Contributed Research Article

Christian Reuter*, Katja Pätsch, and Elena Runft

IT for Peace? Fighting Against Terrorism in Social Media – An Explorative Twitter Study

Abstract: The Internet and especially social media are not only used for supposedly good purposes. For example, the recruitment of new members and the dissemination of ideologies of terrorism also takes place in the media. However, the fight against terrorism also makes use of the same tools. The type of these countermeasures, as well as the methods, are covered in this work. In the first part, the state of the art is summarized. The second part presents an explorative empirical study of the fight against terrorism in social media, especially on Twitter. Different, preferably characteristic forms are structured within the scope with the example of Twitter. The aim of this work is to approach this highly relevant subject with the goal of peace, safety and safety from the perspective of information systems. Moreover, it should serve following researches in this field as basis and starting point.

Keywords: Social media, Twitter, Terrorism, Crisis management

1 Introduction

The attacks in Paris in 2015, Brussels, Nice, and Berlin in 2016, and Istanbul in 2017, to mention a few current examples, did not only claim many victims but also had great political consequences. The so-called Islamic State (IS), which committed the attacks, especially uses social media in a professional way to recruit new fighters and to advertise for their ideology [29]. Yet, active opponents of this terrorism use the same channels to fight against terrorism. Social media play a big role on either side. The use by companies [17], but also by terrorist organizations, has already been considered in research works (see section 2). However, the fight against terrorism on the Web 2.0 has attracted comparatively less attention. Even though the hacker network *Anonymous* threatened the IS with a vir-

*Corresponding author: Christian Reuter, University of Siegen, Siegen, Germany, e-mail: Christian.Reuter@uni-siegen.de
Katja Pätsch, Elena Runft, University of Siegen, Siegen, Germany, e-mails: katja.paetsch@gmx.de, elena.runft@student.uni-siegen.de

tual war, the resulting consequences have not really been received in the media.

We ask ourselves, how do we respond to the propaganda of the terrorists? Twitter works well due to the access options to implement such an analysis. Therefore, we investigate in this paper tweets and Twitter accounts with regard to anti-terror measures. For this, we will initially present the state of research on terrorism and social media (section 2). Subsequently, we explain our methodology, followed by the qualitative analysis of the contents (section 3). Finally, we discuss our results (section 4) to draw a conclusion from our findings.

2 State of Research: Terrorism, Propaganda, and Their Combat in Social Media

This section deals with the current state of research regarding the relevance of social media in conjunction with terrorist propaganda as well as existing research results on possible countermeasures.

2.1 Dissemination of Terrorist Propaganda in Social Media

Much research about terrorist organizations and social media deals with terrorist organizations in general or specifically with the so-called Islamic State (IS, ISIS, ISIL, DEASH). That is why we try both to talk about terrorist organizations in general and to specify the IS due to the current situation. Media play a significant role in terrorism: "The media are partly responsible for the people's panic reactions" [13]. According to a US-representative study, fear enhances precautionary measures; anger prevents them [18]. Christoph [7] argues: "Without a letter of confession, a farewell video by the assassin or a last posting in the social network a bomb attack would be nothing else than a capital crime. Only through the terrorist communications strategy, the crime turns into a terrorist act." However, terrorists do "not rely on media-makers, themselves

became the agent in this game" [7]. And there is a reason for this: "Terrorism can [...] only gain in importance if it becomes meaningful on the media level" [7]. Therefore, social media offer "the advantage of immersion, which means the merger of medium and message. The credibility of terrorist narrations is strengthened by spreading it about supposedly reliable portals like YouTube" [7]. Thus, it feels as if "the terrorist *was one of us* by using the same communication channels ("-weapons") as the recipient" [7].

Not only YouTube serves as propagator: In recent years, Twitter became the most popular Internet platform for terrorists [15]. Neer and O'Toole [19] investigated the use of social media by ISIS and emphasize that social media (especially Twitter) are used as a strategical tool to get young jihadists, Ba'ath officials, and women enthusiastic about their violent convictions. Klausen et al. [16] stress that the British terrorist group al-Muhajiroun uses its international network of YouTube-channels elaborately for propaganda and the presentation of violent contents. Weinmann and Jost [38] explain the use of Facebook, Twitter, and YouTube by terrorist organizations for recruitment and propaganda: social media make it easier to find like-minded people and to consume their contents. Torok describes in more detail how ISIS uses social media. It "provides a stage on which ISIS can perform its recruitment-oriented 'theater', presenting a carefully packaged image of itself as the fulfillment of a kind of ultimate jihadi fantasy" [33]. Furthermore, Torok claims that "social media constitutes an institution wherein extreme beliefs and actions are 'normalized', or made to seem the standard practices of dedicated Muslims" [33]. This leads to ISIS developing and disseminating "its central narratives, often by reframing familiar concepts such as jihad and martyrdom" [33]. By performing this jihadi fantasy of normalized extremism, ISIS addresses young Muslims to follow them as kind of family.

Simultaneously, terrorists can address an almost endless number of potential members, who otherwise would not find the way to the closed forums. According to the study, at the beginning forums were the primary contact points for members, interested parties, and newcomers. Their use was complicated by the police and they came into the firing line of news services, which attacked and shut down the sites. After that, more and more Internet-affine terrorists turned to the social networks [38]. However, the forums still exist parallel since the hard core of the community debates "general developments in the scene, discusses ideological and theological questions and consumes car propaganda" [38] here. Weimann adds that also other online services are involved in the recruitment and radicalization process "such as Kik or Skype" [37], which allow "direct, real-time communication between recruiters and their audiences" [37].

