# Programming and editing resilience?

## Digital information management in crises

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## Abstract

Big data approaches have a new vision: to use data for 'doing good', for example by sourcing information that is shared online into resilience apps, which are meant to ease crisis response. This chapter presents a new angle on the research about digital information management and social media use during crises by looking at the upsurge of 'editing technologies', e.g. algorithms that scan and sort online contents. Drawing on literature about consensus and dissent after the July 22nd attacks in Norway, this chapter argues that editing algorithms featured in social media may complicate the already difficult project of balancing consensus and contestation in crisis response discourses. It describes how users and technologies co-create crisis response discourses online and problematizes how editorial technologies have the power to make some contents visible while making others invisible. The chapter argues that such editorial techniques not only influence the kind of resilience discourse that comes about online, but that the danger of algorithmically 'editing out' oppositional voices harbors the kinds of conflicts that Norway experienced once the consensus-oriented discourse faded.

# Introduction

The concept of resilience is no longer news. It has arrived (Kaufmann 2017a). Especially emergency management programs cultivate the idea of bouncing back or springing forward in response to stress (Holling, 1973; Garmezy, 1973). This becomes evident when we look at institutional programs such as the European Commission's "Strategic Approach to Resilience in the EU's External Action" (European Commission, 2017) or the UN's Hyogo Framework for Action "Building the Resilience of Nations and Communities to Disasters" (UNISDR, 2005). Resilience, however, has not only become a central concept in emergency management programs, but has also found its place in the programming of online platforms and computer applications for crisis response. Approaches to resilience programming include anything from digital mapping of ongoing disasters to the coordination of relief activities based on available online information.

What institutional and digital resilience programs have in common is that they provide emergency populations with a platform to organize themselves. Both kinds of programs are intrinsically organized around the expectation that those hit by crises take on an active role in dealing with it. In light of that, resilience has been interpreted as a program of empowerment that seeks to "build back better" (UNISDR, 2010). Others, however, termed resilience the "lingua franca of survival" (Duffield, 2016) and criticized its guiding theme of adaptation as a contemporary form of "insecurity by design" (Evans & Reid, 2014, p. 38), since security no longer means the protection from harm. Rather, resilience promotes a do-it-yourself notion of security. This is why it has also been described as neoliberalism's normative way of mobilizing social agents (Joseph, 2013). Whether one chooses to interpret resilience as empowerment or as a neoliberal form of governance, the expectation of a participant, self-organized emergency population is always a central norm that characterizes resilience programs. Yet, self-organization is not the only norm that characterizes resilience. In fact, any resilience program can be analyzed in view of the norms, values and expectations they incorporate.

This chapter looks at the way in which online applications for resilience and emergency management incorporate norms, not only through the form and format of postings, but also through the rise of editorial tools that can sort and associate contents with each other. Online emergency management systems have experienced a growth in the past few years (Steen, 2014) and commonly enjoy the reputation of being neutral or objective tools, simply because they are computing technologies. However, the recent debate about fake news, and specifically the one about fake news during emergencies (Ohlheiser, 2017), illustrates well how any computer program incorporates a set of norms. Computer programs are only as neutral as the data or contents fed into it (Boyd and Crawford, 2012; Andrejevic & Gates, 2014; Kaufmann & Jeandesboz, 2016), the social networks that spread its content (cf. Jackson, 2017), or the team writing its editorial algorithms (Kaufmann, 2017b).

In what follows I will briefly describe how resilience has gone digital and discuss some of the challenges that arise with resilience programming. Here, I will also draw on work done by other members of the NECORE project (Ezzati & Erdal, 2017; Thorbjørnsrud & Figenschou, 2017; Figenschou & Thorbjørnsrud, 2016) to illustrate the normativity and the challenge of editing online contents in response to crises such as that of July 22, 2011. These insights will help us understand that editing online contents during and as a part of crisis response requires a careful balancing of consensus and opposition-oriented discourses. I will then turn to describe and discuss how this task is no longer a journalistic one only, but increasingly done in collaboration with software and algorithms.

