Chapter 1

Cascading Crises: Translation as Risk Reduction

Federico M. Federici[a]* and Sharon O'Brien[b]

[a]*Centre for Translation Studies, University College London, United Kingdom;* [b]*School of Applied Language and Intercultural Studies, Dublin City University, Republic of Ireland*

[a] *orcid.org/0000-0002-0057-0340;*

[b]*orcid.org/0000-0003-4864-5986*

* Centre for Translation Studies (CenTraS), University College London, 33-35 Torrington Place, London, WC1E 6BT. f.m.federici@ucl.ac.uk

Chapter 1

Cascading Crises: Translation as Risk Reduction

Abstract

Crises are often transboundary and, even if they are not, culturally and linguistically diverse communities may be caught up in them, whether they are migrant workers, refugees, or tourists. Experts from multiple fields recognize, explore, and challenge our current limitations in engaging with communication issues in multilingual situations of crisis. Understood broadly as both written and spoken acts, translation saves lives and reduces property damages and loss, if it is not a last-minute add-on to crisis management plans. A crisis is not a simple geo-spatial, cultural, legal, humanitarian, medical, logistical, and political tipping point, it is a major concatenation of causes and effects that cascade in many and often unpredictable directions. Yet even where effective, accurate, and specific information is available to be disseminated in different ways through an ever-growing array of technologies, too often the language barrier remains in place. This chapter explores the concept of cascading crises and the role translation could and should have. It positions crisis translation at the intersection of disaster risk reduction, risk communication and translation and interpreting studies. It concludes by highlighting the diverse topics in the volume that start to paint a picture of a diverse field that is opening up for research and development.

Keywords: crisis translation, risk perception, intercultural communication, social factors in disasters

1. Context

On 14 March 2019, Cyclone Idai made landfall near Beira, with winds at 170km/h and more, it was to cause havoc in Mozambique, Zimbabwe, and Malawi. The weather front had worsened around 6 March, and in the early days of the crisis, there were reports of hundreds of victims, with over 500,000 displaced people (the whole population of Beira city). Over two weeks later after Cyclone Idai had made landfall, the first cases of cholera and spikes of malaria were recorded; these first outbreaks were signalled by the International Federation of Red Cross and Red Crescent Societies (IFRC). International humanitarian organizations tried to access the people in need, managing only in some regions, as the areas most affected by the cyclone were inaccessible for weeks. The scarcity of helicopters, these being the only suitable vehicles to reach the areas, delayed the response efforts. Drinking water resources dwindled immediately; hygiene, and safe conditions were impossible to maintain. By Friday 22 March, the UN had released over $20 million in funds to support the humanitarian relief operations, but the scale of destruction was described as ‘unprecedented’ and ‘staggering’ (IFRC). Schools were destroyed, farms annihilated, families disappeared. In all its devastating force, this type of natural hazard is on the increase because of the human impact on climate, especially the increased strength of winds caused by global warming, Cyclone Ida is an example of a ‘cascading disaster’ (Pescaroli and Alexander, 2015). Pescaroli and Alexander define cascading effects in disasters as:

> 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. (2015, pp. 64-65)

Their definition underpins this volume. And the cascading effects of Cyclone Ida are a dreadful illustration of the accuracy of this definition, as they will be felt by generations of residents. The March 2019 event immediately disrupted lives of generations to come but the consequences it has on the socio-economic dimensions also go in unexpected directions: the number of people whose schooling plans were forced to change and the traumas and risks that will linger for decades will turn a single disaster into a cascading crisis. The difference between disaster and crisis is in the duration: crisis situations are not only disruptive events that occur at a specific time, in a specific region, to identifiable groups of people and have cascading effects on surrounding societies and regions. Crisis situations last longer and they can become semi-permanent states – as, for instance, with the lengthy recovery times after earthquakes in Italy, such as the 2009 L'Aquila earthquake, where after a whole decade only limited progress has been made in reconstructing the city and its social networks. We discuss relevant terminology further in Section 2.

Humanitarian organizations need information to act promptly and to exchange information and learn from affected communities about their needs and requirements. To this purpose, Translators without Borders have been publishing crisis language maps since 2016, as an aid for international responders to be at least aware of the linguistic diversity that they will face in a humanitarian crisis. Figure 1.1 shows the map produced by Translators without Borders on 17 March 2019. Intended to support responders involved in the humanitarian response to Cyclone Idai, this map gives a sense of the complexity of risk communication of health concerns among people living in the affected areas. The complexity of crisis communication between local and international responders, local institutions and international institutions, and the humanitarian sectors is evident. Communication between the responders and the affected population becomes

an undeniable source of delays, confusion, and, at worst, could lead to additional property damage and loss, or deaths (Bastide, 2018).

INSERT "FIGURE 1.1" HERE

Figure 1.1. Crisis Language Map, Mozambique by Translators without Borders. Source: https://translatorswithoutborders.org/mozambique-cyclone-idai-crisis-language-map/.

The heightened confusion, delays, and consequences of poor communication map directly onto the second part of the definition by Pescaroli and Alexander (2015, p. 65) that expands on the multidimensional, secondary, and intangible effects of disasters, which are seen as non-linear, hence themselves triggers of crises.

> 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. Low-level hazards can generate broad chain effects if vulnerabilities are widespread in the system or not addressed properly in sub-systems. For these reasons, it is possible to isolate the elements of the chain and see them as individual (subsystem) disasters in their own right. In particular, cascading effects can interact with the secondary or intangible effects of disasters.

This definition exemplifies how the study of communication in crisis settings has to be a cross-disciplinary endeavour through which the impact on all subsystems can be assessed to address some vulnerabilities. This book intends to stimulate a a multidisciplinary debate on how communication is bound to be extremely complex in cascading crises and on the role that translation, understood broadly as both translating and interpreting, can play to facilitate communication. In this chapter, we bring together overarching issues that emerge from this field of study, which have in equal measure

challenged and driven our research in Crisis Translation.[1]

2. Cascading Crises: Definition and Translation as Risk Reduction

In crises where human-induced or natural hazards develop into major disasters that have significant impact on society, the power of language becomes extremely significant. Just as Cyclone Ida affected a huge territory, it also affected cultures with their distinct beliefs, rituals, routines, and languages. The international humanitarian organizations faced a terrified population, and the members of the local NGOs and institutions were likely to be at the same time affected. One non-rhetorical question emerges: when they are traumatized, affected, involved, and exhausted by the struggle to respond to the many needs of so many different people, is it right to ask members of these communities to serve as interpreters and translators? Responders tend to look for local people to help with communication, if their organizations do not have local offices on the ground. Is it right to increase demands on their cognitive and financial loads, as well as on their human resources, at a time when they are dealing with extremely heightened emotional loads? Our contention, and that of the contributors to this volume, is that, although communicating across languages and cultures is complex and resource-demanding, it is advantageous to many stakeholders to think about, plan, and implement multilingual crisis communication.

