

Aphorme: An Intralingual Translation Tool for Emergency Management and Disaster Response

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ABSTRACT

While *multilingual* translation needs (from one or more language(s) to one or more others) in disaster events are a “perennial issue” among responders in crisis-affected communities (Crowley & Chan, 2011) and calls are being made to consider the access to (and *translation* of) information during crisis a human right (Greenwood et al., 2017), the literature that deals with *intralingual* translation in disaster is limited in places where it should thrive, such as crisis communication, translation studies, and rhetoric. Intralingual translation is of increasing relevance in disaster not only because of potential variability in literacy levels among those affected (O'Brien, 2020) but because responding to/planning for disaster requires an understanding of the ‘operational’ terms used (but not always *shared*) by other responding agencies in the field. This paper calls for increased attention to intralingual translation needs in disaster and introduces a translation technology (“Aphorme”) designed to mitigate those needs.

Keywords

Crisis communication, intralingual translation, humanitarian technologies, disaster response tools, linguistic vulnerability

INTRODUCTION

In times of disaster and crisis, where the threat to lives and livelihoods are far more ‘palpable’ or imminent, the ability to deliver a message in a timely, trusted, and coherent manner can be a matter of life or death. This is especially the case in places characterized by multilingual, multicultural, transborder, transient, tourist, displaced, or vulnerable populations whenever disaster information or crisis communications (i.e., signals and warnings, evacuation signs, social media posts, insurance claims, damage, situation reports, etc.) are not written or transmitted in a language native to or spoken by those affected and/or those responding. For example, “translations into 18 languages were needed after the Grenfell Tower fire” (O'Brien & Federici, 2020, p. 129) and a FEMA fact sheet (2017) released after the landfall of Hurricane Harvey (in Houston, Texas; August, 2017) shows that translators were available for those seeking federal disaster assistance in the following languages: Arabic, Burmese, Cambodian, Chinese, Hindi, Korean, Spanish, Tagalog, Thai, Urdu, and Vietnamese. Additionally, to the extent that the increased globalization and urbanization of the world has led to the increased concentration(s) of multiple languages in a greater diversity of locales, then “there is also an increased likelihood that languages and cultures will live side-by-side. If a disaster occurs, there is, therefore, the need for translation” (O'Brien, 2020, p. 305). When translation—used here in a broad sense that includes both oral translation (interpreting) and written translation—are not available or not done in a timely, accurate, and culturally conscious manner, then this can lead to catastrophic and “cascading” consequences.

In the “cascading effects”¹ paradigm of disaster, a primary threat or triggering event is followed by an unfolding sequence of “secondary hazards” (Pescaroli & Alexander, 2015) whereby interventions are needed to respond to the residual ‘fallout’ of the initial, primary, or precipitating event. In high-density metropolitan locales like New York City, for example—a place experts believe is home to over 700 languages, making it “one of the most linguistically diverse cities not only on the planet, but in the *history* of the planet” (Perlin, 2020)—then translation

needs in disaster pose an even greater threat to response, recovery, and resiliency initiatives. In fact, researchers (O'Brien & Federici, 2020) note:

As issues in multilingual communication exist before, during, and after any emergency or disaster, an awareness of cascading effects over the long-term and beyond the geographical location of the event is a *conditio sine qua non* to consider definitions of crisis that account for the interconnectedness of the twenty-first century world” (p. 130).