## From programs to programming: Resilience has gone online

The advent of social media gave emergency populations the option to share information about their situation. Emergency broadcasts on youtube were soon joined by crisis posts that could be re-tweeted or re-blogged on various online community platforms. Even though it is not a given that socially shared data is in fact seen by broader publics, it

has become a trend for agencies and online services to capture and analyze this information. The collection and interpretation of such large-scale information, however, requires hardware, databases, analytic skills and not least rightful access (Andrejevic & Gates, 2014). This is why organized 'big emergency data'-responses took a few years to identify the trend and translate it into dedicated services and apps. Before digital resilience programs were created, social media already provided platforms for self-initiated emergency management. Especially the networked character of social media allowed for customized usages. During the attacks of 22 July 2011 in Norway, for example, Facebook and twitter emergency management applications did not yet exist. Social media were nonetheless utilized to gain an overview of the emergency, to find out whether a person was safe, to express emotions, to mourn and to experience virtual unity (Kaufmann, 2016).

By today, some of these ad-hoc usages of social media are cast into digital resilience services. We can find, for example, Facebook's "Safety check" (FB Safety Check), an emergency check-in feature to show people that you are doing ok even though you may be in a crisis location. This feature has now become integrated into "Facebook Crisis Response" (FB Crisis Response), a platform that also provides community help and fundraising, along with crisis-related links and articles. "Google Crisis Response" (Google Crisis Response) is a similar and older mobile platform that can be used to spread information, to do fundraising, to gain access to connectivity and media kits, to translate information or to track virus outbreaks. Aware of the enormous amounts of retweets during emergency situations, twitter created "Twitter Alert" with which you can enhance the visibility of select, critical tweets "that contain up-to-date information relevant to an unfolding event, such as public safety warnings and evacuation instructions" (Twitter Alert). In order to avoid congested networks when people use WhatsApp, twitter, Facebook and Google Crisis Response, "First Net" has been created. It is an independent authority that provides first responders with a dedicated broadband network (First Net).

It is no surprise that resilience apps and programs flourish when the online information about emergencies is rich and diverse. It includes written contents, audio and visual data, but also metadata, which helps

to tie contents to approximate locations. This information is evaluated by means of statistics and algorithms to map ongoing emergencies, guide users in dealing with the present situation or create insights that are considered valuable for future emergencies. As such, digital resilience programs are the manifestation of the resilience logic. They inherently build upon the adaptive, self-organized emergency 'crowd' that is connected and happy to share. The crowd is here not only the main target of the information market, but also that of emergency management: the crowd provides information and performs its emergency response according the patterns identified by resilience programs. The role of digital programs is here to associate the available information and to specify steps for intervening and dealing with emergencies, which is in fact the key feature of *any* resilience program (Kaufmann, 2017a).

The excitement about such digital opportunities (e.g., Meier, 2013) is also met with criticism. A major question is, for example, whether a state of exception justifies the collection of potentially personal and private data. Other challenges concern the allocation of accountability for conclusions that are drawn from the data, the rise of new vulnerabilities such as misinformation, as well as the commercialization of resilience planning, or the creation of fear by spreading crisis information incautiously (cf. Kaufmann, 2017a; 2016, Crawford et al., 2013). While practicable answers to these criticisms are still rare, another set of issues arises with the analysis of online data: which information should be prioritized and how to fact-check information in order to avoid speculation and fake news? Some resilience programs count on the 'Wikipedia effect', meaning that other users correct mistakes shared on online platforms (Maron, 2013). The Federal Emergency Management Agency in the US, for example, installed 'Rumor Control' by publishing rumors and answering them on their site (FEMA Rumor Control).

## Editing online contents as a part of crisis response

While the fact-checking of social media contents remains difficult, it is not the only problem concerning information management during crises.

