# RE-DIRECTING CONSERVATION RISKS TO DISASTER RISKS IN CONSERVING WORLD HERITAGE SITES IN MALAYSIA

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## *ABSTRACT*

*Although a host of researches have fished-out attributes collectively defining Conservation Risks (CR's) at World Heritage Sites (WHS's) in Malaysia, these attributes are reported to threatening WHS's thereby posing as potential Disaster Risks (DR's) to the WHS's. These fished-out CR attributes however somewhat fall within the confines of 'hazards' (as conceived by some researches and policy documents on DR's) leaving out the other two variables (vulnerability and capacity) which alongside hazards, collectively define DR's. This study as such, intends to explore the studies on CR in Malaysia with a view to aligning these studies to a DR approach in conserving WHS's in Malaysia. Literature is sourced and reviewed by means of document analysis. Interpreted inferences drawn will be used presenting results. Findings reveal that attributes CR while bearing semblance to attributes of DR however predominantly qualify to being hazards both originating from nature and human induced. It is recommended that adopting the full concept of DR to WHS involves exploring the other two variables (vulnerability and capacity) which alongside DR attributes qualified to being hazards will collectively define DR at WHS's both in Malaysia and beyond.*

***Keywords***: *Conservation Risk; Disaster Risk; Malaysia; World Heritage Sites.*

## 1. INTRODUCTION

Discussions that were topical during the World Heritage Convention held at Kyoto in 2012 were on increasing instances of hazards which culminate to disasters thereby subjecting World Heritage Sites (WHS) to great risks. Several reports on such topical issue were presented and deliberated upon by stakeholders at the Convention. The floods, earthquake and fire that occurred at WHS's in Japan, Thailand, Haiti, India, New Zealand and Nepal among other countries left devastating effects (Jigyasu, 2012; Okamura *et al.*, 2015). The magnitude of such devastations discussed in The Convention were pinned to inefficient and/or neglect of Disaster Risk Management Plans in conservation of the WHS's. Resolutions reached in The Convention was that since WHS's are at risk of being affected by hazards that eventually turn out to become disasters, Disaster Risk Reduction (DRR) strategies should be highly prioritised by state parties to The Convention.

Globally, several efforts have been put forth to combating disasters by means of DRR. The United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2007) captures the 'Strategy for Reducing Risks from Disasters at World Heritage Properties' which was adapted from the Hyogo Framework for Action (HFA, 2005). Although HFA served as a global platform for DRR from 2005 until 2015, the Sendai Framework for DRR (2015-2030) has replaced the HFA. The goal of these global platforms for DRR is the substantial reduction of Disaster Risks (DR) by means of optimising the impact of hazards, vulnerability, capacity and resilience of lives, livelihoods and assets within communities in all countries. To achieve these goals which reduce DR, these global platforms spell out priorities for action to DRR. The first priority for action in SFA (2015) is the 'understanding of DR in all its dimensions'.

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Having ratified the SFA, understanding DR within the field of heritage conservation among other fields by Malaysia will show the country's full commitment to the resolution of the World Heritage Convention of which it is a State Party.

Most often than not, risks at WHS's are taken to be within the context of Conservation Risks (CR's). There exists several researches on CR's to WHS's in Malaysia (Kamal *et al.*, 2007; Lee, 2009; Woon and Mui, 2010; King, 2012; Wan Isma'il, 2013; Mat Radzuan, 2016). Although these studies may differ in their attributes to CR, they however unanimously report the threats and/or negative effects the attributes collectively defining CR's bear to WHS's. Therefore, it may be deduced that the attributes collectively defining CR's to WHS's in Malaysia by extension pose as potential DR's.

While applauding the efforts of the researches that have extensively reported the attributes collectively defining CR's (particularly in Malaysia) at WHS's, they somewhat fall within the confines of 'hazards' as conceived by a host of authors on DR's (Anderson and Woodrow, 1989; Parker, 2000; Chen *et al.*, 2003; Reddy, 2010; UNISDR,2015). However, DR have been claimed to being a collective function of not only hazards but also vulnerability and capacity (Chen *et al.*, 2003; Vatsa, 2004; Venton, 2008;Reddy, 2010). Researches on the attributes of CR's at WHS's (particularly in Malaysia) as such contain a vacuum in the other two attributes of DR (vulnerability and capacity) which together with hazards collectively define DR. This study as such, intends to explore the studies on CR in Malaysia with a view to aligning these studies to a DR approach in conserving WHS's in Malaysia.

