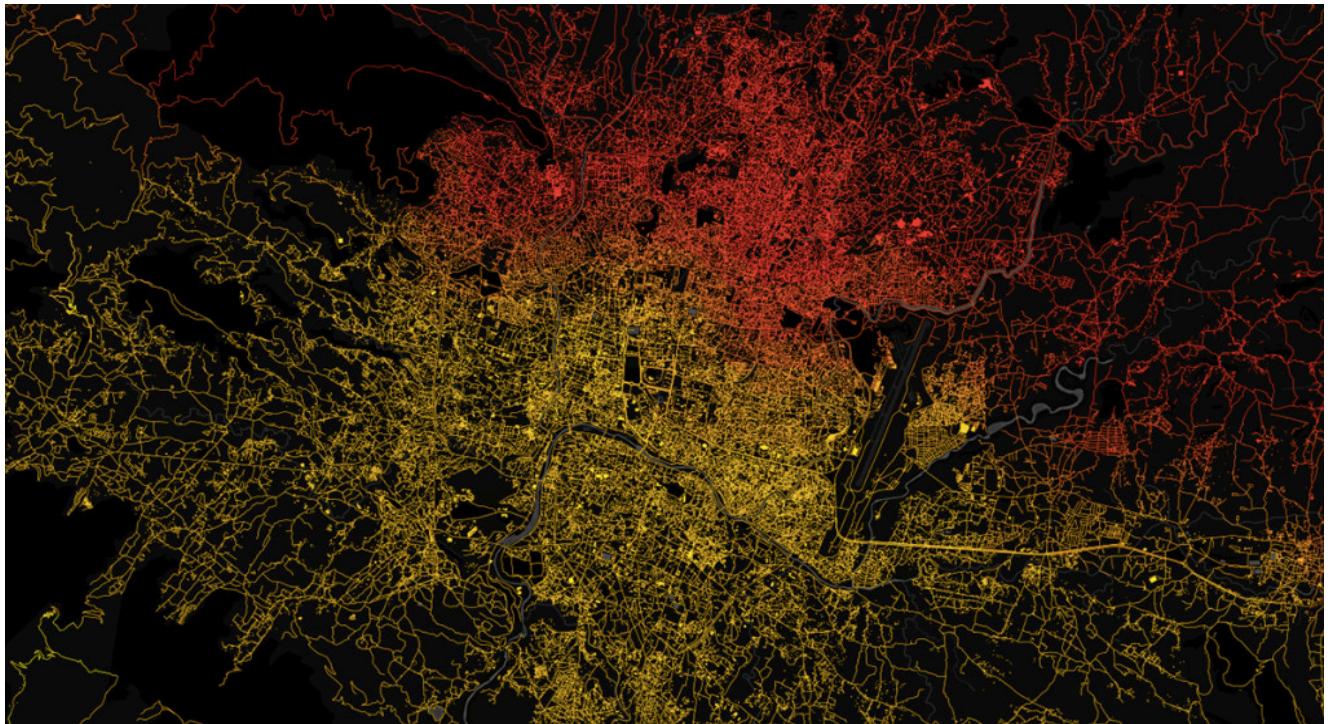# The discourse surrounding open-source mapping technologies in disaster relief

Negative implications of ideological projections in the discourse around OpenStreetMap in the aftermath of disasters

Master Thesis

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ABSTRACT

In recent disaster relief, open-source mapping technologies are increasingly being used by non-governmental organizations (NGOs) and aid agencies. They show their trust in these technologies by relying on them to mobilize their services in crisis situations. In general, relying heavily on technology is already a risk, and that risk is amplified in a situation like a crisis. The possibly problematic ideological projections onto technologies in disaster relief call for a proper intervention.

This research aims to further expose how discourse works. This is done by investigating the discourse around open-source mapping in the context of disaster relief. To investigate how discourse works, a close reading is done of the technology platform *Wired*, which has the motives to promote a rather positive idea of the role of open-source technologies in disaster relief. This platform is the perfect place to look for statements that can be understood as typical expressions of a Technological Imaginary (TI), a concept that can be tied to utopian schools of thought.

The analysis concludes that open-source mapping technologies are presented as liberating and an improvement from previously used disaster relief methods. The *Wired* articles express their belief in the potential of these technologies. The role of the amateur is eulogized. Statements express ideologies tied to deterritorialization and global information communities. Open-source technologies in disaster relief are presented as better than its predecessors.

The statements made in the *Wired* articles actively neglect or hide negative expressions and implications of these technologies. The analysis also exposes what is not being said and what implications of open-source mapping technologies are not discussed to show issues that may result from TI discourse. Within the discourse, the quality of OSM data is not being questioned although research shows that there are problems with the accuracy and validity of data. This exposes that OSM is not as liberating as argued in the discourse. Moreover, OSM is not that easy to use which may result in false interpretation due to limited knowledge of its contributors. Furthermore, the global and local digital divide, indicating problems resulting from difference in access and knowledge, usually grows when disasters strike. The control is given to people who are not on site and who cannot visually assess the situation; this exposes shortcomings of the liberating potential of the technologies. These factors limit the liberating potential that is promoted in the *Wired* articles. Furthermore, this new technology also results in new problems that were not present in older disaster relief methods. The constant flow of data leads to problems with information management.

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Moreover, decentralization of power can lead to lack of centralized decision-making and bad strategies in disaster relief.

This thesis concludes that hopes and beliefs can result in problematic projections onto technologies. By exposing discourse and how it works, this research was able to provide a good starting point for future research in detecting ideological components in journalistic discourse and critically reflecting on them. Furthermore, it may also help scholars to identify methods used to shape discourse and will give them a more critical view on the sources they use and motives of their authors.

Keywords: *Disaster relief, mapping technologies, Technological Imaginary, Wired Magazine, OpenStreetMap, Nepal earthquake, Haiti earthquake, aid agencies, discourse.*

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1   INTRODUCTION

Every now and then, natural or manmade disasters cause widespread destruction and loss of life somewhere on Earth. In any one particular place the risk of a disaster may seem low, but on a global scale disasters regularly strike people, property and natural resources (Rocchio 2014).

Disasters instantly change shorelines, river boundaries, and land features often making existing maps obsolete. When this happens, it is important for first responders to be informed about the new situations on the ground (Rocchio 2014).

After hurricane Mitch struck Central America in 1998, the United Nations, the European Space Agency (ESA) and the French Space Agency (CNES) decided to create a system that would provide free satellite imagery to emergency responders globally. In 1999, the International Charter on Space and Major Disasters was created and has been activated 400 times since then. The system seemed especially helpful in late 2004 when the Indian Ocean tsunami hit Sumatra, Thailand, Sri Lanka, and southern India. The 'Charter' provided first responders with both medium-resolution data and high-resolution data that gave them an overview of the situation on the ground. This information enabled them to plan relief logistics (ibid).

In accordance with Zook, Shelton and Gorman (2010) it can be said that most research on disaster response has so far assumed that states and other quasi-governmental entities are the primary actors in disaster relief and that non-governmental organizations (NGOs) play a secondary role (10). Zook, et al. (2010, 10) further argue that most of this research limits or undervalues the role of information technologies (ITs) as a means to enhance control, command, and distribution of information. It is important to note that one of the authors, Sean Gorman, is employed by a tech-company that built an open-source mapping technology. Furthermore he has assisted with Crisiscommons, actively participates in the OpenStreetMap project, and has participated in Ushahidi implementations in Afghanistan and Haiti; all open-source mapping technologies used in disaster relief. While Alexander (1991) primarily focuses on the positive effects of ITs in disaster relief, later research also highlights the complications that result from "non-proximate technology use" (Stephenson and Anderson 1997; Fisher 1998). In these 'older' works, little attention was paid to the role of individuals or instantly emerging networks in disaster response (Zook, et al. 2010, 10).

Nonetheless, the emergence of Web 2.0, the phenomenon that allows people to collaborate globally on projects that are often highly ambitious in both their scope and scale (Graham 2010, 80), has caused recent research to put more emphasis on the

importance of individuals and privatization (Harvey 2005, 160). Most of this research detects a shift away from the state due to technologies that put power into the hands of "individuals". The greater part of this research considers this an ideological shift. Views are exposed in which it is believed that technologies will liberate people by making it accessible and easy-to-use for everyone. It is suggested that technologies give people agency to actively influence their own situation. This shift has also been researched in the context of disaster response. Townsend and Moss (2005) researched how telecommunications, also on an individual level, alleviate losses and personal trauma. Others examined how ITs empower individuals on the ground for the public good during crisis situations (Fischer 1999; Rodrigue 2001). These works are consistent with the growing significance of the use of Web 2.0 technologies in disaster relief (Graham 2010, 80).

1.1   THE ROLE OF OPEN-SOURCE MAPPING IN DISASTER RELIEF

An ideological shift away from the state, the growing significance of Web 2.0 in disaster relief and overall developments in technologies can be seen in the strategies and maps used in disaster relief. Where quasi-governmental agencies have been dominant in the past in terms of creating new maps after a disaster, production is now more in the hands of individuals (Zook et al. 2010, 10). The ability of this group to assist in mapping and other spatial analyses has grown significantly due to a variety of web-based mapping services.

Aid agencies claim to see a massive change in the role of technology in disaster relief and how technologies can empower the people on the ground affected by the disaster (Lane 2014). Sharon Reader, who works at the Red Cross, says: "Disaster relief is no longer about just dropping items on people and leaving them to it [...] There has been a huge shift in the aid world in seeing people who are affected by a crisis not as victims but as people who have the capacity to look after themselves" (ibid). This expresses the belief that telecommunications can increase self-reliance for disaster victims. Through this way of thinking, NGOs and aid agencies identify and contribute to the same shift away from the state and growing significance of Web 2.0 in disaster relief as argued previously.

