay out of the way of those who can help. Interestingly, in this orderly phase, the group leader is often a white male and seen in a uniform specific of his profession, suggesting a link between the presence of institutions and disaster response.

1.4. Colonialism in Science Fiction

Science fiction is a product of the time it is published in. As I have come to discuss in this thesis, works of fiction reflect characteristic mindsets and ideologies in their narratives that reflect the transitions and aspects of their contemporary society. The concept of reflexivity is present, as well as that of Risk Society and its many facets, but in this chapter I will focus specifically on the subjects of modern western fears and preconceptions in science fiction linking to our collective history of invasion, insurrection, and the colonialism / postcolonialism dichotomy.

As indicated in the article “The fear of invasion” from the British Library (2014), there are several novels that touch upon these subjects directly, as, for instance Jules Verne's Captain Nemo and his “terrorist” attacks on British ships and financing revolutionaries; the racially-charged *The Yellow Danger*, by M. P. Shiel, which describes an overwhelming invasion from China crushing European sovereignty; *The Battle of Dorking*, published anonymously in 1871 by Lieutenant-Colonel George Tomkyns Chesney, who, in his work, capitalised on the general fear of invasion to write about a hostile incursion by the Prussians using a super-weapon he called the “fatal engine” to defeat the British; and, of course, H. G. Wells's *War of the Worlds* and its vivid descriptions of destruction caused by the technologically superior forces of the Martians, playing the critical role of “the other” in the western colonialist mindset.

The dichotomy of colonialism and postcolonialism is central in this discussion of the mindsets behind the selected works of science fiction examined here. The topic is extensive and has been studied thoroughly in the last century, and my approach will be merely an overview of the concepts to fundament my analysis of the selected works.

In Rieder's *Colonialism and the Emergence of Science Fiction* (2008), the author makes an exposition based on the analysis of several early SF works. These works include Wells's *The War of the Worlds*, which is also analysed here. Rieder argues that in these works there is a colonialist discourse, drawn from anthropology and evolutionary theory that is deeply embedded in the narratives. He sees colonialist discourse more like the "genre's texture", rather than a "hidden truth" (p.15, 2008). In other words, the colonialist discourse is an orienting factor in science fiction, seen in the narrative's "references to history its engagement in ideological production, and its construction of the possible and the imaginable." (*idem*). Rieder borrows the concept of "ideological fantasy" from Žižek (1989) to refer to one of the most important features of the intersection of colonialism in science fiction. Applied to the subject at hand, the term ideological fantasy applies to the narratives that hold colonial beliefs as untrue and rejected, while still, in practise, recognizing and even supporting them at the same time. Racism, for instance (extended at that time into the realm of science, namely anthropology) was used in science fiction to highlight the "other" and set it apart from humanity. Since science was seen as the most superior approach to knowledge, early science fiction explored, in the descriptions of fictional worlds and in the actions of the characters, scientific discourse, in order to achieve credibility from its readers. This period also marks the emergence of key tropes linked to the largest colonialist projects, such as those led by Britain, France and other European nations, later on. A significant characteristic of early science fiction was that it emerged as the spiritual successor to adventure fiction, which was popular in Victorian society.

These novels described voyages to unexplored lands in the unknown and unexplored regions of the oceans and often included alien (in the literal sense of the word) societies. A prime example of such fiction is the satirical *Gulliver's Travels* (1726), by ..., where the eponymous hero is a British explorer who, in his travels around the Pacific ocean,

encounters giants, tiny people and more societies with very distinct characteristics that are imbued with colonialist tropes but also represent caustic criticism of colonialism.

As successive explorations reveal the uncharted regions of the globe, writers began to run out of space to place the strange societies and customs described until then, and so began to move to the realm of interstellar explorations where new alien (in both senses of the word) societies lived in yet unreachable domains: “The exotic, once it had been scrutinised, analysed, theorised, catalogued, and displayed, showed a tendency to turn back upon and re-evaluate those who had thus appropriated and appraised it.” (p.4, 2008). The exotic is double-edged in the sense that it can be used to appeal to the reader's familiarity with the described object (as in land, character, society, etc.) but it also contradicts more coherent knowledge of what it is about. This is how, today, with deeper and critical insight of history we can challenge the colonialist motifs present in the early works of science fiction, such as: unequal distribution of colonial wealth, the racial ideologies behind the exploitation of entire peoples and the impact of radical cultural differences on the home cultures of the colonisers, together with the present tropes: “These range from triumphal fantasies of appropriating land, power, sex, and treasure in tales of exploration and adventure, to nightmarish reversals of the positions of colonizers and colonized in tales of invasion and apocalypse.” (p.21, 2008).

Rieder also underlines and discusses other “ideological fantasies”. The first of the three consists in the *discoverer's fantasy*. The works of the first explorers of new lands, such as Columbus, Vespucci and Raleigh refer to the discovered spaces as primal, unclaimed, occupied by plants, creatures and (on their accounts), lesser humans. Land was seen as empty and unworked. This supported the legal argument that because there was no propriety in the new lands, then those from the Old World had the right to appropriate whatever resources they found unclaimed. The second ideological fantasy would be the *missionary fantasy*. It consists in the idea that the colonising civilisation has a superior form

of society that must be implemented over the native population “for their own good”. Native tradition, religion and hierarchy are made to be part of the “old ways” that must be replaced with the “new ways” of the colonisers. The goodness of this change is suggested to be self-evident by the entirety of the native population regardless of whether some suffer for it. Native resistance to this transition brought by the colonisers is used as evidence of sub-humanity and irrationality. Defenders of native culture are thus accused of pursuing their own interest in detriment of their people and deemed as the true enemies, rather than those bringing change. The final ideological fantasy is the *anthropologist’s fantasy*. We consider people we know in the present to exist now as well as in our own past. The idea of confrontation between the past and present is what defines the anthropologist’s fantasy. In science fiction it is often a confrontation, not of the past with the present, but of the present with the future, primarily through a discourse of technological advancements.

