Disasters in History
THE PHILIPPINES IN COMPARATIVE PERSPECTIVE

Organized by
Philippine Studies: Historical and Ethnographic Viewpoints
and the
Department of History
School of Social Sciences, Ateneo de Manila University

In partnership with the
Center for Southeast Asian Studies
Kyoto University

Ricardo and Dr. Rosita Leong Hall
Ateneo de Manila University
Quezon City, Philippines
24–25 October 2014
program
24 October 2014 (Friday)

7:30 – 8:00 am  REGISTRATION

8:00 – 8:15 am  OPENING CEREMONY

National Anthem

Invocation

Welcome Remarks
Filomeno V Aguilar Jr, PhD
Dean, School of Social Sciences
Editor, Philippine Studies: Historical and Ethnographic Viewpoints
Ateneo de Manila University

Introduction of Keynote Speakers
Francis A Gealogo, PhD
Chair, Department of History
Associate Director for Research, Institute of Philippine Culture
School of Social Sciences, Ateneo de Manila University

Emcee and Moderator
David O Lozada III
Assistant Professor, Department of History

8:15 – 9:00 am  Keynote: “Exploring the Limits of the Filipino Past: Toward a More Trans-Environmental History of the Philippines”
Greg Bankoff, Professor of Modern History
University of Hull

9:00 – 9:30 am  Keynote: “Global Warming and Extreme Weather Impacts in the Philippines since the Early Twentieth Century”
Gemma Teresa T Narisma, Associate Professor of Physics
School of Science and Engineering, Loyola Schools
Ateneo de Manila University

9:30 – 9:45 am  Discussion and Open Forum

9:45 – 10:00 am  Morning Refreshments
10:00 am – 12:30 pm  Panel 1:  
**Observatories, Historical Data, and Information Flows**  
*Leong Hall Conference Room 4 (LH 404)*

12:30 – 1:30 pm  Lunch  
*Leong Hall Conference Room 1 (LH 206)*

1:30 – 3:30 pm  
Panel 2A:  
**Natural Hazards and Social Inequalities**  
*Leong Hall Conference Room 4 (LH 404)*

Panel 2B:  
**Literary, Linguistic, and Theological Perspectives**  
*Leong Hall Conference Room 3 (LH 407)*

3:30 – 3:45 pm  Afternoon Refreshments

3:45 – 5:45 pm  Panel 3:  
**Community Responses to Disasters**  
*Leong Hall Conference Room 4 (LH 404)*

6:00 – 8:30 pm  Conference Dinner  
*Manuel V. Pangilinan Center for Student Leadership Roof-deck*

**25 October 2014 (Saturday)**

8:30 – 10:30 am  Panel 4:  
**Metro Manila and Disasters**  
*Leong Hall Conference Room 4 (LH 404)*

10:30 – 10:45 am  Morning Refreshments

10:45 am – 12:45 pm  Panel 5:  
**Disasters, Social Memories, and Cultural Heritage**  
*Leong Hall Conference Room 4 (LH 404)*

12:45 – 1:45 pm  Lunch  
*Leong Hall Conference Room 1 (LH 206)*

1:45 – 4:15 pm  Panel 6:  
**The Science of Weather Patterns and Natural Hazards**

4:15 – 4:30 pm  Afternoon Refreshments

4:30 – 5:00 pm  Toward a Research Agenda  
Keynote speakers and conference participants

*Moderator*  
Neville Jay C Manaos  
Department of History

5:00 – 5:10 pm  Closing Remarks  
Francis A Gealogo, PhD
Day 1: Keynotes
8:15 – 9:00 am  Leong Hall Conference Room 4 (LH 404)

Exploring the Limits of the Filipino Past:
Toward a More Trans-Environmental History of the Philippines
GREG BANKOFF
University of Hull

9:00 – 9:30 am
Global Warming and Extreme Weather Impacts in the Philippines since the Early Twentieth Century
GEMMA TERESA T NARISMA
Ateneo de Manila University

Day 1: Panel 1
10:00 am– 12:30 pm

Observatories, Historical Data, and Information Flows
Leong Hall Conference Room 4 (LH 404)

Moderator: Francis M Navarro

Meteorological Science and Modern Societies: The Observatorio de Manila and the Hongkong Observatory ca. Nineteenth Century
KERBY ALVAREZ
University of the Philippines-Diliman

Earthquakes in Indonesia, 1500–1940: Using Historical Materials in the Reconstruction of Old Data
RYOSUKE KAJITA
Kyoto University

Asian Natural Disasters in Seventeenth- and Eighteenth-Century French and Belgian Newspapers: Knowledge and Information Flow
ISABELLE PARMENTIER
University of Namur

News Reporting on Volcano Eruptions in the Philippines from 1904 to 1919
REINABELLE REYES AND VERNON TOTANES
Ateneo de Manila University
Day 1: Panel 2A (Simultaneous)
1:30 – 3:30 pm

Natural Hazards and Social Inequalities
Leong Hall Conference Room 4 (LH 404)

