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RESEARCH MONOGRAPH

Channeling Cassandra

Humanitarian Intelligence and Decisionmaking in the Age of Complexity

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Abstract

Improving the analysis and intelligence techniques that inform humanitarian response, programming and policy decision making can save lives, reduce human suffering, and restore the security and the livelihoods of disaster and crisis-affected populations. Yet, the international humanitarian community, as well as the Intelligence Community, has undervalued the application of analytic intelligence techniques in humanitarian response, programming, and policymaking. This monograph examines the complexities and challenges that humanitarian organizations and personnel face when deciding how to respond to, mitigate, or prevent the catastrophic aftereffects of natural disasters and conflict emergencies. It examines decisions at the response, programming, and policy levels, as well as the techniques and technologies used for analysis. It includes key findings and recommendations on how the international humanitarian community can adapt its analytical methods to address increasing complexities and challenges. These findings fall into four categories: adapting analysis to complexity, facilitating decisionmaking, enhancing analytic effectiveness, and understanding technology's benefits and limitations. Adopting more innovative, collaborative, and anticipatory techniques will help analysts account for the inherent complexity and uncertainty surrounding humanitarian issues and promote better understanding of the processes, limitations, and drivers of humanitarian decisions at the response, programming, and policy levels.

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Preface

The title of this Monograph, “Channeling Cassandra,” is taken from a presentation I gave in 2020 that related predictive analysis to three stories from ancient Greek literature: Cassandra from Homer’s *Iliad*, *The Boy Who Cried Wolf* from Aesop’s Fables, and *Oedipus Rex* by Sophocles. My friend and Director of ACAPS,* Lars Peter Nissen, suggested Channeling Casandra as the title for my Monograph as a literary allusion for the role of the humanitarian analyst, who must make judgments about inherently unpredictable, uncertain, and complex events and situations.

I started my humanitarian career at the US Agency for International Development’s Office for Foreign Disaster Assistance (USAID/OFDA) in the late 1980s, working as an information management officer in the Washington, DC, Headquarters but sometimes in the field. I wrote situation reports and case studies and collected data about disasters, death and destruction, mostly on natural disasters, such as the 1988 Armenia earthquake, the late 1980’s Africa-wide drought, and the 1991 Bangladesh cyclone. In the 1990s, however, conflict-driven “complex emergencies,” such as civil wars in Africa, Central America, the South Asian subcontinent, and the former Yugoslavia, became more dominant drivers of displacement, food shortages, and disease outbreaks.

In the mid-1990s, the humanitarian community was slow to adapt and integrate new technologies, such as the internet, electronic mail, and Geographic Information Systems (GIS), into their professional work environment. I became interested in a newly conceived website project, called ReliefWeb, and USAID sponsored me to the United Nations (UN) to be part of the original design and development team in 1996.¹ At that time, very few humanitarian organizations were producing digital documents and maps, the internet was new, and the United States, Canada, and Western Europe were the only regions that had reliable internet access. As internet access expanded and more humanitarian organizations began disseminating and posting documents on their websites, however, ReliefWeb became a central online library for humanitarian information and analysis. By the end of 2023, ReliefWeb contained more than 1 million documents, and it had received 20 million users that year. It is personally gratifying to see that this humanitarian information project is still around and used 28 years later.²

But greater access to an overwhelming overload of humanitarian documents did not improve, nor solve the problems of humanitarian decisionmaking related to field response, operational programming, or strategic policy. In 2002, I joined the US Department of State’s (DOS) newly formed Humanitarian Information

* ACAPS stands for Assessment Capacities Project.

Unit (HIU), part of its Bureau of Intelligence and Research (INR). Its mission was to provide visualized and written analysis products directed to policymakers at DOS, USAID, and the US National Security Council, which were also made available in the public domain to the wider international humanitarian community. In the early years, HIU focused on providing unclassified satellite imagery and situational awareness infographic maps of disaster and crisis-affected geographic areas. As humanitarian crises became more complex, more transnational, and more politicized, however, the need increased for contextual, anticipatory, and judgmental analysis internally provided to US Government decisionmakers.

As a humanitarian affairs analyst, I learned how to write value-added judgmental analysis for policy decisionmakers to answer their questions and assess humanitarian crises and issues. I would also select and provide a filtered collection of classified daily documents, most often about new disasters, worsening situations and humanitarian obstacles. I became known as “Denny Downer.”

In 2022-2023, I took a one-year academic fellowship to National Intelligence University (NIU) to conduct academic research, participate in seminars and exercises, and write papers, including this Monograph, on the undervalued topic of humanitarian intelligence and decisionmaking. I returned to my position as a humanitarian affairs analyst at DOS in October 2023 and was immediately thrown into the highly complex and politicized Gaza humanitarian crisis. I retired from Federal service in May 2024. In this Monograph I have documented the lessons learned, the best practices, and recommendations from more than 30 years of experience in the field of humanitarian information and analysis. I am passing it on to the new generation of humanitarian professionals who face a world of increasing complexity, uncertainty, and unpredictability.

Improving Humanitarian Decisionmaking

Issue

The humanitarian impact of climate-driven disasters, catastrophic pandemics, mass migrations, increased internal displacement, human rights atrocities, and protracted internal and interstate conflicts are among the biggest drivers of political and economic instability around the world. Yet, the Intelligence Community (IC) analytic tradecraft literature has undervalued this field of research and analysis compared to topics such as terrorism, weapons of mass destruction, great power competition, and regime change. The IC and the international humanitarian community have not fully adopted established analytic and collaborative tradecraft techniques and training when addressing humanitarian emergencies, issues, and problems.

Research Question

How can a better understanding of complex humanitarian challenges and the application of analytic intelligence techniques facilitate humanitarian decisionmaking?

Scope

This study focuses on improving the analysis and intelligence techniques that inform humanitarian response, programming, and policy decisionmaking, which can save lives, reduce human suffering, and restore the security and livelihoods of disaster and crisis-affected populations. It uses complexity theory as a conceptual framework to identify and define the key concepts in understanding the inherent problems in taking humanitarian action to address natural disasters, conflict crises, and other emergencies that confront the international humanitarian community. An extensive review of the academic and practitioner literature was conducted in the preparation of this Research Monograph to identify new methods and approaches to tackle these challenges. The study also reflects lessons learned from actual humanitarian and disaster case studies and the author's observations and experiences as a humanitarian affairs analyst and information specialist for US Government and UN agencies.

Purpose

The purpose of this qualitative study was to examine the multiple complex challenges involved in providing humanitarian intelligence used in decisionmaking at all levels of response, programming, and policy.

Relevance to the Intelligence Community

Neither the IC nor the international humanitarian community commonly use the term “humanitarian intelligence.” Humanitarian intelligence is not one of the collection INTs, nor does the IC recognize it as one of the specialized disciplines, such as cyber, environmental, financial, or medical intelligence. Because humanitarian analysis relies predominately on open source data and information, some decisionmakers and intelligence analysts in the US Government do not give it the same stature as other types of intelligence analysis. US intelligence analysts tend to rely on their classified intelligence secondary sources, have minimal contact with the civilian and international humanitarian professional community, and little direct field experience to actual natural disaster or humanitarian crisis situations. To the contrary, humanitarians are typically suspicious of the word intelligence, equating it with nonneutral military or political agendas, nontransparency, and arrogance. These mutual suspicions are usually based on the natural clash between two distinctly different professional cultures. The IC needs to adopt more collaborative, more innovative, and more alternative approaches in providing value-added intelligence to decisionmakers.

Understanding Disaster Response

This Monograph incorporates much of the existing research literature, actual humanitarian disaster case studies, and evaluative lessons-learned documentation, but advocates for new approaches and renewed emphasis on the neglected topic of analytic intelligence tradecraft for humanitarian decisionmaking. Neither the analytic tradecraft nor the humanitarian research literature focuses on the challenges unique to analyzing and responding to natural disasters and conflict emergencies. While there has been increased examination of the humanitarian professional community's application of new technologies, such as GIS, satellite imagery, machine learning, and artificial intelligence (AI) tools, there is a lack of research literature or training in the analytical methods or techniques. So, too, little has been written on the art and science of addressing decisionmakers' actual needs, recognizing the importance of presentation, and reducing uncertainty inherent in humanitarian emergencies and issues.

Much literature has been published on humanitarian data and information management, but relatively little on analysis. Many documents, training courses, and materials teach best practices in managing collected humanitarian data and information but pay little attention to analyzing it, especially on how it is used in decisionmaking. ACAPS³ and the Active Learning Network for Accountability and Performance (ALNAP),⁴ however, have published several works and training modules on humanitarian analytical tradecraft and countering cognitive biases. The Delft University Resilience Lab conducted an evaluation on how humanitarians used data and information during the 2013 Typhoon Haiyan response and pointed out some of the challenges for humanitarian operations.⁵ Case studies of several natural disasters in the early 21st century evaluate the use of data and information for disaster response in the UN/World Bank study, "Data Against Natural Disasters: Establishing Effective Systems for Relief, Recovery, and Reconstruction," but they pay less attention to the use of analysis.⁶

A keystone for improving humanitarian response is understanding complexity. Complexity Theory emerged as a conceptual framework in the late-20th century, moving from a Newtonian mechanistic model, where all observables can be measured and known exactly, to a new paradigm based on concepts derived from Albert Einstein, Niels Bohr, and Werner Heisenberg that acknowledge uncertainty and indeterminacy. The words "complex" and "complexity" are frequently used to describe humanitarian emergencies, the international humanitarian system, and 21st century humanitarian challenges. Independent aid consultant Ben Ramalingam first applied the key concepts of complexity theory to humanitarian issues in his works,

*Exploring the Science of Complexity*⁷ and *Aid on the Edge of Chaos: Rethinking International Cooperation in a Complex World*,⁸ although he mainly focused on the broader topic of development issues. NIU Professor Josh Kerbel has written several articles examining the prevalent linear logic biases that run contrary to a better understanding of complex and unpredictable environments and systems.⁹ Pandemics, climate change, migration, and transnational organized crime are cited as reflections of international complexity in Kerbel's writings and presentations.¹⁰

In his book *Doom: The Politics of Catastrophe*, Niall Ferguson asserts that existing complex bureaucratic systems are failing to adapt and handle the growing complexity and uncertainty of disasters and crises, which could lead to irreversible decline and ultimate doom.¹¹ In 2016, David Etkin included a chapter on disasters and complexity in *Disaster Theory: An Interdisciplinary Approach to Concepts and Causes*; however, his book mainly used case studies from disasters in the United States and Canada and neglected international challenges.¹² All these authors and works apply the concept of Complexity Theory to humanitarian action, but do not specifically address the unique challenges of complexity to humanitarian analysis and decisionmaking.