Zelin concentrates on the content [39]: All media of the IS are published in Arabic and only a small part is translated into other languages. Archetti [3] states that online propaganda does not contribute to the recruitment: Viewing a jihad video could even increase the determination of terrorist opponents – consequently an opposite effect. Despite this conflict, it says: Every attention is essential. While some people respond with reluctance, some others are inspired – and that is what the IS wants to achieve [27].

Another aspect is the professionality while handling social media. The members' oral skills (to translate the statement and videos into European languages) [10] contribute to the relief of understanding. Also, the IS propaganda complies not only with potential new fighters, but also with "technically proficient and talented users of social media to sustain the machinery of recruitment" [10]. Since May 2014 IS videos or other media are produced by the al-Hayat Media Center, a special production unit for Western recruitment [37]. The materials by al-Hayat Media Center exist in many languages and are spread via social media. For example, "IS released a video inciting Muslims to come and participate in jihad, featuring a German chant with an English translation" [37]. This video was posted on Twitter in June 2014 [37].

The aims of the propaganda, in whose dissemination social media play a key role, range from external intentions such as distributing fear to internal purposes such as creating emotional solidarity with the target group [5]. The strategy of IS members is to recruit potential supporters from all over the world with the help of postings and to create global terror cells. Greene [11] takes the tactical procedures into account: A popular tactic to spread ISIS propaganda with social media are "Twitter-bombs", which use the most popular hashtags of the week and which are integrated in IS-related postings to reach a larger audience [11]. Thereby, the IS reaches people, who are usually not interested in propaganda material and accidently stumble upon terrorist tweets. Another trick for rapid spread is to follow each other on Twitter [4]. Freedom of expression, liberal or insufficient content review on Twitter encourage terrorist intentions. The opposite tactic of ISIS to the widely spread of general propaganda is "narrowcasting" [37]. As Weimann describes, focusing on specific subpopulations by using specific tailored contents is an emerging new trend [37].

2.2 Combat of Terrorist Propaganda in Social Media

Gartenstein-Ross [9] opens up a new perspective on terrorist actions on the Internet: He concedes the IS to use Twitter for example successfully, but simultaneously draws attention to the fact that the IS completely relies on the success of this propaganda. It should be an aim to weakening the IS's communications strategy. His approaches call for the establishment of a small and quick unit, which is supposed to refute IS-loaded propaganda [9]. Gartenstein-Ross sees a weak point referring to the credibility: One reason why IS messages are vulnerable is that parts of them are not true so that the IS risks extensive damage concerning the perception of its credibility [9].

Turk deals with general measures and strategies to fight against terrorism [35]. Accordingly, the United States are the most important world power and market leaders in the technology of anti-terror-development. In contrast, Jeberson and Sharma [14] focus on the specific determination of possible methods to identify terror suspects in social networks. Cheong and Lee [6] describe that these data could be collected in a knowledge base in connection with intelligent data mining-, visualization-, and filter methods. They could be used by decision-makers and authorities for quick reaction and control during such a scenario. Furthermore, Sutton et al. [32] deal with the application of backchannels as a special form of data mining for acquiring information. Weinmann and Jost [38] explain that "the analysis of terrorist online communication as it is accessible on the corresponding social media sites [can] tell a lot about the way of thinking, the motivation, the plans, and fears of terrorists." Instead of a strict censorship of radical contents, therefore "terrorist communication strategies [should be disturbed] by a mixture of technical (hacking) and especially psychological (anti-propaganda) means" [38]. Hussain and Saltman [12] emphasize that general censorship can actually be counterproductive and they suggest positive measures such as the expansion of contents against the extremism.

Gartenstein-Ross also concludes that it would be a significant victory to weaken the strategic communication campaign of the IS. Weimann sees the security community and governments as well as researchers in the role of a counterterrorism force. For the security community, according to Weimann, it is necessary "to adjust counterterrorism strategies to the new arenas, applying new types of measures including intelligence gathering, applying new counter measures, and training law enforcement officers specialising in the cyber domain" [37]. He observes researchers from various disciplines "coming together to develop tools and techniques to respond to terrorism's online activity" [37]. Generally, Weimann suggests that not only the supply of propaganda but also the demand has to be reduced [37]. As a long-term strategy "to combat radicalisation and recruitment" [37] he adds the construction of counternarratives. Yet, (believable) anti-propaganda does not come from abroad: Under the heading of "Anti-IS Humour", Al-Rawi explains [2] that hundreds of Arabic YouTubers began to transform an ISIS-video with religious singing into a funny dance clip after its release. Moreover, it is possible to focus on preventive measures in combination with (offline) information at schools, universities or prisons [28].

This present knowledge about anti-propaganda provides a starting point for our analysis. We explore anti-propaganda according to the fight against terrorism and try to systemize it. In many approaches, the focus is on the recruitment of new members. Therefore, pictures and videos are supposed to influence the young users of Twitter through their quick and easy consumption. In the following, we investigate and analyze countermeasures using the example of Twitter.

3 Explorative Study of the Fight Against Terrorism on Twitter

In the next section, the applied methodology of the study is described to subsequently analyze the resulting categories (I) clarification, (II) parody/satire, and (III) hacking concerning remarkable phenomena.

3.1 Methodology

Our analysis focusses on anti-propaganda in tweets and compares terrorists' statements to expressions of the US government or media reports, for example. For the applied qualitative content analysis, it was necessary to reduce the data of Twitter so that the amount got manageable qualitatively [36]. On Twitter, one can find many accounts and hashtags, which deal with the fight against terrorism.