While disaster scholars have made appeals for increased attention to language translation in crisis communication (O'Brien & Federici, 2020), these studies continue to highlight the prevailing lack of attention to language and translation in emergency planning and disaster response (Alexander, 2016; Alexander & Pescaroli, 2019; O'Brien & Federici, 2020). Even recent calls to make disaster information more ‘linguistically’ accessible by taking a “rights-based” approach—wherein “the translation of humanitarian information products into local languages and culturally appropriate formats” is held to be consubstantial with the humanitarian belief that “all people have a right to life with dignity” (Greenwood et al., 2017)—have gone unheeded. Scholars note while “language translation aligns with the recent call to consider communication of crucial and timely information in crisis management as a human right (Greenwood et al., 2017) ...the cursory evidence on how the multilingual communication issues are studied so far shows this right goes currently unnoticed, or gets very limited attention, at best” (O'Brien & Federici, 2020, p. 130). As such, translation needs are still considered to be a “perennial problem” (Crowley & Chan, 2011, p. 24) endemic to decision making, information-sharing, and international coordination efforts in disaster. Thus, despite continued acknowledgment by responders and scholars (Shinya Uekusa, 2019, p. 353) that “language barriers and effective communication in disaster contexts (i.e., distributing critical disaster information and warnings) are the central concern in current disaster research, practice, and policy,” both multilingual and intralingual translation needs have not been given adequate attention in the literature on the subject.

Setting aside the *multilingual* translation needs that arise in disaster—but using the literature around it as a starting point for articulating the stakes of a related domain—the focus of this paper is on the *intralingual* translation needs between formal responders and emergent citizen groups (ECGS) in the response phase of a disaster when needs and resources rapidly converge (or *emerge*) at the site of the disaster. Here, an ECG may be generally characterized as informal, *ad hoc*, or temporary group that forms or unites around a common cause, a perceived problem, or an unmet need during the pre-, post-, and trans-impact periods of a disaster.ⁱⁱ However, intralingual translation—or the “translation [of a message] within one language that involves rephrasing the message [into the *same* language] in some way” (O'Brien & Federici, 2020, p. 311) is, like multilingual translation, similarly and surprisingly absent from studies on crisis communication and crisis communication technologies in disaster, despite its growing relevance to information sharing and coordination activities. Advanced here, intralingual translation is of growing relevance in disaster settings not only because of potential variability in literacy levels among those affected (O'Brien, 2020) but because responding to (or planning for) disaster requires an understanding of the operational terms used (but not always *shared*) by other responding agencies, actors, and organizations in the field. Yet, none of the research encountered on translation technologies has addressed the intralingual needs (or, importantly, the *opportunities*) that arise when formal responders and ECGs coincide at the site of disaster but don't speak the same “intuitional” language(s). As such, this paper makes an appeal for increased attention to intralingual translation needs in disaster and introduces a translation technology, “Aphorme,” designed to mitigate the ‘cascading effects’ of language barriers that occur even when responders are working within the same native language.

DEFINING INTRALINGUAL TRANSLATION IN THE CONTEXT OF DISASTER

As defined by legal scholars, “*intralingual translation* or rewording is translation *sensu specifico*: interpretation of linguistic signs with the help of the same language. We have expression(s) or text(s) in one language and translate them into different expression(s) or text(s)—different register—of the same language, e.g., from (lay) English into (technical) English” (Szabó, 2018, p. 8). The need for intralingual translation arises whenever information or data is written or transmitted in a parlance or parole particular to a specialized or professional language community but cannot be easily understood or accessed by those outside of it. Legalese, for example, or “the abstruse and complicated technical language of legal documents,”ⁱⁱⁱ is perhaps the example *par excellence* of why the intralingual translation of information from one register to another (within the same “mother tongue”) ought to be available to those who need it before life-altering decisions can *or should* be made. Just as disaster practitioners have made calls to consider translation a human right (Greenwood *et al.*), so too have legal scholars begun appeals to consider intralingual translation “one of the key pre-conditions of *fair process*” (Szabó, 2018, p. 17) [in law] from a linguistic or rhetorical point of view. As Szabó (2018) explains,

Our claim is that professionals of law speak professional language of law, which is not identical

with the language used by nonprofessionals. Communication among lay and professional participants within a fair process needs intralingual translation, which is not recognized and accepted, even not reflected till now (p. 13).

Within a disaster context, O'Brien (2020) provides another exemplar of intralingual translation:

An example is a disease outbreak where medical information is required to inform at-risk communities about how to prevent the spread of disease. This information may not be understood if it is written in a specialized, medical register and thus intralingual translation into plain language would be suitable (p. 311).