The term humanitarian intelligence is not accepted by either the humanitarian community or the IC. Indeed, University of Groningen Professor Andrej Zwitter titled his book *Humanitarian Intelligence*, but takes mostly an academic perspective, and humanitarian practitioners do not use the term.¹³ ACAPS has produced several thematic and training publications on the topic of humanitarian analysis and methodology.¹⁴ ACAPS has also conducted training exercises on analytical methods, as does DisasterReady.org, an online learning platform built to prepare humanitarian and development professionals for the critical work they do by providing high-quality, relevant online learning resources at no cost in English, Arabic, French, and Spanish.¹⁵ In contrast to publications on analysis and intelligence techniques, much more has been written on aspects of humanitarian data and information management. A substantial amount of more recent literature also exists that promotes the potential beneficial applications of AI for humanitarian professionals, although it includes only a few case examples and an inadequate discussion of the limitations, caveats, and requirements of the technology.

Very few articles analyze the process of humanitarian decisionmaking, with most focusing on tactical and operational decisions, and fewer on strategic decisions. Very little documentation exists on the processes or sources that high-level strategic decisionmakers rely on to make decisions that have policy and future implications. In *Beyond Assumptions: How Humanitarians Make Operational Decisions*,¹⁶ Campbell and Clarke used interviews, surveys, and an app-based diary method to derive findings from humanitarian decisionmakers in an operational context but less on strategic policymaking. The Digital Humanitarian Network, in association with ACAPS and the UN Office for the Coordination of Humanitarian Affairs (UN OCHA), examined decisionmaking in their *Report from the Workshop on Field-Based Decision Makers' Information Needs in Sudden Onset Disasters*,¹⁷ conducted in September 2012, focused primarily on tactical response decisionmaking. In 2013, Tufts University's Feinstein International Center published *The Use of Evidence in Humanitarian Decision Making*,¹⁸ examining case studies on humanitarian programmatic decisionmaking in the Democratic Republic of the Congo, Ethiopia, and the Philippines. Comes, Van de Walle, and Vybornova also presented a research case study for *Bringing Structure to the Disaster Data*

*Typhoon: An Analysis of Decision Makers Information Needs in Response to Haiyan.*¹⁹ The book *Decision-Making in Humanitarian Operations*²⁰ is a collection of academic articles on the various challenges in the decisionmaking process of humanitarian organizations.

Gaps do exist in the research and analytic tradecraft literature related to the application of analytic intelligence techniques on humanitarian decisionmaking in increasingly complex and challenging environments. While much has been published on the application of technology tools in the humanitarian professional sector, little addresses the role of the analysts who provide, filter, present, clarify, and interpret the information to ensure it supports decisionmaking. This Monograph examines humanitarian decisionmaking from a conceptual framework of complexity theory and documents the lessons learned and best practices from actual humanitarian case studies and the author's more than 30 years of professional experience in the humanitarian sector.

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Research Methodology

Conceptual Framework

Natural disasters and conflict emergencies are intrinsically complex; they are destructive, unpredictable, multidimensional, disorganized, and perplexing. Complexity theory, which emerged in the late-20th century is, therefore, an obvious conceptual framework for analyzing and modeling the actors, conditions, events, system dynamics, and trends associated with humanitarian action. Yet, little has been done in the way of study and application of the key concepts of complexity—such as emergence, nonlinearity, uncertainty, and adaptive systems—to the increasingly multifaceted analysis of the challenges of humanitarian action and decisionmaking. As David Etkin states in his chapter “Disasters and Complexity” (2016):

“There is still much research that needs to be done to explore how complexity theory must be incorporated into disaster management, particularly detailed empirical case studies that relate theory to practice. ... The application of chaos or complexity theory to the study of disasters promises to provide a strong theoretical background to some of the empirical science research describing what sorts of organizations and disaster management styles are effective in large disasters or catastrophes.”²¹

Secondary Research Questions

1. How does complexity theory apply to humanitarian analysis and decisionmaking?
2. What are the different types, processes, actions, and problems of humanitarian decisionmaking?
3. How do information challenges, cognitive biases, and logical fallacies interfere with humanitarian analysis and decisionmaking?
4. What are the advantages and challenges of humanitarian intelligence and technology?

Research Design and Analytic Strategy

This Monograph used qualitative research methods and techniques, such as qualitative content analysis, case studies, and expert consultations and observations to derive lessons learned, best practices, and key findings and recommendations. There is little statistical survey data or quantitative documentation on applying intelligence techniques and methods to the processes of humanitarian decisionmaking at the response, programming, and policy levels. The complex realm of humanitarian action is characterized by uncertainty, paradoxes, and outliers.

Qualitative Content Analysis

An extensive review of podcasts, articles, and other writings on complexity theory/science—especially those that applied the theory to geopolitical issues—revealed relatively few writings on how it relates to the processes of humanitarian decisionmaking. A review of the rather extensive analytic intelligence trade-craft literature delineated how information challenges, cognitive biases, and linear logic fallacies interfere with humanitarian analysis and decisionmaking. This review included work by authors Richards Heuer, Randolph Pherson, Mark Lowenthal, and Thomas Fingar, among others. This analysis also benefited from articles, podcast presentations, and the guidance of my NIU Faculty advisor and chair, Professor Kerbel, who advocates for the adoption of new analytic approaches to addressing increasing complexity. As with humanitarian decisionmaking, scant literature was found that deals with the challenges, problems, and resistance to applying intelligence techniques to humanitarian issues. A greater body of literature exists on the progress made in applying new technologies, such as internet and social media, GIS, satellite and drone imagery, and machine learning (ML), to humanitarian issues.

Case Studies

This research incorporates examples of and case studies on a wide range of humanitarian crises, including the Indian Ocean tsunami (2004), Darfur Sudan (2004-present), Syria (2011-present), Haiti earthquake (2010), Burma ethnic cleansing (2017-present), climate change, Typhoon Haiyan (2013), COVID-19 pandemic (2020-22), Ukraine (2014-present), and Gaza (2023-present). These cases include natural and conflict disasters, subnational and international crises, and short-term and protracted emergencies. They provide examples of the complex challenges in providing information and analysis to be used in decision-making; the use of new technologies to provide data and analysis; and the lack of evidence on the effectiveness of analysis in influencing decisionmaking.

Expert Consultations and Observations

During my career, I worked on several humanitarian crises and natural disasters and created information products, both written and visual, to enhance understanding of an event or situation. Having worked for USAID, UN OCHA, and the DOS/INR, I have had the opportunity to observe and receive feedback from personnel at the response, programming, and policy levels. I have also had access to internal IC user feedback surveys that record US Government personnel's use and evaluation of provided intelligence. I have attended and given presentations at meetings and conferences, including the UN-sponsored 2002 Symposium on Best Practices in Humanitarian Information Exchange, the 2007 follow-up Global Symposium +5 on Information for Humanitarian Action, the 2005 and 2014 International Conferences on Information Systems for Crisis Response and Management, and several UN-sponsored Humanitarian Network and Partnership Week annual conferences. From these consultations and observations, I have collected lessons learned and best practices on how data, information, and analysis are used in the humanitarian community.

The Necessity of Applying Complexity Theory to Humanitarian Intelligence and Decisionmaking

This Monograph found that professional analysts of humanitarian issues need to adopt more innovative, collaborative, and anticipatory techniques, to account for the inherent complexity and uncertainty surrounding humanitarian issues and promote better understanding and decisionmaking. They must also better understand the processes, limitations, and drivers of humanitarian decisions at the response, programming, and policy levels, and should tailor their written products and presentations to address decisionmakers' unique constraints, pressures, unanswered questions, and unarticulated needs. Finally, analysts should use technologies, such as AI, GIS, and imagery, but recognize these applications are tools, not solutions.

Adapt Analysis to Complexity

The international humanitarian community, faced with increasing complexity and uncertainty concerning humanitarian issues, must incorporate humanitarian analysis and intelligence into its response, programming, and policy decisionmaking.

The shift to a more complex humanitarian paradigm requires new conceptual thinking and more collaborative and innovative analytic tradecraft practices, techniques, and products. These include interorganizational brainstorming, crisis game simulations, synthesis techniques, alternative analysis, scenario generation, ML tools, and other practices.

The analytic process must be collaborative and benefit from consideration of different perspectives, but judgments should have consensual endorsement from other organizations or consider alternative analysis. Likewise, analytic products and services should be shareable to the extent possible and not strictly internal or classified when they need not be.

Humanitarian intelligence must anticipate and alert decisionmakers to emerging, potential, or neglected threats, risks, opportunities, and potential surprises. More analysis should address global and transnational issues, such as climate change and pandemics, as well as country-specific humanitarian emergencies.

Humanitarian intelligence must accept the uncertainty and uncontrollability inherent in humanitarian complexity; examine the emergent multiple drivers with a holistic perspective; recognize the existing unknowns; contemplate various scenarios and unexpected conditions that may emerge; and consider opportunities to act.

Facilitate Decisionmaking

Humanitarian intelligence must be “decision-centric”—clearly identifying the question that needs to be answered, the problem that needs to be addressed, and the decision that needs to be made. The analytic process and product should be tailored to these issues. Humanitarian intelligence can be presented as a written product (concise and focused), a deep-dive briefing (persuasive and interactive), a visual infographic (clearly presented with obvious takeaways), or findings from a group simulation and brainstorming exercise (collaborative and challenging).

More emphasis must be placed on sharing, processing, filtering, analyzing, and communicating unique, value-added customized services and products for decisionmaking—rather than on duplicative information products and data collection services that simply add to the information overload.

The key to effective decisionmaking is delivering the right analysis to the right people at the right time. Timing is key. Value-added analysis must be provided to decisionmakers before actions need to be taken.

Products should be targeted to the decisionmaker’s trusted advisers and routine sources of information (filtered reading material, favorite websites and portals, customized mailing lists, and so forth) Providing sourced declassified and unclassified intelligence analysis on neutral and transparent platforms would enable it to be accessed by those beyond the initial audience.

Decisionmakers want professional analysts to anticipate and answer their questions and to make insightful judgments with low, medium, or high confidence, based on the best data and information available. Humanitarian intelligence feeds into the decisionmaker’s processes to bolster their personal experiences and perspectives and organizational policies and procedures.

Enhance Analytic Effectiveness

Given current technology, humanitarian organizations’ greatest need is not more collection or faster dissemination of data and information; rather it is more effective presentation of analysis tailored to enhancing decisionmaking. Analysis must be adapted to meet the unique pressures, unanswered questions, and unarticulated demands of decisionmakers.

Analysts must seek information from the crisis-affected population through local reporting, surveys, and interviews to gain a true understanding of its needs, motivations, and concerns. Analysts must consult with external experts through their writings, podcasts, and meetings to get alternative perspectives.

Intelligence used for decisionmaking is as much an art as it is a science. Presentation is just as important as the content and derivation of the analysis being conveyed to the decisionmaker.

In-person and virtual training in building skills, such as conceptualization, analytic techniques, research methods, and presentations, needs to be provided to humanitarian personnel to enhance learning and effectiveness in facilitating decisionmaking.