The editing of shared contents in general is becoming a challenge, especially when apps and software are used for more than practical emergency response, but become means of coping with crises emotionally and intellectually. This became utterly apparent when social media users were left with "unanswered ambiguities" (Kaufmann, 2016) in the aftermath of the 22nd of July attacks. They described how the virtual sense of unity, pride, support and solidarity was always experienced together with the silencing of specific voices, of hate and anger, of aspects too uncomfortable to be discussed online (ibid.). Amongst other things, this had to do with the short, semi-public, and potentially viral format of the postings. What this illustrates is that both the users and the technical functions of the platforms played a role for information management during the July 22 attacks, and thus also for the way in which emergencies were experienced and dealt with online.

To take this argument one step further, not only did users and technologies collaborate when it came to crisis information management, but this collaboration was imbued by norms. Certainly, the contents that users shared were normative, as for example discourses about unity and the experience of a common "we" in the aftermath of the terrorist attack. Furthermore, the editing of such contents, of choosing the opinions and experiences that were going to be visible and invisible in the aftermath of the attacks, was normative too. What may not be so obvious, however, is that these editing processes are more and more influenced by the used technologies. Technologies are part of the highly normative process of editing online information, since format and form of dissemination determines the kind of contents that are shared in the first place. The role that technologies play becomes particularly prominent when we look at what kind of information becomes visible online, but even more so when we realize which information remains unposted or is actively "edited out" – an operation that today can be done via algorithms. We shall see that the "editing out", the silencing of voices and the "invisibilization" of contents are central in the way an emergency is dealt with. In order to understand this point better, we will take a closer look at the discourses, media usages and editing processes that were part of dealing with the July 22 attacks in Norway.

The dominant response to the July 22 attacks was a focus on consensus (Ezzati & Erdal, 2017). This applied not only to political elites and news media, but also to social media discourses revolved around a united response to terrorism. While that is not unique to the Norwegian case (Putnam, 2002), the value of solidarity was nonetheless particularly pronounced in Norway with the rose marches and speeches by the political authorities at the time (Ezzati & Erdal, 2017). This consensual phase also determined editorial practice in news media, where journalists would consider their mission to be co-humans, to bolster taken-for-granted societal values and a shared understanding of the events (Thorbjørnsrud & Figenschou, 2016, p. 4). This unity would become symbolic of the official crisis-response and the way that Norway would deal with the attacks. The ritualistic journalism that sought to foster shared values entailed a distinctive editing practice in the online media (Thorbjørnsrud & Figenschou, 2016). Foregrounding a strong "we" would mean that voices deviating from this sense of unity would be muted (Thorbjørnsrud & Figenschou, 2016, p. 5). Anger, hate and revenge would neither feature in official media stories, nor in the online comment-sections, where editorial practice was particularly interventionist (Figenschou & Thorbjørnsrud, 2017). If online media were not closing their comment sections down completely, they would hire professional moderators to implement commenting guidelines about factuality and ethics, demand for registration and restrict topics for commenting (ibid.). Even though it seemed that the strong editorial character would get lost in social media (Thorbjørnsrud & Figenschou, 2016, p. 5), social media users did the editing themselves by deleting or re-posting specific contents (Kaufmann, 2016).

These strong editorial practices, however, led not only to what niche media experienced as "consensus-pressure" that was exercised mainly by the political and media elites who were close to the events in Oslo (Kaufmann, 2016, p. 13). It also led to a lack of meeting ambiguities and unanswered points, critique and open questions. This void became evident both on social media (ibid.) and in traditional media (Thorbjørnsrud & Figenschou, 2016), as well as amongst political elites (Ezzati & Erdal, 2017). Some, for example, didn't feel part of the consensus and would have found it even provocative to be part of the manifestations of unity, or to

take their open questions up in media discussions (Ezzati & Erdal, 2017, p. 10). They felt that they were seen as part of a homogeneous group, one that is associated with the perpetrator, the "other", when in fact they saw that one could be different from the Norwegian "we" in many ways (Ezzati & Erdal, 2017). As such, they were neither part of the direct response narrative in Norway, nor the discursive enactment of resilience.