Disaster risk reduction researchers highlight culture-bound concepts for their power in framing crises (Krüger *et al.*, 2015), however investigations of the depth, breadth, and duration of the impact that the language barrier has over communication in the different phases of cascading crises remain to be carried out. The multiple roles of those using language to enable communication and empower crisis-affected communities to be equally informed, independently of their native language, have

remained for a long time vaguely defined and understudied. Coordination in relief and humanitarian operations depends on efficient and prompt communication, the lack of which is recognized as the most common obstacle to coordinating efforts and resources in responding to emergencies by the international community (Crowley and Chan, 2011). The main goal of emergency plans and operations is to contain the initial impact of the cascading crises on critical infrastructures. To mitigate the long-term cascading effects or, even better, to mitigate them by increasing communicative readiness prior to an event, we have been advocating that translation be considered as part of the planning process. Risk reduction should include serious thinking on policies for language support and ownership more than currently happens (Federici *et al.*, 2019).

From this perspective, we explain our terminological stance: crisis is preferred to 'disaster', since O'Brien's original coinage of 'crisis translation' (2016). In light of Pescaroli and Alexander's definition of cascading disasters, the term crisis allows us to look at the non-linear, multidimensional sub-systems that are affected by poor communication over a long time. We use crisis as an all-encompassing term to include short and long-term events and their effects, which may be triggered by a disaster. When evaluating the vast terminological debates on disaster and crises (see discussion in O'Brien and Federici, forthcoming), we engaged with Quarantelli's landmark definitions (Quarantelli, 1978, 1987, 1998, 2005) up to the recent UNISDR's definition in the *Sendai Framework for Disaster Risk Reduction* (2015). All definitions are characterized by considerations of duration, resources needed, geographical impact, consequences and effects, and so on. Such definitions seem to focus predominantly on *what needs to be triggered* depending on the typology of the disaster, and the protocols that must be activated to deal with them (UNISDR, 2015, 2016). Some are also preferences dictated by the varieties of English used by Anglophone communities of

risk reduction researchers, whereby 'crisis' is preferred in European contexts over North-American and Australasian English-language publications in Disaster Studies. Other preferences demark disciplinary boundaries (e.g. crisis communication is a research field that subsumes communication in disaster contexts).

We prefer crisis because it embodies all temporal as well as societal dimensions that must be considered before and after a disruptive event happens, including preparedness, resilience, and long-term reconstruction. Enander (2018, p. 715) summarizes the literature in the field of crisis management, to capture how organizations must have *adaptive* features to deal with crises:

> Organizations low on discipline but high on agility will tend to be reactive, applying ad hoc solutions as events unfold. Organizations low on agility but high on discipline will tend toward the bureaucratic and sticking to protocol, regardless of the situational demands.

The middle position of the 'ideal organization', she continues, is one that leads organizations to 'acting in a balanced but adaptive manner' (ibid.). The underlying principles of our research in crisis translation rest on an acute perception of the re-active mode of dealing with the language needs of crisis-affected communities as an obstacle to acting in a 'balanced but adaptive manner' that should no longer have the impact it continues to have.

Triggering one response protocol rather than another has social, economic, and organizational consequences after a crisis erupts. Different budgets can be released, different donors become involved, different response organizations enter or exit the context, and the event may remain a socio-economic crisis for decades (Alexander, 2014; Cornia *et al.*, 2016). Complex communication requirements emerge from the initial response, as documents and records of meetings need to be translated (see also

Al-Shehari in this volume). This complexity amplifies, depending on the size of the event, the processes that need to be activated, and the impact of the event on civil society. The question of scale of response is crucial from the point of view of communication; Alexander (2016b, p. 14) categorizes the scale of events that disrupt societies in an order of growing impact from incident, major incident, disaster, to catastrophe (see also Tierney, 2008). These disruptive events have cascading effects. By adopting the term crisis, we indicate the broader temporal dimensions of developing risk reduction strategies, the short-term recovery plans, and the long-term physical and social reconstruction that engender different communication needs, especially in multilingual societies. For this reason, we refer to cascading crises, in which a natural hazard generating a disaster is part of broader, interconnected web of causes, and consequences of a long-lasting crisis. Alexander's categorizations depict how a disaster is a catalyst to deploy resources. If resources are needed from outside the local area and the public become more involved, it is certain that the crisis will grow in size, impact, and duration for the local population but also, by extension, for those responders who come from outside the local communities. With its growth cross-boundaries, new communication needs soon emerge during the crisis, between local affected populations and the relief operations, or for the local vulnerable groups, such as culturally and linguistically diverse (CALD) communities, for those parts of the world that continue to act on a vision of society as 'monolingual'

A crisis is determined by the aftermaths of the event as much as by the existing vulnerabilities of the society at the moment of disruption, hence social crises leading to conflicts and successive humanitarian disasters are affected by the challenges of crisis communication (e.g. Yemen 2014 onwards). Communication strategies become part of processes intended to increase readiness to deal with emergency situations, building

resilience in societies (especially against expected natural or human hazards), so that responses are more effective, recovery begins in earnest, and reconstruction allows a gradual return to the ordinary workings of the affected population.

Large-scale international collaborations have brought to the fore the importance of multilingual communication in the 21st century, following the 2004 Indian Ocean earthquake and tsunami and the 2010 Haiti earthquake (Crowley and Chan, 2011). However, the focus was initially on interpreting as 'a problem' that delayed efficient communication strategies. From 2016 onward, additional focus on community engagement for disaster-affected regions raised awareness of the fact that translation and interpreting (T&I) are necessary and not just an unexpected problem. On translation of needs from the local communities to international humanitarian aid organizations rests successful activation of suitable protocols. In turn, protocols entail emergency planning (Alexander, 2002, 2016a, 2016b) so that coordination, collaboration, and communication strategies mitigate the cascading effects of any crisis. Yet these plans consider language translation only in part, even when they are plans for action world-wide. Only in 2018 was there a formal recognition of the T&I role in the Humanitarian Charter (Sphere Project, 2018), as discussed in Section 1.3. T&I and linguists (cross-cultural officers, intercultural mediators, cultural mediators, etc.) will all agree that effective communication is a pressing demand at any of these stages, for any size, any process, and any mitigation of impact. The more international the response, the more multilingual the communication requirements.