Understand the Limitations and Benefits of Technology

Although verifiable data and innovative technology play important roles in analysis, it is also important to recognize the limitations of data-driven technology in analysis and decisionmaking. Disaster or crisis-related data is often incomplete, dynamic, not up-to-date, and not standardized, making it difficult to rely on for time-sensitive decisionmaking. Include timestamps, source citations, and any necessary caveats and disclaimers on products and presentations.

Database visualization tools, such as mapmaking GIS and Microsoft Excel charts and graphs, may contain data gaps. Maps, charts, and graphs based on data that is incomplete, out-of-date, suspect, or of limited value must include caveats and disclaimers associated with the visualization.²² Failing to do so may present faulty visualized analysis to those needing situational awareness used for decisionmaking. Furthermore, even if data is available, visualization products need not be created if they do not have value.

ML applications—such as data and text mining, trend and pattern analytics, automatic language translation and recognition, question and answer (Q&A), request for information (RFI) chatbots, agent-based modeling, and algorithmic predictive models—should be promoted as tools for informed and experienced humanitarian personnel rather than as the solution to increasing complexity and uncertainty. Effective humanitarian action still requires coordination, cooperation, political will, and accountability to achieve its goals.

ML, however, may have a role to play in data-driven procedural decisionmaking, but it does not substitute for intuitive wisdom and collaborative process when making response, programming, or policy decisions that require justification, trust, transparency, and accountability. ML technology brings with it a whole new set of issues concerning the quality of big datasets, the ethics of data privacy, the opacity of algorithmic bias, the separation of human participation and accountability, and the risks of cybersecurity threats.^{23, 24}

INCREASED FREQUENCY, SEVERITY, AND HUMANITARIAN NEEDS OF NATURAL DISASTERS AND CONFLICT EMERGENCIES

The annual numbers of designated natural disasters and people forced to leave their homes because of conflict—both refugees and those internally displaced—have steadily increased in the past several years. The Centre for Research on the Epidemiology of Disasters (CRED) reported 399 natural disasters and hazards in 2023, compared to an annual average of 369 from 2003 to 2022. According to CRED, those 399 natural disasters affected 93 million people, causing 86,473 recorded deaths and \$202.7 billion in estimated economic damage.²⁵ The UN High Commissioner for Refugees (UNHCR) reported that **117 million people** worldwide had been forcibly displaced from their homes at the end of 2023 because of conflict, human rights violations, persecution, violence, and other disruptive events—an increase of more than 8 million people compared to the end of 2022 (108.5 million).²⁶

The rise in the number of designated humanitarian disasters and people in need has increased the need for UN-issued appeals and response plans at a time when donor contributions have decreased.²⁷ For the year 2023, the UN put its disaster-response requirements at \$56.69 billion, a 9 percent increase from the previous year. Donor funding shortfalls, however, have forced UN agencies to reduce the number of targeted beneficiaries for their sponsored programs even though the number of people in need continues to increase. This forces the UN and other humanitarian organizations to offer only the most critical assistance to the most vulnerable people and to cut their operational budgets, personnel, and program presence in crisis-affected countries and regions. Budget austerity in traditional donor governments and regional organizations have reduced their humanitarian and development aid contributions.

Complexity Theory and Humanitarian Analysis

“I can’t think of a time when there’s been both a greater multiplicity and greater complexity of the challenges that we are dealing with.”

– US Secretary of State Antony Blinken, 54th Annual Meeting of the World Economic Forum, Davos, Switzerland, January 2024.²⁸

Humanitarian action is taken to save lives, alleviate suffering, and maintain human dignity during and after natural disasters and man-made crises. Actions are taken to protect civilians and provide food, water, sanitation, shelter, health services, and other assistance to facilitate the affected populations’ return to normal lives and livelihoods.²⁹ Humanitarian action also aims to prevent and mitigate such situations by strengthening preparedness before crises occur.

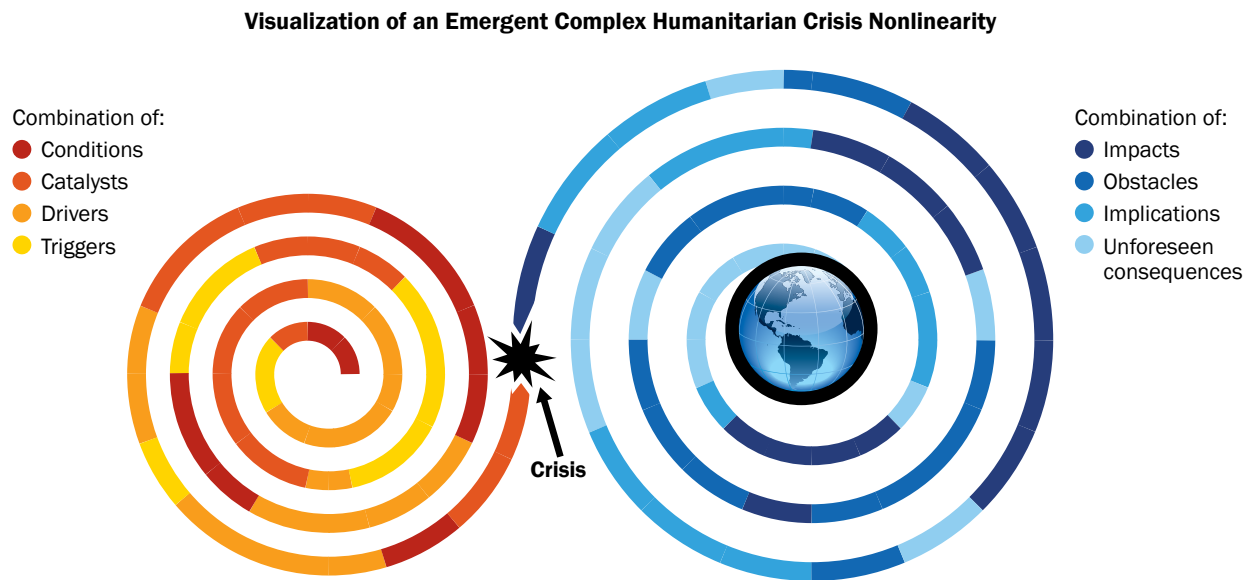
The conceptual framework of complexity theory can help us better understand the inherently complex humanitarian ecosystem. Before examining two case studies, it is important to understand several key concepts of complexity theory as they relate to the humanitarian universe.³⁰

Key Concepts

Emergence is the observation within a system of an effect that lacks a sufficiently clear or apparent cause as normally understood by how the system previously behaved (the legacy state of that system). (see Fig. 1) Disasters and conflict crises arise from a combination of trigger events and exacerbating factors that necessitate humanitarian action. Each unique event or situation produces different effects, cascading impacts, and levels of severity that require multiple types of humanitarian action (food aid, shelter, health and medical assistance, and so forth).

Nonlinearity refers to a situation where no straight-line or direct proportional relationship can be seen between events.³¹ Nonlinear systems and processes do not present the familiar bell-shaped distribution associated with linear systems, where change is gradual and orderly and measurements crowd together near an average value. Natural disasters and political conflicts create humanitarian emergencies that do not follow a linear progression or cyclical timeline. Humanitarian impacts rise and fall, complications emerge and disrupt, participants adapt to changing circumstances, all of which make planning and implementing aid strategies extremely difficult.³²

Figure 1. Emergent Humanitarian Crises



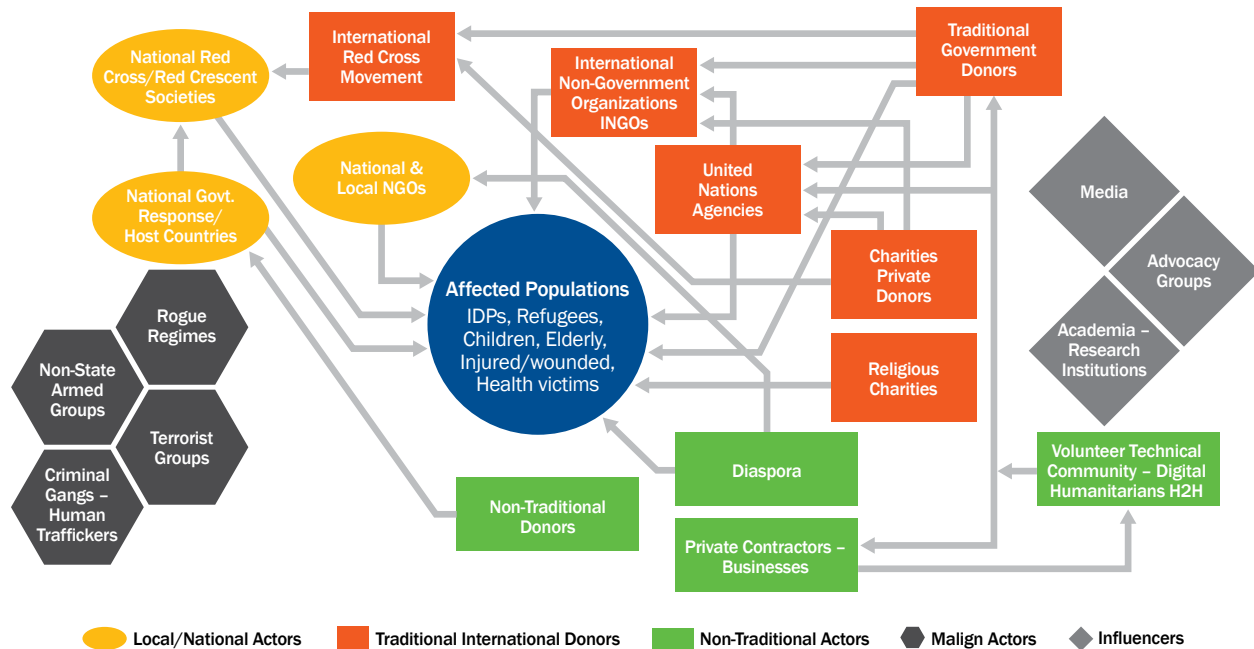
A **Complex Adaptive System** is a complex and dynamic network of interactions in which the behavior of the ensemble may not be predictable from the behavior of the components. The system is adaptive, which means its individual and collective behaviors mutate and self-organize to correspond with a change-initiating micro-event or collection of events. The international humanitarian network is a prime example of a self-organizing complex adaptive system. (See Fig. 2) In *The State of the Humanitarian System*, Obrecht et al. define the humanitarian system as “the network of interconnected institutional and operational entities through which humanitarian assistance is provided when local and national resources are insufficient to meet the needs of the affected populations.”³³ It comprises affected populations, local and national responders, the traditional humanitarian donor community, new emerging actors, rogue antihumanitarian players, and peripheral participants and observers, all having different interconnections, objectives, influence, and capabilities.