## 2. RESEARCH APPROACH

Addressing a problem in any research involves the selection of a suitable research approach (Jayaweera*et al.*, 2015). The aim of this research is to be fulfilled by means of document analysis. Justification for selecting such approach lies in the assertions of Prior (2003) and Owen (2014) that: in most social scientific work, document analysis is placed at the margins of consideration. Authors that have recently used document analysis include: Jayasinghe and Fernando, (2015); Jayaweera *et al.*, (2015).

Document analysis is useful when conducting a study to present ideas whose purpose is to make an issue better understood (Duignan, 2008; MohdAriffin, 2015). This assertion is in line with the goal of this study because this study intends to present findings that may yield better understanding of CR's as they pass for DR's to WHS's. Several documents on CR, DR and other subject matter of this research are sourced and reviewed. Interpretation of the review is by means of drawing inferences to suit the aim of this study.

## 3. CONSERVATION RISKS

Risks in the field if conservation whether to WHS's or to any heritage item are most often than not contextualised to being Conservation Risks (CR's). Although CR is broad in nature, two approaches have been selected to discussing them. While the first approach presents CR in general, the second approach presents CR relative to WHS's in Malaysia. The subsequent sub-sections discusses these approaches.

### *3.1. CONSERVATION RISKS IN GENERAL*

Although researches in CR have been ongoing for decades, attributes collectively defining CR have been presented by different researchers in different contexts. While some authors merely 'identified' attributes collectively defining CR's, other authors went a step further to classify and/or categorise them. The subsequent sub-sections present these contexts.

#### *3.1.1. CONSERVATION RISKS BY IDENTIFIED ATTRIBUTES*

Forsyth (2007) identified attributes of CR's at WHS's to include: conflict in site values; access to disabled; lack of resources; lack of statutory control; lack of management policies; neighbourhood development; traffic; pollution; and skill gap. The work of Orbasli (2008) attributes the following as collectively forming CR's to WHS's: earthquake; high winds; freak storms; flooding; fire; deliberate vandalism; solar radiation; fluctuations in temperature, pollution, climate change, tourism flow, and population density. According to Dolff-Bonekamper (2008), political circumstances and disputes/

conflicts serve as a major source of CR. It is worthy to note that these identified attributes alongside others collectively defining CR's are WHS specific.

### *3.1.2. CLASSIFIED CONSERVATION RISKS*

The work of Waller (1994) classifies CR based on 'frequency of occurrence' into three types that range from 'Type 1' which are 'rare and catastrophic', to Type 2'which are 'sporadic and intermediate' in severity and finally 'Type 3', which are 'constant and gradual'. The relation between these somewhat arbitrarily defined types of CR is shown schematically in Table 1.

Table 1: Conservation Risks by Frequency of Occurrence

| | Constant | Sporadic | Rare |
|---|---|---|---|
| **Catastrophic** | | | …1… |
| **Severe** | | …2… | |
| **Gradual** | …3… | | |

Source: Waller (1994)

Another study classified CR's based on 'agents of deterioration'. Under this category, Michalski (1990) itemised nine CR's. Attempting to improve these, Waller (1994) and Waller (1995) did not only add the tenth CR but further categorised all of them based on the classification of CR's by 'frequency' (against the backdrop). This classification and further categorisation of CR is shown in Table 2.

Table 2: Classification and Categorisation of Conservation Risks

| S/No. | Agent Type | Risk Type by Frequency of Occurrence | Examples |
|---|---|---|---|
| **1** | Physical forces | 1 | Earthquake |
| | | 2 | Mishandling |
| | | 3 | Poor support and vibration |
| **2** | Fire | 1 | Fire |
| **3** | Water | 1 | Flood |
| | | 2 | Roof and plumbing leaks |
| | | 3 | Rising damp |
| **4** | Pests | 2 | Infestation |
| **5** | Contaminants | 3 | Gases and vapours |
| **6** | Criminals | 1 | Theft of elements or parts |
| **7** | Pollutants | 2 | Industrial waste |
| **8** | Light and radiation | 3 | Fading of colour |
| **9** | Relative humidity and temperature | 2 | HVAC malfunction |
| **10** | Custodial neglect | 1 | Abandonment |