2.1. Defining interconnectedness of effects and consequences

Once we accept that the discussion on disruptive events has shifted from 'toppling' to cascading effects, whereby the effects of a disaster, terrorist attack, crucial disruption of

major infrastructures are not linear, then for the interactional and multidimensional nature of communication itself it is natural to accept the 'cascading crisis' denomination. Pescaroli and Alexander's discussion of cascading effects (2015, 2016) sets the benchmark for non-linear analyses of impact; yet the associated recognition that, by their interconnectedness, societies become more reliant on several languages during any crisis is lagging behind (IFRC, 2005, 2006, 2014, 2018; Quintanilla and Goodfriend, 2012). Building on this definition, Pescaroli and Alexander (2015, p. 62) integrate and sharpen the UN Office for Disaster Risk Reduction terminology by emphasizing 'that cascades are events that depend, to some extent, on their context, and thus their diffusion is associated with enduring vulnerabilities'. Such generative aspect is central when considering the consequences of poor multilingual communication in crisis settings, especially as it has a two-fold relationship with risk perception, as we discuss in Section 3.2.

2.2. Cascading crisis and risk communication

The *Sendai Framework for Disaster Risk Reduction* signalled a renewed socio-economic commitment to mitigating the impact of disasters and emerging crises, by engaging with vulnerabilities due to social factors (capabilities, historical distribution of population in dangerous areas, etc.). This shift had happened among scientists and researchers a long time ago, but it needed at least a commitment in principle from governments. It recognizes that natural hazards and other perceived social risks (e.g. terrorism, conflict, migration) have consequences because of people's decisions and level of preparedness to deal with them (Blaikie *et al.*, 1994; Cannon, 2008a; Gaillard, 2010). If, on the one hand, some types of natural hazards have unpredictable onsets (e.g. volcanic eruptions, earthquakes) or only partially predictable (storms, floods, droughts),

on the other hand, it could be argued that people are responsible for creating (some avoidable) vulnerabilities in their societies. No disaster is a *natural disaster* (Birkmann *et al.*, 2013; Kelman, 2018; Thomas *et al.*, 2013; Welle and Birkmann, 2015). However, natural, technological, and human-made hazards lead to disasters that can, in turn, generate cascading crises. Attention has to move to vulnerability. Over the last two decades, risk assessments consider not only economic impact, but also the obvious social impact of working and investing on readiness and resilience. The equation calculating the risk index (Welle and Birkmann, 2015, 2016; Welle *et al.*, 2014) pertains predominantly to natural hazards as triggers, amplified by social vulnerabilities (see Figure 1.2). This equation offers a quantifiable Risk Index for each country of the world. The quantifiable data could and should be correlated with known information on distribution of languages and linguistic minorities, yet they are not.

[INSERT "FIGURE 1.2" HERE]

Figure 1.2. World Risk Index. Source: *Institut für Raumordnung und Entwicklungsplanung*, Stuttgart.[2]

Providing access to crucial information in a language that CALD vulnerable groups understand enable them to become more resilient, prepared, and able to recover after a crisis. For the provision of information, the role for translation and interpreting is pivotal – and their professional domains of practice might blur in the response phase of crises. Yet crisis managers and disaster scientists have barely realized the deep and cross-cutting impact of communication linked to language and cultural differences; the same mistakes in enhancing resilience and in responding are repeated many times,

annually, for each different crisis, regardless of whether it was triggered by a conflict, people displacement, social unrest, terrorism, or natural hazards. This lack of concerted focus results in a perpetuation of cultural and linguistic lacunae in handling most crisis settings, thus perpetuating social vulnerabilities and adding to the risks. Whilst at times little can be done to change the triggers of the risk, much can be done to address the needs for better multilingual communication. That is why, crisis translation has to grow into its 'interdisciplinary' skin to exert more direct influence on other research fields and on policy-making.

3. Interdisciplinary interface

From the premises above, we have consistently considered 'crisis translation' as a point of contact between disciplines. This research area cuts across the needs of the crisis-affected communities and those communicating with them. Figure 1.3 illustrates the idea of a nucleus of common research questions and issues, for a place in which overlapping disciplines, experts, local and international governments, and local and international institutions focus their attention when language is perceived as one of the issues.

[INSERT "FIGURE 1.3" HERE]

Figure 1.3. Crisis Translation Interdisciplinary Nucleus.

3.1. Disaster risk reduction and management

With its interdisciplinarity, crisis translation may support refinement of methodological approaches in other disciplines. Cadag's chapter in this volume illustrates how research

adopting participatory methods in crisis-affected communities is language-bound. Disaster risk reduction and management researchers intending to use these methods so as to understand the real needs of communities and to support resilience, rely on data that *they collect in the field* that are de facto mediated by interpreters. The success of these methods is dependent on having language support. It goes without saying that such data collection settings might be compromised if the interpreting is ad hoc with no guarantee of quality. Those same data tend to underpin research outputs, reports, as well as requests to donors for specific interventions based on the acquired knowledge of the needs of a specific community. And, as Tesseur (2018) has pointed out, language plays a crucial role in the latter activity too, with local NGO stakeholders feeling excluded from accessing funding due to requirements to do so in English only. The ordinary phases of communication with stakeholders who may themselves also speak several different languages are not *urgent* moments of crises themselves (certainly not all of them) but do also involve crisis translation, something that is mostly overlooked.

3.2. Risk and crisis communication

The perception of risks and its associated vulnerabilities depend on social factors (Cannon, 2008a, 2008b); perceived risks are constantly affected by cultural values, as much as by cognitive and emotive responses. In fact, humans perceive, react, and adapt to risk; compared to other organisms, humans do not only 'codify and learn from past experience. Humans have an additional capability that allows them to alter their environment as well as respond to it. This capacity both creates and reduces risk' (Slovic, 1987, p. 280).

A research domain for many disciplines, including psychology, sociology, geography, political science, neurology, and many others, the study of perception of risk

has been connected with the study of natural hazards for a long-time. The empirical research in psychology (Slovic, 1987; Slovic and Peters, 2006) brought forward categorizations that enable us to look at how humans under- or overestimate risk in their perception of reality. In all stages of crisis, the ability to assess appropriately and the sense of survival associated with such assessment contribute to the parameters for harmed/unharmed, death/life, lost/saved conditions. In relation to natural hazard, as well as environmental and situational risks, the work of Douglas and Wildavsky (1983) is particularly significant in discussing risk perception in crisis. They attributed a relationship between social and individual behaviour before risks to the capacity of humans to form social organization (groups or society), which in turn control individuals' own perceptions of risk by means of cultural or social behaviours imposed by the group to the individual. The cultural (and linguistic) interactions within a group determine individual reactions to hazards and alter perceptions of risks. Different cultures then handle risk aversion, risk avoidance, risk assessment, and risk management differently; these differences *affect* communication of risk in multilingual contexts (see Slovic and Peter's on 'affect', which indicates the direct influence of emotions on risk perception). For these reasons, we position Crisis Translation as overlapping with risk communication.