Within these disaster contexts, scholars note that the “rendering [of] a complex text into a more simplified version is a form of intralingual translation. This resulting text is often referred to as ‘simplified’, or ‘plain’, as in Plain Language” (O'Brien, 2020, 311). However, what all these examples share is the tendency to frame intralingual translation as a linear, unidirectional process that *originates from* those who speak the “institutional” language of a formal or “official” discourse (i.e., emergency managers, medical professionals, lawyers, etc.) which is then *directed to* affected residents and survivors who “lack” such ways of speaking. Even emerging translation tools in disaster and those who have discussed them are studied or developed from the perspective of those who are versed in the linguistic register or code particular to a specialized discipline, -logy, sector, industry, branch, agency, or field. This is an issue to which we will shortly return. For now, it is enough to note that the increasing frequency and intensity of disasters—as well as the growing diversity and involvement of ECGs or “spontaneous volunteers” who appear on the scene in disaster—has created, in-kind, an increased proliferation of disaster terms that can be unique to disaster type, disaster location, and disaster responders. As O'Brien (2020, p. 306) notes,

The type and nature of information that needs to be disseminated during a disaster will vary from stage to stage, and from one disaster type to another. For example, during reduction and readiness, leaflets, radio broadcasts or posters on how to be prepared for, or react during, an earthquake may be required. During response, it may be necessary to know whether it is safe to go outside, where the nearest shelter is, how to find food and water, or located loved ones. Then if property has been destroyed in a disaster those affected may be required to fill in insurance claim forms so that their property can be rebuilt. This is not an extensive typology of the types of information that is communicated during disasters, but it provides an example of the broad range that is involved...

An example of an intralingual translation that has not yet been encountered in the literature—but was routinely experienced during fieldwork in Hurricane Sandy (2012) and the Boulder/Colorado Floods of 2013—occurs when those engaged in emergency management activities do not share the same response terms (or definitions *for* those terms) used by other agencies, organizations, and entities in the field. As an example, during Hurricane Sandy, agencies like FEMA, the Red Cross, and the Office of Emergency Management used the ICS (Incident Command System) term “situation report” or “SITREP” to describe a document or report which contains “confirmed or verified information regarding the specific details relating to an incident (FEMA, 2018, p. 13).” On the other hand, Occupy Sandy—a grassroots response network and emergent citizen group (ECG) whose volunteers outnumbered traditional agencies 4:1—used the term “report back” to describe what was essentially the same operational product: a verbal or written debrief on the current situation and/or critical issues facing the response effort. However, information-sharing in the early days of the response was often hindered by these groups not using the same term (or knowing other terms existed) for the same task, term, or lexical marker. Thus, even when ECGs and formal responders share the same native language, the influx and range of responding entities that appear on the scene in the aftermath of disaster do not always (or often) share the same terms for similar or equivalent tasks, roles, or initiatives.

Since ECGs or “spontaneous volunteers” do not often have training in or experience with disaster/crisis response, the terms they use to name their response efforts, tasks, or roles are not always the same words used by more “established” responders. The linguistic dissonance or “rhetorical divergence” that is created when the same word doesn't mean the same thing to different response agencies or actors—or, conversely, when different words are used by different actors/agencies to signify the same (or a similar) thing—can lead to a series of “missed connections” between responding actors and organizations when they cannot locate or collaborate with others performing similar or equivalent objectives and tasks. As Waring (2018, p. 591) notes, “interteam information sharing can be particularly challenging when teams are comprised of members from across different organizations with different language and cultures that must form *ad hoc* to respond to problems in extreme environments rapidly.” Here it should be noted that while these linguistic/cultural differences could mutually aid one another, rarely are those differences between or within ECGs and/or formal responders attended to in any meaningful way.