To understand what such forms of *editing* voices *out* of the response discourse entails, Ezzati & Erdal (2017) introduce the works of Chantal Mouffe (2005). Mouffe discusses the exclusion of opposing voices as an act of power. Exclusion of voice is likely to turn those that hold contesting or opposing views into adversaries or enemies, who no longer share the common bonds of a democratic society (ibid.). As such, exclusion of opposing voices becomes a trigger for conflict (ibid.). This also means that when the resilience of a nation becomes associated with a unity that actively excludes deviant voices, conflict is likely to emerge. In Norway, conflicts did emerge. Figenschou & Thorbjørnsrud (2016) described how editorial practice was challenged and conflicts surfaced especially on the backdrop of "the competing interests between various groups of victims, who all qualify for particular care and protection but represent divergent opinions on what constitutes legitimate debate" (p. 13).

In order not to subdue or mute underlying disagreements, editorial practices of consensus and the building of a "common ground" need to be combined with contestation (Ezzati & Erdal, 2017; Mouffe, 2005). Contestation refers here to a divergent interpretation of the situation, a peaceful disagreement that would eventually not lead to polarization, but to plurality and de-escalation (ibid.). Approaches that facilitate contestation would for example create legitimate channels for dissent in order to represent voices that diverge from the broadly accepted discourses (Thorbjørnsrud & Figenschou, 2016, p. 16f.). In Norway, some media did in fact practice this 'opposition-oriented editing' by expanding the range of voices and giving space to open editorials with divergent arguments and productive dissent that could be carefully countered with more mainstream voices (Figenschou and Thorbjørnsrud, 2017). Monitoring such mediated debates, however, needed a lot of focus. Other media houses simply outsourced this editorial task and therewith the editorial control

to multinational media platforms, such as Facebook (Figenschou and Thorbjørnsrud, 2017, p. 955).

## Algorithmic editing during crises: on our way to resilience bubbles?

Editorial practice plays out differently depending on the format of the technology. Traditional media can steer debates and open up for contesting views in very different ways from social media, not to mention that the format of contestation – a highly contextualized open editorial piece or a short post such as a tweet – does make an enormous difference. Different online technologies allow for editorial practice, i.e. the silencing or the creation of contestation, in their own ways. This means that they also shape emergency response in their own ways. In Norway, the immediate response to the attack followed such a strong consensual narrative that contesting forms of dealing with the event did not receive much space. It was not until after a few weeks that online news media allowed for carefully edited opposing views. The interventionist editorial practices on comment fields, however, remained strong.

When we look at the response on social media, we do find that the users themselves play a role in deciding which contents are posted and shared in the first place. Some of these user decisions streamline or channel social media conversations more than users may be aware of. One example mentioned by a user of Facebook in the aftermath of the Utøya attacks was the case of *slacktivism* (cf. Kaufmann, 2017a): the reduction of an action that is meant to be political to simply liking, clicking on or sharing the contents one agrees with. This is a way of making a statement that does not need much engagement or investment and together with the sites' functions, it does channel or streamline social media debates. In addition to such trends of 'editing' social media communication that are initiated by the users themselves, we also find a range of technological functions that determine the editing of voice on social media platforms. Not only does the rather short format of postings and the loss of context play a role here. The fact that social media are a semi-public network, which means that content can 'go viral' and yet be associated with you,

also determines which kind of information is shared, and which one is not. This, however, requires the user's consciousness about the character of the medium. In that respect, some interviewees mentioned that the awareness about the publicity of the posted content even made them refrain from posting contents at all (Kaufmann, 2016). Especially in extreme situations like crises, however, the consciousness about the character of a communication medium cannot be taken for granted.