4. Rights-based Access to Languages: Mitigating Risk

Acknowledging that awareness of language and culture-specific information on risks is crucial, the contributors to this volume share a common principle, that access to languages in multilingual crisis situations is a human right. The possibility of accessing translated texts of adequate quality remains incredibly difficult to achieve; the gold-standard expectations enshrined in ISO standards and codes of conduct seem

unattainable in crisis settings. However, there should be an acceptance of a paradigm of quality that, drawing a parallel with the features of workable emergency plans, is disciplined yet flexible, and hence characterized by its adaptive features.

By conceptualizing translation as a form of communication in cascading crisis, the issue of quality should be considered in relation to the phases of crises with a focus on risk reduction. As the concern for accessible information of reliable, trustworthy quality clashes with resourcing issues and issues of urgency that go beyond normal parameters of sourcing language services, adaptive measures should be accepted at different stages of a crisis, provided that no other solution is available.

[INSERT "C1 – FIGURE 1.4" HERE]

Figure 1.2. Translation Quality and Crisis Phases.

Figure 4 illustrates a provocative alternative to *rigid* expectations of impossible to achieve quality and resource deployment. It does not mean to imply that each solution is limited to each stage of crisis; for instance, MT could theoretically be used in 'Recovery' and professional translators could be used in 'Response', or, indeed, both could be used. The upside-down pyramid accepts that the strictest processes for TQA would be preferable as would the highest standards of liaison interpreting and professional, domain-specific, expert translators. However, the descending quality is considered within the constraints of times of a crisis. Figures 4 recognizes and accepts that different operational options for T&I exist. It focuses on favouring a revision of emergency plans in which at least minimal expectations for quality can be laid out. Professional integrity and needs for quality are paramount, but the gold-standards for

quality must assess the urgency, sensitivity, and necessity of the translation against the risks implied in the no-translation options (e.g. illustrations and situations described in Cadwell, 2014, 2015a, 2015b). Concerted approaches to achieve translations of suitable quality are important (as illustrated in O'Brien and Cadwell, 2017). These could take the form of civic activities, of citizens collaborations with institutions (Federici and Cadwell, 2018), but ought to include professional associations of T&Is. These associations could have direct roles embedded in forms of institutional preparedness to ensure that collaboration with crisis managers and responders in general are part of ongoing crisis-management training and T&I are embedded in contingency and emergency plans.

Having access to quality translation in global crises could increase communities' capability to reduce risks. These capabilities can become actionable if we were able to make responders and policy-makers consider translation in all phases of cascading crises so that their inclusion in training and response preparations integrate the possible spectrum of solutions to language access needs in all other elements implied in organizing crisis responses.

As emergency plans focus on preparedness, mitigation, response, recovery and reconstruction, translation of languages does not need to be a hindrance and a perennial issue, as it is not only about the impossibility of finding a suitable number of interpreters in needed language combinations at the time of responding to the peak of a crisis. Translation can complement communication and crisis management strategies. Translation has a role to play at policy level; policies for mitigating the impact or risks and preventing further effects in our multilingual and superdiverse societies can focus on a 4-A standard accessibility, availability, adaptability and acceptability of language support for CALD communities in crisis (O'Brien *et al.*, 2018). Translation in context

of crises has the potential role of mitigating impact and augmenting preparedness (Cadwell, 2015b; Federici and Al Sharou, 2018; Federici and Cadwell, 2018; O'Brien and Cadwell, 2017; O'Brien *et al*., 2018). There is the need also to consider that intercultural mediation is often needed as a resource to integrate people over a longer period of time and it cannot be operated as a constant emergency (Filmer and Federici, 2018). Figure 4 ultimately suggests an alternative conceptualization that encourages us to think about flexible methods that are time-dependent and phase-related. To improve quality provision, T&I will need to be involved through their associations, as much as through individuals in ensuring that non-professionals and volunteer linguists do not increase risks and diminish the credibility of the profession when working beyond their specialist domains.

Expectations on degree of quality depend on the phases and can only be lowered when it comes to absolute urgency, when no professional or prepared option is available. However, this is why the shift has to be to *preparedness*, so that other quality options become available gradually and remain sustainable. The balance between flexibility and organization is central to emergency planning and T&I activities will need to take this into account. Without being prescriptive, it is accepted by everyone that having access to, and paying for, experienced professional interpreters in the language combinations needed when a crisis erupts is the preferred option. However, there are steps that need to be followed to be prepared to react to sudden needs. Also, there are constraints that cannot be avoided: some languages are not written and are only oral varieties spoken by minority groups. These are likely to be marginalized and vulnerable by their very nature, either persecuted or socially vulnerable due to partial integration: they risk being exposed to additional dangers with limited access to information. At the same time, there are language combinations in which no training is

available because no market or requirement for professional services exist, nor is likely to develop in the foreseeable future.

Better preparedness to disasters in multilingual situations is not a utopian and ideal aspiration. No more than crisis management and disaster preparedness planning were in their early days. Language is part of people's identity and life; language is not an addition or a nuisance for the humanitarian and response sectors when they try to engage with local communities. Language is always there. Multilingualism is not an exception, but the rule. *Lingua francas* come and go, they are not the solution, because people prefer to be offered (commercial as much as social) services in their own language. This book intends to stimulate a broad, multidisciplinary debate on how communication is bound to be extremely complex in cascading crises and on the role translation and interpreting can play to facilitate communication. There has to be a recognition that so much more can be done, so much more easily, by involving cross-cultural experts, intercultural communicators, or translators and interpreters in drills, training, and role-plays of scenarios used in crisis management. In the next section, we highlight how the various chapters in this book propel the debate forward and pinpoint strategic directions for future research and development.

5. Current and Future Avenues

The contributors to the chapters in this volume debate the notion of language access as a human-right in crisis settings, with a lot of focus on advocacy. They do so, directly or indirectly, through a common denominator: the purpose of demonstrating the imperative need for recognising, exploring, and developing a practical understanding of the role of multilingual communication in crisis situations. If human and financial resources are not available, the search needs to move to technological options and alternatives. It is

not enough to realize these limits. There is a need to overcome them, as all humanitarian organizations and inter-governmental agencies involved in humanitarian operations recognize that 'communication is aid'.