Moderator: Neville Jay Manaois

Typhoons and Philippine Society and History
JAMES WARREN
Murdoch University

JAKE ROM CADAG
University of the Philippines-Diliman

How Does Disaster Uproot Livelihood of Squatter Communities? A Case Study of an Evacuation Center in Metro Manila, Philippines
ZENTA NISHIO
Kyoto University

Day 1: Panel 2B (Simultaneous)
1:30 – 3:30 pm

Literary, Linguistic, and Theological Perspectives
Leong Hall Conference Room 3 (LH 407)

Moderator: Francis M Navarro

Panahon – a Proto-Philippine Reconstruction of Weather Conditions and Possibilities for Disaster Prehistory
RUCHIE MARK POTOTANON
University of the Philippines-Visayas

Dismantling Disasters, Death, and Survival in Philippine Ecopoetry
RINA GARCIA CHUA
University of Santo Tomas

Reinterpreting Natural Disasters: From Natural Evil to Continuing Creation and Redemption through the Mysterious Story of Taal
EDILBERTO ISIDORE JIMENEZ
Ateneo de Manila University
Day 1: Panel 3
3:45 – 5:45 pm

Community Responses to Disasters
Leong Hall Conference Room 4 (LH 404)

Moderator: Patricia Irene Dacudao

Late–Nineteenth-Century Earthquakes in Spanish Colonial Manila: A Social History
FRANCIS A GEALOGO
Ateneo de Manila University

Sliding Earth, Raging Waters: History, Response, and Recovery During the 1976 Moro Gulf and 2004 Sumatra-Andaman Twin Disasters
MA LUISA DE LEON-BOLINAO
University of the Philippines-Diliman

A History of Rodent and Locust Outbreaks in Central Luzon after the 1990–1991 Geological Disasters
MA FLORINA ORILLOS-JUAN
De La Salle University-Manila

Day 2: Panel 4
8:30 – 10:30 am

Metro Manila and Disasters
Leong Hall Conference Room 4 (LH 404)

Moderator: David Lozada III

The Urban Production of Laguna Lake Floods
KRISTIAN KARLO C SAGUIN
University of the Philippines-Diliman

Postwar Urbanization and Flooding in the Peri-Urban Fringes of Metro Manila
MICHAEL D PANTE (REPRESENTED BY LEO ANGELO NERY)
Ateneo de Manila University

Trash Slides and Transformation: Smokey Mountain and Payatas Years after the Disaster
JOHN LEE CANDELARIA
University of the Philippines-Los Baños
Day 2: Panel 5
10:45 am – 12:45 pm

Disasters, Social Memories, and Cultural Heritage
Leong Hall Conference Room 4 (LH 404)

Moderator: David Lozada III

Memories and Knowledge of Disasters in Japan: A Historical Sketch
BOUMSOUNG KIM
Hiroshima Institute of Technology

Social Memory of Disasters and Its Implications for Risk Reduction Policies:
Comparative Perspective of the Philippines and Indonesia
BENIGNO BALGOS
University of the Philippines and Universite Catholique de Louvain

Historic Preservation and the Future of Earthquake-Damaged Heritage Sites in
Bohol and Cebu
REYNALDO LITA
National Historical Commission of the Philippines

Day 2: Panel 6
1:45 – 4:15 pm

The Science of Weather Patterns and Natural Hazards
Leong Hall Conference Room 4 (LH 404)

Moderator: Neville Jay Manaois

Meteorological Observations in the Philippines and Other Southeast/East Asian
Countries since the Nineteenth Century: History, Data Rescue, and Climate
MASUMI ZAIKI, IKUMI AKASAKA, AND TOGO TSUKAHARA
Seikei University/ Senshu University/ Kobe University

Analyzing Extreme Rainfall Events over Metropolitan Manila Area
LARRY GER ARAGON
Central Luzon State University

Typhoon Landfall in the Philippines During the Past 110 Years Based on the
Recovery of Historical Typhoon Data
HISAYUKI KUBOTA
Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

Assessment of Vulnerability to Extreme Flash Floods of Areas within the Matina
Watershed
GLENN DEPRA
Ateneo de Davao University
abstracts
EXPLORING THE LIMITS OF THE FILIPINO PAST:
TOWARD A MORE TRANS-ENVIRONMENTAL HISTORY OF THE PHILIPPINES

The history of the Philippines has been largely bounded by the nation state that, to a great extent, has defined how its past has been conceived and to whom its peoples are mainly compared. A more transenvironmental history, however, seeks to situate the archipelago and its peoples within the context of the risks that natural hazards pose for human activity. On the one hand, the Philippines lies in the direct path of the regular typhoons that sweep in from the Western North Pacific and, on the other hand, the islands also form part of the volcanic and seismic “ring of fire” that stretches from Indonesia to the south and continues on to Japan in the north. These threats Filipinos share with other peoples and nations that may have little to do with regional geopolitical boundaries and much more to do with violent histories of repeated dislocation, destruction, and death from natural forces. This paper places the Philippines within this wider context of risk and then explores the ways in which Filipinos have had to adapt to natural hazards as a frequent life experience over time.
GLOBAL WARMING AND EXTREME WEATHER IMPACTS IN THE PHILIPPINES SINCE THE EARLY TWENTIETH CENTURY