The Need for Intralingual Translation Technologies in Disaster

The growing quantity and diversity of response terminologies—across 1. disaster types, 2. disaster phases, 3. geographic locations, and 4. responding agencies—is likely to lead to intralingual language barriers (on top of multilingual ones that may already exist) which further complicates information-sharing and coordination activities. This compounds pre-existing vulnerabilities and hinders the “Whole Community” approach to emergency management (FEMA, 2011) which encourages emergency managers to engage with local and community stakeholders to enhance national security and resilience. This intralingual language barrier between formal responders and responding/affected communities (or ECGs) is consequently what inspired the creation of the intralingual translation technology developed in 2012 (introduced below) to mitigate this linguistic dissonance. As noted in the scholarly article, “Lost for Words Amongst Disaster Risk Science Vocabulary?” by Ilan Kelman (2018, p. 281):

Disaster risk science, as with many other subjects, is replete with jargon developed with, by, and for a combination of practitioners, policymakers, and academics. Terms, definitions, and interpretations continually evolve, with original intents and foundational ideas frequently being masked. Some words and phrases are used with limited analysis regarding what they aim to convey and what they actually do convey.

While this linguistic impasse has been addressed by disaster scholars who highlight the lack of definitional consensus around disaster risk science vocabulary (Kelman, 2018), the stakes of this impasse are arguably higher *in situ*/in place, when there are degrees of variability in what shared or emergent terminologies *mean*. In such cases, stakeholders and communities can be (and often were) shut out of the very decision-making processes, discussions, and decisions that could have *most benefited* from their collaboration or input. To mitigate the terminological dissonance created by language barriers during a disaster, translation tools and technologies have been developed to abate this issue. One such tool is glossaries that contain definitions of disaster terms. However, as Pescaroli and Alexander (2015, p. 58) note, “anyone who is committed to the field of disaster risk reduction will sooner or later experience the moment at which failure [to] adequately [*sic*] define terms starts to complicate objectives and fill up precious time with meetings and discussions.” If this is the case for defining one’s terms within one’s organization, then it follows that even more time would be required to locate “like” terms with corollary definitions used by organizations outside of one’s own. As O’Brien (2020, p. 309) notes,

For translators and interpreters working in the domain of disaster response, terminology assistance in the form of shared glossaries and glossary management tools would no doubt also be helpful (also see Kageura and Marshman, [2020]). It is recognized that consistent and clear terminology is essential for clear communication in general; this is ever more critical when lives are at risk.

While some critical multilingual translation tools have been developed to help document some of these terminologies (i.e., Translators Without Borders app, the ‘LORELEI’ project; see O’Brien, 2020 for a detailed extrapolation), there were no intralingual translation tools that “matched” or mapped different terms used by different responders to designate similar lexical markers like FEMA’s “SITREP” and Occupy Sandy’s “report back” when Aphorme was first developed (2012) and it is even more surprising that few have been developed since. As Kageura and Marshman (2020, p. 61-62) explain,

Moreover, when more than one term or equivalent is possible for a given concept within a given domain, clients or other consumers of translations often have strong preferences for specific terms and equivalents that reflect conceptual distinctions, provide the desired emphasis, correspond to a particular school of thought or organization, reflect the choices in their existing documentation, or otherwise best meet their needs. In such prescriptive cases, an external depository of term equivalents, which – at least theoretically – does not depend on individual documents to be translated, can be essential to support translators’ work.

Acrolinx is one intralingual translation tool referenced in the literature on the subject that “allows an author to write content and run automatic checks to see if that content has breached any of the stylistic rules encoded in the tool. Such breaches are flagged by the tool, and edits are suggested” (O’Brien, 2020, p. 311). The author continues, “the process enables the author to ensure that the text is accessible by those with limited reading ability or limited knowledge of a specific language. An example of intralingual translation in practice is the rendering of systematic reviews of medical research into plain language summaries by the medical content provider, Cochrane (Von Elm et al. 2013).” However, research on its application to disaster contexts remains unexplored.