Section 1 of this book provides three commentaries on different sample crisis settings, which nonetheless have similar traits. They engage with qualitative data and the issue of reconciling the urgency and need to work with the institutions during different forms of crisis, and the language barrier as a visible obstacle to establishing a relationship of trust. We know that voluntarism is a hallmark of crisis response, with engineers, electricians, and medics, for example, volunteering their expertise to help. We also know that people with multilingual competence will volunteer to translate and interpret when required. Sometimes, professional translators and interpreters are simply not available and bilinguals step up to fill that void. This is clearly the case in the context of Yemen, for example, which is experiencing a protracted crisis for many years now. In his chapter on crisis translation in Yemen, Al-Shehari exposes the motivations of citizen T&Is in Yemen. Strikingly, one of the most dominant motivations is to act as advocates for communities who have no voice and to communicate their suffering to the world. His interviews with volunteer T&Is expose the struggles these people have in the face of no training for their adopted tasks. An issue faced in these circumstances is that sometimes a certain language – more than likely English – acts as the lingua franca for translation and interpreting, but many of the communicative parties have limited proficiency in that lingua franca and/or very strong accents, making the T&I challenge for untrained volunteers even greater.

The interviews conducted by Al-Shehari illustrate the complexities of acting as a volunteer crisis translator, such as lack of status within international response organisations, concerns about personal security, emotional and psychological impact

due to some of the horrific situations the T&Is find themselves working in, the role of gender and, specifically, the lack of freedom of movement as a female translator/interpreter, and even the lack of electricity supply that can impede getting translations done. Al-Shehari's chapter highlights that the volunteer (untrained) crisis translator is an activist, a negotiator, but, above all, a vulnerable human being. As we have come across these forms of volunteerism in multiple shades, one of the theoretical aspects that is difficult to reconcile with the practicalities of 'making do' with what is available in the field is in risk perception. Vulnerable, untrained, volunteer translators are likely to work in fear if not in anger.

Then, when dealing also with rare languages (for the locale), fear, lack of trust, and anger over unequitable treatment may also surface among professional, volunteer, and community interpreters. Drugan's chapter considers multilingual communication in police settings where language and translation have been overlooked or ignored, presenting the experiences of frontline workers following human trafficking raids in the UK and those of the assisting linguists. The latter are vulnerable groups themselves that face degrees of unequitable treatment (lack of training on stress management, lack of information on techniques, lack of respect for deontological values of their profession). The role of these linguists, their level of training, and their ethical codes are all highly varied in this very stressful, high-risk, crisis translation setting. The chapter highlights the considerable challenges of conducting research in this crisis setting and, as with Cadag's chapter, the benefits of interdisciplinary, participatory action research are lauded. Significantly, the repeated refrain that crisis response authorities underestimate the important role of language is confirmed. Prior to sensitisation through training, linguists were seen as 'tools or machines.' Drugan echoes Al-Shehari's observations on challenges faced by interpreters, though the challenges are somewhat different in the

setting dealt with by Drugan, e.g. very long interview sessions, sometimes finishing their tasks late at night and finding themselves in the middle of nowhere with an out-of-power mobile phone and no assistance.

Being instrumental in communication does not imply that interpreters can be used as disposable tools. A third crisis setting is presented by Filmer, in which once again linguists are *handled* like instruments. Gender-based violence is a global phenomenon, but the risk to its exposure is intensified in migratory flows. Men, women, and children who cross the Mediterranean face many linguistic and cultural barriers, especially when recounting some of the horrors experienced on their journeys. The commentary highlights the need for psychological support, as does Al-Shehari's chapter, though this time the focus is on the recipients of crisis translation rather than on the T&Is themselves.

Social, medical and psychological services are a necessity for anyone who has endured sexual or gender-based violence (SGBV). Yet, imagine trying to access such support in a context where limited linguistic and intercultural support exists. Filmer draws our attention to this troubling situation, commenting that lack of support is likely to lead to cascading crises. Linguistic and cultural communication barriers are rife, but what is even more striking is that the victims find it difficult to express their suffering in *any* language, sometimes therefore necessitating non-verbal channels to help victims break through the communication barrier. The role of gender in facilitating or inhibiting linguistic mediation in the context of SGBV in migration is highlighted again here. Attention is drawn to the personal trauma that the intercultural mediator can experience; sometimes having to revisit their own previous trauma when relaying that of the fresh migrant to the medics.

All three chapters in this section, highlight the need for training of organisations who make use of translators and interpreters in crisis settings, of the need to raise awareness of the importance of language and translation, the considerable trauma that can be experienced by the T&Is themselves, whether professional or not, and their need for training to deal with crisis translation tasks.

Moving attention from contexts of crisis translation, the second section of this volume (Instruments and Supports) turns to language specifically and supports for providing adequate access to language, either through accessibility frameworks, plain language initiatives, or through translation technology.

A primary focus for Rodríguez Vázquez and Torres-del-Rey's chapter is crisis communication for people with disabilities (PwD), who tend to be among the most disadvantaged populations during emergency situations. Accessibility of information includes translation and accessibility in the original language. Combining disability with cultural and linguistic diversity makes the challenge of crisis communication greater. Universal Design principles are put forward in this chapter as being potentially beneficial for all members of a crisis-affected community, making content easier to access, understand, and translate. Not doing so, it is argued, could lead to negative cascading effects, for the PwD community, their carers, and for the affected community more generally. The Design for All approach advocated is a proactive rights-based approach to DRR for people with disabilities. Inclusion of PwD communities in disaster preparation through, for example, the testing of emergency response information and procedures, echoes a call made later in the book in Cadag's chapter for participatory action research that is also inclusive. An essential point made in this chapter is that PwD can also have advantages in disasters over members of the community who are not disabled.

Rico Pérez casts a lens over the NGO sector and finds it remarkable that translation tools, the hallmark of specialized, commercial translation for several decades, has barely made an impact in the humanitarian aid chain. Rico Pérez speculates that the (sometimes) voluntary nature of translation in NGOs and the lack of explicit mention of translation in communication budgets might be the reason for the lack of use of professional technologies in NGO-specific translation. An inability to keep up with speedy technological development is alluded to also. Furthermore, she points to the lack of mention of language issues (and, therefore, translation) in the UN's Sustainable Development Goals as a potential reason. By examining 'contact zones' between donors, NGOs, local partners, and beneficiaries, Rico Pérez demonstrates the potential role of translation technology in each possible zone. An important point here is to note the range of types of content that might be translated in a crisis setting by NGOs – and here we refer to all stages of a crisis, including, or especially, readiness, resilience building and recovery. The role of written translation is therefore not to be discounted in crisis response. Overall, Rico Pérez makes a convincing claim that NGOs would benefit from a comprehensive approach to translation technology, parallel to that of the commercial sector, and open multilingual resources will play an important role in helping this to happen.