After the earthquake in Haiti on January 12, 2010, members of the affected community pleaded for help using social media and widely available mobile technologies (Harvard Humanitarian Initiative 2010, 8). The immediate need for maps resulted in Web 2.0-style mapping, in which thousands of civilian amateurs "mobilized to aggregate, translate, and plot these pleas on maps and to organize technical efforts to

support the disaster response" (ibid, 8). According to the authors, aid agencies and NGOs present in Haiti heavily used the data from OSM. To endorse this statement they quote feedback from emergency response workers:

> I am currently in Port Au Prince with the Fairfax County Urban Search & Rescue Team (USA-1) out of Fairfax, VA, USA. I wish there was a way that I can express to you properly how important your OSM files were to us. . . . I am spreading the word about this work to all rescue and humanitarian teams on the ground here in Haiti. Please be assured that we are using your data—I just wish we knew about this earlier. (OpenStreetMap Wiki 2010).

This made the earthquake in Haiti the first disaster in which open-source, online platforms were heavily utilized in disaster relief (Forrest 2010).

The applications had existing networks of users, data and tools that immediately mobilized them to provide the geographical information and situational awareness needed by aid agencies (Forrest 2010). These networks were able to quickly build the "needed data infrastructure for Haiti" which would expose an operational picture of the new reality. Especially the OpenStreetMap (OSM) project "which leverages Global Positioning System (GPS) trails and digitized street patterns from aerial imagery to create a free street map for the entire world" proved to be an especially important source of mapping (Zook et al. 2010, 11).

After Typhoon Haiyan struck the Philippines in 2013, online mapping became even more of a key tool for the United Nations and aid agencies (Falconer 2013). Online images and descriptions of volunteers were processed in online maps provided by governmental agencies to identify which resources were needed in what areas. The maps were used by aid agencies to prioritize what areas of the Philippines needed to be targeted first (ibid). This also happened more recently in the aftermath of the earthquake(s) in Nepal (Peters 2015).

The Harvard Humanitarian Response published a report on the role of technology in disaster relief and called the OSM application an "essential element of the response" (Harvard Humanitarian Initiative 2010, 8). The report showed that mapping is considered essential in disaster relief. The report uses many quotes from aid agencies to illustrate how they rely increasingly on maps constructed by civilian amateurs. Exemplary is a quote by Sanjana Hattotuwa from the ICT for Peace Foundation: "I would trust OpenStreetMap. Period" (Harvard Humanitarian Initiative 2010, 42). They trust that the data collected through OpenStreetMap is correct and will help them in the most

efficient emergency response possible (Zook et al. 2010, 18; Harvard Humanitarian Initiative 2010, 30).

In their research on volunteered geographical information in the aftermath of the Haitian earthquake, Zook, Graham, Shelton and Gorman (2010) attempted to show how "critical" open-sourced maps in emergency response are to NGO's and aid agencies (25). Their research pinpoints two benefits from open-source mapping in disaster relief. According to the authors, the greatest benefit is that a greater number of maps can be constructed within a shorter amount of time, which allows "scarce technical resources to be diverted elsewhere" (12). Most significantly, the resource of (volunteered) labour can now be redirected to other needs that cannot be as easily distributed to external parties thanks to open-sourced mapping (ibid). Another important benefit of open-sourced mapping the authors identified is that it allows individuals to "report on local and specific conditions" (ibid, 12). This has caused aid agencies to grow more dependent on the data provided by volunteers, whether they participate independently or through collaborative communities (ibid, 18).

Both of the aforementioned reports expose predominantly positive discourse in the disaster relief industry surrounding open-source mapping technologies. Since this is a fairly recent and rapidly increasing technology in disaster relief, it is very much being used on an ad hoc basis. Ideological projections on these technologies should be considered a danger because it may lead aid agencies to neglect the negative implications technologies may have. Although the open-produced mapping possibilities result in a number of benefits, NGOs and aid agencies should not be blind to its shortcomings. The sheer scale of which these open-source mapping technologies are being used in immediate disaster response by NGOs and aid agencies make it important to examine critically the negative implications the discourse has. This validates a proper intervention in ideological way of thinking.

1.2   THE FOCUS OF THIS RESEARCH

The main questions this thesis focuses are: What hopes and beliefs are projected onto the role of open-source mapping technology OpenStreetMap in disaster relief? What are the negative implications of the technologies that are neglected by this ideological focus?

The motivations to do this research and the scientific positioning, and the question I have outlined above, make it necessary for me to pay attention to the concept of the Technological Imaginary (TI) and ideologically loaded projections on technologies. The concept of the Technological Imaginary arises from the promise of

technologies. In contemporary society, technologies are often viewed as means to reach utopia. New technologies promise improvements like never before in both functionality as in effect on modern society. Often, this causes new technologies to be accompanied by a utopian image. This brings forth the idea of the 'Technological Imaginary': technologies will improve society (McLuhan, 1976). "Technological Imaginary is constructed by the expectations and projections for cultural and social advancement and manifests itself as an immaterial aspect of technology" (Schafer 2011, 29). This shows how ideology is associated with Technological Imaginary. For this research it is necessary to look at this concept through the views of Communications and Society professor Vincent Mosco (2004), supported by relevant works of media scholars Martin Lister (2009), Imar De Vries (2012) and Mirko Schäfer (2011).

Criticism of Technological Imaginaries and techno-utopianism, mainly from theorists of techno-realism, will also be part of the framework. Opposing schools of thought already expose the dangers of ideological projections on technologies and possible implications of the general use of technologies in disaster relief. The supporters of these schools of thought are also influenced by technological imaginaries, in a negative sense. Media critics Evgeny Morozov (2014), Dale Carrico (2005), Andrew Keen (2006-2012) and again Mirko Schäfer express their beliefs in the negative potential of what technologies may induce. Their theories will provide a view into the problematic implications of ideological ways of speaking of technologies. How is TI discourse shaped in their opinion? What is problematic about TI discourse?

I want to further expose how discourse works. How are negative implications deliberately neglected or hidden in the discourse of open-source mapping in disaster relief? How can expressions that can be tied to the Technological Imaginary become potentially problematic expressions? In this research I consider discourse as a social practice: an active construction of meaning that is being shaped by the context of events, agencies and social (power) structures in which it is located and which it also influences in its turn. Discourse can be a practice that either maintains or weakens the dominance of the status quo (Fairclough and Wodak 1977, 258). In chapter three it will be explained how the method is used to come to valid conclusions.

I have chosen to do a textual analysis of articles from journalistic discourse because it is a very powerful discourse when it comes to maintaining or weakening the dominance of the status quo, mainly because it reaches broad audiences (Broersma & Rupar 2010, 16). Through a close reading in which I will try to identify typical expressions of a Technological Imaginary I aim to expose how discourse works in an ideological context. What are the practical - but often implicit - assumptions on how

effective/valuable/competent this 'new' open-source mapping technology is? What do these assumptions imply this technology can do? What is 'improved' by this technology? What agency is attributed to disaster response organizations and OSM contributors? What are the discursive problems resulting from this? How are these problems actively neglected in OSM discourse?

I chose to focus on the OSM technology because it is one of the most commonly used technologies in disaster relief. The application was not created for assisting in disaster relief; however, this thesis shows that is heavily used in that context. The Harvard Humanitarian Initiative (2010) describes OSM as a "geospatial Wikipedia" (30) with a "community of hundreds of thousands of mappers dedicated to building a free and open map of the world" (69). Applications such as Map Data and route planners are built based on the information mappers provide. Anyone can contribute -- OSM relies solely on volunteers who enter and modify information (OpenStreetMap Nederland 2015).

I will look for these expressions in a place that is known for its positive voice on the role of technologies in every day life; *Wired Magazine*. The ideologically loaded and positive view on open-source mapping technologies will allow me to expose how discourse is shaped. What methods are used to shape discourse? What words are used? To show what is made invisible by the *Wired* discourse, existing criticism on OpenStreetMap will be part of the analysis. Implications of OSM will be pulled back to a discursive level to show what is neglected in the *Wired* discourse surrounding open-source mapping technologies in disaster relief.

To show how *Wired* fails to critically examine open-source technologies in their articles, a comparison is made with an article from the *BBC*. It is expected that the *BBC* will be less ideological looking at its reputation. The *BBC* article still presents assumptions about what does and what does not work; therefore, this article is only used as an off-set to amplify *Wired*'s position and used journalistic methods.

With the presented arguments, it can be concluded that the ideological focus in the discourse of open-sourced mapping technologies in disaster relief can be risky because it intentionally neglects the negative implications and shortcomings of the technologies and its actors. The discourse as shaped by *Wired* presents the open-source mapping technologies as improvements and liberating. The published authors intentionally disguise negative implications. The implications limit the liberating potential of the discussed technologies. Moreover, these implications question the ideological expressions that these technologies are improving disaster relief. This

conclusion indicates how hopes and beliefs can result in problematic projections onto technologies, validating an intervention on this way of thinking.

By exposing discourse and how it works, this research is able to provide a good starting point for future research in detecting ideological components in journalistic discourse and critically reflecting on them. Furthermore, it may also help scholar to identify methods used to shape discourse and will give them a more critical view on the sources they use and motives of their authors.

2   AN IDEOLOGICAL FOCUS WITHIN A DISCOURSE

In contemporary society, technology is often seen as a means to fulfil instinctive desires and reach utopia. This idea can express itself in a Technological Imaginary.

But what is a Technological Imaginary? What are typical utopian expressions or expressions associated to Technological Imaginaries? What words or sentence constructions indicate these expressions? How are hopes and beliefs projected onto technologies? For this research it is necessary to answer all these questions. This chapter shows how ideological expressions in discourse can be recognized. Criticism on this way of thinking will be cited to expose negative implications of this ideological way of thinking and therefore of discourse.

2.1   AN IDEOLOGICAL VIEW ON TECHNOLOGIES

Society has always had the wish and urge to obtain and realize ancient instinctive ideas, fears and dreams (Mosco 2004; Carrico 2006). It is embedded in the human mind to want to believe in progress and to want to believe in change.