Source: Waller (1995)

The work of Reyers and Mansfield (2001) and that of Reyers (2003) categorise CR based on: client/owner risk; consultant related risk; external bodies risk; Health and Safety risk; and risks associated to design constraints. The classification of CR from these studies can be said to be based on the parties involved in conservation work. Research conducted by Silva and Henriques (2015) presented CR based

on "agent of degradation' where they classified the agents into: biological, chemical and mechanical agents. All these classification of CR indicates the efforts put forth by authors to studying CR's. Similarly, the classification also portrays the variability of CR's.

### *3.2. CONSERVATION RISKS TO WORLD HERITAGE SITES IN MALAYSIA*

According to Mohd-Isa *et al.* (2011), Melaka and George Town historical cities were inscribed as WHS's by UNESCO in 2008. Justification for such inscription according to Idid and Ossen (2013) is that both cities possess Outstanding Universal Value (OUV) from the point of view of history, architecture, culture and spiritual practices. Ever since the inscription of these two historic cities as WHS's, there exists considerable studies in the WHS's. Some works include: Idrus *et al.*, 2010; Harun, 2011; Wan Isma'il, 2013; Sa'id *et al.*, 2013; Idid and Ossen, 2013; Hasbollah, 2014; Hasbollah and Baldry, 2014; Mansir and Kasim, 2015. These studies alongside others is a clear manifestation of the growing interest to studying WHS's in Malaysia.

The enactment of National Heritage Act 645 (2005) alongside other legislations and statutory bodies (Federal, State and Local councils) in Melaka and George Town WHS's are statutorily meant to tackle all issues on conservation. This involves combating CR's among other issues. While commending their efforts, researches have not only identified CR's at the WHS's but also claim that CR's threatens WHS's in Malaysia. For instance, Shamsuddin and Sulaiman (2002) and also Said *et al.* (2013) reported worrying trends that threaten the survival of WHS's to include: the disruption of the urban pattern; disappearing townscape; changing activity pattern; visual monotony and obsolescence; and gentrification.

Jenkins and King (2003) attribute CR's at WHS's to derive from relocation of property owners. The work of Kamal *et al.* (2007) and Woon and Mui (2010) identify large-scale urban development, neglect, and the high cost of maintenance to continuously threaten WHS's. Another study by King (2012) attributes CR's to WHS's to: pressures for new high-rise development in the core and buffer zones; modernisation; and traffic. Similarly, the work of Wan Isma'il (2013) also touched on how workshops, factories, noise, smelly and dirty environment, illegal and unsympathetic renovations put WHS's under risk. Furthermore, Said *et al.* (2013) enumerate that WHS's are under intensified threats which include: design of new township development; intensive and uncontrolled development pressures; insufficient legislations and enforcement; changing lifestyles and consumption patterns of city dwellers; expectation of new tourists; public awareness; environmental degradation; non-transparent local initiatives; poor provision of grants and technical advice; insufficient law and enforcement and de-population of inner city.

According to Ahmat *et al.* (2015), CR's in Malaysia could be as a result of: lack of funds; the desire for modernisation; diminishing residents due to increasing rejection of traditional values and identity; economic demand through tourism; attitude of conservation administrators. Although these studies are sourced from different authors, some of the attributes of CR enumerated by the different authors bear semblance. These studies alongside others clearly confirm that CR's not only exists at WHS's in Malaysia but they also threaten WHS's.

## 4. DISASTER RISKS

Over the years, disasters in different parts of the world have left devastating effects to humans, property and communities. Depending on the context of a particular disaster, DR has evolved through numerous definitions by a host of authors. According to Vatsa (2004), DR refers to the chance of injury, damage, or loss. Reddy (2010) equally posits that DR refers to the product of some probability of occurrence of an event and expected loss generating thereof. From these definition, it becomes clear that DR can be said to be built around effects (usually negative) that originating from the occurrence of a probable event.

