



DISASTER CONSTRUCT AS A NEXUS BETWEEN SOCIAL AND NATURAL PHENOMENA: A SYSTEMATIC REVIEW OF LITERATURE

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Abstract

There is increasing awareness in disaster research about the diverse ways in which disasters affect humanity. The impact of disaster stretches from individuals and households to nation-states. Most disaster discourses focus on the impact, mitigation, management, preparedness and response, but neglecting the issues surrounding the social and natural causes of disaster and their interrelationship. Using content analysis from previous studies, we review some of the discussions on disaster construction as a social or natural phenomenon. The review showed that issues about disaster construction largely centre on natural, social or human and technological factors. It is concluded that the issues triggering the construction of disasters are central to disaster preparedness and mitigation, as they lay the platform upon which decisions are made regarding which policy to put in place to prevent, mitigate or prepare for disasters.

Keywords: Disaster, Literature Review, Management, Natural Phenomenon, Social Phenomenon,

Mitigation

Introduction

The world has faced disasters on an exceptional scale. In 2015 for example, there were 395 disasters caused by natural hazards worldwide (Guha-Sapir, et al., 2016). The increasing frequency and scale of disasters pose mounting economic and humanitarian challenges for both developed and developing countries. Guha-Sapir et al. (2016), note that between 2006 and 2015, 564.4 million people suffered from disasters.

In the 1980s and post-2000, the world experienced ten of the deadliest disasters, one of the most devastating being the Haiti tremor which happened in the early part of 2010. Since the year 2015, 1,565 earthquakes with an associated magnitude of 5.0 and above had been chronicled globally. The predicted economic damage attributed to these 2015 disasters was estimated to be US\$ 70.3 billion. This was

significantly lower than what was reported in 2011 during the Japan tsunami and the enormous deluge in Thailand (Guha-Sapir et al., 2016). The United States of America, India, Indonesia, China and the Philippines have been identified as the top five (5) nations mostly affected by natural disasters. In the year 2013, China witnessed her deadliest disasters of the past century. The people of China suffered diversity of disasters; among them being deluges and mudslides, hurricanes, tremors and mass movements (Guha-Sapir et al., 2016).

Since 2011, Africa has experienced 147 natural disasters including 19 droughts and 67 flood events which affected millions of people with an associated cost of US\$ 1.3 billion in economic damages (Emergency Events Database [EM-DAT], 2013). On the average, nearly two disasters of substantial

magnitudes have been documented every week in Africa, since 2000 (EM-DAT, 2013). Globally, however, little is known about these disasters; but they continually and obstinately crumble the capacities of Africans to subsist or flourish. Within the period 2003 to 2013, 1.9 billion inhabitants of Africa were affected by natural threats and catastrophes which triggered over USD 494 billion in projected impairment (EM-DAT, 2013). In 2016, Africa experienced its foulest drought in over 30 years due to the El Nino occurrence, upsetting millions of people in Southern African countries (EM-DAT, 2013).

Sub-Saharan Africa is mostly associated with hydro-meteorological and climatological disasters which encompass floods, storms, cyclones, landslides, severe temperatures, wildfires and droughts. Earthquakes and volcanoes which are geological in nature are the least in terms of rate of occurrence. In some African countries, the agriculture sector takes about 22 percent of the overall impairment and victims attributed to adversities triggered by natural hazards. The lingering damages and losses affected other sectors like infrastructure, health, education, transport and communication, energy, aquatic, business, manufacturing and the environment (Food and Agricultural Organisation [FAO], 2010). Neil Britton, a scholar and expert on adversity control, indicated that the safety required to challenge adversities reflects how disaster is theorised by creators of policies (Neil, 1986). Obviously, a disaster problem is a manifestation of how disasters are interpreted. The description of “disaster” assumed a central locus in most discussions. This mirrored a precise awareness in varied difficult perceptions of the actual noticeable definition of the term “disaster” (Pyles, 2007).

According to the International Federation of Red Cross [IFRC] (2017), a disaster is an unexpected, catastrophic incident that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community’s or society’s ability to cope using its own resources. Though often caused by nature, disasters can have human origins

(IFRC, 2017). Similarly, a disaster is a severe distraction occurring over a short or long period of time that causes widespread human, material, economic or environmental loss which exceeds the ability of the affected community or society to cope using its resources (Emergency Humanitarian Action, 2002).