These beliefs are often collected into an ideology. There are many different connotations of this concept but this research will use the definition by Louis Pierre Althusser, a Marxist philosopher. He describes ideology as a set of conscious and unconscious ideas that make up one's goals, expectations and motivations (1971).

To him, ideologies are not subjective beliefs that are held in the conscious minds of individuals. Instead, Althusser believes that these subjective beliefs are produced in discourses, which he describes as the material institutions and rituals that individuals take part in without subjecting is to conscious examination (ibid). This perception of the concept already exposes one issue with ideological projections. We are lead by discourses in which we neglect to submit our projections onto critical thinking.

Ideological discourses or utopian ways of thinking are not new to civilization (De Vries 2012, 38). Vincent Mosco, author of *The Digital Sublime*, claims that certain narratives become dominant and that these stories are necessary because otherwise individuals lose their sense of goal (2004). Media scholar Imar de Vries (2012) discusses the view of Communications and Society professor Vincent Mosco on society's belief in the ideal.

> Mosco defends the view that we live with an instinctual urge to be astounded, that we
> are equipped with a persistent willingness to believe revolutionary and utopian
> narratives because of the lure of unfulfilled potential in new technologies, even if we,

> paradoxically, already know we will never be able to actually reach the complete and transcendent excellence that is the sublime (De Vries 2012, 15)

According to de Vries, Mosco believes that there is value to this ideological way of thinking (ibid, 28). He does not stand alone in attributing value to this. Various academic fields including sociology, theology, psychology and neurobiology have described intrinsic hopes and beliefs as "fundamental in shaping a person's sense of purpose and wellbeing in life" (ibid, 28). These studies all believe that society hopes for a system available to everyone that will protect them from fear and suffering and will give them direction (ibid, 28).

Although society is often let down by the reality of what technologies can do, revolutionary and utopian claims can still be found with the arrival of new technologies:

> It is what 'the new' does: it perpetually gives our technological imaginary, our yearning for wholeness and completeness that is projected upon technology, fresh impulses by portraying existing technologies as inadequate, and, in the same sweep, by introducing us to the next big thing as a solution (De Vries 2012, 165).

It exposes discourse in which technological change is seen as means to bring society closer to the ideal, the utopia (De Vries 2012, 17). Why is it that society sees this potential to reach the 'ideal' in technologies?

Technologies and speculations about their ability to transform and improve societies, economies and politics seem to go hand in hand. New technologies often embody human desires in contemporary Western society. New technologies promise improvements like never before, in both functionality and effect on modern society. In this teleological discursive construction the "new" opposes the "old" and projects a better state of being onto present-day and future media technologies. De Vries (2012) then presents the argument of media theorist and philosopher Boris Groys in which it is said that the connotation of the "new" is traditionally connected to the idea of progress, the utopian future. It replaces what was before, often instantly or with profound consequences and it "signifies change and difference, processes that are often associated with improvement" (De Vries 2012, 17). It is the idea that technology will bring society forward, into a better state. Change in these areas is pursued through technology: "The attempt to bring technology to perfection and to create a utopia through engineering has been recognized as an important agent of change" (Schäfer 2011, 25). According to Schäfer, utopian thinking is closely tied together to the concept of the Technological Imaginary. What is an imaginary exactly? How can these be recognized?

The scholarly book by Lister (2009) finds the underlying meaning of the "Imaginary" or "imaginaire" in the perception of Jacques Lacan's psycho-analytic theory. He does not see the imaginary as an activity of fantasising or a sort of poetic mental faculty. To Lacan, the imaginary refers to "a realm of images, representations, ideas and intuitions of fulfilment, of wholeness and completeness that human beings, in their fragmented and incomplete selves, desire to become" (Lister 2009, 67). Coherent with Mosco, Lacan argues that these desires to become are indispensable for living. For this research, this notion of the imaginary will be looked at in the context of technology. The concept of the Technological Imaginary "draws attention to the way that dissatisfactions with social reality and desires for a better society are projected onto technologies as capable of delivering a potential realm of completeness" (ibid, 67). In this concept, attention is drawn to the ideological way of thinking in which technologies are seen as means to improve life. This is exactly how discourse works and how it is shaped.

For the sake of this research, I have come to the following notion of TI that will be used as a framework for the analysis: In the Technological Imaginary, hopes and beliefs coincide with various ideologically loaded projections on technology. It represents society's search for the better, the newer, the improved. For this analysis, TI is considered as ideological projections on technologies.

Subsequently, it needs to be established how expressions linked to the Technological Imaginary can be recognized in the context of disaster relief. Therefore it must be established how the TI discourse is read or can be read, how it actively assigns meaning and how it neglects to represent the negative arguments. The TI concept is visible in the discourse through projections onto open-source mapping technologies in which they are considered better than or improvements on methods used before in disaster relief.

Within discourse, it is not only important to determine what is being told, but it is also important to focus on what is not being told. Through his definition of ideology, previously mentioned Althusses exposes how discourse in relation to ideology works. He identifies what he calls the "lacunar discourse". The essence of the lacunar discourse is what is not told, but what is suggested (1971). By stating a number of propositions which are never untrue, a number of other propositions are suggested which are untrue (ibid). I will look for these suggesting propositions in the analysis. To show what is made invisible by the *Wired* discourse, existing criticism on OpenStreetMap will be part of the analysis.

TI discourse can also be recognized when some of the shortcomings of the technologies mentioned, when it is immediately followed by the idea, the vision, that the

technology will be perfected (and therefore these shortcomings disappear). This exposes how TI discourse actively neglects to recognize the implications of possible shortcomings of technologies.

Often it is believed that currently active technologies are not yet used optimally or as efficiently as possible. Subsequently, the hope that these technologies will be used to their full potential also expresses TI, this is highlighted by Schäfer (2011) and in Lacan's theory (Lister 2009, 67). This shows how TI discourse does not necessarily always neglect negative implications; however, it does overrule these with ideological projections of what these technologies will be able to do eventually. Furthermore, De Vries (2012) points out that when technologies are presented as solutions to problems encountered in the past or as means to a better or more efficient disaster relief, they can be considered as expressions linked to TI (17). Especially important in the disaster relief context is when technologies are viewed as a means to fulfil basic human needs such as shelter, food supply and safety, described by Mosco (2004) as protection from fear and suffering.

2.2 CRITICISM ON IDEOLOGICAL THINKING

Critical alternatives to a utopian way of thinking about technology have arisen among advocates for technological change, such as techno-realism and techno-progressivism (Cosco 2005; Mosco 2005; Pesce 2011). The supporters of these schools of thought are also influenced by Technological Imaginaries, in a negative sense. Dystopian aspects of thinking on technologies are often the result of utopian thinking. Critics on utopian thinking believe in the negative potential of what technologies may induce. The views by critics may also expose how TI discourse is created and why it may be problematic. Therefore, it will be explained how each author that I mention informs or contributes to my analysis.

2.2.1 The folly of liberating/democratizing/empowering potential of technologies

Decades ago, this was argued by highly respected theorists Marshall McLuhan (1967) and Walter Benjamin (1938) who stressed the importance of understanding technologies in order to benefit from them. In his most well-known work, *The medium is de message*, media scholar McLuhan, often mistaken for a techno-utopian, argued that the technological extensions of human consciousness were racing ahead of our ability to understand their consequences (McLuhan and Fiore 1967, 126-128). This statement fits with the enlightenment ideal that when one has discovered how something works, one

can use it. This understanding gives the user agency to control manufacturability of society. This process is also discussed in Walter Benjamin's *The author as producer* (1938). Benjamin argues one can only change the apparatus of production if one understands it (ibid, 220-238). If one is limited by technological competences, one will only reproduce existing power relations (ibid). In the analysis, I will try to identify whether or not the *Wired* discourse acknowledges the skills necessary to use the OSM technology correctly. If these are not acknowledged, the analysis will also bring forth what issues may results from improper use of the technology.

This is exactly what media Scholar Mirko Schäfer focuses on in his book *Bastard Culture! How User Participation Transforms Cultural Production.* Schäfer argues that the construction of meaning lies within what he calls the 'dispositif'; the dynamic interaction between discourses, technologies and the social use of these (2011, 16-17). This makes not only important to look at what is being said (the discourse) but also at who, why and through which medium it is being formed. Therefore he reviews the roles of design, technical affordances and appropriation in technological change and shaping collective agency and action. He argues that one must understand technology in its full scale and effect otherwise it may result in issues. In this work, he detects a shift from creating content to providing platforms for user-generated content and social interactions. He identifies and debunks the often ideological assumptions made when it comes to the possibilities of participation that technology can bring (2011). He recognizes TI when an information technology promises economic prosperity, social improvement and global democratization (ibid, 34). He sees that technologies are often represented as enabling technologies, turning consumers into users and users into producers. Lay people and amateurs are welcomed by society as the heroes of the digital era. The book critically reflects on the actual emancipatory and liberating potential of new media (ibid, 167-169). He points out the ways in which new technologies can empower people; however, he remains critical on the power that remains in the hands of big (media) corporations (ibid, 169-174). He identifies a discourse in the information industry in which one can identify both a concentration of power, assigning more power to a number of big companies, as a decentralisation of power, through which users gain more possibilities in the production and distribution of cultural products (Schäfer 2011, 125). The aforementioned big companies have now gained the opportunity to become part of the production process of the users by offering them platforms and services (ibid, 125).

According to Schäfer (2011) TI can also be detected when technologies are seen as something that empowers and gives agency to people or when it is believed to transform and improve societies, economies and politics (31-34). One can recognize

these projections when associations or metaphors are used that refer to improvements (ibid, 33). He recognized the TI in associations with globalization/global democratization, connectivity, economic prosperity, deterritorialization, and social progress. He recognizes Ti in the role that is attributed to design, technical affordances and appropriation in technological change and the shaping of collective action. Social and economical progress is projected onto technical design when it is argued that the world is prospering from the global information infrastructure (ibid, 34). Furthermore, Schäfer detects TI in expressions in which adjectives are used to describe technologies as better, empowering, improving and liberating (ibid, 31-33).