Being a global platform for DR, the International Strategy for Disaster Reduction (ISDR) has proffered interpretation of DR to being a function of hazard, exposure and vulnerability normally expressed as a probability of loss of life, injury or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time (ISDR, 2002; ISDR, 2005; ISDR, 2007; UNISDR, 2015). Adapting this interpretation, a host of authors (Anderson and Woodrow, 1989; Chen *et al.*, 2003; Vatsa, 2004; Venton, 2008; Reddy, 2010) all claim that DR is a function of three key variables which are:

hazard; vulnerability to that hazard; and capacity to anticipate, resist, cope with and recover from a hazards occurrence.

## 5. RE-DIRECTING CONSERVATION RISKS TO DISASTER RISKS AT WORLD HERITAGE SITES IN MALAYSIA

The subsequent sub-sections will begin by presenting some DR's at WHS's. It must be noted that these reported risks will particularly cover some countries in Asia. Furthermore, comparison will be drawn between CR's to DR's.

### *5.1. REPORTS ON DISASTER RISKS AT WORLD HERITAGE SITES*

Several reports and researches have established the attributes that relate to DR. Natural disaster attributes relating to DR as culled from Cummins (2012); Abungu (2012) and Okamura *et al.* (2015) include: Hurricane; Volcano; Earthquake; and Tsunami. Human induced disaster attributes relating to DR as culled from Abungu (2012); Nishibayashi (2012); Bokova (2012); Jigyasu (2012); Badman, (2012) and Okamura *et al.* (2015) include: pressures for development; conflicts; lack of funds; lack of coordination between stakeholders; lack of appropriate capacity; climate change; rapid urbanization; mass tourism; economic development; lack of management strategies; political and economic considerations; lack of consultation; suspicion of other parties; population pressure; unsympathetic and contradictory developments; and fire.

Reports have shown that some of these afore-presented attributes relating to DR have in the past individually or collectively culminated to disasters in WHS's. For instance, Jigyasu (2012) reported that floods, earthquake and fire among others resulted to devastating disasters affecting WHS at Japan, Thailand, India and New Zealand among other countries. Similarly, the earthquake that struck Nepal caused a great deal of loss to its WHS (Okamura *et al.*, 2015). These reports show that the factors claimed to cause disasters are among both afore-presented natural and human induced attributes relating to DR's.

### *5.2. COMPARING CONSERVATION RISKS TO DISASTER RISKS*

Previous sections in this study presented the attributes relating to DR and also the attributes to CR's. Table 2 depicts some comparison drawn between them on the basis of the CR's authors that identified the DR attributes (listed in Table 3) in their study.

Table 3: Comparing Disaster Risk Attributes to Conservation Risk Attributes

| S/No | Disaster Risk Attributes | Conservation Risks in General | Conservation Risks to World Heritage Sites in Malaysia |
|---|---|---|---|
| **1** | Earthquake | Michalski, 1990; Waller, 1995; Orbasli, 2008 | |
| **2** | Pressures for development | Forsyth, 2007 | |
| **3** | Conflicts | Forsyth, 2007; Dolff-Bonekamper (2008) | |
| **4** | Lack of funds | Forsyth, 2007 | Said *et al.*, 2013; Ahmat*et al.*, 2015 |
| **5** | Lack of appropriate capacity | | Jigyasu, 2012; Said *et al.*, 2013 |
| **6** | Climate change | Orbasli, 2008 | |
| **7** | Rapid urbanization | | Shamsuddin and Sulaiman, 2002;Kamal *et al.*, 2007; Woon and Mui, 2010; King, 2012; Said *et al.*, 2013 |
| **8** | Mass tourism | Orbasli, 2008 | Said *et al.*, 2013; Ahmat*et al.*, 2015 |
| **9** | Economic development | | Shamsuddin and Sulaiman, 2002;Kamal *et al.*, 2007; Woon and Mui, 2010; King, 2012; Said *et al.*, 2013 |

| S/No | Disaster Risk Attributes | Conservation Risks in General | Conservation Risks to World Heritage Sites in Malaysia |
|---|---|---|---|
| **10** | Lack of management strategies | Forsyth, 2007 | Said *et al.*, 2013; Ahmat*et al.*, 2015. |
| **11** | Political and economic considerations | Dolff-Bonekamper (2008) | Kamal *et al.*, 2007;Woon and Mui, 2010; King, 2012 |
| **12** | Lack of consultation | Reyers and Mansfield, 2001; Reyers, 2003 | |
| **13** | Suspicion of other parties | Reyers and Mansfield, 2001; Reyers, 2003 | Jigyasu, 2012 |
| **14** | Population pressure | Orbasli, 2008 | Said *et al.*, 2013 |
| **15** | Unsympathetic and contradictory developments | | Said *et al.*, 2013; Wan Isma'il, 2013 |
| **16** | Fire | Michalski, 1990; Waller, 1995; Orbasli, 2008 | |