This paper however, associates itself with the National Institute of Disaster Management’s definition of disaster, which states that a disaster means a calamity, misfortune, tragedy or grave happening upsetting an area attributed to natural and manmade causes or carelessness leading to considerable injury to life or misery and obliteration of belongings and dilapidation of surroundings to the extent that the affected community cannot survive without external assistance (National Institute of Disaster Management, 2005). This definition gives more credence to the interpretation of disaster and places emphasis on natural and manmade causes of disaster.

While historical and mythical explanations of disasters date centuries back, empirical studies have come to provide scientific explanations of disasters. Dynes (2000) professed that the severity of the 1755 earthquake in Lisbon could have been lessened if the population of the city had not been dense. Since then, the argument on the causes of disaster and its apparent effects on humanity have gone through significant alterations (Dynes, 2000).

Many theoretical models such as the Disaster Crunch Model propounded by Blaikie, et al. (1994) have been established to examine the causes of disaster and its ramifications in order to reinforce the resilience of persons, societies and organisations. The model viewed susceptibility as entrenched in the development process which has to be tackled to lessen the threat of disaster. The Model further explained that a disaster occurs only when a threat affects susceptible persons or individuals (Blaikie, et al., 1994). An occurrence on its own cannot be regarded as a disaster; equally, people who have been helpless for several ages cannot be considered to have experienced disaster. Thus, unless there is a “cause occurrence”, disaster cannot be said to have

occurred (Blaikie et al., 1994). Consequently, susceptibility that is entrenched in the development process has been constructed and must be solved to decrease the danger of a disaster. These developments, such as destitution, discernment, segregation and cultural and religious differences, can lead to harmless or insecure conditions: proficient societies as contrasting susceptible societies and sustainable livelihoods contrasting unsustainable livelihoods (Terry, 2008).

The advancement of susceptibility offers an elucidation for the relationships between diverse components which explain susceptibility and disaster. The human element was introduced into the Disaster Crunch Model by Wisner (2004) in an attempt to explain the construction and controlling of disaster. The model has been used by Disaster risk specialists to scrutinise the bases for construction and risk valuation of disaster susceptibility (Wisner, 2004). The model contained two key issues: threats and weakness together construct disaster. Disaster levels, consequently, are influenced by the level of the threat and the weakness of the individuals. For instance, an occurrence that does not bring harm or injury to humans cannot be considered a disaster (Wisner, 2004).

A plethora of the discourse on disasters has been on impact, mitigation, preparedness and response (Hiyalwa, 2013). Although some studies (German Committee for Disaster Reduction, 2012; Opere, & Ogallo, 2016) have stated some issues about the causes of disasters, such issues have often been marginal and not categorised in detail. This indicates that arguments about the causes of disasters exist, but are dispersed in the body of literature in no exact or ordered way. The empowerment of people affected by disaster, and understanding the severity of a disaster is measured not by the degree of its physical force, but by its construct and societal impact (Opere, & Ogallo, 2016). However, the contentions regarding the construction of disasters reveal the power dynamics and reigning ideologies within the societies in which they occur. The occurrence and consequences of disasters are fundamental. Disasters also reveal human

deceptions of stability, baring the inequalities and injustices of societies. The fact that only human beings can recognise catastrophes provided they survive; nature recognises no catastrophes. The considered range of disasters proliferating around the world, made several people face the threat of disaster, and the real risk is often determined by social factors and the contribution of social policies to mitigate disaster impact. It is on the basis of this that there is a need for the comparison between social and natural disaster which will lay the platform upon which decisions can be made regarding which policy can be put in place to prevent, mitigate or prepare for disasters.

This review is, therefore, an attempt to seal this gap by organising some of the social and natural causes engulfing disaster construction and the relationship between them, which appears to have been left on the sidelines. We, however, caution that this review should not be professed as being comprehensive of the complete debates on the subject under consideration. We only capture certain vital arguments aimed at engendering further discussions among academicians and policymakers on the need for reducing the rate of disaster in the world. The rest of the review discusses some of the triggers in disaster construction, the nexus between social and natural constructions of disaster and, finally, narrows in on the conclusions and policy implications.