The research began with the account of the US government @ThinkAgain_DOS, which tries to reveal the propaganda of the terrorist organization. There were found many hashtags like #FreeTheWorld or #VivaSAA, which serve the fight a gainst t errorism. T hese include #ThinkAgainTurnAway, #Daesh, #DaeshLiesExposed, #alleyesonISIS, #IstandwithSyria, #FreeTheWorld, #Syria, #ISIS, #trollingday, #trollingisis, #isismovies, #ISIL,

Table 1: Overview of selected accounts and hashtags, their intention, and methods

Account/hashtag	Intention	Method
@ThinkAgain_DOS	Clarification	Dissemination and commenting of current releases about the topic
@AverageMohamed	Clarification	Dissemination of information by means of cartoons
@Operation_ISIL	Hacking	Call by hashtags to report conspicuous accounts
@isis_karaoke	Parody / satire	Posting of pictures of IS fighters with lines from famous pop songs, according to the motto "dropping songs, not bombs"
#TrollingISIS respectively #TrollingDay	Parody / satire	Posting of modified, mocking ISIS pictures
#ISISChan respectively ISIS_Chan	Parody / satire	Google bomb: Results of the image search on "ISIS" with the presentation of the green-haired anime girl with black jihadists clothes and a melon
#ISISCrappyCollageGrandPrix	Parody / satire	Japanese Photoshop and hashtag campaign for the mockery of IS fighters

#NotInOurName, #No2ISIS, #OpIceISIS, and many others. Moreover, with the help of the Twitter function (suggestion), there could be found several users with similar interests, e.g. @OYEQF, @QuilliamF, @Sil3nceBl4ck, @AnonymousMedia, @AntiTerrorismTR, @Active_Change_F. The identifiable material of the accounts and hashtags from March 1st to March 31st was collected and stored (Table 1).

We compress the filtered material using Open Coding [31], which created categories, from which we finally selected and analyzed specific examples exemplarily. A limitation is the lack of representativeness; however, this was not the goal of this work. It is not about the confirmation of predetermined hypotheses, but about the development of hypotheses and theories from the material [31]. Furthermore, bias effects cannot be excluded due to the explorative process with the identification of significant characteristics. Moreover, English tweets were investigated – consequently, the work focusses on effects and activities in the English-speaking area.

Overall, the found posts, hashtags, and accounts could be assigned to three (not always completely selective) categories: (I) clarification, (II) parody/satire, and (III) hacking. They are based on the later compressed subcategories, which were created in the encoding process (press, pictures, trolling, anime, Grand Prix, spoof). In the following, the main categories are supposed to be investigated and in each case, a representative example should be analyzed. We try to work out significant phenomena out of the mass, but this does not always work. For instance, accounts and trends are fast moving and exchangeable in the category of hacking. They are very similar so that remarkable differences are hard to determine.

3.2 Category I: Clarification

Clarification means to try answering to the terrorist propaganda with logic to invalidate it. It is a complete clarification in terms of a statement, which clarifies unknown

connections. The two accounts @ThinkAgain_DOS and @AverageMohamed are interesting since they have the same aim but work very differently. @ThinkAgain_DOS as the official account of the US government, precisely since March 2016 The Global Engagement Center, was supposed to take the role of the pioneer concerning the fight against terrorism on Twitter. It describes itself as a provider of "information and facts about terrorism and the international community's activities to end terrorism." (Source: https://twitter.com/ThinkAgain_DOS). In contrast, @AverageMohamed fights against the terror by trying to spread information with cartoons. The practical target group, which has to be investigated, are therefore the accounts @ThinkAgain_DOS and @AverageMohamed, whose activities consist of the clarification of the general public as well as potential IS supporters.

A well-known method is the dissemination and commenting of current releases about the topic. In the @ThinkAgain_DOS tweet (02.03.2016), they spread and comment on an article of the newspaper *The Independent* (Figure 1), which contains a related link to a report about British imams, who obtain information in Iraq about the fight against the ISIS. This happens hoping that the imams spread their impressions from Iraq at home and thus counteract the further radicalization. We see that the measure, which is count on, is the clarification about the actual circumstances in IS territories in social media. @Selbyist replied to the tweet: "*This will need thorough investigation. I don't trust that rag Independent, and who's paying for this, George fucking Soros?*" (02.03.2016). Thus, firstly "Independent" as a source is criticized, which he/she does not trust, and it is asked for the financing. Here, one can see that clarification by media reports is not sufficient for credibility.

The users are critical, especially if it originates from the US government, whom they do not trust. A good example is the following discussion: @syrmukhabara posted a collage with six smaller pictures of male, covered in blood

Figure 1: Tweet from @ThinkAgain_DOS.

Figure 2: Tweet from @syrmukhabarat.

Figure 3: Picture campaign by @ThinkAgain_DOS.

bodies, which is decorated with the logo of the Syrian-Arabic army and a link to a newspaper article (Figure 2): *"Here are the Rebels that were ambushed trying to escape Krak des Chevaliers into Lebanon"* (20.03.2014). The comment from @syrmukhabarat assigns the dead to the rebel groups. The news paper article headlines: *"11 rebels killed fleeing famed Crusader fort: Syria army"* (20.03.2014). Therefore, it connects the two even though the source of the picture is not clear. @ThinkAgain_DOS comments: *"[…] They could also be #alquaeda fighters whom #Assad used to send to Iraq and Lebanon #thinkagainturnaway"* (20.03.2014). Thereby, the discussion on the unclear source of the picture has been opened and following speculations have been made.