Schäfer's theory is relevant for this research because it shows the importance to critically reflect on whether or not the technologies can really be considered empowering. Furthermore, it is important to detect how the *Wired* discourse represents OSM as an enabling technology. For the analysis it means that expressions that speak of liberating and empowering technologies should still consider its stakeholders and the companies that control it. Most importantly, his theory has shown that it is crucial for this research to not only look at what is being said, but also by whom. The analysis does not only explore how *Wired* is shaping discourse but also why *Wired* has motives to do so. This makes it important to expose the teleological narrative behind *Wired*.

Carrico (2006), considered a techno-realist, links desires and hopes of discourses to the creation of certain technologies. The author argues that there are dangerous limitations to the way we understand "the role of technological developments in our lives, in the hopes and fears with which we invest them, and in our capacity to take up these developments and actively shape them in ways that better reflect our hopes" (ibid). In his argument he underlines the autonomous aspect of technology as the important factor for progress. Carrico argues that, when technological development is not driven by legitimate democratic processes it will "almost always be a profoundly dangerous and often devastating force, exacerbating existing inequalities, facilitating exploitation, exaggerating legitimate discontent and thereby encouraging dangerous social instabilities, threatening unprecedented risks and inflicting unprecedented harms on individuals, societies, species, and the environment as a whole"(ibid). This way of thinking might suggest that Carrico is a 'technophobe' because his focus seems to be on the problems that technologies may cause; however, he also believes in the power of technology. "I believe that we might make of technological development our most tangible hope that humanity might truly and finally eliminate poverty, needless suffering, illiteracy, exploitation, inequality before the law, and social injustice for everyone on earth" (ibid). He believes that technological development is the

historical force that could be plausible and potentially revolutionary. This point of view combined with his critical thinking shows that it is not dangerous to believe in the power of technology as long as it is consciously examined at the same time. For the analysis it means that I need to look for statements in which the power of technology is expressed without critically reviewing it.

2.2.2. Expressing ideology by not scrutinizing open-source technologies

Congruent with Schäfers' argument, the scholars Morozov (2011) and Keen (2006-2012) also argue that there is big difference between the liberatory potential of new technologies and their realization in practice. Their views are more dystopian because they believe that open-sourcing technologies can even become repressive and culture-destroying technologies.

Self-proclaimed "realist intellectual" Evgeny Morozov explicitly criticizes ideological discourse in his article 'How to stop a Sharknado' (2013; Lovink 2013). Morozov explains how Internet intellectuals often resort to explaining the Internet "rather than keeping to good old critique" (ibid). In this article he is able to expose utopian Internet discourse. He argues that public intellectuals are obliged to first explain ideas and to scrutinize second. He argues that this is exactly what is not being done in the Internet discourse. Rather, he argues these intellectuals are treating the Internet as a sharknado; "an object that can certainly be explained but only at the cost of making it more real and believable that it should be" (ibid). He criticizes this discourse for presenting ideological projections on the Internet as plausible goals. According to Morozov, Internet intellectuals "try to popularize particular aspects of "the Internet": how open-source software or Wikipedia get made, how social media topple dictators, how blogs expand our cosmopolitan horizons." This has made utility the benchmark of success for online technologies. He claims that this is too short sighted. The open-source quality of a platform does not make it liberating or democratizing.

In *The Net Delusion: How not to liberate the world* by Morozov, it is argued that open platforms often do not provide the participation and transparency they promise (2011). This takes into question the commonly made claims of Web 2.0 democratic revitalization (cf. Beer and Burrows 2007). In *To save everything, click here: the folly of technological solutionism* (2014), another work by Morozov, the need for centralizations is presented as a key argument. He provides a critical view on the techno-utopian discourse by warning for a world of seamless efficiency through technology (2014). He argues that strong degrees of centralization are needed to organize data in order to create meaning or planning (ibid).

His criticism is relevant for this research because it indicates what I should be looking for. Is the technology being explained and scrutinized? When it is not scrutinized or being made more real and believable than it should be, TI discourse can be detected. Moreover, it is important in the analysis to recognize automatic assumptions that open-source technologies are liberating, democratizing or transparent.

2.2.3   Scrutinizing data produced through open-source technologies

Silicon-valley veteran Andrew Keen (2006-2008) does not consider the production shift from the expert to the amateur as a positive development. He particularly criticizes the ideological ideas connected to Web 2.0:

> It worships the creative amateur: the self-taught filmmaker, the dorm-room musician, the unpublished writer. It suggests that everyone--even the most poorly educated and inarticulate amongst us--can and should use digital media to express and realize themselves. Web 2.0 "empowers" our creativity, it "democratizes" media, it "levels the playing field" between experts and amateurs. The enemy of Web 2.0 is "elitist" traditional media (Keen 2006)

As visible in this quote, Keen has identified "typical" Web 2.0 language as a combination between '60s radicalism with "utopian eschatology of digital technology" (ibid). The empowering promises that are made in the Web 2.0 movement are: "empowering citizen media, radically democratize, smash elitism, content redistribution, authentic community…" (2006). According to Keen, the empowering promises made in the Web 2.0 movement play upon "creeping narcissism […] with its obsessive focus on the realization of the self" (ibid). This reflects imaginaries as previously explained by the concepts of Lacan (by Lister 2009) and De Vries (2012) showing that this so-called Web 2.0 language exposes TI discourse. This means that it is necessary to look for these words in the discourse analysis.

Andrew Keen (2006-2008) also criticizes the quality of open-sourced data. He stresses that user-generated media cannot match the level of media literacy produced by mainstream media outlets (Keen 2008, 27). He further criticizes anonymity on the Internet. He argues that through this, people focus more on themselves and their own personal gain which causes them to behave worse instead of better (Keen 2007, 75).

This theory of Keen is relevant for my analysis because it argues that open-sourced data cannot have the same quality as data created by experts. I will look for statements in the *Wired* discourse that eulogize the quality of open-sourced data, OSM

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data in particular. Furthermore, Keens argument that people thrive for their own good is also important in the context of the use of open-source technologies in disaster relief. When victims of disaster can influence disaster relief, they most likely will try to do so in a way that it affects them positively.

2.2.4   Discourse neglecting conditions necessary to use technologies

The criticism so far is focused on what issues might result from the use of technologies; however, there are also issues that might arise from problematic conditions in which technologies are used. A divide in global disparities is visible primarily between developed and developing countries all over the world, therefore it is referred to as the digital divide. This divide indicates an economic and social inequality resulting from differences in access to computing and information resources such as the Internet and the opportunities that might arise from this access (Lu 2001). Disasters may make this divide even greater because it negatively affects the economy and social mobility, which are crucial factors necessary in overcoming the divide (Internet World Stats 2014).

Recent research suggests that the gap in the digital divide is no longer about the access but about knowledge (Graham 2011, 227). The problem now lies in information utilization and information receptiveness (Kim and Kim 2001). Individuals need to know how to use information technologies once they have gained access to them (ibid). Information professionals are the only ones who can now bridge this gap between access and utilization by teaching individuals how to properly use the tools they have access to (Vahid Aqili and Moghaddam 2008, 235). The actual usage of these technologies is still subject to the interpretation of its users (Sciadas 2003). This divide indicates that the necessary conditions in which technologies are used should not be neglected; therefore I will investigate in the analysis whether or not these conditions are discussed or (wilfully) neglected in the *Wired* discourse.

3 DISCOURSE ANALYSIS

This chapter presents a valid method of analysis to identify ideological expressions within *Wired* discourse. Ideologically loaded projections and expectations can be identified through a textual discourse analysis. This thesis exposes how and which expectations of technological progress are projected on the OSM application through a close reading of two articles of the *Wired* platform.

A close reading is a form of literary criticism in which a brief passage of text is carefully and meticulously interpreted. In a close reading it is assumed that no element of a literary text is 'just' stated there with no particular reason; it is believed that everything has a function. Therefore great emphasis is placed on the single particular over the general. This means that in the analysis I will focus on individual words, syntax, and the order in which ideas unfold in the text. Furthermore, methods and strategies used in journalistic discourse to convey a message will also be scrutinized. Inevitably, this can be considered a subjective method; however, the theoretical framework provides tools based on respected theories that help detect TI discourse. This thesis will not produce any generalizable comments, but it will however, attempt to expose discourse.

3.1 THE METHOD USED IN THIS RESEARCH

A discourse analysis is an excellent method to discover what is said in the discourse and to find out how it is shaped. The shaping of discourse is a crucial part of discourse itself.

> The discursive approach [...] focuses on the way in which communities construct their limits; their relationship to that which they are not or what threatens them; and the narratives which produce the founding past of a community, its identity, and its projections of the future. (Sayyid, 1998: 261)

Discourses affect society's view on all things; this makes it impossible to avoid discourse. Discourse provides the vocabulary, expressions and often even the style needed to communicate. By examining the discourses surrounding technological innovations, much of the relationship between technology and society can be exposed.

Discourses are closely linked to different theories of state and power (Foucault 1972b). This perception of discourse is largely derived from the work of French post-structuralist and philosopher Michel Foucault, who mainly shaped discourse theory. Sociology professor Iara Lessa has summarized Foucault's definition of discourse down to a workable description in which the discourse is constructed into "systems of

thoughts composed of ideas, attitudes, courses of action, beliefs and practices that systematically construct the subjects and the worlds of which they speak" (2006, 285). Discourse is controlled by objects, of which one can speak of; ritual, how and where one may speak; and the privileged, who may speak (Foucault, 1972a). Critics of discourse analysis, who called Foucault's interventions not useful enough, received the following response from the philosopher:

> It's true that certain people... are not likely to find advice or instructions in my books to tell them 'what is to be done.' But my project is precisely to bring it about that they 'no longer know what to do,' so that the acts, gestures, discourses that up until then had seemed to go without saying become problematic, difficult, dangerous (Elden 2014)

In his perception of discourse analysis he is not necessarily trying to change or intervene within discourse, his goal is to expose it, to raise awareness. In the analysis of a subject, Foucault looks at its practical knowledge. He looks at the subject as an instrument of power rather than an instrument of personal freedom. In this conception, power produces domains of objects and rituals of truth which together construct reality. Part of this production are the individual and the knowledge that one can obtain (Merquior 1988, 108).