Disaster Construction

With the present upsurge of disaster events spreading across the world, the concern in the definitional debate is the issue of disaster construction. Some collection of scholars such as El Mercurio (2010), Gobierno (2010) and many policymakers are now beginning to query the construction of disaster as a socially or a naturally constructed phenomenon. As such, this part of the review focuses, primarily, on the social and natural construction of disaster. These circles of arguments are prevalent in the literature and appear to have a bigger concern for the mitigation or prevention of disaster. The expositions on the nexus between the

social and natural construction of disaster are in the ensuing subsections.

Disaster Construction as a Natural Phenomenon

From the observations of many researchers and practitioners, such as El Mercurio (2010) and Gobierno (2010), disasters are categorised into those that originate from nature and those from human activities. The argument in support of the natural construction of disaster is central to this section of the paper. The contentions backing natural disaster construction are multifaceted and complex. Some of the causes usually cited include hydro-meteorological events, mass movements, landslides, tropical cyclones, hurricanes and floods.

One of the fundamental arguments by El Mercurio (2010) in favour of the natural construction of disaster is the damage it brings to humanity through hydro-meteorological happenings. Hydro-meteorological actions contribute to an increase in the preponderance of disasters, affecting almost all countries in the world (El Mercurio, 2010). Among these hydro-meteorological adversities are deluges, hot tornadoes, rainstorm, droughts and related disasters, sand or dust storms and landslides. Between 1975 and 2010, hydro-meteorological disasters affected some parts of sub-Saharan Africa (Gobierno, 2010). A disturbing characteristic is the growing inclination in the total number of persons who suffered the consequences of the threats of hydro-meteorological disasters, with drought, flooding and wind storms accounting for the highest of the entire number of persons affected (Gobierno, 2010).

Secondly, mass movements comprise a kind of natural occurrences such as corrosion of land, tremors, mudslides and siltation. These occurrences are attributed to rock and soil types, precipitation patterns, landscape, flora and fauna in a particular geographical location (Paticio & Rodrigo, 2010). They cause substantial forfeiture to human existence and destruction to farmlands and infrastructure such as roads, rail lines and water channels. Erosions also lead to ruin of crops, which affects food production. At the East African Cleft, the high landscape associated with sporadic precipitation is a major

factor that triggers avalanches (Mirza, 2012). In 2006, the Réunion had severe economic losses attributed to avalanches and was projected to be US\$ 1 billion. In Réunion, a landslide activated by substantial precipitation and uneven grounds invaded a busy coastal road and many automobiles submerged, triggering a considerable number of demises (Hiyalwa, 2013).

Another evidence put forward by proponents of natural construction of disaster is that climate systems associated with severe storms and precipitation, recognised as tropical tornadoes in the Indian Ocean and hurricanes in the Atlantic Ocean, are produced between latitudes 5° to 20° when sea temperatures are satisfactorily warm (Paticio & Rodrigo, 2010). Cyclones or hurricanes are able to wipe coastline zones with continuous storms of 250 km/h or higher, substantial precipitation and, most dreadfully, surges that trigger the sea level to increase up to 10 metres. For instance, when a cyclone gets to the coastline, it activates coastal flooding and causes destruction to ridges, mangroves and fisheries. In many poor nations, the death rates related to cyclones are usually higher as compared to those attributed to floods (Goemans & Ballamingie, 2013). Evidence from Chile shows that in February 2010, a severe earthquake which measured 8.8 on the moment magnitude scale hit central and south Chile between the cities of Santiago and Concepción. Within a few hours, a tsunami struck the coast of the regions of Maule and Bío-Bío and the island Robinson Crusoe (Paticio & Rodrigo, 2010). Together, the earthquake and tsunami killed 521 people, damaged or destroyed approximately 650,000 homes and caused massive infrastructure damage throughout the central and southern parts of the country (Gobierno, 2010).