Edge of chaos is the transition space and interface between order and disorder that is hypothesized to exist within a wide variety of systems. The edge of chaos is a region of bounded instability that engenders a constant dynamic interplay between order and disorder. The humanitarian ecosystem is characterized by natural disasters, political armed conflicts, and generalized violence imposed on the human geography of societies, governments, cultures, and networks. Humanitarian action makes every effort to mitigate and manage chaotic, catastrophic situations. The ability of actors to adapt to and cope with these disruptive events, conditions, and challenges is what spurs the ecosystem’s evolution and shifts in the global humanitarian paradigm.³⁴

Not equal to the sum of its parts.³⁵ Typically, analysis is based on the concept that a phenomenon is equal to the sum of its parts, but in humanitarian emergencies and action, the effects are disproportional to their component parts. Drivers, triggers, and conditions can generate synergistic effects, which

means that analyzing and addressing each problem individually will not solve the entire issue. The interdependent combination of humanitarian sectoral problems—food, health, shelter, security, and so forth—can enhance, exacerbate, or even counteract each other. Complexity theory seeks to examine the underlying interrelationships and patterns and provide a more holistic understanding of a situation, system, or phenomenon.³⁶

Figure 2. Complex Humanitarian System



Butterfly effect is a concept taken from a metaphor used by meteorologist Edward Lorenz in 1963 that a butterfly flapping its wings in Brazil can lead to a tornado in Texas.³⁷ Although Lorenz admitted that the metaphor was poetic and hyperbolic, the concept suggests that small, seemingly trivial events may trigger something with much larger consequences—in other words, they have nonlinear unforeseen impacts on very complex systems. Some argue that the self-immolation of a Tunisian street vendor in 2011 sparked the series of events that led to the Arab Spring.³⁸ Another example of the butterfly effect would be how the slight increase in annual average global temperatures over consecutive years has altered worldwide climate patterns, which have led to increased humanitarian disasters from floods, storms, droughts, heat waves, and wildfires.³⁹ Climate change-driven food, water, and energy insecurity threatens global political and economic stability. Ironically, climate change is altering the migration patterns and habitats of butterflies.⁴⁰

Uncertainty is another key concept of complexity theory. The unpredictability of disasters and crises, the prevalence of missing and inadequate data, and the arbitrary actions of humanitarian actors are all drivers of uncertainty in the humanitarian ecosystem. Outliers, anomalies, and paradoxes are common. The

Rumsfeldian concept of known and unknown unknowns[†] needs to be incorporated into humanitarian anticipatory processes and actively considered in scenario simulation-based decisionmaking.⁴¹ The international humanitarian community is not prepared for new threats, such as emerging bioengineered pathogens, critical infrastructure cyberattacks, and the increased risk of accidental or intentional use of nuclear weapons.



UNFORESEEN CONSEQUENCES AND PREDICTION FAILURES: LESSONS FROM ANCIENT GREEK LITERATURE

In Homer's *Iliad* (8th century BC), the Trojan prophetess, Cassandra, was condemned to utter true prophecies but never to be believed. After she prophesied the fall of Troy, vengeful Greeks killed her. One of Aesop's fables, "The Boy Who Cried Wolf" (6th century BC), tells the story of a shepherd boy whose repeated false alarms about a wolf attacking the village flock cause the villagers to stop believing him, until one day the wolves attack the flock and eat the sheep and the shepherd boy. In Sophocles play, *Oedipus Rex* (5th century BC), a young Oedipus is told by the Delphi Oracle that he will marry his birth mother and murder his father. He becomes King of Thebes, but later learns that despite knowing the prophecy, he unwittingly did both, and he then gouges his eyes out. In all three cases, the predictions did not end well.

Uncontrollability encompasses the concept that nonlinear emergence, uncertainty, and unpredictability can combine to create an accepted state of uncontrollability, which might fall under chaos theory rather than complexity theory. As the German sociologist Ulrich Bech states, "We are living in a world that is beyond controllability."⁴² Earthquakes, volcanic eruptions, tropical storms, and excessive or insufficient rainfall cannot be prevented; the best that can be done is minimize the damage to human populations, the

[†] During a February 2002 press conference, then-Secretary of Defense Donald Rumsfeld responded to a question about evidence of weapons of mass destruction in Iraq by saying, "There are known knowns, things we know that we know; and there are known unknowns, things that we know we don't know. But there are also unknown unknowns, things we do not know we don't know."

natural environment, and life-sustaining infrastructure. Rarely do diplomatic or military interventions prevent or resolve armed conflicts or acts of group violence that result in humanitarian emergencies. Instead, a conflict will evolve into a protracted (at least five years) humanitarian crisis, a military stalemate, or go through a nonlinear spiral of intensification and de-escalation. Although humanitarian interventions can reduce casualties, suffering, and damage that natural disasters and conflicts cause, they can also lead to unforeseen consequences—positive or negative.

All Humanitarian Emergencies Are Complex; None Are Simple

In the early 1990s, the international humanitarian community recognized the concept of a complex emergency—usually defined as “a humanitarian crisis which occurs in a country, region, or society where there is considerable breakdown of authority resulting from civil conflict or foreign aggression, which requires a multi-agency international response and extensive political and management coordination.”⁴³ The concept was used to distinguish a humanitarian crisis from one resulting from a significant natural hazard or disaster event. Most of the current humanitarian crises requiring international response and assistance, however, emerge from a combination of natural, political, and societal conditions and events; they adversely affect large segments of a country or regional population; and they have political, economic, environmental, and societal ramifications. These humanitarian crises involve many domestic, regional, and international actors, with differing capabilities, resources, interests, and motivations. Today, the term “complex emergency” is not commonly used to define a distinct type of humanitarian crisis.

Case Study 1: A Complex Natural Disaster—Haiti’s 2010 Earthquake

At 4:53 p.m. (local time) on January 12, 2010, a 7.0 magnitude earthquake struck Haiti—the Western Hemisphere’s poorest country—centered not far from its capital and largest city, Port-au-Prince. Estimates of the death toll ranged from 60,000 to 316,000.⁴⁴ Moreover, the destruction in Haiti’s capital left 1.3 million Haitians homeless and 3.7 million in need of emergency assistance. The destruction of its already substandard infrastructure disabled both Haiti’s weak government and the UN and nongovernmental organizations (NGO) substructure that would normally respond to such a catastrophe. Massive inputs of foreign aid, especially from the United States, eased the immediate humanitarian situation but failed to address Haiti’s long-term structural problems. Haiti’s longstanding poverty, deforestation, and environmental pollution only added to the humanitarian disaster.

The damage to the nation’s water and sanitation system led to a cholera outbreak later that year, possibly reintroduced to Haiti by UN peacekeepers deployed from Nepal.⁴⁵ Nearly 800,000 Haitians were infected and more than 9,000 died. Before Haiti recovered from the 2010 earthquake, another struck in 2021. Centered farther from Port-au-Prince, this second disaster killed 2,200 Haitians and affected 350,000

more. Haiti continues to be plagued by hurricanes, floods, landslides, and cholera outbreaks, in addition to the perpetual chaos of nationwide gang violence and political turmoil that led to the assassination of President Jovenel Moïse in 2021. By 2024, Haiti had deteriorated even further into political, economic, and humanitarian chaos.

Case Study 2: Complex Conflict Humanitarian Crisis—Syria Civil War (2011-present)

The ongoing Syrian conflict started as one of the Arab Spring rebellions in 2011, then quickly escalated into a subnational revolt by multiple ethnic populations against President Bashar al-Assad’s regime. Several nonstate armed groups continue to fight against the regime and each other, resulting in an uncalculated number of deaths due to violence, malnutrition, and disease. The fighting involved direct military interventions from foreign countries, with Russia and Iran assisting the Assad regime and the United States and the Republic of Türkiye providing military support in nongovernment-controlled territories. Moreover, until 2019 the anti-Western terrorist group, Islamic State, controlled large swaths of territory in Syria and northern Iraq in its effort to establish a transnational Islamic caliphate.

Since 2011, approximately 6 million Syrian refugees fled the country and as many as 15.3 million Syrians needed humanitarian assistance inside Syria, including 6.8 million internally displaced in 2022. The constant fighting—along with restrictions imposed by the Assad regime and Russia in the UN Security Council—limited humanitarian access and thwarted humanitarian efforts. The conflict included atrocities, such as the Assad regime’s use of chemical weapons against civilians and the Islamic State’s massacres and executions of civilians. Humanitarian and health workers—mostly Syrians, but some expatriates—were killed in aerial bombings, aid convoy ambushes, assassinations, and executions. In February 2023, two nearby mega-disaster earthquakes affected populations in Türkiye and Syria, including conflict-affected populations in northwest Syria and Syrian refugees in southern Türkiye.

Complex Humanitarian Paradigm

It has become cliché to state that the humanitarian ecosystem is complex, except to point out that around 2015, the global humanitarian system began to shift from a *complicated* to a *complex* paradigm that encompasses new actors, new threats, and new trends. (See Table 1.) In his article “It’s True, the World Always Has Been Complex—But Not Like This,” NIU Professor Kerbel states that the geopolitical paradigm has shifted to adapt to new emergent phenomena stemming from greater global interconnectivity and interdependence and exemplified by the world’s growing physical and virtual networks.⁴⁶ As examples, Kerbel contrasts the current state of the world with the complicated, but not as complex, bipolar Cold War paradigm, as well as to the pre-internet information and communications media landscape.

This shift necessitates new methods for addressing change. Under the previous paradigm, the UN, Western NGOs, and donor governments dominated the international humanitarian system. Natural disasters and

conflict crises were most often addressed at a country level rather than through a global, multidimensional approach. Massive increases in transcontinental migration, intensifying climate-change disasters, the global COVID-19 pandemic, more protracted regional conflicts, and escalating criminal violence are now forcing the international donor community to rethink how it deals with these more complex humanitarian challenges.⁴⁷

Table 1: The Humanitarian Paradigm’s Shift Toward Complexity

2001-14 Paradigm (Complicated)	Current Paradigm (Complex)
Refugees from marginalized populations in conflict-affected, low-income countries crossed borders into neighboring countries and were settled into camps.	Refugees and economic migrants travel long distances to desired destinations with help from human smugglers, smartphones, and social media.
Sporadic storms, floods, and droughts were addressed at the country level.	New climate patterns cause more frequent storms, flooding, droughts, heat waves, and wildfires.
Regional/countrywide epidemics, such as Ebola, cholera, malaria, and yellow fever, devastated mostly low-income countries.	The COVID-19 pandemic catches the international humanitarian community off guard and affects both lower-income and higher-income countries.
Armed conflicts were mostly between governments and nonstate secessionist, revolutionary, sectarian, or terrorist groups.	Protracted, unresolved armed conflicts, and nationwide criminal violence drive humanitarian crises and mass migration/displacement.
Intrastate armed conflicts frequently have spillover effects on neighboring countries and may involve coalitions of governments providing direct or indirect military support.	Intrastate and interstate armed conflicts increasingly have global geopolitical and economic effects and entanglements.
UN and Western NGOs and donor governments dominated the international humanitarian system.	New nontraditional donors, local NGOs, and malign actors play greater roles on the humanitarian stage.
Humanitarian principles, best practices, and new technologies are promoted and endorsed.	Increased politicization and pursuit of bilateral transactional and soft-power strategies weaken international coordination mechanisms.