The usefulness of translation technology for crisis translation is a theme taken up also by Parra Escartín and Moniz, who additionally consider crowdsourcing. They focus on the ethical issues that might prevail when machine translation and crowdsourcing are used for crisis translation, enumerating these issues to raise awareness. Starting from the position that no technology is ethically neutral, the authors outline potential workflows in crisis translation with different levels of technological implementation. The ethical questions pertaining to translation in general and data in

particular are then unpicked for crisis translation settings, which introduce additional sensitivities. Data ownership, anonymization and storage – all for the crisis context – are just some of the issues raised for consideration. The management of data becomes even more complicated if temporary volunteers are availed of, many of whom would presumably not be under any confidentiality or non-disclosure agreements. The IEEE 'ethically aligned design' principles are considered for the development and deployment of translation technology in crisis settings.

Cadwell, Bollig and Ried's chapter throws light on a case of volunteer, specialized translation in a health-content setting (Cochrane.org). The theme of the volunteer as advocate, first presented in Al-Shehari's chapter, resurfaces here. Linguistic volunteers seem to be motivated by more than target text production and career development. By allowing volunteers of varying degrees of experience to contribute to different kinds of content production, Cochrane harnesses the volunteers' wish to advocate for broad knowledge of health-related topics. The management and sustainability of flow of volunteers for this setting is highlighted as a challenge and reinforces the point that significant effort is required to successfully harness volunteers for any crisis translation setting. The provision of feedback appears to correlate with volunteer retention. Using volunteer translation communities for more than *just* producing translated content, but also as engaged communities who are willing to advocate for and contribute to a bigger communal good is an important observation from this case study.

Language needs in disaster risk reduction (DRR) and disaster risk management (DRM) (combined as DRRM) is the focus of Jake Rom Cadag's chapter, introducing a thematic section focussing on methods and data. The lack of recognition of the role of language and translation in DRRM and, specifically, in conducting research for DRRM

is attributed to a prevalence of ethnocentrism. For DRRM in general, translation from the largely Western languages of disaster response and inclusion is not sufficient. Full participation and two-way translation and dialogue is required, allowing for highly situational cultural concepts and knowledge to be discussed, mapped and understood. The situationality of each disaster might result in a combination of different stakeholders and languages, thereby requiring flexibility in language response. Cadag also argues for the need not just of 'translating' DRRM concepts, but of 'laymanizing' them, or making specialized terms more accessible to those with limited understanding or language proficiency. This initiative might even involve creating visual aids for school children for evacuation drills, hence intersemiotic translation.

To improve DRRM, collaborative multidisciplinary research is required. The participation of stakeholders, especially full engagement of disaster-affected populations, is not a given in disaster research, but inclusion of affected communities would seem like a very necessary development for the field. Their inclusion, however, requires first that communication can happen in a language that they understand and, second, that Western concepts of disaster, risk, hazards etc. are made culturally appropriate. It is important to consider the methods used for inclusion of affected communities. Cadag suggests that participatory research methods, with due consideration for language and culture, as well as intellectual ability, could be given higher consideration. He proposes Participatory Action Research (PAR) as a suitable framework and provides examples of the tools that sit in that toolbox. Importantly, PAR favours conduct of research in local languages and facilitators who can speak those languages.

Measurable, rigorous, empirical data on the role of communication and lack thereof in developing awareness of intercultural communication in cascading crises are

an objective to pursue in crisis translation with urgency. In the past few months, there have been a number of aviation crashes which are a form of cascading crisis – as the tragedy is followed by disruption to ever-busier flying routes, airports, and circulation of goods and people. Those crashes were not necessarily due to communication errors, but communication is still an issue for pilot-controller interaction, as Bettina Bajaj's chapter illustrates. This chapter addresses the concept of intralingual translation for native and non-native speakers of a language in situations that require accuracy and comprehension to ensure health and well-being. Though English is the default common language for pilots and controllers, Bajaj considers it important to point out that these agents are often exposed to multilingual situations with strong accents, dialects and, presumably, varying proficiency. The issue of lingua franca and the challenges it presents for crisis communication and translation presents itself here, in a compelling example, as in previous chapters.

Unlike some of the other communication settings described in this volume, Bajaj deals with the setting where verbal communication is the only channel and the all-important non-verbal channel is missing. In high stress, high stakes settings, this means that clarity and accuracy are of the utmost importance. Bajaj, however, draws our attention to the fact that non-verbal signals, such as prosody and paralinguistic clues, are available in verbal communication channels, if the communicators are willing, and trained, to hear them. A strong argument is made in support of the importance of 'communication awareness' for effective communication in general, but especially in high stress, high stakes settings, such as crises. Using the conversation analysis method applied to one example of a very serious failing of communication awareness, Bajaj makes a compelling case for the use of this method in analysing failures in pilot-controller communication.

Rossetti also takes up the topic of intralingual translation for increased comprehension of health content, with a focus on measuring readability and comprehensibility. By introducing technological support into an otherwise manual simplification process, it is demonstrated that aspects of readability can be significantly improved, suggesting that some technological support would help (volunteer) editors to create more readable content. However, Rossetti's evidence also shows that increased readability does not necessarily lead to increased comprehensibility. This finding emphasizes that the concepts of, and relationship between, readability and comprehensibility are not straightforward, and that we cannot assume that by increasing readability we automatically increase comprehension. Reading skills play a significant role, pointing to a need to consider the dissemination of risk and crisis content in multiple formats. Empirical testing of textual interventions for increased readability of crisis-related content is therefore imperative.

Conclusions

The task of summarising the future directions for research and development in the domain of translation for cascading crises is very difficult, given the rich landscape presented in this volume. Nonetheless, we attempt to provide a succinct summary of what we feel are the salient focal points for the future.

The need for training of translators and editors (whether already trained and operating professionally or not) and of those who need their services deserves immediate attention. This training should not just focus on 'how' or 'what' to do, but also on the emotional, psychological and physical well-being of those who act as translators in crisis settings. Management of translation volunteers, quality assurance, and feedback as a form of training and retention are worthy of further attention.

Technological supports already exist to bolster translation and editing activity in the commercial sector; there is no reason why this could not be harnessed for the crisis and NGO sector. Ethical questions emerge in relation to Artificial Intelligence in particular, which are exacerbated if AI-driven translation technology is deployed for crisis response.

Given the lack of recognition of the importance of language and culture, and of translation specifically, in crisis settings, the domain is ripe for research and development. Interdisciplinarity will be essential and methods like participatory action research are emerging as desirable approaches.