The global average temperature has increased by about 0.85°C from 1880 to 2012 according to the Intergovernmental Panel on Climate Change (IPCC 2014). The world is projected to be even warmer (by about 2.6°C – 4.8°C) by the end of the twenty-first century at the worst case scenario. This warmer earth leads to changing climate patterns and weather extremes that can have serious impacts on the Philippines. This talk will discuss how climate and extreme weather have changed and how these have affected the Philippines since the early twentieth century. This historical perspective will highlight preexisting patterns of hazards and impacts that emphasize the potential serious implications of future climatic changes due to global warming.
In the nineteenth century scientific institutions flourished in different territories in the Pacific. Pioneering Jesuit missionaries established several observatories in Africa and Asia, some of which became popular and well developed that governments turned them into state agencies. The return of the Jesuits to the Spanish colonies at that time and the regeneration of their overseas missions, like in the Philippines and China, arguably paved the way for waves of enlightenment ideas to be concretely felt in the region. For example, sectors such as tertiary education and commercial agriculture became beneficiaries of modern science. In conjunction with the need to sustain and enhance the economic activities of different states in the Pacific, meteorological observatories were seen as vital in advancing modern and accurate typhoon warning systems for merchant vessels, shipping, and sea travel in major Asian sea routes and trading coastlines. They became the Pacific watchdogs of several colonial and imperial governments, such as in the Philippines and China.

This paper compares the scientific development of and discusses the collaboration and the once-controversial relationship between the Observatorio Meteorológico de Manila and the Hong Kong Observatory of the British Meteorological Service in the nineteenth century. The study will present a landscape of modern knowledge, focusing on the role of scientific institutions in supporting colonial and imperial states in the Pacific region, through new studies on weather and natural hazards. The paper also attempts to illustrate a facet of emerging modern societies in the nineteenth century, by looking at the different levels and stages of “shared” environmental experiences and knowledge politics between the Philippines and China.
EARTHQUAKES IN INDONESIA, 1500–1940: USING HISTORICAL MATERIALS IN THE RECONSTRUCTION OF OLD DATA

Indonesia suffers from earthquakes quite often. Since 2000 the government of Indonesia has passed laws and regulations for earthquake-related disaster management. In this context it is important to analyze both recent and old earthquakes to help in the formulation and refinement of such laws. This research focuses on analyzing data from earthquakes in historical records from the time of the Dutch East Indies, notably *Java, zijne gedaante, zijn plantentooi en inwendige bouw (1500–1850)* and *Natuurkundig Tijdschrift voor Nederlandsch Indie (1850–1940)*. The Dutch records on earthquakes from 1500 to 1920 and numerical values of the Rossi–Forel Intensity Scale from 1921 to 1940 were compared. From 1500 to 1850 sixteen Dutch words referred to earthquake. These words were classified into five groups that denote the intensity of the earthquake: group 1 denotes a catastrophic earthquake; group 2, a weaker one than group 1 but definitely stronger than group 3; group 3, a middle-level earthquake; group 4, a weak earthquake; and group 5 an earthquake that does not deal any damage. In the records of 1921 the Rossi–Forel Intensity Scale was introduced. In 1921 there were 2,402 earthquake reports whereas in 1920 there were only 1,270. These numbers show that the introduction of the Rossi–Forel Intensity Scale had a considerable effect on the seismic observation by the colonial government. The sixteen Dutch expressions for earthquake were compared with the appropriate parameters of the Rossi–Forel Intensity Scale. This analysis makes it possible to compare the old Dutch expressions with the modern intensity scale and to use the information contained in historical records.
This paper aims to paint a picture of the Philippines and their natural disasters as it was forged in Western Europe in the seventeenth and eighteenth centuries. We focus on two main points: 1) identification of the disasters and affected populations, described by the newspapers of the Ancien Regime; and 2) identification of the sources of the journalists and the circulation of ideas and data.

To answer the first issue, an inventory of the information about natural disasters in Southeast Asia and particularly in the Philippines—relayed by the French and Belgian newspapers from the early modern times—will be drawn up. What were the events that kept the attention of journalists? Were they properly identified? What specific aspects were highlighted by these writers? What social and environmental consequences were pointed out in the newspapers?

The second question leads us to wonder about the journalistic work and specifically the sources of information used by the chroniclers. How was this type of information (natural disasters) managed by European newspapers? What was the network of correspondents operating in the Philippines and, more broadly, in Southeast Asia? How did they send the data to Europe?

The base of this research consists essentially of five newspapers of the seventeenth and eighteenth centuries (Le Courrier des gazettes, Le journal des savants, L’Esprit des gazettes, L’Esprit des journaux français et étrangers, Le journal général de l’Europe). Many issues of these newspapers have been preserved, made available online or in repositories of libraries such as the Royal Library of Belgium and the Library of the University of Namur. This research is related to the project “Local Adaptation, Resilience & Interpretation of Socio-Natural Hazards, and Environment Management in the Philippines” (University of Louvain [anthropology], University of Liege [geography], University of Laval [anthropology], University of the Philippines-Diliman [anthropology, history, geography], Ateneo de Manila University [geography], 2014–2019).
The Philippines is home to thirteen active volcanoes and an average of one volcano eruption every two years, with a total of 96 recorded eruptions since 1900. Before the advent of radio in the 1920s, news of the occurrence and aftermath of disasters were disseminated primarily through print media. This paper discusses the coverage of volcano eruptions in the Philippines between 1904 and 1919 in the prominent newspapers of the era, primarily *The Manila Times*. Using spatial and temporal analysis, we study the extent and nature of the reports and the influence of geographic and social factors, if any, on their publication dates and content.