Source: Dennis King, “Adapting to Shifts in the Humanitarian Paradigm,” *Research Short*, NIU, June 7, 2023.

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Humanitarian Decisionmaking

“Truly successful decision making relies on a balance between deliberative and instinctive thinking... The key to good decision making is not knowledge. It is understanding.”

– Malcolm Gladwell, *Blink: The Power of Thinking Without Thinking*, 2005.⁴⁸

Humanitarian crisis decisionmaking is, literally, a matter of life and death. In the immediate aftermath of a crisis, first responders must have the best information available to execute search-and-rescue activities and provide life-saving medical care to disaster victims. Multiple humanitarian aid programs must quickly step in to provide clean water, food, health services, and shelter to disaster survivors and the crisis-affected populations. The purpose of humanitarian action, such as programming, technical support, and policies, is to save lives, but it also involves alleviating human suffering, restoring livelihoods and infrastructure, and safeguarding food, water, and physical security for all vulnerable and crisis-affected populations.

Anticipating and preparing for natural disasters, health epidemics, and conflict crises—which can happen anywhere on the globe—can reduce deaths, damage, and human suffering. Humanitarian decisionmakers frequently face time pressure, especially in the early, dynamic phase of the crisis when rapidly changing conditions on the ground create ever-evolving challenges for responding aid organizations. Uncontrollable factors, such as surprise events, resistant actors, developing obstacles, and changing circumstances, also make humanitarian decisionmaking difficult. Political considerations can overrule objective analysis and adherence to humanitarian best practices, and aid accountability concerns often inhibit innovative approaches, risky interventions, and anticipatory actions.

Categories of Humanitarian Decisionmaking

The three categories of humanitarian decisionmaking are: response, programming, and policy. (See Fig. 3.) Some decisions are unique to their category; others overlap and have implications for the other categories.

Response

At the field level of a disaster site, volunteers within the affected community, first responders deployed by the national and other governments, local NGOs, and, sometimes, donors are the first to rescue and tend

to survivors. They undertake tactical response activities, including search and rescue, emergency medical care, logistics, and damage assessment. These first responders are in direct contact with the affected population, applying first-aid, and providing help to those affected. Their direct contact with the affected population puts them in a unique position to assess the initial set of field and tactical decisionmaking questions that quickly arise during a humanitarian crisis.

Sample Response Decisionmaking Questions

- What and where are the highest priority, unaddressed lifesaving needs and opportunities?
- What are the most effective means to deliver and distribute aid supplies and services to the affected population?
- What are the baseline data indicators for the country or area (for example, population demographics and health, infrastructure) before the emergency—to provide a measure with which to evaluate the change in conditions?
- What are the risks, threats, and constraints that humanitarian workers will face in the crisis-affected area?
- What are the best ways to counteract the logistical bottlenecks, bureaucratic obstacles, and environmental constraints that hinder fast-and-effective delivery of humanitarian supplies, services, and projects?
- What are the best ways to protect critical infrastructure and aid resources at risk during a disaster or conflict?

The data and information products needed to answer these response decisionmaking questions include preliminary estimates and assessments, sample surveys and interviews, baseline data and profiles, maps and GIS imagery of the affected area, risk analyses, and field situation reports.

Figure 3. Overlapping Categories of Humanitarian Decisionmaking



Programming

Headquarters-based or Country Mission directors and program and desk officers are responsible for operational planning, program design, resource allocation, project implementation, coordination, and situational monitoring of new and ongoing humanitarian emergencies. The affected country governments, civil society organizations, local and international NGOs, and UN humanitarian agencies develop project proposals, flash emergency appeals, and consolidated humanitarian response plans, usually

based on humanitarian needs assessments and analysis. These program proposals and appeals are then submitted to national and international donor organizations, who evaluate these programmatic proposals and appeals and make funding decisions based on their strategic policies, available resources, and cost-benefit analysis.⁴⁹

Sample Programming Decisionmaking Questions

- How bad are the latest severity indicators (deaths, damage, displacement, and so forth), and what are the long-term unmet needs and obstacles related to this disaster or crisis that will need to be addressed?
- What donated supplies, services, and projects will best serve the unmet needs and alleviate the suffering of the affected population? What are the components of the program (commodities, personnel, permissions, partners, etc.) and what is the timeframe for this assistance?
- When, where, and why did or will people move to escape the crisis situation?
- How effective are the national government and local civil society groups who are responding to this disaster? Which organizations are best to work with or support?
- What assistance are other donors, international organizations, and NGOs providing to this crisis? What are their capabilities and motivations? How does coordination take place?

The data and information needed to address these programmatic and operational decisionmaking questions include needs assessments, situation reports, project program proposals, emergency and humanitarian appeals, and monitoring and evaluation reports.

Policy

Headquarters-level policymakers are responsible for strategy and policy development, anticipatory preparedness, and geopolitical and diplomatic coordination. This type of analysis and decisionmaking is centered on advancing the relief organizations' policy goals and countering threats, risks, and adverse actors that oppose or interfere with these goals.

Sample Policymaking Decisions

- What advocacy, diplomacy, and coordination actions can address the needs of the crisis-affected populations and counteract any risks, threats, and malign actors during the crisis?
- What policies, programs, and opportunities should be supported to address anticipated needs and strategic interests? When and under what conditions should organizational programs and projects end or be turned over to national and local entities?
- What policy and program opportunities can be taken to avert or mitigate the humanitarian effects of anticipated crises or disasters?
- What new developments (new actors, new technologies, new approaches, and so forth) would impact the humanitarian system?

- What policies and actions would promote local and national resilience, early recovery, and long-term self-sufficiency?
- How do humanitarian action and policy interact with development aid, human rights, and conflict prevention, resolution, and peacekeeping agendas?
- What future threats and challenges will aid organizations need to prepare for?

The data and information needed to address these policy and strategic decisionmaking questions include analytic products, lessons learned, program evaluations, and strategy papers.

Three Different Decisionmaking Processes

In their research study, *Beyond Assumptions: How Humanitarians Make Operational Decisions*, Leah Campbell and Paul Knox Clarke examine three methods for making humanitarian operational decisions: analytical, naturalistic, and procedural.⁵⁰

The analytical approach relies on collected information and synthesized analysis to identify the best possible course of action based on provided options. This approach is used in cases of high uncertainty when assessors have the time and ability to collect evidence for analysis and to collaborate to make decisions. This evidence-based or data-driven approach may not provide a specific recommendation, but rather a selection of options drawn from the current situation or future scenarios.

The naturalistic model relies on intuition—shaped by previous experience and informed judgment—to identify a course of action that will produce positive results. This heuristic thinking tends to be used in situations of high urgency or familiarity. The effectiveness of the decision depends on the experience and knowledge of the decisionmakers and is best when undertaken through group consultative collaboration with different perspectives than by an individual deciding for an organization or community.

The procedural process relies on codified procedures or steps to identify courses of action. It is used when decisions involve familiar, repetitive, and well-structured tasks. Standard operating procedures and guidelines are often used in collaboration with the analytical and naturalistic approaches. In routine situations when the big data input is stable, the options are well defined and there is minimal human risk or expectation of human accountability.

Challenges To Decisionmaking

All individuals, groups, and organizations make decisions during a disaster or humanitarian crisis. For example, surviving individuals and affected communities must decide how and where to find food, shelter, medical treatment, and safety. National governments and local organizations decide how to respond to the emergency needs of the population in their affected country and areas. Finally, international organizations and aid donors decide which programs to support to restore security and livelihoods, improve health and nutrition conditions, and promote long-term political and economic stability.

Response

In the urgent period after a humanitarian disaster or crisis triggering event—such as an earthquake, storm, mass-casualty attack—early decisions to rescue survivors, provide emergency medical care, and protect those at risk can save lives. One of the immediate analytical response questions is: “What and where to prioritize response and assistance?” With limited time to save lives and minimal data and information available, these decisions are usually “naturalistic” and based on assumptions, experience, and urgently expressed needs. Crisis operations centers and task forces may be established to monitor the rapidly changing situation and make collaborative decisions on how to respond.

The internet and social media messaging has revolutionized the ability of those at the site of a disaster to instantaneously report the emergency needs of those affected. The 2010 Haiti earthquake was one of the first humanitarian responses to use mobile phones’ Short Message Service, or text messaging, to collect, synthesize, and disseminate crowdsourced data and participatory crisis-mapping information collected directly from disaster victims.⁵¹ Improperly analyzed, verified, and visualized, however, crowdsourced data can lead to decisions based on selective, misleading, or deceptive misinformation or disinformation. When time and fast reaction are of the essence, the tendency is to use whatever data and information are available, without the time or ability to analyze, compare, and verify its accuracy.

Programming

Once population needs and infrastructural field assessments are conducted, relief organizations can generate humanitarian appeals and project proposals. One of the most important analytical questions is: “What supplies, services, and projects would best serve the unmet needs and alleviate the suffering of the affected populations?” Progress has been made in developing procedures, standards, and guidelines to assist in programmatic decisionmaking. Organizational capacities, funding availability, and target beneficiary data are necessary inputs for the decisionmaking process. In fact, some have proposed that agent-based modeling and AI tools can be used in this process.⁵² Decisions on program development and approval, however, are mostly done as a group or in committee collaboration.

Humanitarian actions depend on coordination, partnerships, and cooperation among humanitarian actors. It is important to know what other actors are providing, doing, and funding to understand the broader, interdependent context and to fill the gaps in unmet needs, avoid duplication, and act as a force multiplier in achieving humanitarian goals. Donor earmarks and conditionality, bureaucratic obstacles, and inadequate consultation with the other international, national, and local actors can constrain the effectiveness of programmatic decisionmaking.

Policy

The policy and strategic formulation process is the most complex and undocumented type of humanitarian decisionmaking. At the strategic level, policymaking is influenced not only by strategic analysis, but also by

the decisionmakers' personal experiences, individual sources of information, and political considerations. One of the strategic analytical questions that need to be addressed is: "What policies, programs, and opportunities should be supported to address future needs and strategic interests?" Government or organizational leaders tend to make these decisions and these decisions are subject to change when the leaders turn over. Every four years or so, the US Government issues a *Joint USAID-State Department Strategic Plan*, which reflects the humanitarian policy priorities and goals of the current administration.^{53, 54}

HOW DO HUMANITARIAN DONORS MAKE DECISIONS?⁵⁵

In 2021, the Center for Global Development produced a policy paper based on surveys of 14 donors and follow-up interviews with 9 of them, who collectively accounted for 62 percent of the reported humanitarian funding in 2020. Among their findings:

- In addition to their internal reporting and analysis, donors rely on many common sources of information to help determine their priorities and approaches to funding humanitarian responses. These common documents include UN Humanitarian Response Plans and Humanitarian Needs Overviews. Most of the respondents were generally satisfied with the sources they consulted, calling them "the best of what we have."
- Some donor respondents noted that these documents were inconsistent and required negotiated and compromised approval among the host government, the UN, and NGO partners. These shortcomings led some donors in the survey to also rely on non-UN sources, such as the algorithmic indicator-derived Severity Index analysis produced by ACAPS.
- Donors consult evaluation reports and third-party monitoring to assess the effectiveness of humanitarian programs. Some donors participate in multilateral agency coordination groups to share information and evaluations to encourage reform, governance, and improved performance of their implementing grantees.