Intralingual Translation Technology Challenges

While disaster scholars and practitioners have advocated creating terminological glossaries pre-and post-disaster,

some challenges accompany such efforts. Perhaps most obvious is the inability to access such lists if internet connectivity is compromised or inexistent (before or after an event) in a disaster area. Researchers (O'Brien, 2020, p. 312) explain,

Having simple, verified, terminology lists available could help in a disaster setting... However, online glossaries will suffer from the same challenges as TM [Translation Memory] and MT [Machine Translation] if power and connectivity are compromised. Therefore, glossaries that are offline and easily accessible (for example via a mobile phone App) may be beneficial. Having glossaries that are online only, password protected, or in a downloadable PDF (Portable Document Format) files, is prohibitive. PDFs, in particular, are not very searchable or accessible. An added challenge here is glossary maintenance: to be useful glossaries need to be kept up-to-date, which takes time and resources.

Aphorme, the intralingual translation tool detailed below, endeavors to solve some of these problems by serving as a “dynamic” (rather than static) dictionary/repository of technical terms that are emergent in (or commonplace to) disaster, crisis, and emergency operations. While other scholars (Kelman, 2018, p. 289) have asked “rather than never-ending expansion of glossaries to encompass all possible words and combinations thereof, might an argument be considered for simpler, more straightforward, and more meaningful approaches?” the technology advanced here would contain and allow the “never-ending expansion” of glossaries in a way that is (hopefully) user-friendly but “all-encompassing.” Those who have written upon issues surrounding disaster risk terminology (Kelman, 2018) have noted:

Other important areas for research are comparatively analyzing how vocabularies are defined, applied, and interpreted across countries, cultures, languages, and dialects, as well as the meanings, or lack thereof, for policy and practice at different scales. In particular, no evidence or discussion is presented in this article to indicate who adopts the definitions, in which contexts, how they are applied, or their relevance for and use in policy and practice (p. 289).

Aphorme endeavors to answer these calls.

INTRODUCING APHORME: A DYNAMIC DICTIONARY AND INTRALINGUAL TRANSLATION TOOL FOR DISASTER RESPONSE

The Greek term “aphorme” translates to “starting place” or “starting point” and is used in the field of rhetoric to designate lines of thought from whence movement, activity, or discussion flows. Aphorme then, in simplest terms, is a tool and technology that allows communities in crisis to define their terms, on their own terms, as a starting point for information-sharing and inter-agency collaboration. It was designed in 2012 as an open-source web application that functions as an editable/dynamic wiki-glossary and dictionary of operational and emergent terms used by responding agencies, organizations, and ECGs during a disaster or crisis event. While this app was initially hosted on the cloud platform as a service (PaaS) website heroku.com and written with a combination of programming languages (JavaScript, CSS, Ruby, and CoffeeScript), heroku.com no longer supports the Rails software version in which it was written. Though its source code can still be accessed (https://github.com/andygimma/aphorme_ruby) and its social media remnants can be found on Twitter, (@Aphorme) it would take more eloquent coding to bring it back to life and to its full potential. As such, the use cases and specifications below describe the original blueprint of its design when it was built in 2012 and culminates in suggestions and challenges for future development.

As established in this paper, the linguistic or rhetorical variability across disaster types, phases, and responding entities creates a language barrier, which can lead to a form of “secondary trauma” when needs or initiatives go unmet due to a communication breakdown. This is especially between ECGs who are often “first to the scene” but do not have a background in emergency response, and for traditional agencies who speak the language of emergency management, but who are not well-versed in the vernacular of the community since they come into a community from the outside-in. Additionally, while multiple terms exist for what are arguably the same or similar tasks, resources, or objectives—whether these terms are used by the same organization or different ones—no translation tool currently exists that would ontologically or semantically “match” congruent terms that differ in name but not in meaning. For example, while FEMA uses the term “sit-rep/situational report” to describe a “document that often contains confirmed or verified information regarding the specific details relating to an incident,” the Occupy Sandy/OWS term for this was “report-back” (and relatedly, “meeting minutes”) which describe a written document or orally-delivered account of details pertaining to a previous event which help to inform current actions in the present.