Something that is harder to be aware of or conscious about is the way in which algorithmic editing increasingly influences social media responses. It is intuitive to assume that 2.0 media, meaning dialogical forms of communication, and 3.0 technologies, where many communicate with many, allow for a broader variety of voices than traditional media. The very term *social* media indeed suggests composite discussions and yet, there are editing mechanisms at play that unify and fragment online communication at the same time. As opposed to traditional media, the way in which editing takes place is less obvious and visible. Algorithms 'enact editing', for example, by suggesting contents to users based on what they have posted, liked or re-tweeted. Such personalized results streamline the information that the user gets access to, leading to a separation of the user from oppositional contents, which is why Eli Pariser called such phenomena "filter bubbles" (Pariser, 2011). As opposed to the so-called "echo chamber", which describes a similar phenomenon from a more pejorative perspective (i.e. pointing to someone else's failings), the term filter bubble has a more self-critical connotation (Lum, 2017). The effect of filter bubbles is that social media users are supported in their view and tend to connect with online communities that share their interests. Voices that contrast the mainstream opinion may then not come to the surface, either because opposing voices are simply not part of the community, because community members decide against speaking up or because such voices are over time edited out of the conversation by the algorithm. As such, the voices we see and hear on social media may in fact be more unified or consolidated than we expect.

Some argue, however, "somewhat counterintuitively, these same channels are also associated with an increase in an individual's exposure to material from his or her less preferred side of the political spectrum"

(Flaxman et al., 2016, p. 298). It remains to be seen whether filter bubbles would then contribute to a climate of contestation with carefully edited contextualization of opinions, or rather one of polarization and conflict, where reading divergent views contributes to an intensification of one's own beliefs. Other algorithmic technologies enable the editing of posts according to their level of toxicity, meaning language that is "likely to make others leave the conversation" (Conversation AI). For example, "Conversation AI" is a function that is developed as part of Alphabet-owned "Jigsaw". Jigsaw is a platform that "builds technology to tackle some of the toughest global security challenges facing the world today—from thwarting online censorship to mitigating the threats from digital attacks" (Jigsaw). The aim of the project Conversation AI is "to help increase participation, quality, and empathy in online conversation" (Conversation AI). This can be done by identifying where particularly harmful or toxic comments come from and by moderating them. One possible application of the algorithm they develop would be to include a filter in the Google Chrome settings where users can decide what level of toxicity they would like to read on news sites, or sliders that allow them to rank comments according to toxicity (Conversation AI Perspective Hacks). While none of these technologies is yet in use, and the developers outspokenly recommend a journalistically moderated use of the algorithm (Conversation AI), the project of coding toxic language shows nonetheless that coding deviant contents and steering how much one would like to be exposed to them, may also become a possibility. Toxicity and other sorting algorithms, however, are only as neutral as the data they are based upon, and if set out to rank or invisibilize contents they perform highly normative work. As such, filter algorithms are another example of normatively imbued, yet inconspicuous technologies that in the best-case scenario enable contestation within online debates and increase participation, or in the worst case exclude opposing views and polarize standpoints.

Given that the dividing line between productive dissent and intolerable deviance (Figenschou & Thorbjørnsrud, 2017, p. 955) or toxicity is thin and professional standards do not yet exist (ibid.), it remains to be seen whether sorting algorithms introduce their own new standards in editing online debates and resilience discourses. In light of the upsurge

of such editing technologies, the central questions remain: what kind of content becomes visible and invisible through editing algorithms? Are users aware of this form of sorting? Will oppositional views be allowed to appear or will they be muted online, especially when shared in response to a national crisis? In light of an increasing integration of traditional and social media, which means that the boundaries between journalistic and algorithmic forms of editing become more blurred as well, these questions become all the more relevant.

## Conclusion

Crisis response includes not just practical answers to emergencies, but arguably also emotional and intellectual responses - that is discourses about traumatic events. Here, the management of disagreement seems to be particularly challenging. Balancing consensus- and opposition-oriented contents in order to avoid polarization and conflicts seems to require extensive editorial resources in the first place (Thorbjørnsrud & Figenschou, 2016; Figenschou & Thorbjørnsrud, 2017; Ezzati & Erdal, 2017), and even more so if they are uttered in response to a terrorist attack. In addition to that, such discourses increasingly take place online in a fast-moving, networked environment, where statements can not only spread widely and publicly, but where they are also registered, coded and translated into resilience apps.