This conception fits the ontological position of social strategists Laclau and Mouffe (1985) in which they believed that our perception of reality and of the character of real objects is mediated entirely by discourse (ibid, 108; Rear 2013, 3). I chose to use the method of discourse analysis as created by Laclau and Mouffe because the aim of their discourse analysis is not to discover the truth about reality but to describe how discursive struggle constructs this reality in a way that it appears natural and neutral (1985, 108). According to Rear (2013), Laclau and Mouffe consider discourse as "an attempt to fix a web of meanings within a particular domain" (6). Laclau and Mouffe pick apart discourse by analysing and describing the processes that lead to the meaning of signs, which further lead to the creation of discourse. This method allows them to expose a particular system of meanings assigning meanings to other signifiers within discourse. For example, "democracy acquires the meaning of 'real' democracy as opposed to democracy based on class oppression, freedom is given an economic connotation, and the state acquires a new set of functions and roles" (ibid, 6). In the analysis it will be attempted to detect such meaning-creating systems. These connections expose how discourse is shaped. I expect to find meaning-creating connections between open-source technologies and the TI terms that are mentioned in the theoretical framework by Schäfer (2011) and Keen (2006).

In discourse it is not only important to determine what is being told, but it is also important to focus on what is not being told. Through his definition of ideology, previously mentioned Althusser exposes how discourse in relation to ideology works. The essence of his "lacunar discourse" is what is not told, but what is suggested (1971). By stating a number of propositions which are never untrue, a number of other propositions are suggested which are untrue (ibid). I will look for these suggesting propositions in the analysis. To show what is made invisible by the *Wired* discourse, existing criticism on OpenStreetMap will be part of the analysis.

3.2   JOURNALISTIC DISCOURSE

The focus on journalistic discourse is chosen because it is a very powerful discourse when it comes to maintaining or weakening the dominance of the status quo, mainly because it reaches broad audiences (Broersma & Rupar 2010, 16). Truthfulness and reliability are seen as the "basis of a shared social code between journalists and their public", which is crucial for the existence of journalism (ibid, 16). Nevertheless, in the past few decades, scholarly research has ceased to accept the idea that media can provide a daily mirror (Fowler 1991). Broersma and Rupar (2010) even claim that journalistic discourse is consciously constructed and performative: "Events and facts do not have 'intrinsic importance' but become important because they are selected by journalists" (ibid, 16). Journalistic articles are now seen as social constructions, not as articles that neutrally reflect social reality or empirical facts (ibid, 16).

Broersma and Rupar detect and explain the twofold strategy in journalism to make stories "as convincing as possible" (ibid, 17). First, attempts are made to hide any shortcomings or inadequacies in an article. Furthermore facts are generally implicitly, sometimes even explicitly presented as natural (ibid, 17). This is exactly what happens in discourse according to Laclau and Mouffe (1985). They argue through discourse, reality is constructed in a way that it appears natural and neutral (ibid, 108).

Journalists often use specific forms that assist in proving the truthfulness of an article. The structure of an interview suggests a mimetic representation of a conversation in actual chronology and temporality that helps readers forget that it is actually an interpretation of a conversation (Broersma 2008). Furthermore, journalists frame information using "organizing principles that are socially shared and persistent over time, that work symbolically to meaningfully structure the social world" (Reese 2003, 11). Journalists can make sense of complex issues or events by organizing and simplifying them. They use the existing knowledge of the public and attempt to appeal to cultural codes (Broersma & Vupar 2010, 17).

Secondly, Broersma and Vupar (2010) expose the professional practices, routines and textual conventions created in journalism to "guarantee that this process of construction or representation is as accurate—or mimetic—as possible" (17). In their articles, journalists often reflect on these journalistic processes by stating which reports and documents they use. Often multiple sources, preferably eyewitnesses, are often quoted. Journalists are required to double-check their sources. Furthermore, it is expected that the journalist will keep the reporting balanced by allowing both sides to be heard (ibid, 17). This shows how one recognizes journalistically constructed content. This is relevant for this research because these characteristics help identify whether an article can be considered part of journalistic discourse or a subjective blog post.

Broersma and Rupar (2010) therefore argue that an article may be considered a convincing representation when it establishes a feeling of truthfulness in the eyes of the public. This will transform an interpretation into truth, a reality on which the public act (ibid, 17). The methods that articles use to attempt to make their articles as convincing as possible are crucial to understand in this discourse analysis. They help expose discourse by showing how socially constructed articles on disaster relief inherently project hopes and beliefs on open-source technologies.

3.3   THE CHOSEN PLATFORMS

Not only will this analysis of open-source mapping technologies in disaster relief map the expectations and projections (what is said), but also it will attempt to reveal how discourse is shaped (i.e., by whom, why and through which medium). Therefore *Wired* will be heavily scrutinized to show possible motives or personal interests.

When one looks at the position of the *Wired* platform that published the articles, an obvious bias can quickly be detected. In one of the magazines' first colophons, *Wired* appointed the media theorist and Marshall McLuhan as their 'patron saint' (Stahlman 1996). McLuhan argues that technologies shape culture (2008). From the beginning, the techno-utopian agenda of co-founder Stewart Brand and his associate Kevin Kelly has been the strongest immediate influence on the editorial outlook of the magazine (ibid). Furthermore, *Wired* has incorporated the following description of its website in its RSS feed which turns up in Google when one is looking for the website: "Get in-depth coverage of current and future trends in technology, and how they are shaping business, entertainment, communications, science, politics, and culture" (Wired 2015). It is interesting to note that in this description, technology is seen as something that 'shapes' industries, methods and everyday life. These findings show the coloured editorial outlook of the magazine when it comes to the role of technologies in progress. This

raises the expectation that TI discourse can be found here. That is why the Wired platform is a suitable place to detect an ideologically loaded and positive view on open-source mapping technologies that will allow me to expose how discourse is shaped. What are the practical but often implicit assumptions on how good this 'new' open-source mapping technology is in the articles? Journalistic framing and methods to reach authenticity and truthfulness are also scrutinized. Does the *Wired* platform use the journalistic two-fold strategy to make their articles convincing? What is actively made invisible in the articles? I will expose in what specific way(s) the cons of open-sources technologies are intentionally neglected or not considered natural.

   To show how *Wired* fails to critically examine open-source technologies in their articles, a comparison is made with an article from the *BBC*. It is expected that the *BBC* will be less ideological looking at its reputation. The platform *BBC* operates under the guidelines set by the Secretary of State for Culture, Media and Sport (Andrews 2005). Although *BBC* is in the public sector, much of the work is outsourced to the private sector. However, either sector can produce biased articles. The *BBC News* is the largest broadcast news gathering operation in the world (Sambrook 2006; BBC 2014b). In a service review on the trustworthy of the *BBC* it was found that "The BBC's network news and current affairs is trusted and highly regarded by audiences, and continues to outperform other news providers on a range of measures" (BBC 2014a). This statement shows that the *BBC News* is known for its trustworthy reputation. All these findings suggest that the *BBC* is a more objective journalistic source than *Wired.* The *BBC* article still presents assumptions about what does and what does not work; therefore, this article is only used as an off-set to amplify *Wired*'s position and used journalistic methods.

4 DISCOURSE OF OPENSTREETMAP IN THE CONTEXT OF THE TECHNOLOGICAL IMAGINARY

The main questions this thesis focuses on are: What hopes and beliefs are projected onto the role of open-source mapping technology OpenStreetMap in disaster relief? What are the negative implications of the technologies that are neglected by this ideological focus?

4.1 A CLOSE READING IN JOURNALISTIC DISCOURSE

Through a close reading of two *Wired* articles, this chapter will be able to derive statements from texts in journalistic discourse that can be linked to the Technological Imaginary. These are often implicit assumptions about how valuable/useful/competent /effective this 'new' open-source technology is in the context of disaster relief. At the same time, it will be shown how these TI expressions result in discursive problems. Furthermore, the implications of OSM will be pulled back to a discursive level to show what is actively neglected in the *Wired* discourse surrounding open-source mapping technologies in disaster relief.

4.1.1 *WIRED* Article One

The first article that is analysed is called "The Open Source Maps that made rescues in Nepal possible" (2015). The title suggests that the writer, Annie Sneed, attributes great responsibility and promise to the open-source map technology. According to the author, aid groups quickly deployed teams in Nepal after an earthquake struck on April 25th 2015 (Sneed 2015). She argues that these organisations depend heavily on data from open-source maps: "but there are plenty of people who are contributing from thousands of miles away […] They're part of an online community of volunteers from all over the world who are mapping Nepal from their laptops, creating data that's critical to on-the-ground relief" (ibid).

First of all, she sees it as a positive development that volunteers from all over the world are contributing. In Laclau and Mouffe's analysis, this statement describes how volunteers have a new role in disaster relief by turning into a global collaboration (1985, 6). With Sneed statement it is argued that the world is prospering from the global information infrastructure. This global information infrastructure and deterritorialization is linked to the TI by Schäfer (2011, 34).

By calling the data 'critical', she insinuates that these organizations do not only use open-sourced information but that they actually rely on the data in their relief

efforts. Relying on technology is always a risk, however; it is amplified in crisis situations (Huesemann and Heusemann 2011, 245). Sneed later puts more emphasis on how crucial the OSM data is to aid agencies: "they detailed a huge swath of the region, providing critical information about road networks, hiking trails, relief camps, footpaths, and river crossings to governments and aid organizations" (Sneed 2015). Sneed then uses a quote by Tyler Radford, interim director of the humanitarian OSM team to confirm her statement: "The maps will be used in all kinds of ways to deliver aid, whether it's healthcare, food, or shelter" (ibid). Quotes like this, that rephrase what has already been said, are often used by journalists to help create a feeling of truthfulness and reliability (Broersma & Rupar 2010,17). Sneed uses this quote to prove what she has said.