Humanitarian advocacy, diplomacy, and coordination depend on strong, comprehensive, and persuasive strategic analysis. Given the inherent complexity and uncertainty of the current humanitarian paradigm, different circumstances may require different strategies. Throughout the history of humanitarianism, international actors have promoted several conceptual strategies—including hearts and minds, humanitarian interventionism, responsibility to protect, do no harm, resilience, and localization. Analysts and decisionmakers may need to have a menu of strategies. These strategies should follow the imperative to provide impartial humanitarian aid based on need, but they may compromise on principles of independence and neutrality.⁵⁶

Often, senior-level committees or working groups are responsible for making the important programmatic or policy decisions in meetings where they can discuss the pros and cons, consider alternative perspectives, and review the read-ahead background and relevant analysis to make an informed, final decision and take an action.

Analytic Complexity

“We are drowning in information, while starving for knowledge. The world henceforth will be run by synthesizers, people able to put together the right information at the right time, think critically about it, and make important choices wisely.”

– Edward O. Wilson, *Consilience: The Unity of Knowledge*, 1998.⁵⁷

The complexity and uncertainty inherent in the wide range of humanitarian issues make analysis and decisionmaking difficult. Humanitarian analysis is confounded by information overload, the dynamic nature of collected disaster data, the persistent gaps and unknowns found in humanitarian situations, the spread of misinformation and disinformation, and the inherent unpredictability of disasters and crises. Conventional analysis based on linear logic also presents problems in conducting analysis and making decisions during complex humanitarian crises.

Challenges in Conducting Humanitarian Analysis

Information Overload: One of the most common constraints to analysis for humanitarian decisionmaking is the vast amount of critical data, information, and analysis that is available and useful. The emergence of the internet, email, and social media during the past 30 years has generated an information tsunami that overwhelms humanitarian analysis and decisionmaking. Because decisionmakers usually have little time to find the information and analysis they need, they rely on familiar, trusted sources. It is the role of the analyst to filter, extract, synthesize, and present the information needed in a timely manner, to answer the critical questions, and to make it actionable for decisionmaking.

Rapidity of Events: Changes to the humanitarian situation and emergence of new conditions occur at a more accelerated pace—making any situational awareness quickly out of date. Unresolved protracted conflicts and new outbreaks of violence, natural disasters, and climate change-driven events present additional challenges to humanitarian analysis, decisionmaking, and the ability to galvanize political will. The rapidity of events adds to the problems of information overload, community compassion fatigue, and quickly outdated data.

Dynamic Data: Disaster data—death tolls; numbers of people affected, displaced, and in need; and assistance, both needed and provided—changes continuously, especially in the more volatile early phases of a crisis. Estimates from multiple sources often disagree and can rise or fall as situations change and new

information becomes available. These conditions make it essential to track the time when data is used for analyzing and making decisions for affected areas. Because most crisis and disaster data are extrapolations subject to change, they should be considered proxy indicators when conducting analysis for decisionmaking. For example, crisis-related data on excess mortality or deaths attributed to starvation, malnutrition, disease, or lingering injuries are extremely difficult to quantify and use for comparative analysis.

Analysts can manipulate, distort, and exaggerate data to emphasize the judgments they want to convey to decisionmaker and their audience. In their article, “Ten Things We Know About Humanitarian Numbers,” Joel Glassman and Brendan Lawson warn against the humanitarian community’s overreliance and overconfidence in only using collected disaster data for evidence-based decisionmaking. They remind us of caveats to be considered:⁵⁸

- Numbers are not necessarily facts, and are often sample extrapolations, estimates, and proxy indicators of a situation.
- Numbers are unreliable when we need them most.
- Numbers have automatic credibility and are conveyed faster than information or analysis.
- Numbers depend on the credibility of the source and the currency and methods of collection.
- Numbers are time-dependent and may obscure baseline data, temporal trends, and outliers.
- Numbers are based on sample selections that can vary depending on location source.
- Numbers depend on technical applications, such as databases, GIS, and ML applications.
- Numbers depend on definitions, context, analytical interpretation, and accompanying narrative.
- Numbers often cannot express the range of impacts at smaller scales in the same way as testimonies, storytelling, and images.

Data Gaps and Unknowns: Analytic judgments and decisions must be made without complete information about the crisis because of poor access to affected areas or the lack of media and humanitarian coverage. Governments can restrict reporting and block social media access to the citizenry. The motivations, intentions, and secret knowledge of actors, especially combatants and other malign groups, often are not publicly revealed. Valuable data and information needed for analysis and decisionmaking are often not shared because of sensitivity and security concerns, interorganizational competition and mistrust, and lack of established protocols for sharing and transparency.⁵⁹

Misinformation/Disinformation: Disaster data is prone to sensationalistic overestimation or misleading underestimation. Misinformation and disinformation can undermine humanitarian analysis and decisionmaking,⁶⁰ because, once published, it becomes difficult, if not impossible, to verify, clarify, or correct. Misinformation is false or inaccurate information accepted as factual. Disinformation is false information spread to mislead or deceive, such as conspiracy theories, propaganda, hate speech, and fundraising scams.⁶¹ Malign regimes and nonstate actors have waged disinformation campaigns against aid organizations and

personnel. For example, disinformation and conspiracy theories about Ebola, COVID-19, and polio programs in Pakistan hindered health measures and led to attacks against health workers.⁶² Recent advances in the ability of AI tools to fake data and information have made disinformation even more difficult to detect and correct.

Unpredictability: A significant portion of humanitarian analysis involves hazard risk mapping, disaster early warning, political instability and conflict watchlists, and predictive analytics. This reflects a renewed emphasis on preemptive anticipatory action to prevent or mitigate the impact of potential humanitarian threats and risks. Decisionmakers often press analysts to provide predictions about future events or courses of action, but they may ignore the assigned probability, confidence levels, caveats, and disclaimers that accompany the analysis.⁶³

ANIMAL METAPHORS FOR UNANTICIPATED EVENTS

The following animal metaphors are sometimes used to describe surprise humanitarian crises.⁶⁴

- Black Swans are rare unanticipated catastrophes, such as a pandemic.
- Gray Rhinos are probable, but neglected, threats that become high-impact disasters, such as super typhoons.
- Boiling Frogs are slow, long-simmering humanitarian crises that eventually become humanitarian catastrophes.
- Dragon Kings are extreme, first-time cataclysmic events, such as the use of nuclear weapons, a critical transnational cyber shutdown, sea level rise, or an astronomical phenomenon that affects Earth (for example, solar storm; asteroid, meteorite, or comet strike.)⁶⁵



Cognitive Biases and Linear Logic Fallacies

Causation Bias: Linear logic typically looks for causation in phenomena, but most humanitarian crises cannot be traced to a single event with a clear start date. Rather, they arise from a combination of drivers, catalysts, triggers, preexisting conditions, and contributing circumstances. In 2023, the World Economic Forum used the term “polycrisis” to denote a “cluster of related global risks with compounding effects, such that the overall impact exceeds the sum of each part.”⁶⁶ These events can have disproportionate or cascading effects that are unforeseen or difficult to predict and measure.

Analytic Reductionism: Most humanitarian analysis breaks down a crisis or issue into component parts, which tends to deemphasize contextual complexity, interconnectedness, and more holistic decisionmaking. The UN OCHA's Humanitarian Cluster System and the structures of most aid organizations reinforce conventional analysis and traditional coordination and response strategies to large humanitarian crises. But crises generally exceed the sum of their parts. Recent humanitarian challenges, such as transcontinental migration, climate change disasters, pandemics, and cyberthreats, require more holistic analysis that transcends sectoral and national boundaries.

Historical Precedence/Path Dependency: One type of confirmation bias is the tendency to analyze and make decisions about crises based on past similar events or situations.⁶⁷ Although lessons learned and repeatable best practices are important, the complexity and uncertainty inherent in some new humanitarian issues requires moving beyond the past. Crises tend to be unique and not repeatable. Unforeseen events, outliers, and anomalies all add to the unpredictability of each crisis event and situation.

Proportionality/Impact Measurement: Linear analysis tends to evaluate crisis severity and aid effectiveness based on measured indicators and results-based management. The act of measuring, however, contains inherent uncertainty, and the poor quality and unevenness of disaster and humanitarian data make comparative metrics difficult to assess. No single factor or intervention is likely to drive an impact. Moreover, effects tend to be more synergistic than additive. Results take time to emerge, usually longer than the evaluative timeframe. Furthermore, unforeseen circumstances, uncontrollable obstacles, and intentional disruptions are likely to emerge and sabotage or interfere with aid objectives and improvements in the situation.⁶⁸

Probability: An indication of a degree of probability or likelihood of a judgment or scenario is one of the standard methods used to address the inherent uncertainty in complex analysis. It is, however, often just a self-protective disclaimer for both the analyst and the decisionmaker. The outliers, anomalies, and paradoxes common in humanitarian crises make prediction and probability difficult to evaluate.

Rational Action: One common assumption of linear logic is the mirroring bias that population groups and leaders act based on rational self-interest: weighing pros and cons, risks and opportunities, and various options to achieve their objectives and goals.⁶⁹ Faced with extreme pressure and stressors, population groups, political leaders, and humanitarian donors sometimes make decisions and take actions that are counterproductive and result in more harm than good. Humanitarian actors often take actions that are contrary to conventional predictive analysis.⁷⁰

Complexity Thinking

Recognition and understanding of humanitarian complexity require alternative, nonlinear thinking that embraces uncertainty, unpredictability, and uncontrollability. This way of thinking needs to use more collaborative and innovative analytic tradecraft techniques, technology tools, and products. Examples might include interorganizational brainstorming, crisis game simulations, synthesis techniques, alternative analysis, scenario generation, ML tools, and other practices.

HUMANITARIAN FAILURES

Just as complex humanitarian crises emerge from a combination of causes and contributing factors, recognized failures of the international humanitarian system arise from a combination of factors. Often, poor or mistaken analysis leads to ineffective decisionmaking, a failure to galvanize the necessary political will, the inability to facilitate coordination, and inaction to promote humanitarian interventions that mitigate the effects of the humanitarian catastrophe. So far in the 21st century, disasters and conflict crises judged to have been humanitarian failures include the tsunamis in Indonesia and Sri Lanka (2004),^{71, 72} Burma's cyclone (2008),⁷³ Haiti's earthquake (2010),⁷⁴ Pakistan's floods (2010),⁷⁵ and conflict crises in Afghanistan,⁷⁶ Sudan,⁷⁷ Syria,⁷⁸ and Yemen.⁷⁹

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The Advantages and Challenges of Humanitarian Intelligence and Technology

“Data-hungry technologies require large amounts of data to make them effective, but while the quantity of humanitarian data is increasing, its integrity and quality is mixed. ...this information will only be effective if aid agencies and policy makers act on it.”