While “sit-rep” and “report-back” may not share perfect 1:1 correspondence, Aphorme would store and match terms along these lines, by allowing contributors to see other terms that share a “high correspondence” in

meaning/definition between one term and another. As of yet, no such “disaster dictionary” exists apart from [ReliefWeb’s Glossary of Humanitarian Terms](#) by OCHA (United Nations Office for the Coordination of Humanitarian Affairs) and whose “terms and definitions in [their] glossary have been compiled from existing glossaries and other reference material available to the public, with a focus on their common usage and understanding within a humanitarian context, particularly as relating to natural disasters, complex emergencies and disaster risk reduction” (2008, p. 1). While their glossary is available in English or Korean, it is still a static glossary; as such, it is prone to meaning decay over time. While Aphorme was similarly designed to host terms and definitions from both formal and emergent groups, it endeavored to go a step further in two directions: 1. First, by allowing *contributors* from those organizations to add and update entries in “real-time,” and 2. by ontologically matching terms that share similar definitions—or are marked as belonging to a particular disaster type or phase—even if those groups do not share the same term for what is essentially the same linguistic “marker” or terminological “target.” This way, in future crises or disasters, groups like FEMA and ECGs would be notified (or could see) when their respective terms (i.e., “SITREP” and “report back”) were definitionally aligned or correspondent with one another.

In addition to the above, Aphorme mapped/visualized/displayed “what exists” in the terminological landscape (see banner on [@Aphorme](#) for a screenshot) where terms, when entered, are “geo-located” or “pinned” within a 5-mile radius of the person or group who enters or edits a term. This serves to visually map what terms are emerging and being edited in particular regions or areas worldwide. Initial users logged onto the Aphorme app using an email address, could search for terms through a search field, see a list of terms categorized alphabetically, and could access a world map of where terms had been entered. For the duration that Aphorme was online, it was used in the aftermath of Hurricane Sandy by Occupy Wall Street/Occupy Sandy volunteers, was contributed to during the #COFlood event(s) by ECGs, and was used by a select few in the educational and technological sectors.

CHALLENGES AND FUTURE DEVELOPMENTS

One of the challenges to this app includes security. Luckily this application has a low risk profile. No personal information beyond an email would be used for logging in and we didn’t store any other info that wasn’t directly related to terminology. Because Aphorme’s data isn’t particularly useful for hackers to sell in online markets, future developers can spend more of their resources on adding benefits to Aphorme’s users. Following OWASP (Open Worldwide Application Security Project) guidance is recommended to make sure that we are protecting users. To ensure data integrity, regular backups of the full database would need to be conducted, and existing off-the-shelf software can be used to detect anomalies and potential spamming. Once a spam attack is detected, we can simply rollback all terms added or changed by the attacker.

To ensure the best possible experience for users, we would develop community guidelines with all stakeholders, and would follow the best approaches of apps (like Wikipedia) to ensure tried and true approaches to community management. Since an organizational or user logo would be displayed next to a definition that an organization contributes, each term would feature multiple definitions (and logos) beneath it (with options to sort definitions by organization/contributors, number of “likes” or “validations,” etc.) so that a list of terms (if entered into Aphorme’s database) would be generated underneath that organization. When that list is generated, it would also show what terms are shared by other entities in the field, which could help to cut down on “duplicate efforts.”

Finally, Aphorme would redress the issue of “derivation” by tracing when and where (and through whom/what) a term comes into being or how the meaning of a term changes over time. Suppose a term or definition for that term is edited after a particular event. In that case, we can better account for the nuances of these changes and how geological, cultural, or event-specific needs change how we understand a concept, need, resource, or term. Aphorme, then, is a platform designed to be used by multiple publics and arenas—from crisis response to education or social movements—that share a concern of reaching an audience at the right time, at the right place, with the right language, so that a vital message or “bit” of information can be relayed, communicated, and received by vested publics. It is possible for this directory to be replicated for other fields and domains and may also be interoperable with the directory above. A road map and more use-cases for the application would be immediately available to the programmer or researchers who take up this project.