Besides the news articles, @ThinkAgain_DOS also posts pictures or videos, which are supposed to communicate educational messages. Under #UnitedAgainstDaesh a picture (Figure 3, 09.03.2016) was posted, which shows an Iraqi woman and a girl, who sit on a couch side by side and look seriously: *"'For one hour a day they electrocuted me: cables to my head, hands and feet. I was crying and begging him to stop, but he wouldn't listen.' Iraqi woman held captive by ISIS for 4 months."* The comment on the picture says: *"#UnitedAgainstDaesh: Coalition seeks to destroy the evil perpetrators of extreme violence against"*. The post's

aim is to strengthen the accusations against the ISIS to be violent and ruthless.

On 13th March 2016, @ThinkAgain_DOS posts another picture (Figure 4), which displays a woman and a girl, who hold up a sign. The text says: *"ISIS DOES NOT REPRESENT ISLAM"*. They both look at the camera. This gives the impression that they straightly look at the viewer. The supposed mother-daughter-team should not arise pity but convey the viewer that two strong Muslim women are responsible for the clarification about ISIS. The pic-

Figure 4: Picture campaign by @ThinkAgain_DOS.

Figure 5: Tweet by @AverageMohamed.

ture remains uncommented; it was only equipped with the hashtags #NoToDaesh and #DaeshLiesExposed. The two women stand symbolically for all modern Muslim women who do not support the ISIS and who do not let themselves be discriminated.

However, @AverageMohamed, a kind of fictional character, produces cartoons, which aim at protecting young people from radicalization using clarification. *The Guardian, The Telegraph*, as well as *Radio Bayern 2*, reported about him and his work. He posts a link to one of his YouTube videos (Figure 5, 21.10.2015), which is headlined with "Identity in Islam" and equipped with various hashtags (#almuhajirah, #jondi). These hashtags are also used by terrorist organizations among others and are supposed to undermine the propaganda work and reach adolescents, who are likely to get radicalized. The video deals with the question of society, religion, and identity. He promotes for variety and tolerance and makes these parts of the Islam. Thereby, he tries to counteract the arguments of the extremists, which claim that its Allah's will to kill all the unbelievers.

3.3 Category II: Parody and Satire

Parody is a hilarious satirical imitation by distortion and exaggeration. The satire is a genre, which criticizes and stultifies events. Both aim at expressing mockery about serious issues.

Under the hashtag #TrollingISIS and #TrollingDay we could identify pictures, which obviously make fun of the IS. The hacker network *Anonymous* declared the 11th December the "ISIS Trolling Day" and made a plea on the website Ghostbin for using the satirical strength of the Internet to post memes and cartoons which make fun of the IS. This plan is part of the operation of *Anonymous*, which wages a cyber war against the ISIS since the attacks on 13th November 2015. Under #TrollingISIS and #TrollingDay, they posted a flood of modified ISIS pictures. A popular element, which was spread rapidly, was the replacement of the ISIS fighters' heads with yellow bath ducks. Instead of weapons, the fighters hold up toilet brushes (Figure 6).

Anonymous explicitly called for using goats on the pictures: *"post photos of goats while @ing Isis members with captions talking about their wives"*. This kind of parody is based on the rumor that the Prophet Mohammed nursed sodomy with goats. Since sexual intercourse is largely a taboo subject, this accusation strikes the chord particularly. This kind of criticism on the Islam, in particular on the IS, therefore is strongly politically motivated. In Figure 7, one can see IS fighters, who ride oversized goats and wave a flag with the statement "We Fuck Goats".

Another popular presentation are ISIS fighters connected with homosexuality. In Islam, homosexual intercourse is considered as fornication and is prohibited un-

Figure 6: #TrollingDay IS fighters as bath ducks.

Figure 8: #TrollingDay IS fighters with dildos.

Figure 7: #TrollingDay IS fighters with goats.

Figure 9: #TrollingDay Abu Bakr al-Baghdadi with detergents.

der penalty of death. In December 2015, a video was released which showed how two homosexual men were captivated and thrown off a roof. ISIS is virtually hunting homosexuals, even more abusive is the description 'gay' for them. In Figure 8, one can see armed IS fighters, whose weapons are turned into oversized dildos. The user tweets below: "Join #IslamicState brothers are waiting #TrollingDay." This implicates that the ISIS were a 'gay club', which hurts their dignity. In further pictures IS fighters are shown in lady's underwear swinging the 'Gay Pride'-Rainbow-Banner. Also, the hint on the virgins was picked up again by a Meme which tells: "Promise 72 Virgins. Doesn't mention Gender."

Another topic of various tweets of the Trolling Days is the lack of intelligence of the IS. The displayed post, for example, shows the ISIS leader Abu Bakr al-Baghdadi with the detergent *Daesh* (Figure 9). The hashtag #Daesh-

bag is inspired by the word "douchebag", which colloquially means sucker. With the advertisement of detergent, the IS is – literally – portrayed effeminately. The brainwash, which happens through propaganda and recruitment, turns the supporter to marionettes of the IS, individual opinions are rejected, says the intension of the anti-propaganda.

Besides the politically motivated satire measures, which build a targeted intention of the anti-propaganda, there are also pure parodies of the IS. One example is the hashtag #ISISChan or "ISIS_Chan". There one can find pictures on Twitter of a green-haired girl with black jihadists clothes and a melon. ISIS Chan was created by users of the Japanese textboard-site 2channel (Figure 10). On 24th January 2015, a thread with the title *"Let's make ISIS into a moe girl and send it to them!"* was created. A Google bomb

Figure 10: Guidelines for ISIS Chan.