The way in which algorithmic tools are starting to be part of both the dissemination and the editing of online contents is a rapid development that deserves a closer look. In doing so, I argued that users and technologies co-create crisis responses. More specifically, decisions of algorithms to foreground some contents and make others invisible is by no means neutral or objective, but a highly normative and powerful form of enacting crisis response. The specificity of the medium chosen to do crisis response is thus more influential than most users are aware of. As my earlier research on social media use during crises has shown, the chosen technology may influence viewpoints; it may create consensus and unity, but also ambiguity and voids (Kaufmann, 2016; 2017a). In this chapter, I have taken this discussion further by showing how editing technologies

are part of either facilitating or shutting down contestation in the way that they sort and filter contents. Even though such automated, yet highly normative decision-making is most likely inconspicuous to the average user, it does have effects on how crises are experienced and how conflict-laden crisis response and resilience discourses may turn out to be, especially when editing technologies make oppositional views disappear. Since the new vision in big data approaches is to make the world a better place with the help of data analysis, we can only hope that those programming and offering such services bear in mind what a powerful role these technologies play in crisis response – for better or worse.

# References

Andrejevic, M. & Gates, K. (2014). Big Data Surveillance: Introduction. *Surveillance and Society* 12(2), p. 185–196.

Boyd, D. & Crawford, K. (2012). Critical Questions for Big Data. Provocations for a cultural, technological, and scholarly phenomenon. *Information, Communication and Society* 15(5), p. 662–679.

Crawford, K., Faleiros, G., Luers, A., Meier, P., Perlich, C. & Thorp, J. (2013). Big Data, Communities and Ethical Resilience: A Framework for Action. White Paper for PopTech and Rockefeller Foundation. Available at: https://s3.amazonaws.com/poptech_uploaded_files/uploaded_files/66/original/BellagioFramework.pdf (5 December 2017).

Duffield, M. (2016). The resilience of the ruins: toward a critique of digital humanitarianism. *Resilience – International Policies, Practices and Discourses* 4(3), p. 147–165.

European Commission (2017). *Joint communication to the European Parliament and the Council. A Strategic Approach to Resilience in the EU's external action*. Available at: https://eeas.europa.eu/sites/eeas/files/join_2017_21_f1_communication_from_commission_to_inst_en_v7_p1_916039.pdf (5 December 2017).

Evans, B. & Reid, J. (2014). *Resilient Life. The Art of Living Dangerously*. Cambridge: Polity Press.

Ezzati, R.T. & Erdal, M.B. (2017). Do we have to agree? Accommodating unity in diversity in post-terror Norway. *Ethnicities* (online first), p. 1–22.

Figenschou, T.U., Thorbjørnsrud, K. (2017). Disruptive Media Events. Managing mediated dissent in the aftermath of terror. *Journalism Practice* 11(8), p. 942–959.

Flaxman, S., Goel, S. & Rao, J.M. (2016) Filter Bubbles, Echo Chambers, and Online News Consumption. *Public Opinion Quarterly* 80(S1), p. 298–320.

Garmezy, N. (1973). Competence and adaptation in adult schizophrenic patients and children at risk. In: S.R. Dean (ed.), *Schizophrenia: The first ten Dean Award Lectures*. New York: MSS Information Corp., p. 163–204.

Holling, C.S. (1973). Resilience and Stability of Ecological Systems. *Annual Review of Ecology and Systematics* 4, p. 1–23.

Jackson, J. (2017). Eli Pariser: activist whose filter bubble warnings presaged Trump and Brexit. *The Guardian*. Available at: https://www.theguardian.com/media/2017/jan/08/eli-pariser-activist-whose-filter-bubble-warnings-presaged-trump-and-brexit (Accessed 17 November 2017).