One of science fiction’s distinctive traits is the introduction, within the narratives, of technological marvels and speculation on future technology. However, the thrill of technological breakthrough has more to do with the aspect of scarcity of technology rather than the benefits brought to society as a whole. In fact, the key to linking colonialism to science fiction is that a unique technology that grants a significant advantage to whoever possesses it means that there is an inequality - a factor of power that drives narratives, creates conflict and ultimately leads to question the boundaries of rules that define society. Rieder mentions Jules Verne’s *Twenty Thousand Leagues Under the Sea* to illustrate this point. The fact that Captain Nemo has a submarine capable of stealth and of an advantageous combat position against British ships allows him to overcome sovereignty to some level. His technological advantage frees him from domination to some level, making the reader think of how the sovereignty of the nation state will weather future advances in military technology. Technological advantages, in the possession of a particular group, have a way to disrupt the balance of power. We see this in the dominant relationship established

by colonists over the native peoples of the New World. Their technological advantage gives them the power to disrupt the systems already held in place by the natives. To summarise, in Rieder's words:

“Colonial invasion is the dark counter-image of technological revolution. In relation to technology, as in other contexts, the history, ideology, and discourses of colonialism dovetail with the crucial, double perspective that runs throughout the genre: on one hand, the wondrous exploration of the new and the marvellous encounter with the strange, but on the other, the post-apocalyptic vision of a world gone disastrously wrong.” (p.33, 2008).

Another way in which colonialism is imbued in the makeup, or “texture”, of early science fiction is through the usage of time travel. While in later stories using this plot element has greater concern for temporal paradoxes and logical continuity, early science fiction focused more on the aspect of new space that came with a change in time. Time travel was particularly popular during the ascendance of imperialism because, for western society, travelling into the non-western world was understood as travelling to the past. Moreover, the past derives not only from technological differences but also from racial differences. Based on the idea from evolutionary theory that the human species aren't unchanging in time, science fiction puts into question where cultural differences end and biological differences begin. It is thus not uncommon to see time travel stories exploring the opposing ideas of progress and degeneration. Rieder references Wells's *The Time Machine* to illustrate this point. He argues that the human evolves into either the *Enoi* and the *Morlocks*, two different species biologically separated by many years of segregation resulting from the accentuated division between proletariat and bourgeoisie.

Rieder also dives into Wells's *The War of The Worlds*' expressions of colonialism. In this novel, Wells famously inverts the roles of coloniser and colonised, with the British being on the other end of an invasion which, this time, is led by Martians inside giant tripod machines. The framework of colonial relations, however, remains unchanged. One of the

most relevant aspects of the inversion is that the narrator doesn't play the role of the "scientific observer" (or explorer) on the side of the coloniser. Instead, he is the colonised; he takes the role of the "analysed" and the "theorised about"; he has a serious technological disadvantage and the only thing he can do to defend himself is attempt to escape from the Martian weapons. Rieder borrows the concept of cinematic gaze from Laura Mulvey in *Visual Pleasure and Narrative Cinema*, to discuss his own adaptation - "the colonial gaze": "The colonial gaze distributes knowledge and power to the subject who looks, while denying or minimising access to power for its object, the one looked at." (p.7, 2008). *The War of The Worlds* manages to maintain this structure despite the inversion of the roles of coloniser / colonised, contributing to the effectiveness of the message transmitted in the story. It goes even further with the physical description and representation of the Martian invaders. In earlier sci-fi, the role of the colonist was typically seen as the biologically and technologically superior, which contrasted with the uncivilised traits of the colonised, drawing the latter closer to a state of animality and irrationality. Seeing as the Narrator in Wells' story takes the role and view of the colonised, the colonisers are thus made to be super-evolved monstrosities (from both an ethical and physical descriptive standpoint). It is suggested that they may have once been humanoid, but during the invasion Martians are characterised by their large brain and head and two groupings of eight tentacles; they are also capable of telepathy, of standing on their tentacles (albeit in low gravity) and require transfusing blood from other animals with their tentacles to compensate for the lack of a digestive system. This clever animalisation of the invaders not only turns the colonist figure into "the other" but it also makes it as repulsive as the colonised were made to seem in earlier sci-fi. This is achieved by using the same elements used to prove the inferiority of the colonised (like biological degeneracy and barbaric culture) on the colonisers. The final effect is that it undermines pro-colonialist ideas in sci-fi narratives at their foundations, helping the readers to think critically about them. Colonial projects instilled a great deal of anxiety in their respective homelands, and Rieder argues that the

inversion in *The War of The Worlds* is more than just a genre trait (“not merely nightmares morbidly fixed upon by science fiction writers and readers,” [p.124]), but rather a reflection of the historical processes of environmental, social, biological and cultural devastation resulting from the interaction with non-European peoples.

Another relevant reference in the study of science fiction in a similar light is Jessica Langer in *Postcolonialism and Science Fiction* (2011), which is understood as being the first comprehensive attempt at ordering the intersections of postcolonial theory and science fiction. For the purposes of her work, post-colonialism can be understood as a concept comprehending both the historical process of decolonisation and the reemergence of new colonial and imperialist ideas in modern contexts of power, culture and economics (Young, 2016). In her book, Langer analyses a variety of texts including an anthology of science fiction and fantasy, as well as the popular massively multiplayer online roleplaying game *World of Warcraft*. The latter is discussed at length for science fiction elements such as technology and the present colonialist racial stereotypes. The playable factions in the two radically opposing alliances is a clear example of resurfaced stereotypes and ideas from colonial narratives that draw the players in. One can, for starters, choose to create a character from an array of races with quest-lines starting in different “starter zones” reflecting their particular theme. There is an equal number of races on each alliance - the *Alliance* and the *Horde*. Although the deeper “lore” in the game (made up of novels and extensive wiki pages) tends to go around the apparent dichotomy of “good against evil” to give some depth to the game’s story (for the sake of more invested players); regardless, it stands the fact that certain colonial stereotypes are undeniably associated to these factions. The *Alliance*, for instance, consists of orderly and “civilised” races. The dwarves and gnomes are expert machine makers; the night elves are a superior form of trolls evolved from settling near a powerful magical well; the draenei are “(...) literally aliens from another planet who crash-land in the WoW world of Azeroth, and their “home city” is actually their crashed starship (...)” (p.86); and so on. On the other hand, the *Horde* consists of races characterised by the opposing traits to those of the *Alliance*. There are: the trolls, who have built great civilisations but are now tribal

folks attached to religion and without a starter zone of their own (starting instead in the orc zone); the tauren - literally cow and bull people -, whose cultural traits and motifs seem almost a direct copy from those of the Natives of North America; the goblins, who are responsible for designing the *Horde's* heavy machinery, and yet, unlike the gnomes or the dwarves, their inventions look much more unstable and clunky, with the added risk of being dangerously explosive². In the cases mentioned above it is clear how the game has appropriated the cultures of real people in the real, non-virtual world. These cultures are marginalised and understood as the exotic “other” both in the game and outside of it. Moreover, as a character, any player can assume the cultural identity of these races and therefore feel entitled to understand the identity of the peoples the game represents to its races.