However, of all the natural disasters, floods and droughts are more prevalent (Aderogba, 2012). Floods are triggered by the reaction of a tributary or rivulet or, simply, a valley/channel that contains abundant water to manage with (Aderogba, 2012). While they upset many countries around the globe, deprived societies are the most vulnerable to flood and drought risk (Douben & Ratnayake, 2005).

Another trigger of floods is found in Chow's definition of floods which stipulates a comparatively great flow of water that exceeds the canal provided for the excess water. Floods are the greatest reoccurring, prevalent and catastrophic disaster in the world (Odufuwa, et al., 2012). Deluge that upsets populous space is noted to be an adversity, because it is an overflow of a large amount of water beyond its normal limits. It occurs suddenly across a limited area without warning and is associated with very heavy rainfall that leads to an increased run-off driven by changes to catchments (such as deforestation or urbanisation) (Parker, 2007). One of the grim lessons that Mumbaikar in India learned from the deluge of July 26, 2005 is that the city has lost sight of its ecological base. The incident was not only a horrifying memory for every Mumbaikar but has disillusioned the common people from their city known as "Aamchi Mumbai" (our Mumbai) and had, also, shattered the elite's imagination of Mumbai. The deluge brought a new perception about the city and kicked a debate concerning the planning and development of Mumbai (Parker, 2007).

Additionally, unstable sand humps are severe disasters affecting towns in the Middle East, especially in Saudi Arabia. This occurrence is considered to be the most common in contemporary years because of the expansion of towns, highways and infrastructure development (Kutieli & Furman, 2003). Any amount of dust in the atmosphere at any material point in time is connected to the airstream. Hence, appreciating and experiencing the moody air bids a likely sandstorm. Day-to-day existence is under threat by sandstorms for a number of days dependent on the storm strictness (Maghrabi, et al., 2011). The greatest destructive effect connected to sandstorms is a drop in eyesight of residents which upsurges the frequency of road accidents and may escalate the incidence of giddiness of aeroplane pilots (Kutieli & Furman, 2003). The air elements in the atmosphere present a vital effect on the wellbeing of humans (Bennion, et al., 2007), particularly, people struggling with heart-related diseases. Added ecological effects may comprise

destruction to communication and automated structures and a decrease in soil nutrients, which has implication for food security.

Disaster Construction as a Social Phenomenon

This section of the paper focuses on the issues that make disaster construction a social phenomenon. The discourses presented here are, basically, human-related. Although weather and geologically associated disasters are noted to have triggered the highest number of demises and economic damage; disasters triggered by humans are growing in prominence. Disasters initiated by individuals include industrial accidents, transportation accidents, armed conflicts, discharge of dangerous constituents and the collapse of structures (Baş, 2014).

In the first instance, chemical materials are central constituents for the manufacture of goods, crop cultivation, industrialisation and construction. Any detonation or diffusion which happens due to any error in the process of packing, assembling or discharging these constituents may lead to severe impairment. Accidents such as detonation and diffusion of perilous materials lead to a severe threat to the wellbeing of many inhabitants, as they could increase economic loss and affect the built environment. These accidents occur as a result of the negligence of humans (Baş, 2014). In the Bhopal Gas Tragedy in India, the Government chronicled 5,295 mortalities whereas advocates claim that 25,000 persons died from the aftermath in the subsequent years. The succeeding cohorts of children are born with disorders such as brain injury, perverted limbs and musculoskeletal conditions (Gazala, 2014). Similarly, in 2010, human error caused an oil rig in the Gulf of Mexico to detonate and caused the death of many employees. It was regarded as the most obscene oil spill in the history of the US. Broken inundated pipelines discharged several million barrels of oil into the sea for a period of three months, endangering coastlines and swamps.