Figure 11: ISIS Chan with a melon.

should fill the results of the image search on "ISIS" with presentations of the anime girl. In the first 24 hours, the hashtags were used 9.000 times on Twitter (ibid.). Figure 11 shows ISIS Chan with a melon on a plate. She holds the knife wrongly at her throat. The subscriber explained that she wanted to teach the ISIS what knives are actually for: cutting melons.[1]

A Japanese Photoshop and hashtag campaign shows edited pictures of the IS with two Japanese hostages (#ISIS-CrappyCollageGrandPrix). On 20th January 2015, ISIS publishes a video on YouTube, in which a masked fighter threatens to kill two Japanese hostages if Japan does not pay two million dollars of ransom. Japanese users replied with parodies of the video with the hashtag. Figure 12 shows the IS supporter cutting a kebab, and there are hate comments of IS supporters below the pictures, such as: *"Japanese people, you are so optimistic. Is it because he said 5800 kms you think you are safe zone. We have army everywhere."*[2]

On 26th December 2015, the self-declared caliph of the IS, Abu Bakr al-Baghdadi, makes a plea in an audio message for all Muslims to join the fight. Though, many Muslims rejected the IS on Twitter with reasons like "My goldfish is ill, I, unfortunately, have to go to the veterinarian" or "Sorry, I am busy watching Netflix". For the Muslims,

it was important to show that ordinary citizens have other things to do than joining a worldwide religious war. The account ISIS_Karaoke acts according to the motto "dropping songs, not bombs" and provides pictures of IS fighters with lines from pop songs. The background of this is the new prohibition of music of the IS in Racca, the capital of the so-called caliphate.[3] Figure 13 shows Jihadists, which presumably perform "Stayin' alive" from the Bee Gees.

3.4 Category III: Hacking

Another category of the fight against terrorism includes hacking. "The hacker network Anonymous declared the virtual war with martial words to the Islamic State (IS) after the terror series in Paris."[4] After the Parisian attacks in 2015, hackers, outside Anonymous, dedicated themselves all over the world to the fight against ISIS on social networks.

Figure 14 shows the tweet from @Operation_ISIL from 16th March 2016. It lists hashtags, which lead to similar topics and a word document with a series of accounts, which

---

1 http://www.dw.com/en/melons-instead-of-tanks-meet-isis-chan-the-anime-that-fights-islamic-state/a-18698611.
2 http://knowyourmeme.com/memes/isis-crappy-collage-grand-prix 21.01.2015.

3 http://www.stern.de/digital/online/isis-karaoke--satire-auf-twitter-bringt-is-kaempfer-zum-traellern-von-britney-spears-songs-6423078.html.
4 http://www.focus.de/politik/ausland/diese-attacken-koennen-nicht-ungestraft-bleiben-anonymous-erklaert-dem-is-per-videobotschaft-den-krieg_id_5089975.html.

Figure 12: #ISISCrappyCollageGrandPrix IS fighter with kebab.

Figure 13: @isis_karaoke IS fighters dance presumably with "Stayin' alive".

Figure 14: Tweet from @Operation_ISIL.

Figure 15: Tweets about #GhostSecGroup.

German 'pro-IS' rapper and asks the community to "Go get him!". The hacker scene participates actively in parodist pictures and videos and distributes them. Hacking, therefore, refers to illegal activities, like the blocking of accounts and the appeal to the population to report suspected persons as well as legal activities by multiplying parodist media.

4 Discussion: Effectiveness of the Measures

As the literature study showed, social media can contribute to the fight against terrorism [2], [6], [9], [14], [38]. The measures against terrorist propaganda on Twitter are very active as we could see. The main work of @ThinkAgain_DOS, which here is representatively applied for

have been disarmed. Figure 15 illustrates that there is a possibility for everyone to join the war against extremist groups. For this, all users are asked under appropriate instructions to report conspicuous accounts. Other activities are kept hidden from the social network since it involves illegal activities, which are not intended for the public. The success of these hacker attacks remains questionably as numerous sites are callable despite many barriers. Hackers can also be 'haunted' by ISIS users. They fight among each other and simultaneously call for a hunt. In the post from 18th March 2016, @intel_ghost draws attention to a

the US government, consists of the dissemination of articles. This way of educational measures is very passive and reactionary. The "scouts" make a claim to spread the truth, in contrast to the terrorists' lies. Gartenstein-Ross [9] adds that the weak point of the IS is its credibility and terrorist communication strategies can be stopped by technical (hacking) and especially psychological (anti-propaganda) means. However, the countermeasures have the same problem with the credibility as we determined in the analysis (cf. discussion opened by @syrmukhabarat from 20th March 2014). Thus, the USA also have problems with the credibility, yet, they are also terrorists in the eyes of the enemies. At this point, users like @Average-Mohamed have better chances to be perceived positively. He is more credible as a Muslim if he informs about the Islam. All things considered, different clarification strategies become visible, which also are related to the respectively taken role (government, local organization, political organization, private person).

It surprisingly stands out that the supposedly private users are significantly more productive than official accounts: In our study, those registered a substantially higher number of retweets. The official accounts (e.g., @TheGEC or @ThinkAgain_DOS) make less use of range increasing hashtags than the private scene. The possible reason is that official sites work more covertly. The Twitter users fight against the common enemy IS with strategies of anti-propaganda, e.g. satire. Parodist image editing is very popular on the web and apparently encourages to participate. On the one hand, terrorists react with extreme threats on the edited pictures and the accompanying mockery, on the other hand, for the IS, every attention and dissemination counts. The educational work also attracts attention. However, it does not get that much attention as the satirical approach – at least regarding the counted retweets. The IS often works with pictures and videos so that it is more effective to reply on the same level instead of texts and statements.