**NEWS REPORTING ON VOLCANO ERUPTIONS IN THE PHILIPPINES FROM 1904 TO 1919**

Reinabelle Reyes

Vernon Totanes
Typhoons have been largely ignored in Philippine historiography until quite recently. Cyclonic storms have helped shape the character—physically, economically, socially and culturally—of particular regions and areas in the Philippines, especially the northern and southern extremities of Luzon, the Visayas, and large stretches of the eastern seaboard of the Philippine island world. But typhoons have not affected all people and all areas in the archipelago equally. Blaikie and his colleagues have argued in *At Risk: Natural Hazards, People’s Vulnerability and Disasters* that patterns of death and damage from such cyclonic storms and the capacity of people to recover and reconstruct their livelihoods reveal differences based upon their history, regional wealth, and sociopolitical organization.

While individual calamities have found a place in some studies of cities, colonies, and nations in Southeast Asia, few scholars have considered cyclonic storms as important agents of change, or explored in detail the cultural impacts and the perception and meaning of the typhoon in daily life.

For the past five centuries, nature’s powerful tropical child—the typhoon—has continued to embark annually upon its unpredictable, unreliable, and unstoppable Pacific journey, heading in the direction of the Philippines.

What recent extreme twenty-first-century typhoons have reaffirmed is the capacity of one of nature’s most fearsome phenomena to lay bare the social inequalities of contemporary Philippine society, especially the extent to which elite and upper-middle-class prosperity has been founded on peasant deprivation and, more recently, capitalist institutions. Despite the centuries separating them, the typhoons mentioned in this paper share remarkable continuities. They have repeatedly destroyed the livelihoods and homes of families and communities and inflicted disproportionate harm on the poor and those lacking a bundle of entitlements. While long-term recovery from typhoons has generally been slow, necessarily affected by the vitality of the economy, nationally and locally, and whether there has been a sustained humanitarian response to the crisis, the social strains on particular Filipino communities and their capacity to recover have been far more difficult in recent times because of the recurrence, scale, and intensity of the cyclonic storms, and continued local and foreign control over resources. This paper provides some comparative examples and explores aspects of the impacts of the typhoon on Philippine society and history over the course of five centuries, with particular reference to population increase and cyclonic storms, economic development and typhoons, and political development and typhoons.
Our interest in studying ethnicity and disaster lies on the empirical observations that ethnic groups are discriminately impacted by disasters. The studies that investigated the influence of ethnicity in the outcomes of disasters are very limited. Yet, they are consistent that among the most impacted are ethnic minorities and indigenous people because of their higher exposure and vulnerabilities to hazards. In order to reduce the risk of disaster of the ethnic groups, one needs to understand the factors of vulnerabilities and their root causes. This subject matter, however, remains unscrutinized in the larger disaster literature.

This study proposes a framework to analyze the vulnerabilities of different ethnic groups. This framework argues that the contemporary vulnerabilities collectively shared by the members of a particular ethnic group are accumulated in space and time. The root causes of these vulnerabilities are global, national, and local in scale situated in different geographical spaces and are in constant construction and deconstruction through time. These root causes include colonial history, global political and economic structures, policies of the state, and interethnic relationship. These root causes are unique to each ethnic group and thus explains the differential vulnerabilities of various ethnic groups.

This study draws on a case study featuring the multiethnic communities surrounding Mount Kanlaon located in the island of Negros, Philippines. The study area is characterized by a great ethnic diversity composed of three major ethnic groups (Ilonggos, Cebuanos, and Bukidnons).
In Metro Manila urban poor households have suffered tremendous damage and loss as a result of typhoons and flooding. Most studies have focused on analyzing the macro-level vulnerability or disaster prevention in the communities. This paper addresses how victims are influenced by and cope with the actual impacts of disasters. Our data are based on fieldwork conducted in an evacuation center in Navotas City, Metro Manila. We found that typhoon victims coped with their lack of lifelines through cooperation, but they faced difficulties in transforming relationships and communities because of a high mobility in evacuation centers. The communities in which they lived were often disbanded. This paper reconsiders what “disaster” means to squatter communities. This disaster-mitigation program was meant to protect people and property, but it could be another disaster for the squatters. Using insights gained at the evacuation center, we found that this program has had a huge influence on squatters and has uprooted communities, their houses and networks, which support their unstable livelihoods. Squatter communities were thus struck by two disasters.
The study of weather patterns and disasters has been a recent trend in history. In the case of the Philippines, however, written historical sources have been around only for several centuries, and much of the past is unwritten or prehistoric. Thus there is a need to look at other perspectives, like the use of oral tradition, archaeological findings, geological maps, and others. This paper is an attempt to use linguistics to discover bits and pieces of the past. To be able to achieve this, the following are to be accomplished: (a) collection of vocabulary items referring to weather conditions from different Philippine languages where subgroups are represented, (b) reconstruction of certain proto-Philippine (PPh) vocabulary items (proto-morphemes) using the comparative method, and (c) reimagination of Philippine prehistory (with focus on weather conditions and disaster) using reconstructed proto-Philippine weather vocabulary.