Famine is also identified as the worst human-induced disaster in the world. It is problematic to

explain what famine is, but it is mostly associated with political discourse (World Ecological Report, 2008). Famine is similar to absurdity, hard to describe but conspicuous enough when seen (WER, 2008). With regard to public convention, famine is a pervasive scarcity of food that affects any mortal kind, an occurrence that is mostly associated with widespread undernourishment, hunger and prevalent as well as increased deaths. Devereux & Howe (2004) defined famine as a situation in which the people who are dying are between 2-4 years in a population daily, the worse form is 20-40 percent of children who are aged between six months and five years. These notwithstanding, the present food supplies in the world are enough to cater for the world's populace; but, an estimated 20 percent of persons on the African continent do not have sufficient food on a consistent basis (WER, 2008). Niger, for instance, witnessed an "austere undernourishment" considered by other institutions as a "philanthropic crisis" and "a severe living calamity" (Famine Encyclopaedia Britannica, 2008). Traditionally, famine is often triggered by a decrease in crop production or an increase in the populace as against provincial resounding capability. It is observed that the functioning cause of famine is an imbalance between population growth and food production. However, the generic causes are usually related to political instability, erroneous public policies and oppressive political structures (Alex, 2005).

Also, conflict and political violence constructed by humans, together, have direct and indirect undesirable effects on human life (Krause & Mutimer, 2005). Apart from instant demise and obliteration, resources required for a population's development are diverted to build military power. Violent conflicts upset health care delivery and other rudimentary facilities, generate deprivation and infection and lead to a habitual assassination of many people either directly or indirectly (Krause & Mutimer, 2005). Gupta, et al. (2002) establish that an increase in child deaths triggered by conflicts continues to exist even after military aggressions end. According to the World Health Organisation

(2004), civil conflicts characteristically generate or lead to a protracted setback of human development that mostly leads to impoverishment enduring from cohort to cohort. Conflicts aggravate a severe disturbance of livelihoods, farming and health delivery systems of humanity, which usually create enduring impacts that affect development. Though considered as disastrous happenings generating awful sufferers, human-induced tragedies must be regarded as unavoidable consequences of the world's disparity policies sanctioned by significant influential organisations (WHO, 2004).

The Nexus between Social and Natural Constructions of Disaster

In the early days, disasters were noted to be the making of God or the action of man, an etymology that perseveres in the lexicon of many enterprises (Steinberg, 2006). As humanity evolves and is noted to be more intricate, it is an acceptable fact that humanity has become more progressively accountable for the actions and happenings which were attributed to powers out of their reach. Countless disasters attributed to nature may not have happened or could have led to a lesser effect on societies if not for the activities of persons (Steinberg, 2006).

During most parts of the 20th century, the disaster literature understood disasters as the effects of extreme natural events which could be most effectively mitigated by human modernist scientific approaches such as engineering and centralised planning (Burton, et al., 1978). Critical scholars from a variety of subjects such as human ecology, human geography and Marxian political economy have rigorously challenged this approach, which they referred to as the hazard paradigm (Blaikie et al., 1994; Gaillard, et al., 2014). At the heart of their challenge was a new analysis of nature embodied in the often-repeated assertion, "Natural disasters are not natural". The critical disaster scholars did not deny the reality of natural threats such as tremors and tornadoes, but they contended that it was the societal, political and economic relationships that made persons susceptible to such incidents (Kelman, 2012).

Ultimately, the critique about the “nature” of the hazard hypothesis generated a new approach to analysing and managing disasters which focuses on the political, social and economic factors that generate social vulnerability (Blaikie et al., 1994; Wisner, et al., 2012). Influenced by these scholars, Naomi Klein's (2010) work on how states and multinational companies hijack disaster to impose neoliberal policies also pivots on a critique of the idea of “natural” disasters (Klein, 2010). In an interview about the 2010 earthquake in Haiti for example, Klein summarises her argument saying "... we need to unambiguously understand that this catastrophe, which is divided into natural and unnatural, must not be seen or considered so, as an additional debt to Haiti, or to drive for disliked corporatist policies in the wellbeing of (United States) businesses" (Klein, 2010p34). The criticism of natural disasters as un-natural has altered the way academics reason about and manage disasters and has assisted to consolidate the political ecology of hazards.