Generally, on Twitter the use of hashtags (#) is important to address the message to the proper audience. The audience, which should be addressed by counter measures against terrorist propaganda, are young Muslims [37], who are in first contact with extremist contents. @AverageMohamed also uses hashtags in Arabic to reach the Arabic speaking youth and the propagandists [11]. Some users of category II (parody and satire) address their posts directly to ISIS with their hashtags. However, mostly the hashtags of the counter posts only refer to themselves and their surrounding.

Algorithm-based scans could "support and relieve to some degree [and] shortly a fully-automated process could

be guaranteed, but not a fair and uncensored verification" [38]. Especially, bots for automated opinion making represent a major challenge [21]. Hacker attacks on IS accounts seem to be promising, at least since instead of one deleted account immediately two new accounts emerge. Nevertheless, this work matters as a sign of resistance. It would be useful, but not easy, to infiltrate the basic structure of terrorist online presence specifically and to tackle the problem more fundamentally than only deleting accounts superficially.

To counter terrorist groups, which cannot even be deterred by their own death, is only manageable with sufficient acumen and gallows humor. Apparently, falling in indignity and ridiculousness is the worst for the IS. Many reactions of the IS representatives on parodist or satirical tweets are aggressive and contain threats of violence. Therefore, relevant accounts are often hacked or reported so that it is problematic to relate it afterward. Based on these reactions, one can read that the satirists touched a nerve. This weak point can be attacked with parody and satire, which are quickly received collectively. Though, it is possible that the IS after that realizes its threatened punishments due to the insult or that the dissemination of the propaganda material attaches attention to the IS. The Muslims showed a subtler way to resist the terrorists with their rejections via Twitter concerning the appeal to join the holy war. Some answers of the users are based on evidence from the Koran, whereby they withdrew the basis for argumentation of the IS.

5 Summary and Conclusion

Social media play a significant role in terrorism as well as in the fight against terrorism. The research on social media meanwhile has a place in the information systems (IS) research with behavior-oriented as well as design-oriented studies. So far, there are only a few publications in earlier IS-articles about terrorism in social media. This article deals with the fight against terrorism in social media. In the first part, the state of research in the field of terrorism, propaganda, and their combat in social media was analyzed and based on this, in the second part, the use of Twitter was explored exemplarily.

Considering the whole spectrum of the phenomena on Twitter, which were classified into (I) clarification, (II) parody and satire, and (III) hacking, it becomes apparent that one measure alone is not promising. Finally, clarification is the one thing, which may detect supposed lies of the terrorists, but it should be communicated believably. Using

hacking or parody and satire, the Twitter users get the possibility to crack down on terrorists as a unit. So, it is also possible to counter the feeling of helplessness considering the powerful enemy. However, none of the measures works if they are not addressed to the right audience. The wide spread of the Internet must be used effectively; otherwise the message will disappear in the mass.

For hacking, however, one must consider legal and ethical questions. There is a response for satire, but the countermeasures should exceed. Bots, which work automatically here, should be perceived as a major challenge. As previous research has found out, legitimate bots generate large amounts of benign tweets, while malicious bots spread spam or malicious content [8]. Studies on a Syrian social bot during the civil war, which was active for 35 weeks on Twitter before it was shutdown, not only found that "growth, behavior, and content of this particular botnet did not specifically align with common conceptions of botnets", but also showed aspects to distinguish bots from real users [1]. The article concludes that "there is room for research on the effective detection of social botnets in social media." There are also approaches to detect radicalism [34] that might be integrated into these attempts.

The measures in the context of fighting against terrorism offer many possibilities, which seem to be worthwhile and whose essence is presented compactly as follows:

1. To start mass movements (join forces against the IS)
2. To convey authenticity and credibility (especially for official sites)
3. To use parody and satire for critical reflection (especially for private positions)
4. Resistance on eye level (Muslims turn against the IS)
5. Hacking (with bots) by specialized groups (not only superficial elimination)
6. To convey clarification understandably (speech in language of population)

Of course, this study has limitations: This explorative overview could only identify a part of the activities. It provided insight using qualitative methods, but the entire structure has not been addressed (see methodology, section 3). In following studies, the network of countermeasures should be investigated using quantitative methods of (social) network analysis as well as bigger data sets [23]. It is assumed that a growing part of the propaganda is made by bots and therefore the conflict shifts to a technical level (H1). To evaluate the effectiveness of the measures accurately, a longer-term observation of the reactions of the IS propaganda is required. Furthermore, using social media analysis [30], it should be examined if parody and satire are especially consumed by sympathizers of this humor or

if they encourage endangered persons to reflect critically (H2). In general, it should be examined if the right people get the right message. The activities of the opposition, activists, and refugees, which potentially play a significant role, should also be investigated in this context [26] (H3). Further, it should be examined if and how the population weighs privacy and the fight against terrorism on social media [22] (H4). Findings of Critics Informatics [20], which usually deal with crisis management, should be transferred to the fight against terrorism where possible.

References

[1] ABOKHODAIR, NORAH; YOO, DAISY; MCDONALD, DAVID W: Dissecting a Social Botnet. In: *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing – CSCW '15* (2015), S. 839–851 — ISBN 9781450329224.

[2] AL-RAWI, AHMED: Anti-ISIS Humor: Cultural Resistance of Radical Ideology. In: *Politics, Religion & Ideology* Bd. 7689 (2016), Nr. May, S. 1–17.

[3] ARCHETTI, CRISTINA: Terrorism, Communication and New Media: Explaining Radicalization in the Digital Age. In: *Perspectives on Terrorism* Bd. 9 (2015), Nr. 1, S. 49–59.

[4] BARRETT, RICHARD: *The Islamic State*, 2014.