The PPh is a “hypothetical language” from which most languages in the Philippines have developed and is spoken in the islands probably more than 2000 years ago. Thus this study attempts to go further than what is available through the use of existing documents. Aside from looking back, it is also possible to look forward from the reference point of the PPh to the present. By looking at phonological and semantic innovations and the lexical borrowings, snippets of past contacts, experiences, and divergence among peoples can be possibly gleaned, leading to the ethnolinguistic groups the Philippines has today.
DISMANTLING DISASTERS, DEATH, AND SURVIVAL IN PHILIPPINE ECOPOETRY

This study seeks mainly to explore the role of literature in analyzing survival through the study of death and disaster in poetry. To accomplish this objective, the different forms of disaster in the poetry of Merlie Alunan and Dr. Abercio V. Rotor are analyzed using the framework of “dismantling.” In ecocriticism, dismantling involves surfacing the “scars of history” in poetry to create an ambience of disaster, which will link the dismantling of the feelings (i.e., inside) of the human being with the physical experience (i.e., outside) to clear a space for survival. Here, ecopoetry serves as a catalyst for sustainable thoughts that can turn into calls to action for preventing future disasters. Moreover, ecopoetry is also a “witness to history,” as writing about disasters is acknowledged to be an act of surviving, conquering trauma, and providing a personal perspective to historical survival accounts. Consequently, this paper also demonstrates ecopoetry as a “time capsule” of certain tragedies—one that may be more accurate than memory can ever be.
Many Filipinos and foreign tourists visit Taal not only for its pleasant climate but mainly for its breathtaking view of the freshwater lake and famous volcano. Only a few, however, are aware of its violent past, which, in a strange way, has transformed Taal into the place of beauty that it is today. Such ignorance of the past makes people oblivious to future danger.

This paper uses Taal as a concrete case for discussing the mystery of natural evil, which arose in modern philosophy to question the traditional Christian belief in a benevolent and powerful God. Taal’s violent and frequent eruptions in the past caused tremendous death and destruction. And yet it is precisely such cataclysms that created the unique freshwater ecosystem that is the Taal Lake, the fertile lands on the shores of the lake, and the natural beauty of the area that attracts visitors today.

The paper aims to present ancient to contemporary Christian perspectives to address the mystery of natural evil. It shows that natural disasters like Taal’s volcanic eruptions are the “costs” of evolution. Death and suffering form paradoxically part of the process in the ascent of life, a process in which God is present through God’s creative Spirit and the incarnate Son who redeems the whole cosmos by suffering with it and by raising it to new life. Such an awareness of Taal’s volcanic history, of its rich but fragile ecosystem, and of a Christological perspective on evolution brings about ecological concerns and the recognition of the danger of the continuing residential and commercial exploitation of the area: save Taal, or else face its wrath.

This paper hopes to stimulate interdisciplinary discussions on a relevant issue, particularly within the fields of environmental science, history, geology, biology, philosophy, and theology. It can also become a call for action on the national and local governments, local residents, scholars, schools, the Church, business people, and environmentalists.
The June 1863 and July 1880 earthquakes that hit Manila and the environs were among the most destructive disasters that hit the colony. Aside from the massive destruction of the built-up structures of Intramuros and its arrabales (suburbs), the infrastructure network was also severely compromised as road networks, bridges, and the city wall were destroyed by the massive tremor.

The quakes showed the vulnerability and exposure of a densely populated urban community like Manila to the risks and hazards of natural disasters and calamities that had long characterized the Philippine natural world. With hundreds of people dying as a result of the tragedy, and the cost of rebuilding the city's infrastructure reaching staggering proportions, the lessons of the 1863 and 1880 earthquakes remain largely unappreciated. The development and use of new building materials, the reconstruction efforts after the earthquake, the development of new patterns for settlement for the city, and the awareness among the people of the potential destructive capacity of natural disasters to human lives were among the most obvious consequences of the disaster. The resilience of the people in the face of natural calamities, the adaptation of entire communities in the aftermath of the destruction, and the formulation of new systems of urban planning and construction were among the most pronounced conditions that defined the outcome of the two tremors. Taken in the context of the long history of the other massive earthquakes that hit the Philippines, the 1863 and 1880 earthquakes prove both continuities and discontinuities in the social history of communities coping and adapting to the calamities they faced as a people.
Disasters—both natural and man-made—are seemingly regular occurrences in the Philippines. We have myths to show that our ancestors had knowledge of these natural phenomena and, by the twentieth century, reams of scientific data on earthquakes, floods, volcanic eruptions, and typhoons have become available. And yet even at the present time we seem unable to overcome loss of life and property when these hazards strike. Only recently, we have again suffered from the strength of Supertyphoon Yolanda (international name: Haiyan) with its accompanying storm surge, despite adequate warnings from PAGASA and the accessibility of Project Noah via Internet. What went wrong? Why are we always unprepared for calamities?