Horde and *Alliance* races are equally matched in military capabilities and both have equally efficient means of tackling problems. It is interesting that the game does not assert that either of the alliances are superior but instead labels them as chaotic and lawful (which is reminiscent of the character alignment system in *Dungeons & Dragons*). The representation of technology-centred races in the *Alliance* and the spiritually and magic prone races of the *Horde* perpetuates racial stereotypes from colonialist ideology, but Langer's main argument is to disprove that this makes science fiction a naturally prejudiced genre:

“(...) SF is not an inherently imperialist discourse or writing practice; rather, it has been adopted for imperialist and racist ends, sometimes deliberately and sometimes through ignorance.” (p.45).

Langer's study of science fiction and the imbued post-colonialism in its narratives shows that references to colonialist ideals and stereotypes might not always be used to put current society at an angle where it can be criticised and better understood. Rather, it can mean that colonialism might be present in the narratives in a way that perpetuates it, in an age where it,

² Furthermore, the goblins seem to be reminiscent of anti-semitic propaganda. They are characterised as being extremely greedy, cunning, and desiring to amass money for themselves. They are the exclusive proprietors of the neutral banks and auction houses all players in the game can access.

more than ever, is freely dissected and challenged by society. In that sense it is a critical notion to be held when analysing works of science fiction.

2. Analysis of the four novels

2.1.1. Unequal Distribution of Risk

In TWOTW, several cylinders fall from the sky between Woking to the centre of London in what is a reconnaissance mission from Mars. The aliens that emerge from the pods sow chaos and destruction of the like which cannot be escaped by anyone. The focus of the novel is a critique against colonialist representations in fiction. The way this critique is made is by switching the point of view from the coloniser to the colonised. Because of this, all those on the human side (the colonised) are treated equally. There are no mentions to a particular social class benefitting from either increased protection or lessened vulnerability. It can be argued that Wells deliberately portrayed the Curate - a representative of institutionalised religion - as an exceptionally cowardly man to highlight the fact that not even those with divine protection were better prepared for disaster.

The disasters occurring in TKW are directly caused by the devices of the alien invaders, who are only able to survive in the realm of deep underwater. Due to this feature in their nature, the risks resulting from the invasion affect everyone up to the higher regions of the planet, where either sea water or sea tanks cannot reach. In Britain, the authorities maintain power by relocating government facilities to higher parts of the country, as a way of coping with the risks. Even the main characters are in advantage because they have somewhere to live in higher altitude. In comparison to TWOTW, the setting of TKW allows for classes to be treated unequally by exploiting the physical limitation of the invaders.

DADES takes place after a major global ecological disaster - the nuclear apocalypse of World War Terminus - that wipes out most of the animal and plant species on the planet. The disaster shapes the way society works after the “apocalypse” in the way that risk is

distributed. The constant risk of genetic corruption from the everpresent radioactive dust segregates society from those who are healthy unaffected humans and those who have suffered mutations, the latter being outcasts and shunned by the former. Unequal risk distribution goes much further than TWOTW and TKW, in the sense that it actually creates distinct social classes. WWZ in turn takes unequal distribution of risk to the extreme when it remakes western social hierarchy (specifically in the USA). Because of the speed at which the living dead collapse entire institutions, relations of power based on wealth become useless in maintaining status. Instead, practical knowledge of survival defines who is put in charge, and the importance of old roles is reversed:

“At first I thought this woman was just being rude, degrading the instructor by refusing to use her title. I found out later that Mrs. Magda Antonova [the instructor] used to be this woman’s cleaning lady.” (WWZ, ebook)

From the earliest novel to the latter, there seems to be a progression in the way unequal risk distribution is represented, from no inequality to social-shattering inequality.

2.1.2. The "Boomerang effect" of Risk in modernity

The invasion of the aliens in TKW and the tactics they use to conquer the Earth are a reflection of the effects of climate change on our planet. The active melting of the polar ice caps results in the rising of sea levels, affecting everyone living in coastal settlements. In a way, TKW is a simulation of a hastened global warming through the aliens’ technological means³, and presents what is human action in objective reality as a weapon (used by the aliens). It is a warning that humanity’s influence in climate change will come back - like a “boomerang” - in the near future, ensuing risks of an apocalyptic scale. There are a few

³ as in their unexplained power to melt the polar ice caps

details, specifically regarding the use of nuclear weapons, that raise questions. Several nations, starting with the United Kingdom begin to use such weapons as a retaliation against the sunken ships and the contact expedition team that went missing. This is not however discussed in the narrative as an environmental risk. Rather, the usage of the bombs serves the purpose of reaffirming the military prowess of the nations to the public. The reactions to the invasion do, in fact, read as a competitive show of power between the western and the eastern blocs at the time of the Cold War.

The plot of DADES is built around the risks that resulted from a devastating nuclear war. The fact that radioactive dust is still carried by the winds slowly brings degeneration to all humans in contact with it. Chickenheads like Isidore - humans with their genes corrupted by radiation - had radioactive dust affect their mental faculties. Men usually carry lead codpieces with them to avoid going sterile due to the constant threat of radiation. Constant risks define this post-apocalyptic society and serve as a reminder of how certain actions in the present can affect all of society, even those who contribute the most to big decisions and are better protected against the foreseeable risks. Additionally, DADES also introduces the concept of “kipple”, which is a metaphor for the lack of sustainability. John Isidore is one of the characters who mentions kipple, and with good cause. He is a *Chickenhead* - in other words, a non-regular human being whose mental faculties were affected by radiation. He lives in an abandoned building filled with clutter. In Isidore’s words, Kipple is “useless objects, like junk mail (...) or gum wrappers (...) When nobody’s around, kipple reproduces itself.” (DADES, ebook) Society’s views in the novel compare it to the laws of entropy in the way that “the entire universe is moving toward a final state of total, absolute kiplization.” (DADES, ebook). Due to its universal condition, kipple always comes back even after being controlled for a moment.