Moreover, Sneed neglects the issues that arise from the constant flow of information. There is no such time to check all the work that volunteers have put in because aid agencies and government act on these maps as soon as they are starting to become visible. Sneed even says this herself: "As basic map information is gathered by the volunteers, OSM makes it immediately available to the public—so that people can mesh it with other datasets to create custom maps, like one that identified the location of Nepalese healthcare facilities" (ibid). This shows that Sneed also uses the journalistic two-fold strategy as explained by Broersma & Rupar (2010, 17).

Sneed further describes how and why the OSM application is a great technology in disaster relief by the next quote: "Several hours after the earthquake hit Nepal, OSM had already activated its network, which it deployed strategically to map the areas with the least coverage that had also been hit the hardest"(ibid). She therefore argues that the open-source mapping technologies are used to plan the most efficient disaster relief possible, which makes them better than mapping technologies used in disaster relief in the past. This idea of progress exposes the teleological narrative that when something is new, it is often considered better, thus exposing TI (De Vries 2012, 17).

This is problematic because she does not take into account that when locals contribute data to maps it often results in maps varying degrees of coverage (Zook et al. 2010, 20). Anyone who has access to the technologies (Tablets, mobiles and such) on which the OSM application operates, can use the app and alter maps. However, this 'access' is often the problem. The local digital divide, expressed in the difference in access to technologies, may increase the gap. When disaster strikes poor countries, such as Haiti, the Philippines and Nepal, it should be taken into account that the local people have been disconnected from their already minimal connection to the Internet (Zook et al. 2010, 17). Often field workers rely on portable satellite antennae that enable them to

connect to the Internet from many places in the world (Harvard Humanitarian Initiative 2010, 10); however, this does not give Internet to locals. This problem is consistent with the concerns related to the digital divide that claim that ideas of technological progress have little relevance for poor countries because not everyone has access to them because of infrastructure or poverty (Borsook 2000, Barbrook and Cameron 2000). While techno-utopians, and in this case NGOs, aid agencies and contributors to the maps believe that digital technology is used for the greater good, it can actually harm people (Crovits 2011).

What can also be noticed is that she uses adjectives to positively describe the technologies. An example is: "those are amazing results for a humanitarian team run almost entirely by volunteers, and almost entirely remotely" (ibid). Not only does she call the results amazing but she puts a lot of emphasis on how great these results are because they were created in certain extreme conditions; hence "entirely by volunteers" and "entirely remotely". This can be linked to the concept of deterritorialization connected to the TI by Schäfer (2011, 34).

Sneed does not question the validity of OSM data. According to Morozov (2013), it is problematic to not critically examine a technology. Not only does she not critically examine the data, she calls this data 'critical' in disaster relief. This exposes lacunar discourse in which it is not told what issues may arise from letting untrained volunteers produce open-sourced data. However, it is argued that this data is vital to disaster relief, which suggests it is considered valid. This is a dangerous assumption because over the last few years there have been growing concerns in the industry about the accuracy and validity of open-sourced mapping technologies, which possibly would make them unreliable in immediate disaster relief (Goodchild 2007).

By allowing relatively untrained volunteers, NGOs and citizens "create data critical to the recovery and maps contextualized this data", the accuracy and validity of this data should be questioned by its users (Keegan 2010, 12). Web 2.0 critic Andrew Keen argues that open-sourced data cannot have the same quality as data created by experts (2006). Still, the *Wired* author Sneed only focuses on how fast and how 'structured' the data is created, rather than on its quality. She does not acknowledge the possible issues that may arise from data created by amateurs. Instead, she sees this as a method that causes progress in disaster relief.

Research shows that there are no systematic quality checks performed on the data (E-Edcuation 2013). It is warned that "you use the data at your own risk and should typically avoid relying on OSM information for mission critical functions unless no other dataset is available" (ibid). This same research also shows that the accuracy, precision

and detail of the OpenStreetMap coverage "varies across space, without a simple means of detecting the variation"(ibid). As a result, open-sourced maps might contain more flaws that would have been prevented by professional cartographers.

This makes it problematic that Sneed does not critically examine the role of amateurs. It should not be neglected that open-sourced maps can be less reliable in emergency situations (Goodchild 2007). Not only does she fail to question the data's reliability, she amplifies how others rely on OSM mapping data:"Requests also came in from aid organizations, the Nepalese Army, and the government for maps that could help them identify and access victims"(ibid). It is dangerous that these organizations act upon data that might be not be valid. This is not discussed by Sneed. There are several issues related to open-sourced data that Sneed neglects to mention or made invisible in her article. This simultaneously exposes the discursive problems.

First, Sneeds expressions assume that all those who can contribute, act in good faith (Keegan 2010; Zook et al. 2010) even though open-sourcing technologies are often subject to their users' biases (E-Education 2013). Although OSM allows more people to participate and contribute in disaster response, only a relatively small, homogenous group has been able to participate due to the omnipresent inequality in "both individual skills and access to proper tools" (Crutcher and Zook 2009; E-Education 2013). This may express a knowledge divide as previously described by Graham (2011, 227). The problem now lies in information utilization and information receptiveness (Kim and Kim 2001).

Second, it is made invisible by Sneed how OSM relies on the skills of its volunteers. Throughout the article she does not acknowledge the skills necessary to use the OSM technology correctly, even though research shows that the data created by OSM volunteers may not be as valid as created by professional cartographers. In the past, skilled and trained professionals created data and maps after disasters (Zook et al. 2010, 25). At first the application was mostly used by skilled volunteers because it was still a bit hard to understand for other, less experienced people who also wanted to contribute (Harvard Humanitarian initiative 2010, 37; Keegan 2010). Although OSM allows everyone to contribute, not everyone has access to the technology or knows how to properly use it; interpreting and understanding maps may be problematic for amateurs.

Sneed fails to critically reflect on whether or not the technologies can really be considered empowering, which exposes TI discourse in the views of Schäfer (2011, 31-33), Morozov (2011) and Keen (2006). These scholars argue that open platforms often do not provide the participation and transparency they promise. Other scholars (Orcutt 2015, Forrest 2010, and Zook et al. 2010, 15) argue that the success of such technologies

relies on the number of people that are able to contribute; however, in several developing countries, such as Haiti, Philippines and Nepal, many people on the ground do not have access or enough knowledge to contribute to these maps. In addition, crisis areas such as the aforementioned developing countries often have minimal connection to the Internet (Zook et. al. 2010, 17). This exposes a digital divide present in disaster areas. It is problematic that this lack of access is not acknowledged or mentioned by Sneed. The economic and social inequality in these countries restricts OSM local users to contribute to OSM (Lu 2001). This exposes that the technology is not as liberating or empowering as argued by Sneed. Moreover, when there is basic connectivity, the problem shifts to information management (Harvard Humanitarian Initiative 2010, 10). In addition, heavily on technologies in general can be seen as a risk (Huesemann and Heusemann 2011, 245). This risk is amplified in crisis situations.

The third issue is that the actual usage of these technologies is still subject to the interpretation of its users (Sciadas 2003). Mediated communication overall removes several aspects crucial to transferring messages (Wienken 2011). Issues may arise when maps are constructed based on information given in short status updates, tweets or text messages by people on the ground. These sources cannot hold the contextual clues needed by the volunteers to estimate the severity of the situation on which they need to act. In addition, the language in which contributors insert data can vary, and all the data needs to be translated manually, possibly unintentionally changing the meaning of the data (Harvard Humanitarian Initiative 2010, 11). The actual usage of these technologies is still subject to the interpretation of its users (Sciadas 2003). This is not mentioned or discussed by Sneed. She rather argues that the technology will only get better when the app is increasingly being used by volunteers (Sneed 2015).

The fourth issue is that OpenStreetMap is subject to contributor biases because "each contributor must make decisions about the types of features that are most important to place on the map. The OSM community also decides the types of features that can be tagged" (E-Education 2013). An illustrating example is that there are multiple tags in OSM that one can use to mark an adult entertainment venue, while proposed tags that indicate hospice services and child day care services have "floundered" (Stephens 2013). Geography professor Monica Stephens attributes this directly to the significant male majority of OSM contributors (ibid). This gender imbalance in OSM also raises concerns.

Alyssa Wright (2013) investigated the demographics and structure of the OSM community. She argues that a lack of gender and racial diversity poses "significant challenges" for the sustainability of the application: "Without diversity we risk

stagnation and irrelevance. Maps are biased by the norms, traditions, assumptions, an political biases of the map maker" (ibid). She pleads for teaching a wider and more diverse group of users how to use the OSM technology and urges the industry to "stop jousting for technical supremacy" (ibid). In saying this, Wright literally urges against the Technological Imaginary by saying that the solution is not in the technology.

Moreover, users are not registered; therefore, their backgrounds and motives are unknown. Keen criticized open-source web technology and especially the anonymity of its users (2007, 75). He argued that through this, people focus more on themselves and their own personal gain which causes them to behave worse instead of better (ibid, 75). Sneed does not critically examine the volunteers that contribute in OSM. Instead, she rather focuses on the value of the created data.

The fifth issue that might arise from the use of open-source data in disaster relief is that there are no key decision makers. These decision makers are often needed in the planning and structuring of immediate disaster relief (Harvard Humanitarian Initiative 2010, 17). Although many different NGOs and aid agencies use the same maps already, there is no general plan of approach that all users follow. Open-source technologies in disaster relief are lacking the strong degrees of centralization that needed according to Morozov to organize data in order to create meaning or planning (2014).