Finally, calling something a 'crisis' can attract both positive and negative attention. Positive, in the sense that its importance, especially from a communication and translation point of view, can be better recognized and dealt with than in previous times, but negative in that crises can be politically engineered, as Drugan notes, to stoke other reactions such as fear. Recognising and debating the pros and cons of such labelling is important. Recognising the important contribution of translation in these settings, whether or not they are labelled as a 'crisis', is a necessity.

The *Sendai Framework* demands a convergence of activities towards risk reduction. If we accept that 'Risk reduction and hazard mitigation strategies must address the underlying practices that contribute to vulnerability' (Comfort *et al.*, 1999, p. 40), then we also accept the inclusion of language translation as a risk reduction tool. Pronounced at a critical turning point for re-assessing disasters not as 'occasional crises' but as events that are amplified by existing conditions and their effects, now considered as cascading, leading experts in disaster research acknowledged that affected populations needed to be 'enabled' to 'manage their own environments more responsibly and equitably over the long term by joining in a global structure that

supports informed, responsible, systematic actions to improve local conditions in vulnerable regions' (ibid.).

The commitment to risk reduction is currently included in the *Sendai Framework*, the commitment to engage with communities is enshrined in the *Grand Bargain*, so it may be time to look at risk perception as a linguistic issue for which appropriate language and modes of communication ought to be used to pursue all the commitments to risk reduction. After all, these commitments are to sustain the essential human right for protection (Art. 3), and this human right comes after the right not to be subject to discrimination because of language (Art. 2). It is time to look at cascading crises and the effects of risk perception through the lenses of translation.

Acknowledgment

The discussion of crisis translation in this paper draw on the activities and findings of the INTERACT Crisis Translation Network a project that has received funding from the European Union's Horizon 2020 Research and Innovation program and the Marie Skłodowska-Curie Actions (Grant No. 734211).

References

Alexander, David E. 2002. *Principles of emergency planning and management*. Oxford and Harpenden, NY: Oxford University Press on Demand/Terra Publishing.

Alexander, David E. 2014. "Communicating earthquake risk to the public: the trial of the 'L'Aquila Seven'." *Natural Hazards* 72: 1159–1173.

Alexander, David E. 2016a. "Disaster and Emergency Planning for Preparedness, Response, and Recovery". In *Oxford Research Encyclopedia Natural Hazard Science*, 1–20. Oxford and New York, NY: Oxford University Press.

Alexander, David E. 2016b. *How to Write an Emergency Plan*. Edinburgh: Dunedin Academic Press.

Bastide, Loïs. 2018. "Crisis Communication During the Ebola Outbreak in West Africa: The Paradoxes of Decontextualized Contextualization." In *Risk Communication for the Future*, edited by Mathilde Bourrier, and Corinee Bieder, 95–108. Cham: Springer.

Birkmann, Joern, Omar D. Cardona, Martha L. Carreño, Alex H. Barbat, Mark Pelling, Stefan Schneiderbauer, Stefan Kienberger, Margreth Keiler, David E. Alexander, Peter Zeil, and Torsten Welle. 2013. "Framing vulnerability, risk and societal responses: the MOVE framework." *Natural Hazards* 67 (2): 193–211.

Blaikie, Piers, Terry Cannon, Ian Davis, and Ben Wisner. 1994. *At Risk. Natural Hazards, People's Vulnerability and Disasters*. London and New York, NY: Routledge.

Cadwell, Patrick. 2014. "Translation and Interpreting Needs in the Great East Japan Earthquake of 2011." Paper presented at the Man versus Machine: Proceedings of the XXth FIT World Congress (Vol. II).

Cadwell, Patrick. 2015a. "A Place for Translation Technologies in Disaster Settings: The Case of the 2011 Great East Japan Earthquake." In *Conflict and Communication: A Changing Asia in a Globalising World*, edited by Minako O'Hagan and Qi Zhang, 248–282. Bremen: EHV Academic Press.

Cadwell, Patrick. 2015b. "Translation and Trust: A Case Study of How Translation was Experienced by Foreign Nationals Resident in Japan for the 2011 Great East Japan Earthquake." PhD thesis, *Dublin City University*. Accessed April 8, 2019. http://doras.dcu.ie/20839/.

Cannon, Terry. 2008a. “Reducing people's vulnerability to natural hazards communities and resilience.” *WIDER Research Paper 2008/34*. Accessed April 7, 2019. http://hdl.handle.net/10419/45089.

Cannon, Terry. 2008b. “Vulnerability, ‘innocent’ disasters and the imperative of cultural understanding.” *Disaster Prevention and Management: An International Journal* 17 (3): 350–357.

Comfort, Louise, Ben Wisner, Susan L. Cutter, Roger Pulwarty, Kenneth Hewitt, Anthony Oliver-Smith, John Wiener, Maureen Fordham, Walter Peacock, Fred Krimgold. 1999. “Reframing disaster policy: the global evolution of vulnerable communities.” *Global Environmental Change Part B: Environmental Hazards* 1 (1): 39–44.

Cornia, Alessio, Kerstin Dressel, and Patricia Pfeil. 2016. “Risk cultures and dominant approaches towards disasters in seven European countries.” *Journal of Risk Research* 19 (3): 288–304.

Douglas, Mary, and Aaron Wildavsky. 1983. *Risk and culture: An essay on the selection of technological and environmental dangers*. Berkeley, CA and London: University of California Press.

Enander, Ann. 2018. “Principles of Emergency Plans and Crisis Management.” In *Handbook of Safety Principles*, edited by Niklas Möller, Sven Ove Hansson, Jan-Erik Holmberg, and Carlpp Rollenhagen, 711–731. Hoboken, NJ: Wiley and Sons.

Federici, Federico M., and Khetam Al Sharou. 2018. “Moses, time, and crisis translation.” *Translation and Interpreting Studies. The Journal of the American Translation Interpreting Studies Association* 13 (3): 486–508.

Federici, Federico M., and Patrick Cadwell. 2018. “Training Citizen Translators: Red Cross translation needs and the delivery of a bespoke training on the fundamentals of translation.” In *Translation in non-governmental organisations.* Special issue of *Translation Spaces*, edited by Wine Tesseur. 7 (1): 20–43.

Federici, Federico M., Brian J. Gerber, Sharon O’Brien, and Patrick Cadwell. 2019. *The International Humanitarian Sector and Language Translation in Crisis Situations. Assessment of Current Practices and Future Needs*. Accessed April 7, 2019. https://drive.google.com/file/d/1jGEhbiAzoxuVZw25Bpj9EnjlDFcfcAT-/view.