– Sarah W. Spencer, “Humanitarian AI: The Hype, the Hope and the Future”
Humanitarian Practices Network, Network Paper Number 85, November 2021.⁸⁰

Both civilian humanitarian organizations and the IC resist combining the words humanitarian and intelligence. In his book, *Humanitarian Intelligence: A Practitioner’s Guide to Crisis Analysis and Project Design*, University of Groningen Professor Andrej Zwitter reports, “There is justified resistance on the part of humanitarian actors to associate with intelligence organizations. But there are important skills humanitarian analysts can and should learn from the rich and long experience of traditional intelligence analysis.” Zwitter states, “Humanitarian intelligence aims to reduce uncertainty and risk by providing the basis of informed decisionmaking. ...by using investigative and analytical techniques in the service of rapid and continuous assessment, project and program development, impact evaluation and learning.”⁸¹ Weiss and Hoffman use the term “humanitarian intelligence” when they speak of the need for better information gathering and knowledge on belligerents to provide humanitarian early warning for planning and staff protection purposes.⁸² Dr. John P. Sullivan defines humanitarian intelligence as analyzed information that is vetted and validated to provide the decision maker with an understanding of the situation in order to form a viable course of action to respond to the situation or crisis at hand.⁸³

Intelligence, in addition to its role in informing decisionmaking, can be distinguished from the word “analysis.” Intelligence can be divided into two different approaches: Analysis is the process of collecting and examining components of data and information to extrapolate judgments or hypotheses about a situation, issue, or phenomenon. Synthesis, on the other hand, is a process in which analysts collect information, ideas, arguments from multiple sources to discover patterns, connections and relationships, and gain new knowledge about a particular topic.⁸⁴

HUMANITARIAN INTELLIGENCE: OPEN SOURCE VERSUS CLASSIFIED

There are many academic and research institutions, NGO humanitarian think tanks, specialized investigative journalism organizations, and private research companies that make use of the enormous body of open source intelligence to provide humanitarian and human rights analysis to humanitarian personnel and decisionmakers. Open source reporting and collected information from humanitarian organizations, aid workers at the scene of the crisis, and communications from affected communities are the most common sources used in humanitarian intelligence.

At times, intelligence analysis products derived from technical methods are sanitized, declassified, and then discreetly shared with select members of the humanitarian community, when intelligence, for example, indicates specific threats to the physical security of aid workers and humanitarian targets, or planned disruptions of humanitarian access. Declassified intelligence has also been used to document war crimes and mass atrocities. A few times, intelligence has been released to alert of planned armed conflicts, atrocities, or impending instability in a country. An independent evaluation by Francois Grunewald of France's humanitarian think tank Groupe URD concluded that few in the international humanitarian community thought an attack by Russia on Ukraine was a possibility in early 2022, "despite regular warning from the US Foreign Service and warnings given from 18 February onward by the Institute of the Study of War."⁸⁵ In contrast, it is generally agreed that Hamas's October 2023 attack on Israel caught the humanitarian community and aid organizations in Gaza, as well as Israeli and US intelligence, by surprise.⁸⁶

Types of Humanitarian Intelligence

There are several types of intelligence that are applicable to humanitarian analysis and synthesis used to answer key questions of decisionmakers.⁸⁷ These include:

Descriptive Analysis/Synthesis (What is happening?) examines what is known about humanitarian situations, locations, actors, specific events, etc. Because the humanitarian situation changes day to day, it needs to be monitored to keep decisionmakers informed with up-to-date analysis. It can take the format of a situation summary report or a situational visualization that includes graphics, maps, and chronological timelines.

Explanatory Analysis/Synthesis (Why is it happening?) explores the causes, triggers, and factors contributing to a humanitarian crisis or disaster. It might be presented as a written summary document, or a visualized causal map or network chart.

Evaluative Analysis/Synthesis (What are the positive/negative results?) makes judgments about the value and significance of a situation, response, project, etc. After action reports, lessons learned, best practices, and independent evaluation studies of past humanitarian crises are examples of this type of analysis, which can be useful for current decisionmaking.

Comparative Analysis/Synthesis (How does it compare?) contrasts the similarities, differences, and relative values among two or more humanitarian crises and how they rank against each other.⁸⁸ This type of analysis

can be in the form of a matrix, index, or map that gives a numerical score or color-coded designation to a list of distinct humanitarian crises, based on core variable indicators.

Estimative/Predictive Analysis/Synthesis (What will be the future events and trends?) identifies, describes, and forecasts events, conditions or probable outcomes that might be expected to exist months and even years ahead. It is usually based on past data and behavioral trends and can use predictive analytics, such as data mining, ML, AI algorithms, and agent-based modeling techniques.

Anticipatory Analysis/Synthesis (What are the events and trends to prepare for?) foresees and warns about emerging conditions, trends, threats, and opportunities that may require a rapid shift in posture, priorities, or preparation.⁸⁹ It is more about exploring scenarios and possibilities than predicting the timing of future events. NIU Professor Kerbel stresses the anticipatory nature of foresight, which is more about “imagining how a broad set of conditions (trends, actors, development, behaviors, etc.) might interact and generate emergent outcomes.”⁹⁰

Scientific Methods and Analytic Techniques

The fundamental precept of analysis and intelligence is that they are based on the best available, verifiable evidence, but analytical judgments must be made when data is insufficient, conditions uncontrollable, and future events unknowable. Analysis becomes even more important when it is used to make judgments and decisions in humanitarian crises where the lives and well-being of humans are at stake. The analyst must try to cross-check and verify reported information and collected data to guard against using misinformation and disinformation. The analyst must also recognize and counteract the built-in cognitive biases in the analytic process.⁹¹ These include:

- Selection bias: confirmation bias and anchoring effect;
- Process bias: framing effect, hindsight, and clustering illusion; and
- Social bias: groupthink, mirror imaging, and stereotyping.

Heuer and Pherson and others promoted structured analytic techniques (SATs) to counter these cognitive biases and organize and stimulate thinking about intelligence problems.⁹² Despite promotion and training, in 2016, the Rand Corporation conducted a small sample survey of US Government IC analysts and concluded that only a small minority used SATs in their analysis.⁹³

Collaborative SATs include group brainstorming, roleplaying, and devil’s advocacy, red teaming, and what if? exercises are examples of challenging and contrarian SATs.

Diagnostic SATs aim to make assumptions and competing hypotheses more transparent.

Anticipatory SATs include scenario generation, alternative futures speculation, and simulation gaming.

Visualization SATs include timeline chronologies, concept mapping, and SWOT (strengths, weaknesses, opportunities, and threats) matrices are examples of

Within the humanitarian professional community, humanitarian analysis is not recognized as a function or area of expertise in the same way that situation reporting, GIS mapping, and data management are considered.⁹⁴ Faced with increasing complexity and uncertainty concerning humanitarian issues, humanitarian intelligence needs to be incorporated into the response, programming, and policy decisionmaking processes.

Humanitarian Applications of Technology

Technology has greatly facilitated humanitarian work, but the challenges to analysis and decisionmaking remain. Since the mid-1990s, the information professional staff are no longer just the workers who fix your computer when it is not working. Information professionals comprise information management officers, GIS specialists, data scientists, subject matter analysts, sectoral experts, and web masters and social media producers. Technology challenges not anticipated in the 1990s include information overload, data caveats, misinformation and disinformation, and cybersecurity threats. Furthermore, despite some progress, differences in geographic and demographic access, affordability and availability, technological interconnectivity, and skills training and digital literacy still create inequities between agency headquarters and field staff.

Information and Communication Technology (ICT)

The public debut of the internet in the mid-1990s revolutionized the humanitarian profession, but the traditional international humanitarian community has been slow to adopt and adapt to new technologies. In the 1990s, situation reports, maps, assessments, and other papers were disseminated by facsimile, interoffice routing, and traditional mail, then archived in filing cabinets and libraries. After a few small experimental pilot initiatives, the UN launched its ReliefWeb site in 1996. The project reported 20 million users and 35.3 million user sessions in 2022. ReliefWeb, its partner UN websites Humanitarian Data Exchange and ReliefWeb Response, along with a vast number of other humanitarian websites, greatly enhanced the sharing and availability of the critical data and information used for analysis and decisionmaking. Interactive dashboards are newer software applications designed to gather, collect, and visualize data and information on a platform that users can easily share and interact with to provide customized, personalized situational awareness and understanding.

The exponential availability of low-cost smartphones and personal tablet devices enables more individuals in most countries to access information and communicate. With the proliferation of text messaging, social media sites, and personal blogs, a new group has emerged within the international humanitarian community—usually called the volunteer technical community (VTC) or digital humanitarians.⁹⁵ This technologically savvy group adds much-needed innovation and idealism to the humanitarian ecosystem.⁹⁶ Nevertheless, a study by UN OCHA and the Digital Humanitarian Network found that a significant lack of integration still exists between traditional humanitarian organizations and the digital humanitarian technical community, and better two-way adaptability of local community-collected data is still needed.⁹⁷

Geospatial Analysis Technology

Maps and photography have always been a part of humanitarian information. Maps allow viewers to visualize geography, topography, infrastructure, natural hazards, conflict-affected areas, and who is doing what and where. With the development of commercial server-based GIS software in the 1990s, humanitarian organizations began creating geospatial visualizations that could easily be customized, updated, and presented for analytical purposes. NGOs that specialize in humanitarian applications of GIS technology emerged as effective partners within the VTC and digital humanitarian community.

National and international disaster-response organizations have long used Earth-orbiting meteorological satellites to track cyclonic storms, monitor drought and desertification, map flood- and wildfire-affected areas, and calculate agricultural production. High-resolution aerial and satellite imagery, however, was once the exclusive domain of major power military intelligence entities and was only publicly revealed in rare cases, such as during the 1962 Cuban Missile Crisis and for detecting mass graves in Bosnia in 1995.⁹⁸ With the increased availability of satellite imagery from government and commercial vendors since the early 2000s, humanitarian organizations began using imagery to detect logistical obstacles, find concentrations of displaced persons, plan refugee camps, and for use in other humanitarian applications. Now, unmanned aerial drones are also deployed for rapid humanitarian assessments where it might be difficult to access affected areas on the ground.