In case there are decision makers, they are still struggling with the constant information flow. This real-time quality can also be a problem in the handling of information. "If decision makers wish to have access to (near) real-time assessments of complex emergencies, they will need to figure out how to process information flows from many more thousands of individuals than current system can handle" (Harvard Humanitarian Initiative, 12). This constant flow of data can also be problematic when aid agencies attempt to use the OSM data. This has caused a challenge for disaster responders, who are struggling to handle the increasing amount of data, pouring in almost constantly (Harvard Humanitarian Initiative 2010, 10). Although this is also considered a problem in the non-emergency world, it is amplified at times of crisis. Due to poorly adapted tools, training and strategies, responders are increasingly ill-prepared to produce useful knowledge from the flow of information and data (ibid, 10). This observation shows a gap in knowledge which may indicate a digital divide when it comes to the appropriation of technology. There is no problem in making mapping data accessible for aid agencies, however there are issues in the utilization of this information. Sneed does not acknowledge this in her article.

4.1.2 Concluding *WIRED* Article One

Congruent with the journalistic two-fold strategy as described by Broersma and Rupar (2011) and syntax used to make stories as convincing as possible, Sneed attempts to hide any shortcomings or inadequacies in the article. She does not get into the problems or false data that might emerge from volunteers contributing to such apps. She quite easily dismisses these problems by saying that the system is simple enough that a quick online tutorial will suffice to get the often inexperienced, non-expert contributors started, adding that their work will be "reviewed by more experienced users" (ibid). By saying that, she neglects that easy-to-use design often comes at the price of proprietary lock-in and therefore limited opportunities for appropriation (Schäfer 2011, 34).

The order in which she presents OSM as a solution in disaster relief unfolds through the structure of the text. The article starts by describing an event; the earthquake in Nepal, then the consequences and problems that resulted of this event; immediate need of maps for aid agencies and governments, and it ends with the 'solution' to these problems; mapping data collected through OSM. The author ends the article by attributing an important and great role for OSM in disaster relief: "The foundation built by OSM's volunteers will not only make it easier to get help to victims of this disaster, but hopefully those of future disasters as well" (Sneed 2015). By saying this, she eulogizes the role of the amateur. She suggests that this foundation built by volunteers is an enabling technology, exposing an ideological focus in discourse according to Schäfer (2011, 31-33), Morozov (2011) and Keen (2006) who further argue that it is important to critically reflect on whether or not the technologies can really be considered empowering. Instead, lack of local Internet, knowledge and tools puts the people who are not affected or not present in control. They suggest that technologies lessen human contact, which would lead to a 'distant' society (Huesemann and Huesemann 2011, 245). This seems ambivalent, as more and more people are contributing or participating in disaster relief who were not able to before. However, it can be true for the involvement of the aid agencies present in countries struck by disaster. Instead of communicating directly with the locals, they rely on data provided by people who are not even in the disaster area.

Through this structure, Sneed presents the open source technology as a solution to problems that occur after disasters. In line with Morozov (2013), it is visible that, although Sneed attempts to explain the technology, she fails to criticize it. This is an important indicator of an ideological focus in discourse.

When one takes a look at the background of Annie Sneed on LinkedIn, is shows that she has a background in scientific writing. She has worked at Scientific American

where she "critically assessed scientific advancements" for a worldwide audience (LinkedIn 2015). She does not show this background because she fails to critically examine the OSM technology in the article, and rather uses the journalistic two-fold strategy to convey the technology as a critical tool in disaster relief. This fits the reputation of the *Wired* platform in having a techno-utopian agenda.

4.1.3   *WIRED* Article Two

The *Wired* platform has another article on open source mapping technologies in disaster relief. Liat Clark called 'How Nepal's earthquake was mapped in 48 hours', describes the role of several open sourced mapping technologies in disaster relief (2015). Her article is structured in a similar matter. The author also starts with the occurrence of the disaster and describes the immediate need for basic maps to get aid agencies started. She then introduces the mapping efforts of volunteers globally: "That same morning, a different kind chaos sprang up thousands of miles away, in disparate directions, across the globe -- the effort to use data and satellite maps to help first responders before they even hit the ground" (ibid). This statement exposes associations with globalization/global democratization, connectivity, and deterritorialization; terms that Schäfer (2011, 34) and Keen (2006) link to TI discourse.

She describes in a day-to-day, step-by-step process how mapping is done in disaster relief, which she announces through the following expression: "This is how a natural disaster is mapped in 48 hours" (Clark, 2015). It seems like she is announcing what is possible with these technologies and what these technologies can do in disaster relief. She first describes the disaster response in the crisis area immediately after disaster strikes as messy and difficult.

The following statements in the text suggest that Clark sees open-source mapping tools as improving current disaster relief. She argues that OSM has been more effective in prioritizing what areas needed help the most: "Back in the UK, the work needed to achieve that had already begun." She says the OSM community "kicked into action immediately" after disaster struck Nepal. She says this "already thriving" OSM community was particularly important fort his particular relief effort. She presents this community as a global collaboration: "People all round the world tend to leap into action and contribute" (ibid). She associates this global community with a faster, more effective disaster relief; therefore, it can be linked to TI. Through Schäfers' (2011, 34) and Keen's (2006) perspective TI can be recognized in the shaping of collective action through technology These associations are problematic because they do not take into account the issues that may arise from data created by amateurs.

To prove how valuable the data is to aid agencies, the author quotes Dale Kunce, coordinator at the American Red Cross: "In the week after a large event we are data carnivores -- anything that will make our job easier is used"(Clark 2015). Clark is a bit more critical on the quality of the maps created in the short period after the earthquake. She acknowledges that the maps are not that great in the beginning and that more data sources can be added later on (ibid). Nevertheless, she still thinks that the open-sourced maps can provide a basic set of maps to aid agencies on the ground to commence their coordination efforts. She later even calls OSM data a 'key source' for governments and aid agencies (ibid). As detected in the first *Wired* article, this author also claims aid agencies rely on technology. Again, it needs to be noted that it is risky to rely on technology, even more so in crisis situations (Huesemann and Heusemann 2011, 245).

Clark acknowledges possible shortcomings of the application, which she later refutes. According to the author, the community contributing to OSM in disaster relief is "partly made up of aid employees, but the majority are laypeople, volunteers that want to help in a more tangible way" (Clark 2015). The publicity causes larger numbers of people to contribute, making more than half of the contributors completely new to the application. She critically identifies that: "whilst that's undoubtedly a good thing, many are making mistakes and need to be trained along the way" (ibid). After she identifies this problem, she then describes a non-technological validation system that should prevent errors made by rookie contributors. "With a second pair of eyes cross-checking every bit of data put into a different square. More experienced mappers that have been contributing for years will act as another check point in the system, making wide-ranging edits by looking at the entire map and identifying areas that have been underserved" (ibid). This fits with the idea is that the accuracy of data will grow when the number of people contributing increases: "given enough eyeballs, all bugs are shallow" (Raymond 1999, 9).

By saying the validation system is a crosschecking system she might contradict herself because later in the article it is described that the humanitarian relief team has changed is process and OSM tools since the Haitian earthquake. According to the author in the new process, task managers are assigned who split up maps into grits "enabling people to work in such a way that there is no overlapping" (Clark 2015). In that, she might contradict herself because she suggests that in the new dividing system no double work is done. Does this also mean that inserted data is not double-checked? By making this unclear or maybe even contradicting, the article shows inadequacies (Broersma & Rupar 2010, 17). On top of that, she says that the source of the images is sometimes not even known to the OSM teams (Clark 2015). While she identifies this problem, she does

not question the reliability of the maps created through this technology. In the view of Morozov (2013) neglecting issues or not scrutinizing technologies exposes ideological/utopian discourse.

Overall in the article, Clark attempts to show that mapping technologies have a prominent role in disaster relief. She calls mapping data 'vital' to relief effort. "All the data is vital for coordinating the relief effort and getting first responders to the dispersed population, identified on day one"(Clark 2015). She uses a quote from Turner Brinton of the provider of satellite imagery DigitalGlobe to highlight the importance of mapping data: "It is a critical component in providing first responders and aid groups with an understanding of conditions on the ground"(ibid).

Clark ends the article with a statement to exhibit the scale on which OSM mappers continue to contribute to maps in disaster relief: "meanwhile, a community of digital mapping volunteers continues to plug away as that information pours in. In the time it took to write this article, a further 21 mappers joined the OSM effort, and a further 2,855 edits have been made to Nepal's crumbling buildings" (ibid).

4.1.4   Concluding *WIRED* Article Two

While Clark's article seems to have a less ideological focus at first sight, she understates the problems that may be caused by incorrect mapping or use of open-sourced mapping. The structure of the article is dedicated to proving the 'importance' of OSM in disaster relief. She keeps going back to the importance of open sourced mapping technologies in disaster relief. As a result of doing this, she neglects the negative implications of these technologies to a level that is problematic. Furthermore, she makes mistakes when it comes to the journalistic two-fold strategy by showing an inadequacy (Broersma & Rupar 2010, 17). She contradicts herself in the matter of the inexperienced contributors. She identifies that the source of the maps used by OSM teams is not always known; however, she neglects to discuss the possible issues that arise from this. She also uses the two-fold strategy as presented by Broersma and Rupar (ibid, 17) to use quotes to increase a feeling of reliability and truthfulness by quoting people who are part of the mapping teams. Safe to say, these are not merely observers but rather active stakeholders who might benefit from the good reputations these technologies might get through these positive ways of talking about them. Although Clark does identify some of the shortcomings of the technology, she still believes in the potential of the technology and sees the solutions to the current issues as plausible. Morozov would argue that this is dangerous because ideological projections on technology should not be considered plausible goals (2013).

A quick read through other articles by Clark ('How gaming can improve our cognitive abilities' and 'Mega floating solar power plants open in Japan') suggest that she generally promotes technology as a means to improve things. This fits the reputation of the *Wired* platform in having a techno-utopian agenda.

4.2   THE *BBC* ARTICLE

To compare these *Wired* articles to less explicitly positive data, this research will now look at an article by technology reporter Edwin Lane from *BBC NEWS* (2014). The article will function as an 'offset' to the *Wired* articles. This will expose how exorbitantly positive the *Wired* articles are compared to the *BBC* article.