Joseph, J. (2013). Resilience as embedded neoliberalism: a governmentality approach. *Resilience* 1(1), p. 38–52.

Kaufmann, M. (2017a). *Resilience, Emergencies and the Internet. Security In-Formation*. London: Routledge.

Kaufmann, M. (2017b). The co-construction of crime predictions: Dynamics between digital data, software and human beings." In: Fyfe N.R., Gundhus H.O.I. & Vrist Rønn, K. (eds.), *Moral Issues in Intelligence-led Policing*. London: Routledge, p. 143–160.

Kaufmann, M. & Jeandesboz, J. (2016). Politics and 'the digital': from singularity to specificity. *European Journal of Social Theory* 20(3), p. 309–328.

Lum, N. (2017). The Surprising Difference Between 'Filter Bubble' and 'Echo Chamber'. *Medium*. Available at: https://medium.com/@nicklum/the-surprising-difference-between-filter-bubble-and-echo-chamber-b909ef2542cc (Accessed 14 March 2017).

Maron, D.F. (2013). Disaster Response. Congress is grappling with the benefits and risks of using Facebook, Twitter and other social media during emergencies. *Scientific American*. Available at: https://www.scientificamerican.com/article/how-social-media-is-changing-disaster-response/ (Accessed 5 December 2017).

Meier, P. (2013). How to Create Resilience Through Big Data. *iRevolutions*. Available at: https://irevolutions.org/2013/01/11/disaster-resilience-2-0/ (Accessed 5 December 2017).

Mouffe, C. (2005). *On the Political. Thinking in Action*. London: Routledge.

Ohlheiser, A. (2017). No, the shark picture isn't real: A running list of Harvey's viral hoaxes. *The Washington Post*. Available at: https://www.washingtonpost.com/news/the-intersect/wp/2017/08/28/no-the-shark-picture-isnt-real-a-running-list-of-harveys-viral-hoaxes/?hpid=hp_no-name_hp-in-the-news%3Apage%2Fin-the-news&utm_term=.1e1106cc96be (17 November 2017).

Pariser, E. (2011). *The Filter Bubble: What the Internet is Hiding from You*. New York: Penguin.

Putnam, R.D. (2002). Bowling together. *The American Prospect*. Available at: http://prospect.org/article/bowling-together-0 (Accessed 5 December 2017).

Thorbjørnsrud, K. & Figenschou, T.U. (2016). Consensus and dissent after terror: Editorial policies in times of crisis. *Journalism*. Online first, p. 1–16.

Steen, M. (2014). Emergency Management: There's an App for That. *Emergency Management*. Available at: http://www.govtech.com/em/training/Emergency-Management-App.html (Accessed 17 November 2017).

UNISDR (2005). *Hyogo Framework for Action (2005–2015): Building the Resilience of Nations and Communities to Disasters*. Available at: http://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf (Accessed 11 August 2016).

UNISDR (2010). *Building back better for next time. Experiences and lessons learnt from the project "Building resilience to tsunamis in the Indian Ocean"*. Available at: http://www.unisdr.org/files/14499_buildingbackbetterforthenexttime.pdf (11 August 2016).

## Referenced Online Services

Conversation AI: https://conversationai.github.io/ (5 December 2017).

Conversation AI Perspective Hacks: https://github.com/conversationai/perspectiveapi/wiki/perspective-hacks (5 December 2917).

FB Safety Check: https://www.facebook.com/help/695378390556779 (5 December 2017).

FB Crisis Response: https://www.facebook.com/about/crisisresponse/ (5 December 2017).

FEMA Rumor Control: https://www.fema.gov/hurricane-irma-rumor-control (5 December 2017).

First Net: https://www.firstnet.gov/about (5 December 2017).

Google Crisis Response: https://www.google.org/our-work/crisis-response/ (5 December 2017).

Jigsaw: https://jigsaw.google.com/vision/ (5 December 2017).

Twitter Alert: https://support.twitter.com/articles/20170444# (5 December 2017).