TWOTW does not have a specific focus on the production of modern risks. There are references to devastating modern weapon systems but the plot is centred on England and

the actions of the narrator. WWZ on the other hand does touch upon the “boomerang effect” in the first phase of the World War Z, when the solanum virus starts spreading. It does so via the narrative subplot of the illegal organ trafficking networks, which carry the virus from its point of origin in China to all parts of the world. Inevitably, the agents of the networks are turned into the living dead in a twist of poetic justice. In all seriousness, however, illegal organ trafficking is represented as a modern risk mainly due to the technological requirements for the transport of swiftly perishable items, and the fact that it is not regulated, and can be a means to spread diseases. It is arguable if the boomerang effect applies to organ trafficking, but it is undeniable that the novel depicts that possibility, suggesting at least a broad connection to it.

2.1.3. Metamorphosis

The earliest science fiction novel - TWOTW - is a great example of a nation-state centred narrative. As has been written before, the plot revolves around the narrator in his desperate quest for survival amidst a Martian invasion. The story is thus located in England, and although occasionally we read about other places outside the region, the limelight sits permanently on the topic of complete civilizational failure under the pressure of invasion by a technologically superior force. Even though the aliens are defeated at some points, we witness the armed forces facing constant defeat. Additionally, there are also some cases of pillaging and theft, indicating that security institutions and authority have also failed. Reading TWK feels like a transition from TWOTW, like a leap in time, much like a process of metamorphosis itself. Even though the story in TKW is similar to that in TWOTW, as it also follows the perspective of the narrator, the sequence of events is not located solely in England. The invaders strike sea vessels and coastal settlements all around the world,

regardless of nationality, and there is a greater focus in the continued conflict between the world powers at the time. Whereas the invasion, in TWOTW, was represented as a national problem, in TKW it is an international problem, that even goes as far as to provoke conflict between nations.

Other than the decimation of biodiversity and the global threat of radioactive dust, DADES's plot does not focus on the borders and scale of risks in modernity; instead, it goes into discussing in depth what is to be human and the risks of not being (or no longer being) human.

WWZ contains interesting representations of global risks. There is, of course, the main theme of the novel - the solanum virus and the living dead - but the risks associated with it speak Max Brook's vision of modern risks the best. Rather than having their contexts fixed in time, such as in TWOTW and TKW, there is a progression in WWZ, from modernity to pre-modernity. As social institutions all over the world are torn apart by the living dead, global society is slowly broken down into smaller, separate parts as in a very short amount of time the means to convey goods and information all over the world are severely crippled, if not destroyed. Society turns its priorities to survival only and when the war is over; the only way to move on is to restore the integrity of nations all over the world, or, in other words: starting over.

2.1.4. Characteristics of Risk Society

TWOTW was originally published shortly before the start of the 20th century. Although the novel has references to important technological steps taken in the coming century, the late stages of globalisation are not yet represented. As has been discussed before, the setting of TWOTW is Britain and there are hardly any references to the outside world, whether other nations were attacked or what their reactions were. TKW is an

interesting novel to compare to TWOTW because even though their publishing dates are set apart by a few decades, they have similar key elements in their plots. A particular characteristic of the Risk Society (according to Giddens) that can be seen in TKW and not in TWOTW is the separation of the actions of characters and their environments. Any action taken in London against the Martians is seen and felt directly by the population, whereas in TKW several countries use nuclear weapons underwater, which is an environment that is distant from their societies. The very effects of alien weapons in TKW are distant from the populations, as the aliens don't actually need to be present in order to attack human settlements. This can also be seen in the increasing scarcity and price of goods that are transported overseas due to the alien attacks.

WWZ shows all three characteristics of the Risk Society, although in reverse. The disruption of expectations by the development of technologies is present in reverse, for instance, as no new technologies disrupt the expectations of the characters. Rather, it is the ending of access to present technologies due to the total economic collapse of societies that breaks expectations and forces individuals to adapt in order to succeed. This also leads to the collapse of the sparse social networks into local ones and the cause-effect of people's actions to become localised rather than go global. WWZ goes beyond TWOTW and TKW in terms of complexity and representation of modernity in the way that it describes modernization in reverse, caused by the action of an overwhelming force that is capable of destroying institutions and disconnecting people. This is important to understand why these main characteristics of Risk Society are not a theme in DADES. The plot of the latter does not contain a major disaster happening, nor any event that can significantly alter the norms of large institutions. This means that there is no necessity of describing a globalised society relation with risk. The fact that the novel doesn't put great detail into the characterisation of a global society in general also prevents drawing up a significant relation to Giddens's characteristics of the Risk Society.

2.1.5. Reflexivity

One of the main points of criticism in TWOTW is the reversal of roles traditionally held in colonialist narratives, where the main point of view is usually assigned to the character of the invader, who conquers and dominates the forces of a new land, be them nature or the natives. It can be argued that TWOTW is the result of a reflection on the traditional narrative form because it proposes the reader a new examination of the roles of the invader and the invaded. In other words, TWOTW is a pioneering reflection upon the preparedness of British society to face the risk of an invading power.

On TKW, the narrative entails some degree of reflective thinking that is not present in TWOTW. The call for awareness of the vulnerability of coastal settlements to sea related risks is by itself an exercise of reflection upon society in objective reality, but the difference between this and the previous novel is that there are references to preventable damage and general disinformation in areas physically distant from the shores. It suggests that there is some distance between recognition of the problem and its risks and prevention. Writing in retrospective, the narrator criticises society for acting too late - society has failed in reflecting upon its constant risks.

In DADES, the lengths to which society goes to reflect upon its risks can be said to be almost fanatical. Being impossible to prevent radioactive dust from contacting societies on Earth, normal citizens are required to do monthly check-ups to ensure they are still healthy humans. Because being human has a great impact in one's social status, exposure to radiation can turn anyone into an outcast at any time, typically by getting rejected in a job interview. The fact that society is constantly questioning the humanity of its members is just as unsettling as it is fascinating, but this would be matter to expand upon in another occasion.