In certainty, though individuals cannot do much with regard to the causes of natural happenings, individuals have been progressively capable of lessening the effect of natural incidents on humanity. Early warning systems can give signals to coastal inhabitants of impending tsunamis; thereby, giving the populace enough time to evacuate from threat zones. Zoning codes, when compulsory, can prevent the people from constructing in flood-prone zones. When land is used properly, it can decrease the danger of landslips which trigger unrestrained clear-cutting of trees. Tree felling for fuel or construction has occasioned mudslides anytime there was substantial precipitation in Central and South America while cattle grazing has increased desertification in the Sahel. Further, unrestrained building close to coastlines upsurges dangers from tsunamis and tornadoes, removal of swamplands has eradicated a natural alleviating factor for the destruction attributed to tropical storms while partisan systems have twisted droughts into deprivation, mostly, in developing countries (Quarantelli, 2001).

In ancient times, societies' description of the cause of a disaster, its possible effect on their livelihoods and its connotation had gone through significant alterations by man and not nature. As Carr contended as far back as the early 1930s, it is man who defined disaster, not nature. Not all storms or flash of water is a disaster. If it does not affect or cause severe mortalities and additional grave fatalities, Carr contended that “disaster did not happen” (Carr, 1932). His connection of disaster to an incident linked to the obliteration of humanity and economic development is very much moulded by contemporary resourcefulness.

In the olden days, solar eclipses and comets were understood as calamities because they existed as symbols of heavenly irritation to punish the living for their sins, just like quakes and volcanic explosions (Quarantelli, 2001). Human anguish was not an issue, but it was recognised as excessive indicators directed by a key act of physical disruption that moulded the intuition of a misfortune. Disasters in olden days were credited to or linked to the mystical. They regarded disasters as the making of God, with the insinuation that no one can prevent them from happening (Quarantelli, 2001).

The emergence of science has brought about an imperative change on how humanity theorised disasters. Science and technology have led to a change in people's understanding and interpretation of disasters. While people have progressively perceived disaster as the making of Nature, modern time's observation of disasters suggests that disasters are caused by men and women and are not the making of Nature (Quarantelli, 2001). The outcome of a disaster, today, is more often than not “put the blame on another human being”. State officials, huge industry or inconsiderate operatives are often held accountable for many disasters. Rumour has it that the 2004 Tsunami in Indonesia was not “natural”; it was triggered by nuclear testing (Quarantelli, 2001).

For decades, political ecologists have been arguing that there is nothing like a natural disaster. Instead, they claim that the idea of a “natural” disaster hides

the societal and political developments that make some individuals and populaces more or less susceptible to natural hazards such as earthquakes, hurricanes, etc. (Gaillard et al., 2014; Wisner, et al., 2012). Although this intervention has opened important spaces for re-conceptualising disaster and for reducing disaster risk, the critique of the “natural” can be further extended in useful ways. Rather than rejecting the naturalness of disasters, a few political ecologists have explored how particular understandings of the “natural” cause influence post-disaster responses and policies designed to reduce social vulnerability (Goemans & Ballamingie, 2013). Over the years, there have been debates about how to theorise these relations – from Marxian dialectics to social construction to realist policy approaches and more – but there has been a long-term consensus that the idea of the “natural” in the disaster literature concealed the root causes of disaster risk and, by extension, the tactics necessary for reducing that risk (Goemans & Ballamingie, 2013).

Conclusions

In this paper, we compared the social and natural creation of disaster and the connection between the societal and natural constructions of disaster. It emerged from the review that the main issues that trigger natural disaster are hydrological – mass movement, floods and drought, tropical cyclones, tsunamis and earthquakes while the social causes are industrial accidents, armed conflicts, famine and economic disasters. Of these, natural disasters generate the largest negative effects on humans followed by armed conflicts and economic disasters.

The nexus between natural and human-made disasters accedes to alterations in how these happenings are often witnessed. Unexpected mishap of natural disasters coming with minor or no restraints raise descriptions of a flawless public mistreated by unexpected incidents.

Analyses of natural and man-made disasters in this review treat natural and man-made disasters as independent incidents. Yet, there may be an interrelationship between them. As per the review,

we may conclude that natural disasters cannot be scientifically separated from man-made disasters. Nonetheless, the disaster construction is indispensable because it helps policymakers to determine what policies to make in order to address the impacts of disaster. That is, the type of policy geared towards the alleviation, preparedness or response to natural occurrence depends upon a crowd of resources. It is, also, essential to note that the fight against disaster must be holistic and not individualistic, bearing in mind the interdependence between nature and humans in the process.

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