[5] CHATFIELD, AKEMI TAKEOKA; REDDICK, CHRISTOPHER G.; BRAJAWIDAGDA, UUF: Tweeting propaganda, radicalization and recruitment: Islamic state supporters multi-sided twitter networks. In: *Proceedings of the 16th Annual International Conference on Digital Government Research – dg.o '15*. New York, New York, USA : ACM Press, 2015, S. 239–249 — ISBN 9781450336000.

[6] CHEONG, MARC; LEE, VINCENT C S: A microblogging-based approach to terrorism informatics: Exploration and chronicling civilian sentiment and response to terrorism events via Twitter. In: *Information Systems Frontiers* Bd. 13 (2011), Nr. 1, S. 45–59.

[7] CHRISTOPH, STEFAN: Funktionslogik terroristischer Propaganda im bewegten Bild. In: *Journal for Deradicalization* Bd. Fall/15 (2015), Nr. 4, S. 145–205.

[8] CHU, ZI; GIANVECCHIO, STEVEN; WANG, HAINING; JAJODIA, SUSHIL: Who is Tweeting on Twitter: Human, Bot, or Cyborg? In: *Acsac 2010* (2010), S. 21 — ISBN 9781450301336.

[9] GARTENSTEIN-ROSS, DAVEED: Social Media in the Next Evolution of Terrorist Recruitment. In: *Hearing before the*

Senate Committee on Homeland Security & Governmental Affairs, Foundation for Defense of Democracies (2015), S. 1–11.

[10] Gates, Scott; Podder, Sukanya: Social Media, Recruitment, Allegiance and the Islamic State. In: *Perspectives on Terrorism* Bd. 9 (2015), Nr. 4, S. 107–116.

[11] Greene, Kyle J.: ISIS: Trends in Terrorist Media and Propaganda. In: *International Studies Capstone Research Papers* Bd. Paper 3 (2015), S. 1–59.

[12] Hussain, Ghaffar; Saltman, Erin Marie: *Jihad Trending: A Comprehensive Analysis of Online Extremism and How to Counter it* : Quilliam, 2014.

[13] Jackob, Nikolaus: Die Diffusion von Terrormeldungen, die Wirkung von Anschlägen auf die öffentliche Meinung und die Folgen für das Vertrauen in die Demokratie. In: Glaab, S. (Hrsg.): *Medien und Terrorismus – auf den Spuren einer symbiotischen Beziehung*, *Wissenschaft : Sicherheit#Bd.#3*. Band 3. Aufl. Berlin : Berliner Wissenschafts-Verlag, 2007, S. 155–174 — ISBN 978-3-8305-1435-0.

[14] Jeberson, W; Sharma, Lucky: Survey on counter Web Terrorism. In: *COMPUSOFT, An International Journal of Advanced Computer Technology* Bd. 4 (2015), Nr. 5, S. 1744–1747.

[15] Khayat, M.: Jihadis' responses to widespread decline in participation on jihadi forums, increased use of Twitter. In: *MEMRI Inquiry & Analysis* Bd. 955 (2013).

[16] Klausen, Jytte; Barbieri, Eliane Tschaen; Reichlin-Melnick, Aaron; Zelin, Aaron Y.: The YouTube Jihadists: A Social Network Analysis of Al-Muhajiroun's Propaganda Campaign. In: *Perspectives on Terrorism* Bd. 6 (2012), Nr. 1, S. 36–53.

[17] Koch, Michael; Richter, Alexander: *Enterprise 2.0 – Planung, Einführung und erfolgreicher Einsatz von Social Software in Unternehmen* : Oldenbourg-Verlag, 2009 — ISBN 9783486590548.

[18] Lerner, Jennifer S; Gonzalez, Roxana M; Small, Deborah A; Fischhoff, Baruch: Effects of fear and anger on perceived risks of terrorism: A national field experiment. In: *Psychological Science* Bd. 14 (2003), Nr. 2, S. 144–150.

[19] Neer, Thomas; O'Toole, Mary Ellen: The Violence of the Islamic State of Syria (ISIS): A Behavioral Perspective. In: *Violence and Gender* Bd. 1 (2014), Nr. 4, S. 145–156.

[20] Palen, Leysia; Vieweg, Sarah; Sutton, Jeannette; Liu, Sophia B.; Hughes, Amanda Lee: Crisis Informatics: Studying Crisis in a Networked World. In: *Proceedings of the International Conference on E-Social Science*. Ann Arbor, USA, 2007.

[21] Ratkiewicz, J; Conover, M D; Meiss, M; Gonc, B; Flammini, A; Menczer, F: Detecting and Tracking Political Abuse in Social Media. In: *Proceedings Conference on Weblogs and Social Media*, 2011, S. 297–304.

[22] Reuter, Christian; Geilen, Gordian; Gellert, Robin: Sicherheit vs. Privatsphäre: Zur Akzeptanz von Überwachung in sozialen Medien im Kontext von Terrorkrisen. In: Mayr, H. C.; Pinzger, M. (Hrsg.): *Informatik 2016: von Menschen für Menschen*. Klagenfurt : GI-Edition-Lecture Notes in Informatics (LNI), 2016.

[23] Reuter, Christian; Ludwig, Thomas; Kotthaus, Christoph; Kaufhold, Marc-André; von Radziewski, Elmar; Pipek, Volkmar: Big Data in a Crisis? Creating Social Media Datasets

for Emergency Management Research. In: *i-com: Journal of Interactive Media* Bd. 15 (2016), Nr. 3.