Filmer, Denise, and Federico M. Federici. 2018. “Mediating Migration Crises: Sicily and the Languages of the Despair.” *European Journal of Language Policy* 10 (2): 229–253.

Gaillard, Jean-Christophe. 2010. “Vulnerability, capacity and resilience: perspectives for climate and development policy.” *Journal of International Development* 22 (2): 218–232.

IFRC. (2005). *World Disasters Report: Focus on Information in Disasters*. Accessed April 7, 2019. http://www.ifrc.org/Global/Publications/disasters/WDR/69001-WDR2005-english-LR.pdf.

IFRC. (2006). *Disaster Management in a Global World: Tensions, Contradictions and Imperatives - A Red Cross Red Crescent Perspective*. Accessed April 7, 2019. http://www.ifrc.org/en/news-and-media/opinions-and-positions/speeches/2006/disaster-management-in-a-global-world-tensions-contradictions-and-imperatives---a-red-cross-red-crescent-perspective/.

IFRC. (2014). *World Disasters Report: Focus on Culture and Risk*. Accessed April 7, 2019. http://www.ifrc.org/world-disasters-report-2014.

IFRC. (2018). *World Disasters Report 2018. Leaving no one behind*. Accessed April 7, 2019. https://media.ifrc.org/ifrc/wp-content/uploads/sites/5/2018/10/B-WDR-2018-EN-LR.pdf.

Kelman, Ian. 2018. “Islands of vulnerability and resilience: Manufactured stereotypes?” *Area* 00: 1–18. doi:https://doi.org/10.1111/area.12457.

O’Brien, Sharon. 2016. “Training Translators for Crisis Communication: Translators Without Borders as an Example.” In *Mediating Emergencies and Conflicts. Frontline Translating and Interpreting*, edited by Federico M. Federici, 85 –111. Houndshill, Basingstoke and New York, NY: Palgrave Macmillan.

O’Brien, Sharon, and Patrick Cadwell. 2017. “Translation Facilitates Comprehension of Health-Related Crisis Information: Kenya as an example.” *Journal of Specialised Translation* 28: 23–51.

O’Brien, Sharon, and Federico M. Federici. (forthcoming). “Crisis Translation: Making Language Translation Visible in Disaster Prevention and Management.” *Disaster Prevention and Management* 29.

O'Brien, Sharon, Federico M. Federici, Patrick Cadwell, Jay Marlowe, and Brian J. Gerber. 2018. “Language Translation During Disaster: A Comparative Analysis

of Five National Approaches." *International Journal of Disaster Risk Reduction* 31: 627–636.

Pescaroli, Gianluca, and David E. Alexander. 2015. "A definition of cascading disasters and cascading effects: Going beyond the 'toppling dominos' metaphor." *planet @ risk* 3(1). Accessed April 7, 2019. https://planet-risk.org/index.php/pr/article/view/208/355.

Quarantelli, Enrico L. 1978. *Disasters: Theory and research*. London and Thousand Oak, CA: Sage.

Quarantelli, Enrico L. 1987. "Disaster Studies: An Analysis of the Social Historical Factors Affecting the Development of Research in the Area." *International Journal of Mass Emergencies and Disasters* 5 (3): 285–310.

Quarantelli, Enrico L. 1998. *What is a disaster? A dozen perspectives on the question*. New York, NY: Routledge.

Quarantelli, Enrico L., ed. 2005. *What is a disaster? A dozen perspectives on the question*. London and New York, NY: Routledge.

Quintanilla, Jacobo, and Lizzie Goodfriend. 2012. *When Information Saves Lives: 2011 Humanitarian Annual Report*. Accessed April 7, 2019. http://www.internews.org/sites/default/files/resources/IN2011_HUMANITARIAN_AnnualReport-web.pdf.

Slovic, Paul. 1987. "Perception of risk." *Science* 236 (4799): 280–285.

Slovic, Paul, and Ellen Peters. 2006. "Risk Perception and Affect." *Current Directions in Psychological Science* 15 (6): 322–325.

Tesseur, Wine. 2018. "Researching translation and interpreting in non-governmental organisations." In *Translation and Interpreting in Non-Governmental Organisations*, Special Issue of *Translation Spaces*, edited by Wine Tesseur, 7 (1): 1–19.

Thomas, Deborah S. K., Brenda D. Phillips, William E. Lovekamp, Alice Fothergill. 2013. *Social Vulnerability to Disasters* (2nd ed.). Boca Raton, FL: CRC Press.

Tierney, Kathleen. 2008. "Hurricane Katrina: catastrophic impacts and alarming lessons." In *Risking House and Home: Disasters, Cities, Public Policy*, edited by John M. Quingley, and Larry A. Rosenthal, 119–136. Berkeley, CA: Institute of Governmental Studies Publications.

UNISDR. (2015). *Sendai Framework for Disaster Risk Reduction 2015 - 2030*. Accessed April 7, 2019. http://www.unisdr.org/files/43291_sendaiframework fordrren.pdf.

UNISDR. (2016). *Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction*. Accessed April 7, 2019. https://www.preventionweb.net/files/50683_oiewgreportenglish.pdf.

Welle, Torsten, and Joem Birkmann. 2015. "The World Risk Index. An Approach to Assess Risk and Vulnerability on a Global Scale, Electronic, Individual." *Journal of Extreme Events* 2 (1): 1550003. doi:https://doi.org/10.1142/S234573 7615500037.

Welle, Torsten, and Joem Birkmann. 2016. "Measuring the Unmeasurable: Comparative Assessment of Urban Vulnerability for Coastal Megacities—New York, London, Tokyo, Kolkata and Lagos." *Journal of Extreme Events* 3 (03): 1650018. doi:10.1142/S2345737616500184.

Welle, Torsten, Yaella Depietri, Marjory Angignard, Jörn Birkmann, Fabrice Renaud, and Stephan Greiving. 2014. "Vulnerability assessment to heat waves, floods, and earthquakes using the MOVE framework: test case Cologne, Germany." In *Assessment of Vulnerability to Natural Hazards. A European Perspective*, edited by Jörn Birkmann, Stefan Kienberger, and David E. Alexander, 91 –124. Amsterdam and Boston, MA: Elsevier.

[1] The research activities coordinated by Sharon O'Brien within the INTERACT Crisis Translation Network, of which Federico M. Federici is also a member, persuaded us to consider a number of overarching principles that emerged at every turn of the project. See https://sites.google.com/view/crisistranslation/home (accessed April 7, 2019).

[2] See https://www.ireus.uni-stuttgart.de/Internationales/WorldRiskIndex/#tabs-1 (accessed April 7, 2019).