This paper revisits two parallel events in Southeast Asian history: the 1976 Moro Gulf and the 2004 Sumatra–Andaman tragedies caused by the double hazard of earthquake and its epiphenomenon tsunami. It aims to dissect our collective response to and recovery from these disasters through a retelling and analysis of their history and of the government’s response and the steps taken during recovery. It concludes by summarizing the strengths and weaknesses of disaster management and addressing improvements and failures made at present to help in better risk reduction and mitigation.
A HISTORY OF RODENT AND LOCUST OUTBREAKS IN CENTRAL LUZON AFTER THE 1990-1991 GEOLOGICAL DISASTERS

Ma. Florina Orillos-Juan

Two geological disasters struck Central Luzon in the 1990s: a 7.7 magnitude earthquake that shook the region on 16 July 1990 and the eruption of Mount Pinatubo starting June 1991. These two catastrophes wrought havoc in the towns and provinces of the region, particularly altering the landscape of the region that has traditionally been dubbed as the “rice bowl” of the Philippines. The onset of monsoon rains and typhoons in the following years worsened the damage done by the earthquake and volcanic eruption.

A year after the occurrence of these disasters, Central Luzon experienced another form of disaster: rodent and locust outbreaks that destroyed the major crops in the region. This paper will explain how these two pests affected the agricultural productivity of the region. The responses of the local folks in fighting these pests will be discussed.
Heavy monsoon rains in August 2012 caused flooding in Metro Manila and Laguna Lake, damaging urban homes and disrupting lake livelihoods. While Metro Manila floods subsided after a few days, Laguna Lake residents continued to live with floods for the next three months. This paper, divided into two sections, employs ethnographic and historical approaches to tie the experiences of hazards by Laguna Lake fish producers with the spatio-temporally uneven urban production of flood risk. Drawing from interviews and observations conducted in 2012, the first section discusses the differential experiences and strategies of Laguna Lake capture fisherfolk and aquaculture producers, who view floods, typhoons, and other hazards in varying ways. State introduction of aquaculture in 1970, part of broader visions of development of the lake as a resource, transformed fisheries by fixing production in space while also creating new livelihood vulnerabilities in times of floods. Through a review of state documents and news articles, the second section of this paper links the 2012 floods with the hydrological infrastructure complex constructed as a response to a series of Metro Manila floods in the 1970s and early 1980s. The system of floodways and hydraulic control structures mitigated urban flooding to some degree, but transferred risks to the lake. Through the parallel focus on strategies of living with lake floods and the urban production of this risk, the paper views Laguna Lake floods as one of the metabolic relations between the city and the lake that produces uneven spaces and natures in the process of urbanization.
This paper looks at the interaction between urbanization and floods in the peri-urban fringes of Metro Manila. It compares the historical experiences of two flood-prone informal settlements, one in Barangay Banaba, San Mateo, Rizal, and the other in Barangay Sangandaan, Quezon City. The two settlements were largely rural in the immediate postwar period, but rapidly urbanized in recent decades. Relying on both documentary and ethnographic sources, this paper charts the urban development of these settlements in relation to the constant threat of floods, housing patterns, and the erosion of rurality. In scholarly literature and in popular discourse, the relationship between flooding and urbanization is often framed in terms of how the latter contributes to the increased frequency and ferocity of floods. This paper begins with such a premise; however, it will also assess this cause-and-effect relationship in reverse: Have floods contributed to the pattern of urbanization in Philippine societies? Focusing on the aspect of housing, it will look at how the constant threat of floods has affected the residents’ decisions regarding their homes: where to build houses and why, what materials to use, what amenities to ensure/forego, when to relocate, and others. The answers to these questions at the household level are also analyzed at the community level to see how a specific natural disaster exerts its influence on the social composition and structure of communities that are vulnerable to both natural disasters and economic inequality.
In April 2013 a mountain of trash fell over in a dumpsite in San Isidro, Rodriguez, Rizal, burying one backhoe operator and three other men working in the dumpsite. Search and rescue were futile after a few days, since garbage generates heat and releases toxic gas that would kill anyone buried in it. This incident brought to memory earlier trash slide tragedies that have caused loss of lives to people earning a living out of scavenging and waste picking—the August 1990 Smokey Mountain trash slide that killed a family of two, and the more horrific July 2000 Payatas Tragedy that buried and killed close to three hundred. These two disasters, despite being a decade apart, gained worldwide attention because they showcased the squalor and poverty of a country where sanitation and garbage disposal problems are but a fitting representation of rampant corruption in the government and the misery of society’s poor.

This study seeks to look at trash slides as disasters that happen frequently in less developed countries but have not been studied as often as other disasters. Specifically, this study aims to compare the two major dumpsites and their built communities before and after the trash slides and the transformation they have undergone as different stakeholders convened to mitigate and prevent such disasters from happening in the future.
This presentation considers the formation and transformation of memories and knowledge of disasters in Japan during the twentieth century. Scientific-knowledge making has, as historians of sciences have shown, been conducted within historical contexts, and therefore, it could be argued that what kinds of knowledge and which scientists are remembered are dependent upon sociocultural contexts. Likewise, not all disasters have been documented and/or remembered to the same extent.