CONCLUSION & FUTURE RESEARCH

As advanced here, even when the communications between emergent and formal responders are conducted in the same language, the definitional variability between organizations of what operational terms mean (like “disaster” or “triage” or “encryption”) or the diversity of terms for the same operational task (“SITREP” and “report back”) can delay or block critical response-related activities. When stakeholders and communities involved in the

response, recovery, or resilience efforts do not share or have access to what disaster terms or concepts *mean*, these unmet translation needs in disaster fall into the “cascading effects” paradigm of disasters (Pescaroli & Alexander, 2015) whereby a primary threat or triggering event is followed by an unfolding sequence of “secondary hazards.” As a dynamic dictionary of technical terms and *topoi* (commonplaces) in disaster, crisis, and emergency, Aphorme not only seeks to better account for how vocabularies are created, defined, applied, and adopted by various stakeholders over time, but also endeavors to visualize how the confluence of disaster or crisis events—in particular places, with their respective geographical and cultural features, at specific moments in time—results in “new” or “novel” words and concepts.

The emergence of new words in a disaster could be particularly informative to research on ECGS by understanding what terms and topics emerge—and where they emerge—within the local speech or “vernacular” communities, especially when responding to disaster due to what “new” words tell us about the different geographic, social, and cultural, and demographic needs which produce them. If, as Plato has noted, “necessity is the mother of invention,” then attending to the words that responders use (or perhaps, more importantly, *invent*) to name or describe new response-oriented tasks is a “starting point” (an “aphorme”) of mapping how and where and when and by whom such inventions or innovations come into being. This is perhaps even more critical to attend to when those responders do not have the resources (i.e., funding, technologies, “man-power,” political connections, social capital, etc.) as more “established” agencies/actors if necessity is the true driver and progenitor (or “mother”) of invention.

Not only would an intralingual translation tool like Aphorme contribute to calls made by disaster scholars to better understand and categorize the kinds of emergent phenomena (EP) that arise in disaster settings (Quaranteli, 1984), but it would capture and ontologically map/semantically match the wide range of operational terms that coincide, intersect, overlap, and emerge in disaster and crisis settings. While Aphorme is still in development, it was designed in ways that implicitly acknowledge the “constitutive nature” of communication wherein “acts of language use have the potential not only to reflect but also to create processual instances in the world” (Schoeneborn & Trittin, 2013) in a multi-directional and mutually reinforcing manner. As such, it does not privilege one organization’s terminological set or glossary over another but encourages disaster response actors and communities to “define their terms on their own terms.” As such, Aphorme—as a “starting point”—allows both formal and emergent responders to “get on the same page” without speaking the same language. It is hoped that this discussion will provide the evidentiary basis or “proof of concept” necessary to bridge exigent gaps within and between these bodies of literature of intralingual translation and information sharing on both a theoretical and field-based front. It was anticipated then, as it is anticipated now, that there will be a growing need for intralingual translation tools given the ever-increasing diversity and frequency of disaster responders, disaster types, and disaster locations.

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ⁱ Defined by Pescaroli and Alexander (2015, p. 64-65), “Cascading effects are the dynamics present in disasters, in which the impact of a physical event or the development of an initial technological or human failure generates a sequence of events in human subsystems that result in physical, social, or economic disruption. Thus, an initial impact can trigger other phenomena that lead to consequences with significant magnitudes. Cascading effects are complex and multi-dimensional and evolve constantly over time. They are associated more with the magnitude of vulnerability than with that of hazards.”

ⁱⁱ The frequent appearance and *ad hoc* grouping of those who demonstrate altruistic or ‘helping’ behavior at the scene of an actual or potential disaster is a focal point of formalized research within the branch of disaster sociology. This body of literature developed around the frequent but informal sightings of emergent phenomena (EP) and ECGS made by emergency responders and correspondents since the early 1900s (Prince, 1920), leading to the first systematic study on ECGS in disaster preparedness and recovery activities by the Disaster Research Center (DRC) at the University of Delaware. See: Quarantelli, E. L. (1984). Final project report #33: Emergent citizen groups in disaster preparedness and recovery activities. University of Delaware Disaster Research Center, i-88.

ⁱⁱⁱ See: Oxford English Dictionary. (2018). 3rd edition, s.v. “legalese, n.”