[24] Reuter, Christian; Pätsch, Katja; Runft, Elena: Terrorismus und soziale Medien – Propaganda und Gegenpropaganda. In: Prinz, W.; Borchers, J.; Jarke, M. (Hrsg.): *Mensch & Computer: Tagungsband*. Aachen, Germany : Gesellschaft für Informatik e.V., 2016.

[25] Reuter, Christian; Pätsch, Katja; Runft, Elena: Terrorbekämpfung mithilfe sozialer Medien – ein explorativer Einblick am Beispiel von Twitter. In: *Proceedings of the International Conference on Wirtschaftsinformatik (WI)*, 2017, S. 649–663.

[26] Rohde, Markus; Aal, Konstantin; Misaki, Kaoru; Randall, Dave; Weibert, Anne; Wulf, Volker: Out of Syria: Mobile Media in Use at the Time of Civil War. In: *International Journal of Human-Computer Interaction* Bd. 32 (2016), Nr. 7, S. 515–531.

[27] Ryan, L.: *ISIS Is Better Than Al-Qaeda At Using the Internet*. — Defense One.

[28] Saltman, Erin Marie; Russell, Jonathan: *White Paper – The role of prevent in countering online extremism*: Quilliam, 2014.

[29] Seib, Philip; Janbek, Dana M.: *Global Terrorism and New Media: The post-Al Qaeda Generation*. New York : Routledge, 2011.

[30] Stieglitz, Stefan; Dang-Xuan, Linh; Bruns, Axel; Neuberger, Christoph: Social media analytics – An Interdisciplinary Approach and Its Implications for Information Systems. In: *Business and Information Systems Engineering* Bd. 6 (2014), Nr. 2, S. 89–96.

[31] Strauss, Anselm L.: *Qualitative Analysis for Social Scientists*: Cambridge Press, 1987.

[32] Sutton, Jeannette; Palen, Leysia; Shklovski, Irina: Backchannels on the Front Lines: Emergent Uses of Social Media in the 2007 Southern California Wildfires. In: Friedrich, F.; Van de Walle, B. (Hrsg.): *Proceedings of the Information Systems for Crisis Response and Management (ISCRAM)*. Washington D.C., USA, 2008, S. 624–632.

[33] Torok, Robyn: *ISIS and the Institution of Online Terrorist Recruitment*. URL http://www.mei.edu/content/map/isis-and-institution-online-terrorist-recruitment. – abgerufen am 2017-01-31. — Middle East Institute.

[34] Tuna, Tayfun; Akbas, Esra; Aksoy, Ahmet; Canbaz, Muhammed Abdullah; Karabiyik, Umit; Gonen, Bilal; Aygun, Ramazan: User characterization for online social networks. In: *Social Network Analysis and Mining* Bd. 6. Vienna : Springer (2016), Nr. 1, S. 104 — ISBN 1327801604.

[35] Turk, Austin T.: Terrorism and Counterterrorism. In: Goode, E. (Hrsg.): *The Handbook of Deviance*. Hoboken, NJ : John Wiley & Sons, Inc, 2015, S. 537–548.

[36] Wegener, Claudia: Inhaltsanalyse. In: Mikos, L.; Wegener, C. (Hrsg.): *Qualitative Medienforschung: Ein Handbuch*. Konstanz : UVK Verlagsgesellschaft mbH, 2005, S. 200–208.

[37] Weimann, Gabriel: The Emerging Role of Social Media in the Recruitment of Foreign Fighters. In: de Guttry, A.; Capone, F.; Paulussen, C. (Hrsg.): *Foreign Fighters under International Law and Beyond*. The Hague : T.M.C. Asser Press, 2016, S. 77–95.

[38] Weimann, Gabriel; Jost, Jannis: Neuer Terrorismus und Neue Medien. In: *Zeitschrift für Außen- und Sicherheitspolitik* Bd. 8. Wiesbaden : Springer Fachmedien (2015), Nr. 3, S. 369–388.

[39] ZELIN, AARON Y.: Picture Or It Didn't Happen: A Snapshot of the Islamic State's Official Media Output. In: *Perspectives on Terrorism* Bd. 9 (2015), Nr. 4, S. 85–97.

Bionotes

Christian Reuter
University of Siegen, Germany
Christian.Reuter@uni-siegen.de

Christian Reuter, PhD, studied Information Systems at the University of Siegen and the École Supérieure de Commerce de Dijon, France and received a PhD for his work on (inter-)organizational collaboration technology design for crisis management. Before his scientific engagement he was full time consultant for a telecommunication corporation. He has acquired, conducted and managed national and international consultancy and research projects and has published more than 100 scientific articles in information systems, human-computer interaction, computer-supported collaborative work, crisis management, peace, safety and security, and social media. He is divisional director for crisis information systems at the University of Siegen and voluntary founding chairman of the section "HCI in safety-critical systems" of the German Informatics Society.

Katja Pätsch
University of Siegen, Germany
katja.paetsch@gmx.de

Katja Pätsch, B.A. in Literary, Cultural and Media Studies, is a student of Media Culture and Safety Management at the University of Siegen. She graduated as a B.A. in 2014 and now works as a student research assistant while pursuing her M.A. degree. Her research is focused on political communication in social media and it's possible consequences.
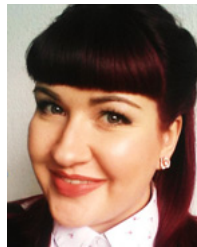
Elena Runft
University of Siegen, Germany
elena.runft@student.uni-siegen.de

Elena Maria Runft, B.A. in Literary, Cultural and Media Studies, studies Media Culture and the newly introduced Security Management at the University of Siegen. She is interested in countering terrorism and writes her master thesis about counter narrative campaigns in social media.