In WWZ, prevention and analysis of the risks of the past and present is central to the plot. The structure of the novel is a series of interviews, conducted to people from different fields and backgrounds, developing around the following questions: What went wrong? How could it be prevented? What went right? The purpose of the interviews within the narrative is in fact to make prevention against a similar disaster much more efficient. In the view of this analysis it can be said that the main antagonist is not in fact the living dead but actually general miscommunication and, more specifically, corruption. Factors like the illegal organ trade and the false vaccine “phalanx” are quite clearly indicated as the cause for the ineffective preventive measures taken by societies across the world. Whereas in the earlier three novels reflexivity was a suggestion and not even a factor in the plot, in WWZ it is what drives the story and Max Brook’s criticism of modern society.

2.2.1. Objective and Subjective Hero

The two earliest novels - TWOTW and TKW - are told by the narrators. The narrative is centered around their experiences and interactions with the world, and because of that the reader tends not to access a “bird’s eye” point of view and therefore remains blind to the characters who really have the traits that define a hero in an objective sense. For example, because the narrator in TWOTW is hiding from the invaders, we don’t see who is out there helping out the most by fighting them back. TKW is similar to TWOTW in this sense. The difference is that in the former the narrator is not permanently placed amidst a raging battle. Conflict in TWK is fairly abundant but it is distant from the narrator for most of the narrative. It can be said that both narrators are in a war, yet only one acts in a battle. When comparing the traits of the narrators from the two novels with the traits of the objective hero, it can not be said that there are any similarities, or at least that such similarities were deliberate.

DADES is a novel where the subjective type of hero dominates the setting. Characters have traits that are attributed to the objective hero, but the very narrative focuses on the subject of identity, on what it means to be human at a time when risk and technology alter people and machines to the point of blurring the lines that separate them. Because of this, there are no objective heroes. All characters have heroic traits but none of them can be considered an objective hero. They have their own values and motives. Deckard's case is great to illustrate the subjectivity of his actions. To the androids he is chasing, Rick Deckard embodies the oppression of society. To his peers, however, Deckard is (at the end of the story) the legendary bounty hunter who could track and "retire" androids who were exceedingly difficult to distinguish from genuine humans. Of course, there are no "right" sides on the judgement of Deckard's motives and values. The way the conflicting views of the characters are introduced in the novel makes us, readers, question their ideas instead of immediately siding with them.

Readers are invited to question the motives of characters in DADES, as well as WWZ. In the latter, however, we are much more inclined to judge many of the interviewed (or people referenced by them) as objective heroes. As stated before, WWZ revolves around the description of what went wrong in preventing a massive global disaster. The characters, of course, reflect this. They are either a representation of what failed in the prevention structures or of what succeeded in saving humanity from extinction. Because of this, the latter type of characters is described as having the traits that define an objective hero. An example is Michael Choi, a military diver operating inside an atmospheric diving suit who is tasked with clearing the living dead on the seafloor. He is shown to have signs of bravery and belief in the preventive efforts against further attacks by the living dead.

2.2.2. Functions of Heroism

Even though we cannot say that there are characters who are exactly objective heroes in the novels under study, we can point out who displays heroic behaviour. It can also be classified in terms of functionality. The point of classifying heroic behaviour by function is not to analyse every instance but to highlight predominant and intentional functions of heroism described in the novels.

TWOTW and TKW share many similarities despite the period of time between their publishing. TWOTW does not use the function of enhancing in heroic behaviour to complement discussion on risk management. In TKW, however, there is a particular character - Alistair Bocker - who can be described as embodying the function of enhancing and protecting. He does so in the way that he presents theories and scenarios regarding the mysterious phenomena that later turn out to relate to the activities of the alien invaders. Bocker does not uplift the characters but he helps them make sense of the situation the world is going through, as well as provides some sense of security against the uncertainty, which is what the narrator is after, as a reporter for the EBC. In DADES, Isidore acts as a model for the function of enhancing because of his display of empathy. Rick Deckard, not being able to foster the empathy to connect to mercer through the empathy box, tacitly sees Isidore as more human than himself, despite the fact that he isn't a "regular" human, and a chickenhead. WWZ displays a complex sequence of often unrelated interviews in which the interviewed occasionally reference characters that represent the function of enhancing.

All novels describe behaviour in some degree of moral modelling. This is because characters are conveyors of social criticism. Whether social criticism comes always under the guise of hero-like promotion of virtuous norms and values is ultimately up to the reader, however. In TWOTW, the narrator plays well as a hero because of how he transmits, for example, anticlerical values and ideas that were contested at the time. It can be said that the

narrator thus fulfils the function of moral modelling as a subjective hero, because not all readers may agree with his values. In DADES and WWZ, there is plenty of behaviour that is subjectively heroic, as discussed previously, but the difference from TWOTW is that in the former the characters' behaviour is more often opposite to objectively heroic than not objectively heroic at all.

The common point of view in TWOTW and TKW provides the reader limited access to character behaviour taking the functions of heroes. In DADES, the point of view is third-person omniscient, which is useful for taking insight into what the characters are thinking and feeling. As DADES isn't, however, a novel with an active disaster affecting the behaviour of the characters, the focus on heroic actions and functions is limited. WWZ combines a multitude of points of view through interviews to different characters who speak about the actions of others and of their own. There are several representations of the function of protecting, for instance, particularly associated with characters in battle or in management positions. Because of this complexity of characters and points of view, WWZ is the novel with the most extensive portrayal of heroic behaviour.