In the article, Lane argues how the role of technology in disaster relief is changing by discussing several examples of technologies. Lane uses expert sources to express their knowledge of technologies in disaster relief. This contributes to a feeling of truthfulness and reliability. His sources including a technology professor, a communication advisor for the Red Cross, and a manager of the governmental agency the Humanitarian Innovation Fund, can be considered more reliable as they are not representatives of the technologies used in disaster relief and they therefore have less strong motives to promote technology as a saviour. The technology professor is able to use his expertise to identify trends involving technologies. It can also be assumed that the communication advisor for the Red Cross wants the best possible strategies and methods in disaster relief. The last one, the manager at the governmental agency, is even responsible for innovative research in disaster relief. These positions enable them to identify trends in disaster relief, especially in relation to technology.

In his article, Lane is able to sketch out how technologies play a role in modern-day disaster relief. He does this by making sense of complex issues and events by organizing and simplifying them. He discusses several different technologies, including drones, use of mobile phones and social media. He discusses the "growing efforts to develop technology designed to make a difference in disaster zones" (ibid). The idea that technology can make a difference is in itself, ideological. He does not express this as his own opinion, but links the statement to humanitarian workers.

According to the author, "dozens of technologies" were developed in the wake of Haiti to help disaster relief. Although the author is predominantly positive about the use of technologies in disaster relief, he remains critical in the following quotes. The author is aware of the digital divide present in the countries struck by disaster: "There's plenty of technology for rich white men, it's the rest of the world that we need to help." However, the biggest problem he identifies and is repeated through his sources is that it

is hard for people to "to harvest and filter the vast amounts of data generated by a disaster or conflict [...] with the real challenge being to turn all of that data into information that humanitarian agencies can actually act on"(ibid). This does show that Lane is aware of the issues that rise from the constant flow of data coming in through open-sourced mapping. This is exactly what is neglected in the *Wired* articles.

In some of the quotes he uses to explain this technology, it is possible to detect ideology. He quotes Sharon Reader, a communications advisor for the International Red Cross, who is very positive about the use of a mass texting programme in disaster relief: "I don't know of any other means of communication where you could reach that many people, that quickly and that directly". Reader even calls text messaging the "ideal way to communicate" in developing countries because of the sheer volume of mobile phones sold in these countries (ibid). Subsequently, Lane discusses the role of technology in disaster following the earthquake and tsunami in Japan in 2011, he uses some ideological words: "The Twitter network became a crucial communication method and information source, typically faster and more effective than mainstream media" (ibid). The words "crucial communication". "typically faster" and "more effective" indicate in improvement in technology and TI (Schäfer 2011, 31-33). He also discusses how volunteers with an expertise help in disaster relief in "monitoring social media, translating messages to and from local dialects, and creating crisis maps around disasters" (Lane 2014). He acknowledges that volunteers still need to have a specific set of skills in order to deliver aid. This differs from the perspective of Sneed and Clark because they believe that the more people who can contribute, the better OSM will get.

Throughout the entire article, Lane describes a shift in disaster relief. He argues that aid workers are seeing a "sea-change in the role of technology in humanitarian relief, and how it can empower those affected by the disaster they find themselves in"(ibid). He closes his article by describing this shift: "There has been a huge shift in the aid world in seeing people who are affected by a crisis not as victims but as people who have the capacity to look after themselves"(ibid). This also highlights the biggest difference in content from the *Wired* articles. Lane focuses on technologies that are used by local people, people who are affected by the disaster, where Sneed and Clark concentrate on how people all over the world contribute to data collection in disaster relief. Lane also expresses TI because technologies are sometimes described as empowering technologies (Schäfer 2011, 31-33; Keen 2006). The expressions in the article that speak of liberating and empowering technologies do not consider its stakeholders and the companies that control it. This also exposes TI discourse in the *BBC* article. Throughout the rest of the article Lane identifies and explains technologies

but also acknowledges some of its shortcomings. In the view of Morozov, this makes the article less utopian than the *Wired* articles because the technology is not only explained but also scrutinized, which Sneed and Clark failed to do.

5   CONCLUSION

This research has been an attempt to further expose journalistic discourse in open-source mapping in the context of disaster relief that can be understood as expressions of the Technological Imaginary. The main question asked was: What hopes and beliefs are projected onto the role of open-source mapping technology OpenStreetMap in disaster relief and in what negative implications does this result?

Journalistic discourse was the focus of this study because of its powerful voice and broad audience. The two-fold strategy used by journalists as described by Broersma and Rupar (2010, 17) was used to explain how 'reality' and discourse are constructed in journalistic discourse. Laclau and Mouffe's discourse theory was applied to find meaning in text (1985, 6). Schäfer (2011), Morozov (2011-2014) and Keen (2006-2008) provided the methods and vocabulary that are necessary to detect TI discourse.

It is also important in discourse theory to not only look at what is being said, but also by whom (Schäfer 2011, 16-17). The teleological narrative behind *Wired* show why Wired has motives to shape positive discourse around technology. The past of *Wired* exposed a history of strong techno-utopian ties. The platform sees technology as something that 'shapes' industries, methods and everyday life. These findings show the coloured editorial outlook of the magazine when it comes to the role of technologies in progress. This made *Wired* a suitable place to detect an ideologically loaded and positive view on open-source mapping technologies and expose discourse.

Although all articles spoke about the role of technologies in disaster relief in a predominantly positive manner, a close reading exposed notable differences in how ideas unfolded. It can be said that the *Wired* platform promotes a rather ideological idea of open source technologies in disaster relief. Both articles present open-source mapping technologies as a solution or saviour in disaster relief. Not only are these technologies seen as a solution, but both authors also believe that the technologies will get an even more prominent role in disaster relief. By that they project their hope onto these technologies. This fits the reputation of the *Wired* platform in having a techno-utopian agenda. The *BBC* article identifies a shift in the use of technologies and the role of amateurs in disaster relief. Some expressions in the article can be linked to TI they describe technologies as empowering and improving. However, Lane does not neglect the shortcomings of these technologies and is therefore less ideological.

In discourse it is not only important to determine what is being said, but also what is not being said. Sneed and Clark downplay or neglect the skills that are necessary to use OSM correctly. OSM is not that easy to use which may result in false

interpretation due to limited knowledge of its contributors. According to Benjamin (1938, 220-238), McLuhan (1967) and Schäfer (2011, 167-169), knowledge and skills are crucial for the success of the technology. Although Clark takes the time to acknowledge that there are skills requires, she easily dismisses the effort one has to put in to learn how to use the technology properly. She neglects the possible negative implications that may result from improper use.

Moreover, the 'power' is not really put into the hands of local people as argued within the discourse shaped by *Wired*. The control is given to people who are not on site and who cannot visually assess the situation; this exposes shortcomings of the liberating potential of the technologies. If technology is not used correctly, they might even become repressing technologies. Sneed and Clark do not critically reflect on whether or not the technologies can really be considered empowering or liberating (ibid). They do not question issues of access and knowledge that are often present in crisis areas. This digital divide indicates that the necessary conditions in which technologies are used should not be neglected; however, these conditions are not discussed or (wilfully) neglected in the *Wired* discourse.

Both authors present OSM as an enabling technology, which is associated with TI by Morozov (2011), Schäfer (2011, 31-34 and 167-169) and Keen (2006). Sneed and Clark focus a lot the scale on which OSM is being used. They welcome amateurs as disaster relief workers, which indicates that they eulogize the role of amateur (Keen 2008; Schäfer 2011, 34). This is problematic for a number or reasons. First of all, there are problems with the accuracy and validity of data, because the group of users is often biased. Second, decentralization of power can lead to lack of centralized decision-making and bad strategies in disaster relief.

Moreover, Sneed and Clark argue that disaster relief is improving through the use of open-source mapping technologies, which indicates that they believe that the world would prosper from the global information infrastructure (Schäfer 2011, 34). The authors describe open-source technologies in disaster relief as better, empowering, improving and liberating compared to previous technologies. This shows how the Wired discourse is trying to convey the positive potential of technologies, which exposes Technological Imaginary (ibid, 31-33).

Sneed and Clark connect OSM in disaster relief to globalization/global democratization, connectivity, economic prosperity, deterritorialization, and social progress, which exposes TI (Schäfer 2011, 34). This makes it even more important to critically look at the how the technology is being used and the data that is being created. This is exactly what Sneed and Clark failed to do so. Instead, the authors amplify how

crucial the data is in disaster relief, and how much the aid agencies rely on OSM data. In general, relying heavily on technology is already a risk, and that risk is amplified in a situation like a crisis. Although Clark is a little more critical than Sneed, she still presents ideological projections on the role of OSM in disaster relief as plausible goals by arguing that the current issues will be fixed in the future. Presenting ideological ideas of technology as plausible is one of the most dangerous characteristics of ideological thinking according to Morozov (2014).

Both Wired authors structured their articles in a way that technology was presented as a solution to problems in immediate disaster relief and as an improvement from their predecessors. Both *Wired* articles fail scrutinize the technologies they discuss; it being made more real and believable than it should be. This is problematic because, as Carrico (2006) argues, it may not dangerous to believe in the power of technology as long as it is consciously examined at the same time.

The close reading method made it possible to unfold the central ideas and key supporting details in the articles. Implications of OSM were pulled back to a discursive level to show what is neglected in the Wired discourse surrounding open-source mapping technologies in disaster relief. This thesis was not able to produce generalizable comments because this method can be considered subjective and the scope was limited to two articles. Nevertheless, by thoroughly and methodically examining meaning in text, this thesis was able to expose how discourse is shaped and the possible negative implications of ideological thinking. Moreover, the analysis shows how to detect a difference in certain degrees of positiveness within discourse.

More importantly, a framework was created that helps recognize ideological projections onto technologies which can be used for future research as a starting point in the exploration of ideological components in journalistic discourse. Scholars now have the tools and language to detect strategies used by journalists to construct ideological discourse. To elaborate on this research, it is interesting to find out who makes money of, or invests in open-source mapping technologies that are used in disaster relief.

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