First, in focusing on the topics that were covered in local newspapers published in Iwate Prefecture, located in northeastern Japan, I discuss how regional coverage about tsunamis may have faded. It could be said that there has been a hierarchical structure in which national issues have overwhelmed local varieties. One can find, however, a similar structure of “center” and “periphery” even in the prefecture per se: in comparison to the inland prefectural capital, the Sanriku coast, which has actually been hit by tsunami waves, seems to have been peripherally situated.

Second, concerning memories of scientific knowledge, I focus on the changes in the hierarchical division of labor in knowledge production. While those researches that had been devoted to regional earthquakes and tsunamis were gradually marginalized, a former “hero” who had once been hailed as a “prophet” of earthquakes and his works have virtually been consigned to oblivion.
Communities that are constantly at-risk with natural hazards have developed worldviews vis-à-vis the risks they face. These worldviews influence how people perceive and respond to disasters. Instead of being considered as local capacities, the belief systems and philosophies of communities on disasters are considered as vulnerabilities.

Communities perennially hit by disasters have a wealth of social memory about the calamities they had experienced in the past. The social memory imprinted by the sheer impact of disaster events on life, property, and livelihood has enabled the high-risk communities to learn from these calamities. In turn, the integration of such learning into a community’s way of coping gives rise to what is known as local knowledge.

Over the years, there were attempts to document existing local adaptation practices of communities on disasters. Nevertheless, although there is recognition of the value of local knowledge in disaster risk reduction, there is a dearth of appreciation and integration of such knowledge in disaster policies due to contentions regarding its reliability, replicability, being context-specific, insufficiency for resilience vis-à-vis types and scales of impending risks, and the lack of comprehensive documentation.

This paper draws upon the concepts of vulnerability, marginalization, capacity, and public policy in the face of natural hazards. More pointedly it examines whether and to what extent social memory of disasters facilitates resiliency in relation to the risks communities face. The paper is drawn from ethnographic research undertaken in Mount Merapi in Indonesia and the Angat river basin in the Philippines. On the one hand, Mount Merapi is considered the most active volcano in Indonesia with an eruption span of 3.5 years on the average. On the other hand, the Angat Dam’s release of water aggravates the flooding in the municipalities of Calumpit and Hagonoy, Bulucan. The paper argues that social memory on disasters facilitates community resiliency and is a strong basis for sound, context-specific, and culture-specific disaster risk-reduction policies.
The massive earthquake that ravaged Central Visayas on 15 October 2013 immensely damaged several centuries-old Catholic churches, government buildings, monuments, and ancestral houses, which have formed part of the provinces’ rich cultural heritage.

A multiagency technical team, which quickly responded and made an initial assessment two days after the disaster, would undertake prerestoration work, the first step in rehabilitating the sites and structures, under the directive of the National Historical Commission of the Philippines (NHCP) and the National Museum (NM). These two agencies have been tasked by law, specifically Republic Act No. 10066, to implement the restoration and preservation of the nation’s historical and cultural heritage, using international conservation standards.

The damaged structures unquestionably bear historical and cultural value and in a real sense are the soul of the community. The individual and communal lives of the people have revolved around these centuries-old structures that are inextricable parts of the natural and human landscape. The restoration of the damaged structures shall be conducted after addressing the basic needs of the people. Simultaneously, the government will conduct thorough scientific studies and stakeholders' consultations on whether to restore the heritage churches or build new churches and preserve the ruins. The fundamental goal is to regenerate the people’s cultural identity, create new opportunities, and create livelihood through heritage preservation.

Prior to the actual restoration or rebuilding work, to be done over at least three months in several phases, it was deemed essential to conduct prerestoration work as an immediate disaster response measure to protect the structure from further damage, determine its security, and ensure public safety. The work consists of 3D laser scanning, clearing of unnecessary debris, installation of bracing supports on the ruins, retrieval of historic materials, documentation of retrieved stone blocks, geotechnical survey, materials characterization, and detailed engineering studies. Prerestoration work, with its end goal of producing a master conservation plan is to be completed within at least three months.

The cultural agencies utilized the emergency funds released by the National Commission for Culture and the Arts (NCCA). Various volunteers undertook initial scanning of walls and documentation. Parishioners and nongovernment organizations built temporary churches. The Tourism Infrastructure and Enterprise Zone Authority (TIEZA) and the Department of Public Works and Highways (DPWH) also allotted funds for the rehabilitation efforts.

The NHCP has conceived the idea of creating and attaching a Heritage Conservation Training Institute to a state university in Bohol to offer a ladder program in conservation science to sustain the long-term conservation program the province has to take. Bohol has to do the work and protect heritage through the guidance of the government.
This presentation deals with a historical perspective of disaster. Mainly, we discuss meteorological observations in the Philippines, and other East and Southeast Asian countries since the nineteenth century. We review history to carry out “data rescue” in order to understand the present climate and reconstruct climates of the past. We also aim to contribute knowledge to understand the recent climate change and examine its effects on natural disasters.