2.3.1. Misconceptions about Panic

Being one of the most "action-packed" novels, the earliest of the selected four - TWOTW - has several passages that mention the idea of panic. People don't immediately react irrationally after they see the alien cylinders falling from the sky. There's curiosity in a first moment, but after the first character is captured by a Martian, panic soon follows:

"There were shrieks and shouts, and suddenly a mounted policeman came galloping through the confusion with his hands clasped over his head, screaming. "They're coming!" a woman shrieked, and incontinently everyone was turning and pushing at those behind, in order to clear their way to Woking again. They must have bolted as blindly as a flock of

sheep. Where the road grows narrow and black between the high banks the crowd jammed, and a desperate struggle occurred. All that crowd did not escape; three persons at least, two women and a little boy, were crushed and trampled there, and left to die amid the terror and the darkness." (TWOTW, ebook)

There seems to be a lot of questionable and incorrect notions in this citation of panic behaviour. The characters are compared to unthinking sheep, a term comparable to "billiard balls". Even the police forces join in the panic. People are seen crying and trying to run away. A little boy and a woman are crushed by the mindless crowd and left to die. Although it is impossible to say how people would behave in the particular situation of a Martian invasion with the characteristics of that represented in TWOTW, this is not the behaviour people usually show in real life. Wells prefers rather to describe panic killings over the characters helping the elderly or the young. There are also descriptions of looting and profiteering:

"The fear I felt was no rational fear, but a panic terror not only of the Martians, but of the dusk and stillness all about me. Such an extraordinary effect in unmanning me it had that I ran weeping silently as a child might do. Once I had turned, I did not dare to look back." (TWOTW, ebook)

In another instance, the narrator himself starts to panic. It can't be said that the narrator's reaction was appropriate, as there are no actual precedents of Martians' invading Earth, be it in TWOTW or in objective reality, that can support comparison. However, he describes "panic terror" as an irrational fear because he ran away crying. We don't know if he followed the people, or if he ran aimlessly or somewhere in particular. In any case, crying silently and running away is not panic behaviour.

Curiously, in TWOTW, the first reaction to the sight of the invading Martian cylinders is not panic. There is a first instance of curiosity, as people gather around the crash site, and next, altruism:

"The thought of the confined creature was so dreadful to him that he forgot the heat, and went forward to the cylinder to help turn." (TWOTW, ebook)

Ogilvy perceives the creature inside the cylinder to be in pain, so he attempts to help it out. Dissuaded by the heat, he got out of there and hurried to tell everyone about what he saw. It is interesting to note how the first reaction is to help rather than run away from the unknown. Ogilvy goes back to tell everyone what he saw. It's hard to say whether this was the norm at the time, before most of the studies in panic were made.

Given TKW's more passive alien invasion, panic is not described in an action setting, as it is in TWOTW. Instead, there are representations of panic buying as a consequence of disrupted trade routes. Later on, as water starts flooding the cities and mass migration begins to take place towards settlements of higher altitude, also violence and looting start occurring. It is possible that there are much less descriptions of panic in TKW because the invasion and ecological disasters are more gradual processes than the disasters in TWOTW. There is, however, a particular part where the narrator sees an invasion of coastal land by the "sea-tanks" presumed to be an alien weapon to capture people. Descriptions of panic are not as in depth as in TWOTW, but there are no major red flags regarding the description of flight and behaviour in disaster:

"Then there was panic, the luckier ones ran right away, the others bolted for cover into the nearest houses." (TKW, ebook)

In this episode, people are seeing the sea tanks for the first time ever. They come to discover that they are a lot deadlier than they seemed at first, but that they can also be destroyed by explosive weapons. Nevertheless, the first reaction the narrator reports others taking is them running back inside their homes. The characters do tend to move towards places they perceive as safe during a disaster. It is therefore not absurd to think that Wyndham had already some idea of the misconceptions of panic and knew how to portray a somewhat "realistic" situation.

There is a particular mention to the concept of panic in DADES when concerning a device called the "Penfield Unit". In the post apocalyptic society of the novel, there are technological means for controlling one's emotional state. The protagonist - Rick Deckard - and his wife, Iran, own one of those mood altering devices and use it regularly to fix the state of their emotions, but there is a passage where the penfield unit is used to immobilise people by creating a feeling of panic in them:

"This assembly," Roy continued, "has a Penfield unit built into it. When the alarm has been triggered it radiates a mood of panic to the - intruder. (...) That's the nature of panic: it leads to random circus-motions, purposeless flight, and muscle and neural spasms." He concluded (...)" (DADES, ebook)

The episode has a series a red flags when conceiving panic. Firstly, it can be argued that some symptoms, like muscle and neural spasms are reminiscent of a panic attack. According to the National Health Service of the United Kingdom (2018), however, symptoms of a panic attack include trembling, irregular heartbeat and dizziness, at most. Purposeless flight is also proven not to be a sign of panic when people are confronted with situations of disaster.

Max Brooks represents misconceptions of panic deliberately, in WWZ, an intention that is not entirely clear in the other novels. Panic is not portrayed as a consequence of disaster but rather as a consequence of miscommunication and misplanning. The "Great Panic", more accurately described as total societal collapse, resulted from a series of lies and miscommunication by institutions unable to properly assess the threat of the living dead. This happens when phalanx is declared a false cure for the solanum virus, and in the battle of Yonkers. During that battle, having zombies in front and back in a war scenario was a very panic-prone situation. It's factual that when people are surrounded, they will pursue what path they find more suitable to escape, even if it is not logical. It is stated throughout the novel that the massive failure of the battle of Yonkers was due to the lack of fighting

preparation against the living dead. The methods were wrong, and there was no backup plan because the military were confident they were not going to lose the battle.⁴

2.3.2. Emergency Planning

In the novels under analysis, emergency planning is often reflected in how the characters are described to react to disaster, and in particular how authorities treat them. The closest event in objective reality to the Martian invasion, in TWOTW, is a military incursion by a well armed force. In principle, the main agent to prepare against such an event is the armed forces, which do indeed participate in the conflict and is able to make small advances despite the overwhelming advantage of the Martians. However, there is hardly any military initiative to evacuate the population to a safe place, resulting in a chaotic escape during the height of the invasion. In TKW, there is a shift from TWOTW, as the authorities are shown to have deep concerns about managing the population once the rising sea levels lead to flooding in settlements of lower altitude:

"The main response was to move possessions to upper storeys, and grumble loudly at the inefficiency of authorities who were incapable of saving them the trouble involved. Notices were posted giving the times of high-water for three days, but the suggested precautions were couched with such a fear of promoting panic that they were little heeded." (TKW, ebook)

Even though the authorities are concerned with popular response to the inevitable floods, the way they communicate precautions is not to the point. They fear a panic might ensue if people do know exactly what might happen, resulting in loss of control over the population. What is not entirely clear is what they mean by panic, as it is not shown to the

⁴ On an interesting side note, the film inspired on WWZ took a step back and did exactly the opposite of this by adding scenes of purposeless flight and general mayhem without mentioning or showing the reasoning for panicky behaviour (*World War Z*. Marc Foster, 2013).

reader. Fearing to inform people because they might enter a panic is a way of taking them for irrational, emotive agents. It is not necessarily inaccurate to portray the authorities committing this mistake, but the fact that the narrator does not point it out makes it pass for effective planning.