CASE STUDY: SATELLITE IMAGERY FOR HUMANITARIAN DIPLOMACY

One of the first examples of satellite imagery being openly used for humanitarian and human rights diplomacy was in Darfur, Sudan, in 2004. DOS and the National Geospatial-Intelligence Agency (NGA) collaborated on high-resolution satellite imagery analysis of armed Arab militia attacks on non-Arab civilians and UN-run refugee camps in the desert regions of western Sudan. The publicly released remote satellite imagery of destroyed village dwellings, backed up with on-the-ground interviews of displaced civilians conducted by a joint DOS, USAID, and NGO survey team, was used to determine that the Sudanese Government was conducting genocide against civilian populations in Darfur.⁹⁹ Soon after, the UN, Human Rights Watch, Amnesty International, the US Holocaust Museum, Harvard University, and the *New York Times* used commercially available satellite imagery analysis to reveal and condemn atrocities in Sudan and other cases. In 2018, DOS and NGA again used satellite imagery analysis and victim interviews to document atrocities against the Rohingya minority by the Burmese military.¹⁰⁰ Perpetrators are increasingly taking steps to conceal physical indications of war crimes and crimes against humanity, knowing that satellite imagery can document and provide evidence.

Artificial Intelligence and Machine Learning

AI refers to the general ability of computers to emulate human thought and perform tasks in real-world environments, while ML refers to the technologies and algorithms that enable systems to identify patterns, make decisions, and improve themselves through experience and data. The *New Humanitarian* prefers to label it “non-human intelligence.”¹⁰¹ Starting around 2017, the development and proliferation of ML tools

added to the technology available to the international humanitarian community, yet these remain in the promotion and piloting phase and have only really been used by groups in the academic, IC, and VTC sectors. Applications, such as data mining, trend and pattern analytics, machine translation and recognition, Q&A and RFI chatbots, and agent-based modeling, can be useful tools for humanitarian personnel. AI technology, however, brings a whole new set of questions about the quality of big datasets, the ethics of data privacy, the opacity of algorithmic bias, the separation of human participation and accountability, and the risks of cybersecurity threats.^{102, 103}

ML technology would be best promoted as a tool for experienced and informed humanitarian analysts, rather than as the answer to the increasing complexity and uncertainty of humanitarian problems. Data-driven ML systems can be beneficial when the datasets are relatively stable, up-to-date, and standardized. For example, AI-automated decisionmaking may be useful when making evidence-based decisions on recommendations of types, quantity, and duration of supplies or services to provide to a specific, stabilized target beneficiary population. Nevertheless, humanitarian personnel should remain responsible for making final decisions when the lives and well-being of crisis-affected populations are involved. Effective humanitarian action still requires coordination, cooperation, political will, flexibility, accountability, and good old intuition and wisdom based on experience to achieve its goals.

Predictive Analytics

Predictive analytics is an AI process of using historical data and statistical models to predict future outcomes. Historical data and statistical analysis can be useful in deriving relative probability of natural disaster events based on geospatial and temporal data on earthquake and seismic zones, storm paths, or drought-prone and flood-risk areas. Although it can be a useful tool for humanitarian anticipatory analysis, it is still a “black box” approach that requires human participation, verification, interpretation, and proper presentation to decisionmakers to be effective.

“CAN A BLACK BOX PREDICT A BLACK SWAN?”

ACAPS Director Nissen, in examining the phenomena of black swan events and black box analytics,¹⁰⁴ argues that predictive and anticipatory analysis depends on justification, trust, transparency, and accountability. Decisionmakers want and need to know the available evidence, the knowledge gaps, and the basis for the analytic judgments made, along with the probability and possible consequences of a scenario. But just as important is the trust that the decisionmaker has in the source of the analysis and the accountability provided in conveying the analyses’ level of probability and confidence. Although a useful tool, predictive analytics programs are still a black box approach that use and algorithmically analyze both historical and recently reported data to generate projections, extrapolations, and probabilities. What it cannot generate, however, is the political will, cooperation, and fortuitous factors that can make decisions effective. Effective predictive and anticipatory analysis still requires human participation, verification, interpretation, and proper presentation to decisionmakers.

Outside the realm of natural disaster events, the track record for predicting coups, rapid state collapses, fast-onset migrations, and mass atrocities has not been very good, even for intelligence entities with access to sophisticated, covert SIGINT, GEOINT, HUMINT, and AI capabilities. The extent that early warning and anticipatory action have prevented or mitigated events that might have become large-scale humanitarian crises is difficult to prove. The challenge remains to get decisionmakers to take human or AI-generated anticipatory intelligence seriously so that it leads to preventive, preparatory, or mitigative actions.

The Art of Humanitarian Intelligence

Analytic intelligence is as much an art as it is a science. Presentation is just as important as the content and derivation of the analysis being conveyed. Each decisionmaker has their own preferred ways of receiving and processing incoming information—whether reading and underlining the written word, absorbing oral briefings, quickly grasping a visualization, or interacting in a collaborative process. Written analysis needs to lead with its bottom-line up front (BLUF) and be concise, compelling, convincing, and well documented. Oral briefings should be engaging, clearly presented, and personalized with first or secondhand accounts, observations, and storytelling to make them more effective and memorable. Standalone visual graphics need to be self-explanatory, eye-catching, and not overwhelming with visualized data. Interactive collaborative analysis should engage the participants, encourage alternative viewpoints, and stimulate out-of-the-box thinking. The unspoken “trick” to intelligence is getting the decisionmaker to select, digest, and consider the analytic judgments, projections, and warnings.

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Conclusions and Implications

“If you venture into an unknowable, uncertain realm armed with your trusty probability to make decisions, you might be in for a potentially catastrophic shock. ... when it is necessary, it is important to at least acknowledge the unpartable mists of uncertainty and incorporate an acceptance of chaotic dynamics into decision-making.”

– Brian Klaas, *Fluke: Chance, Chaos, and Why Everything We Do Matters*.¹⁰⁵

Conclusions

Complexity and Uncertainty Are Increasing

The humanitarian ecosystem is becoming more complex and more uncertain as the international humanitarian system becomes more interconnected and the players—who can play traditional, nontraditional, and malign roles—grow more numerous. Climate disasters are occurring in unexpected locations. 2023 alone saw tropical storm-induced flooding in Libya; wildfires in Hawaii, Canada, and Greece; floods in Niger; drought in the horse latitudes[‡] of South America; and heat waves across central Europe. Most unresolved armed conflicts have been ongoing for more than 10 years, and they have displaced large percentages and multiple generations of the affected populations, many of whom are unlikely to ever return to their countries of origin.¹⁰⁶ In addition to armed conflict, pervasive criminal gang violence, persecution, environmental stresses on livelihoods, and other socioeconomic factors are driving record numbers of refugees and migrants from their countries of origin. New viruses, such as COVID-19, have escaped contained geographic regions and killed millions of people across the globe.

Technology Has Benefits and Limitations

Technology has both helped and hurt the international humanitarian community. The internet, social media, GIS, satellite and drone imagery, ML tools, online training, and virtual meeting platforms have transformed the humanitarian professional community¹⁰⁷ by facilitating the collection, processing and sharing of data and information; improving collaboration and coordination; and empowering affected populations.

[‡] Horse latitudes, also known as subtropical ridges or highs, fall about 30 degrees north and south of the equator and are generally characterized by sunny skies, calm winds, and little precipitation.

Crisis-affected communities and individuals have much greater capability to receive and provide information via personal cellphones and other devices. Technology has also brought massive information overload and confusion, however, abetted the rampant spread of misinformation and disinformation, undermined cybersecurity, and encouraged an overreliance on electronic infrastructure.¹⁰⁸ Although technology has improved work effectiveness, it has not solved the problems of poor decisionmaking, insufficient political will and anticipatory action, and inadequate crisis preparedness and response.

Humanitarian Analytic Intelligence Is Undervalued

Little discussion of humanitarian analysis for decisionmaking occurs in the body of analytic tradecraft or humanitarian research literature. In most humanitarian response organizations, the role of “analyst” is a rarely recognized position or function.¹⁰⁹ Some humanitarian organizations provide instruction in technical skills, such as assessment, monitoring and evaluation, and security risk management, but fail to offer courses on the art and science of humanitarian analysis. ACAPS,¹¹⁰ the Anticipation Hub,¹¹¹ and others, however, have established networks to foster interorganizational collaborative analysis and stimulate knowledge co-creation and innovation on emerging topics in anticipatory action.

Implications

Humanitarian Crises Are Both Drivers and Outcomes of Political and Economic Instability

According to the 2023 Fund for Peace Fragile States Index, the 30 countries with the highest fragility alert rankings are experiencing armed conflict, are characterized by rampant criminal violence, or are recovering from recent natural disasters or epidemics.¹¹² Public perception that a government is responding poorly to humanitarian crises can be a tipping point for fragile states. Because climate change worsens food, water, and energy insecurity, it helps drive internal and transnational conflict and displacement—stressing populations and increasing competition for scarce resources. Political control is under dispute in an increasing number of geographic areas, with many escalating to armed conflicts that have limited external humanitarian access.¹¹³ Intrastate and interstate armed conflicts are increasingly causing global geopolitical and economic effects and entanglements. Record numbers of citizens are permanently leaving their countries of origin, changing host countries’ political and economic dynamics with both good and bad effects.¹¹⁴

The Traditional International Humanitarian Community Has Not Adapted

The humanitarian ecosystem has not adapted to these new threats, challenges, and actors. Some actors—terrorist and paramilitary groups, criminal and human smuggling gangs, and even some governments—intentionally thwart humanitarian access or attack humanitarian aid organizations. UN Security Council

permanent members have blocked or vetoed efforts to condemn human rights violations and approve humanitarian initiatives such as cross-border humanitarian aid deliveries. Faced with emerging global threats, such as climate change and pandemics, many governments are rejecting multilateral coordination approaches in favor of pursuing purely political, self-interest “soft power” humanitarian strategies. As Western-based aid organizations have proliferated and evolved into complex bureaucracies, national governments and local NGOs have become more independent and sometimes resist coordination and donors’ attempts to influence their policies and actions. The annual number of people worldwide in need of humanitarian assistance, and the financial requirements of traditional humanitarian organizations to meet those needs, continues to increase over the years, and donor funding has not kept up with these financial humanitarian needs. This has led many to proclaim the international humanitarian system is both “broke and broken.”

A Disconnect Exists Between Analysis and Humanitarian Decisionmaking

As humanitarian issues become more complex and more uncertain, decisionmakers at the tactical, operational, and strategic levels need the best analysis available to make informed decisions. Few documents, however, exist on how humanitarian organizations use data, information, and analysis to make tactical, programmatic, or strategic decisions, diminishing accountability and learning potential.¹¹⁵ Instead, decisionmakers rely on their favorite media and think tanks, advisers and associates they respect, and their own “naturalistic” judgments based on their experience and intuition.^{116, 117} Rather than simply adding to the overload, customized analysis needs to be value-added, answer specific questions, and provide unique context to the decisionmaking process. Analytic intelligence benefits from collaboration and sharing of different perspectives including those from affected communities and outside experts. Analysts need to understand the needs, priorities, and preferences of the decisionmakers and the audiences they serve.

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