Out of all nineteen attributes relating to DR (refer Section 5.1) none of the researches reviewed on CR's report on the following: hurricane; volcano; and tsunami (hence sixteen are captured). Although the DR attributes somewhat compare to the CR attributes identified by the authors (depicted in Table 2), these attributes somewhat fall within the category of 'hazards' as conceived by a host of authors on DR's (Anderson and Woodrow, 1989; Parker, 2000; Chen *et al.*, 2003; Reddy, 2010; UNISDR,2015).

### *5.3. Aligning Conservation Risks at World Heritage Sites in Malaysia to Disaster Risks*

Although the attributes of CR's in WHS's somewhat fall within the confines of 'hazards', DR is reported to not only be a function of hazard but also that of vulnerability and capacity. The migration of CR's to DR's as such involves exploring the other two variables (vulnerability and capacity) which alongside hazards collectively define DR's at WHS's both in Malaysia and beyond. To achieve this, Table 4 showcases the extensive work authors have undertook to classify the three variables collectively defining DR's.

Table 4: Classification of the Variables Collectively Defining Disaster Risk.

| Variables | Variable classification | Authors |
|---|---|---|
| **Hazards** | Origin (Natural and human induced) | Anderson and Woodrow, 1989; Parker, 2000; Chen *et al.*, 2003; Reddy, 2010; UNISDR, 2015. |
| | Magnitude | |
| | Frequency | |
| | Aerial extent | |
| | Duration | |
| | Speed of onset | |
| | Spatial dispersion | |
| | Temporal spacing | |
| **Vulnerability** | Physical/material | Anderson and Woodrow, 1989; Chen *et al.*, 2003; Vatsa, 2004; ADPC, 2006; IFRC, 2007; Venton, 2008; Reddy, 2010. UNISDR, 2015. |
| | Economic | |
| | Social | |
| | Economical | |
| | Institutional | |
| | Educational | |
| | Environmental | |
| | Attitudinal/motivational | |
| **Capacity** | Physical/material | ADPC, 2006; IFRC, 2007; Reddy, 2010; Gaillard, 2010; Eiser *et al.*, 2012; UNISDR, 2015. |
| | Institutional | |
| | Social | |
| | Economic | |
| | Attitudinal/motivational | |

While these classifications may serve as a stepping stone thereby assisting in aligning CR's to DR's, it must be borne in mind that attributes defining the interplay between these three key variables must be defined within the context of DR's at a particular WHS.

## 6. CONCLUSION

The attributes of CR's at WHS's in Malaysia although bearing semblance to attributes of DR do not fall under the attributes identified (amongst other factors) to culminate to disasters at WHS's in Japan, Thailand, India and Nepal amongst other countries in Asia. However, these attributes of CR's at WHS's in Malaysia together with those attributes identified to cause disasters all somewhat fall within the confines of 'hazards'. Similar to the hazards that culminated to disasters in the afore-reported WHS's, attributes of CR's qualified to being 'hazards' may cause potential DR's in conserving WHS's in Malaysia.

Comprehensive coverage of DR's however involves classifying of attributes of CR's qualifying to being hazards based on the classification in Table 3. Furthermore, an integration of these attributes of CR's (which qualify as hazards) with a full exploration of 'vulnerability' and 'capacity' specific to the WHS's in Malaysia will be necessary. Doing such will fall in line with the integrated-approach to studying CR's usually propagated statutorily (ICOMOS, 2010a; ICOMOS, 2010b; ICOMOS, 2011; ICOMOS, 2012). This study although being part of an ongoing Ph.D. will in future explore 'vulnerability' and 'capacity' (based on classifications of Table 3) of the WHS's in Malaysia. Subsequently, a model to assess DR's at WHS's in Malaysia will be proposed.

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