Given the absence of major active disasters in DADES, there is no significant instance where emergency planning is a concern. In WWZ, however, emergency planning is a central aspect of the plot. Nury Televaldi is a smuggler, who, in his interview, describes the severe consequences of the Chinese outbreak, which is silenced by the Chinese government. There are crackdowns on illegal emigration⁵ but general corruption has made an international outbreak impossible to prevent. The Chinese government keeps the outbreak as a secret, hoping to keep projecting strength to the international community and to its own citizens. WWZ is different from TKW in its representation of the authorities' response to disaster in that the reasoning behind the miscommunication of emergency situations is explained. We do not know exactly what panic is in TKW and why the authorities fear it, but in WWZ we know that the CCP doesn't want to fully inform and prepare the population for a deadly virus outbreak because it does not want to take responsibility for it and because it perceives it to weaken its own image. On another episode, when the ex-White House chief of staff intervenes, we can be led to think that the discussed problem in TKW is also present here. During his interview, the chief of staff says he is grateful for the vaccine scam because it prevented the population from panicking immediately, which would have caused the collapse of society. He assumes people will react irrationally towards risks they are not prepared for, and it is quite clear that he has a condescending attitude towards the public. The way he is described can be classified as criticism for top politicians, but it also serves as a pointer to the fact that communication

⁵ people leaving China

failed because of poor prioritization and the illusion of safety rather than immediate prevention by informing the population.

Another interesting part of WWZ as regards emergency planning is the Battle for Yonkers. The military in WWZ is described to weaponize fear as a way to control public perception of a crisis and to keep the economy stable by “avoiding mass panics” (which has already been covered). The goal of the military was to make people think they were safe, and not actually protect them in the face of total disaster. Even though at this point in the story no one was prepared to deal with the threat of the living dead, military authorities still assumed that the option for not creating an illusion of safety was the riskiest solution. The story goes on about what defensive measures were taken to give humanity a fighting chance against the living dead, but the research had to come at the cost of dangerous and often fatal experimenting. Instead of assessing the threat, the military, quite ironically, panicked with the threat to its public image and failed miserably at weighing the options.

2.4.1. Colonialism in Science Fiction

Science fiction is often ripe with references to colonialism. In particular, the two earliest novels, TWOTW and TKW, have a series of ideas enmeshed in their narratives that can offer new perspectives on the representations of disaster response once analysed in the light of postcolonial studies. For different reasons, DADES and WWZ do not have a focus on colonialist practices, or a narrative that actively criticises them.

In TWOTW, the reversal of roles between the traditional figure of the coloniser and the colonised makes for a critique of British imperialism in the nineteenth century. As previously mentioned, the British become the ones defending from an invasion, and the Martians, the technologically superior force. This is where the “science” part of science fiction works in TWOTW. To demonstrate the superiority of the Martians’ weapons, Wells

takes contemporary scientific theories and applies their speculative value as deadly arms. At the time, of course, this meant biological, chemical and directed energy weapons, as well as the advanced mechanics in the invaders' tripods. The Martians are speculated to have completely exhausted the resources of their planet, reducing it to a barren wasteland, thereby justifying their conquering of Earth, "(...) crowded only with what they regard as inferior animals." Theirs is a quest for survival, not enrichment. This is not to say that they are not described as monsters, as opposed to humanity. Regardless, the social criticism is quite clearly summed up here: "Are we such apostles of mercy as to complain if the Martians warred in the same spirit?" (TWOTW, ebook)

Human qualities are removed as much as possible from the aliens, in TWOTW, as a way to "alienate" them from the readers. It works as criticism against the figure of the colonist but also as a way to turn him into an enemy. By the lack of human qualities I mean that the Martians do not empathise or even attempt to communicate with anyone. Their own body shape is made to be as monstrous as possible, to the point that they feed on blood transfusions. There is, however, some implication, gathered from the narrator's musings, that the Martians have not always had such a "monstrous" appearance. At a point in the narrative, a different kind of aliens are found. They are humanoid, and share some similarities with the larger non-humanoid creatures, despite being treated as food. That is, the conquering aliens have actually evolved from the smaller, frail creatures carried in their transport ships.

"That last stage of exhaustion, which to us is still incredibly remote, has become a present-day problem for the inhabitants of Mars. The immediate pressure of necessity has brightened their intellects, enlarged their powers, and hardened their hearts." (TWOTW, ebook)

According to note 5 in this edition of TWOTW, Wells believes that a world order and the transcendence of nationalism are necessary for progress. In line with Darwinist thinking,

he links the perseverance of the superior Martians to the extreme environmental risks of their homeworld, which forced them to evolve. As stated in the previous chapter, despite the roles of the coloniser/colonised being reversed, the former is still described as superior in almost every level, even in terms of biology and evolution. In TKW, the “alienation” of the aliens’ humanity is taken to the extreme. They also do not attempt to communicate, but their shape is left as a mystery even after the invasion is thwarted. In comparison to TWOTW, in TKW the narrator is forced to speculate with much less information. Another important aspect about the invaders in TKW is that their intent of taking habitable land from human societies is not immediately apparent when they arrive on Earth, as it is with the Martians. This allows for some criticism of the contemporary powers’ eagerness to give military responses.

2.4.2. Ideological Fantasies of Science Fiction

The discoverer’s fantasy is well reflected in TWOTW, even at first glance. The Martian invaders are described by the narrator in an introductory fashion - albeit speculating - as invading Earth in search of a favourable place to settle their dying population. They seek to appropriate the resources found on Earth because they are better spent ensuring their survival. Their main motivation is not hindered at all by the fact that the human civilization already takes Earth as its home and, like the European colonists in the then called “New World”, they efficiently destroy or exploit (by capturing people to serve as their food) anyone that stands in their way. In TKW, the actions of the invaders have the same apparent explanation - to take land and conquer Earth - although there is nothing more than the narrator’s speculation on the motivations of the aliens. They succeed in preventing human reconnaissance from interfering with their own underwater operations and expand their area of reach by melting the polar ice caps and raising the sea levels. The discoverer’s fantasy

still applies, although it does so in a more distant manner, so as to support a focus on different themes from TWOTW, like global warming and the Cold War.