First, the history of meteorology in the Philippines is briefly discussed. The Jesuits (although there were Portuguese forerunners) began Philippine meteorology, and were then succeeded by the Americans and the Japanese under their respective occupation periods, and finally by the Filipinos themselves in the era of Philippine independence.

Secondly, imaging and digitization of old, paper-based instrumental meteorological records must be carried out before these records are lost to decay. This kind of activity called “data rescue” is now taking place all over the world. We worked on data rescue not only for the Philippines but for Japan, Indonesia, and the Chinese coastal areas for records dating back to the nineteenth century. The recovered data were converted to modern units and digitized into computer-readable form, and then corrected and homogenized to be comparable with modern data.

Finally, we investigate the characteristics of long-term changes in the seasonal march of rainfall in the Philippines. For the period 1952 to 2008, the seasonal progression patterns with the early onset or early withdrawal of the summer rainy season appeared before the late 1970s. On the other hand, a pattern consisting of the delayed onset and delayed withdrawal of the summer rainy season had been frequent since the 1990s. Further analysis for the first half of the twentieth century is conducted.
The study mainstreams a diversion of analyzing and estimating rainfall magnitudes over different return periods (RPs) from annual maximum rainfall averaging (RRave). One-, two-, and three-day annual maximum RRave datasets to represent Metropolitan Manila Area (MMA) were formulated from individual RR series of three underlying stations (Science Garden, Port Area, and Sangley) from 1974 to 2013. RR designs were integrated using three probability distribution methods (Weibull, Hazen, and Gringorten formulae), with the incorporation of the Method of Moment under Extreme Value I or Gumbel Distribution. Preliminary test through One-way Analysis of Variance (ANOVA) was initially assimilated over respective log-transformed daily rainfall data for auxiliary assessments.

Most of the one-day annual maximum rainfall averages have been brought by typhoons. Over this period, extreme rainfall magnitudes of no higher than 150mm are expected to recur at least once every one to two years, and rainfall no higher than 210mm is expected every two to five years. The two- and three-day extreme rainfall events, which most often coincide with the southwest monsoon prevalence (July to September), denote an average of 90 to 330mm and 100 to 400mm that are expected to recur and even be exceeded in one- to five-year intervals.

Rainfall events that resulted to major flooding incidents similar to those of 1997 and 1999 are expected to recur within the next six years and could even be readily observed and exceeded within the next four years. The most extreme torrential rainfall of 2012—highest among all rainfall events in the last forty years—could persist over the Metropolitan Manila area at least within the next four decades.
Typhoon tracks are available over the western north Pacific after 1945. Historical typhoon tracks were recovered from the reports of Monthly Bulletins of the Philippine Weather Bureau, Central Meteorological Observatory Tokyo Japan, Hong Kong Observatory, and Zi-Ka-Wei (Shanghai) Observatory, that date back to 1884.

Typhoon landfall numbers in the Philippines have interdecadal variability associated with El Niño/Southern Oscillation (ENSO) and Pacific Decadal Oscillation (PDO), but no long-term trend was found during the past 110 years. During the low PDO phase of 1945–1976, the annual typhoon landfall in the Philippines decreased significantly during the El Niño years, and increased during the La Niña years. During the high PDO phase of 1902–1939 and 1977–2005, however, the difference in annual typhoon landfall in the Philippines between different ENSO phases became unclear.

Typhoon Haiyan (Yolanda) hit the Philippines in November 2013, and storm surges that reached about 7 m in height occurred in the Visayas. About 153 typhoons hit the Visayas in the past 110 years. At least one typhoon hits this area in a year. However typhoons with storm surge damage were observed in only three cases—in 1897, 1912, and 2013—in the past 110 years. These three typhoons passed similar tracks by landing at the areas of Guiuan and Hernani in Samar Island, with similar intensities and minimum sea level pressures around 925.2 hPa, 924.0 hPa, and 910.0 hPa, respectively. Storm surges reached about 7 m in height. These facts suggest that there is a possibility of a similarly strong typhoon that will make landfall at least once in 100 years.
The flash flood that hit Matina, Davao City, in the southern Philippines last 28 June 2011 was the most severe the city has experienced. This study was conducted to find out the possible causes of the flood, using the United Nation’s framework on climate change for the assessment of the vulnerability of the affected barangays. Results from the water level gauge and the rainfall data from the Manila Observatory weather station were used to analyze the height of the floodwater and the volume of rain. An open-source mapping software was used for watershed topographic analysis. The University of the Philippines undertook a flood simulation using the rainfall data from Typhoon Ondoy to forecast the effects should the same amount of rainfall pour in Davao City. Geohazard maps from MGB were overlayed to the barangay hazard maps of Davao City to determine the hazard-prone areas.

The results of the study identified the following factors that contributed to the rapid flow of the flood water from the uplands: area of the catchment, rapid land-use change, and landslides in upstream areas. An added risk is the sanitary landfill at the headwaters of the river.

Among the adaptation measures recommended are community preparedness and enhanced capacity of rescue teams. Needed mitigation measures are the setting up of automated weather stations in the upstream, automatic river-water level gauges, strict monitoring of water quality released from the landfill, and relocation of residents from vulnerable sites.