The missionary's fantasy, although related to the discoverer's fantasy is not present in any of the novels. The invaders in TWOTW and TKW can be speculated to have a motivation, taken into consideration that they are intelligent species, capable of constructing the means for interplanetary travel. However, this speculation does not go as far as to give the reader a solid idea of the reasoning behind their motivation, let alone the logic of their moral codes. Even though the Martians have more human qualities (seldom though they may be) than the TKW invaders, they do not attempt in any way to communicate. It goes without saying that the same applies to the latter. This ideological fantasy may be, however, visible in science fiction when the invaders are capable of successful communication.

The anthropologist's fantasy is represented in the way the authors of TWOTW and TKW describe conflict and the technologically superior forces of the alien invaders, particularly as regards their use of weapons. TWOTW and TKW have two different takes on the confrontation of the present of war (their contemporary present) and its future. WWZ also has its own take, although much more distanced from the previous two novels. This ideological fantasy is vital to the social critique the novels entail, because of how it attempts to warn the reader about the terrible dangers of new warfare technologies. In the earliest novel, the deadliest weapons are the toxic "black smoke" and the "heat ray". Even though directed energy weapons were not used in the battlefield at the time Wells wrote TWOTW, chemical weapons already existed, and were used extensively just a couple of years later, in World War I. The superior weapons of the invaders in TKW also come in the form of heat rays, but there are more interesting ones in their arsenal. These include the "sea-tanks", which use organic-like tentacles to capture people during coastal raids. There's a clear intention of describing organic/biological weapons as superior to the mechanical devices used by the human militaries. The technology the invaders use to melt the ice caps and

provoke a massive global flooding disaster, however, is what best represents the anthropologists' fantasy in TKW. Wyndham turns a process that is already causing problems and turns it into a weapon against humanity. This is not only a confrontation between past and present; it is also made to be a confrontation of the present with itself. Finally, in WWZ, although there is not a figure of the "invader" or "colonialist" in terms of an organised group, there are the characters infected with the solanum virus - "the living dead". They represent a biological weapon of the likes human society is not prepared to deal with. It is unclear whether the virus was produced in a lab but the idea is that it represents a possible future risk (not as in "the living dead" but as an equally swift and deadly disease) against which there are no means to respond in the present.

Conclusion

Four novels of science fiction might not be enough to paint a reliable picture of the major tendencies in the genre, on any subject. The analysis made in this dissertation, however, does not aim for that. The goal is to see how catastrophes and their different stages are represented in science fiction and their role in the construction of disaster imaginaries. The following hypotheses stem from this goal: 1) Representations of disaster response in science fiction are more accurate the more recently they were published; 2) Identical misrepresentations of disaster response are present on all works of science fiction; 3) Disaster and risk management are described to be related to human organisation rather than the elements of fantasy that define the antagonists or the disaster; 4) Critical discourse specifically on disaster response is present in all works of science fiction. Nearly all hypotheses are verified in the analysed novels. Number two is noted not to be true, as there are different misconceptions and different forms of awareness of objective reality in representing disaster response.

From TWOTW to WWZ, social critique is present, but it is also represented differently; the more recent novels have more complex and nuanced representations and social critique. This is particularly true for the representation of panic and the depictions of heroism. WWZ has several descriptions of panic and even contains a major event in its plot which is called "The Great Panic". The difference from the other novels is that panic in WWZ is not just described as being an illogical response to disaster but as a specific response to the collapse of social institutions. TWOTW, on the other hand, describes panic behaviour as irrational, without giving an explanation besides the threat of the Martian invaders. The same goes for the few descriptions of panic in DADES. TKW however does a better job at describing this kind of disaster response based on objective reality and provides a more

analytical approach to the behaviour of characters, which is an interesting conclusion as the novel was published before DADES and it's closer in terms of structure to TWOTW than the latter. Putting to exception a few instances like the latter, the first hypothesis is true.

There is a considerable leap in proper representation of disaster response from TWOTW to TKW. Even though there are many similarities between the narratives, the latter reflects globalized society better and places greater focus on disaster response as a borderless, international issue. The same goes for WWZ, as the central disaster in the narrative is specifically described in a similar way. Not considering DADES for not focusing on the subject of global risks, TWOTW is the exception to the rule, as the reader only learns of the events taking place in England, with no mention being made to invaders elsewhere in the world. WWZ and TKW describe the responses to their central disaster in a global setting, as in, concerning all of the world's countries. The novels' approach to a global conflict is, however different. In TKW, the invaders not only represent global risks such as global warming but also represent opportunities for conflicts between the major power blocs of the Cold War era. Although interstate conflicts are represented in WWZ, the focus is placed on how countries fail to communicate with each other rather than the conflict itself. In that sense WWZ criticises the limitations of modern global society like no other of the four novels can.

Representations of heroism also differ between the novels, even though they don't focus as much on it as they do on other subjects like panic, Risk Society and colonialism. From the earlier to more recent novels, heroic behaviour goes from not being too commonly represented to appearing as individualized behaviours, often subject to personal judgements, incited by the narrative. In other words, heroic behaviour becomes more complex, and is less "objectively heroic". It should be noted that it is incorrect to assume that earlier works of fiction in general do not represent objective heroes. Only four works of science fiction were analysed and by no means should any conclusions be drawn from the tendencies observed by the analysis in this dissertation.

All novels have instances of social critique and, in the case of TWOTW and TKW there is a major focus on the subject of colonialist representations. With the proper understanding of the novels' main focus of criticism, it is possible to tap into a deeper exploration of representations of disaster response. It is a matter of context, without which disaster response cannot be fully analysed.

The recommendation for further study and development of this specific field is a significant increase in the number of analysed novels. They should be grouped in several fields, including date of publishing, author's nationality, science fiction subgenre and prize winners. Improvements to the methodology regarding to making it more streamlined and objective are also a requirement in order to make the analysis more swift and effective. Background information, methodological improvements and comparison between a superior number of novels will produce a worthy contribution in exploring the role of science fiction in reproducing the realities of disaster.

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