

A VILLAIN'S GUIDE TO SOCIAL MEDIA AND INTERACTIVE DIGITAL STORYTELLING

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Abstract. If we have not yet achieved planetary super-villainy on the desktop, it may be feasible to fit it into a suburban office suite. The familiar perils of fiction and deceit can now be augmented by mass customization, allowing powerful malefactors to shape perceived reality to suit their preferences. Social media permit the modern villain to deploy traditional cruelties to great and surprising effect. Interactive digital storytelling lets us exploit weakness and illness for profit and help us normalize wickedness. Because the impact of villainous techniques is radically asymmetric, our fetid plots are difficult and costly to foil.

Keywords: Hypertext, new media, literature, fiction, implementation, history of computing, politics, villainy.

1. Introduction

Technological innovation has long facilitated villainy at ever greater scale. Technology, moreover, offers many opportunities to cater to the whims and caprice of the individual villain. The vandal hordes of antiquity were proverbially destructive, but they were hordes: they lacked the personal touch. More recent efforts, such as the M. Ming's Gigantic Nitron Ray, D. Vader's Death Star, and A. Goldfinger's thermonuclear attack on international markets, achieved that personal touch only by commanding vast stockpiles of capital.

Previous technological approaches to villainy depended on doomsday machines, zombie apocalypses, thermonuclear devices and the like, as these were the only available technologies that supported large-magnitude calamities. New media permit the modern villain to deploy traditional cruelties at unprecedented scale. We admit that small cruelties and local harms can be just as satisfying as global conquest, mass destruction, or summoning the elder gods. Still, there is satisfaction in numbers, and only by specifying a victim pool of adequate size can we ensure the statistical significance of our results.

The focus of this work is restricted to villainy. We are not concerned here with merely criminal uses of social media and the interactive storytelling, such as money laundering, theft, or embezzlement. Our concerns, as always, are domination of cities, nations, and planets, accumulation of wealth beyond the dreams of avarice, the destruction of dreams and widespread infliction of pain.

Our central observation is that important new media technologies provide asymmetric advantage to villainy.

2. The Price of Lies

People have mistrusted fiction since Plato. They have sound reason: there is only one truth, and that truth may be obscure and misunderstood. Against truth, we may place any number of lies. We can choose these lies for their clarity, and for the convincing certainty with which we can expound them.

If we do not know which tall tale might best serve our wicked ends, familiar analytical techniques for real-time sentiment analysis and A/B testing can be deployed in real time to track engagement and propagation of our stories [26]. We can know within minutes what messages are most attractive to different audiences. We can transfer resources to those stories that appeal most strongly to our audience; we need not waste time and attention on less efficient stories, even if they happen to be true. Our successes are our own; our failures cost us little.

In the late age of print, extensive philosophical and empirical investigation into the nature of reading and the formation of meaning cast grave doubt on many former certainties. Readers play a crucial role in giving meaning to texts; much of our experience of a text — whether a novel, a painting, or a televised drama — is derived from knowledge we bring to it, and is not to be found within the boundaries of the work itself. Your experience of *Hamlet* is not mine (fortunately!), nor can you experience *Hamlet* today as you did thirty years ago. This postmodern understanding opened important new vistas in theory and criticism, and for a time cast the very idea of truth into doubt. If you and I experience *Hamlet* and *The New York Times* differently, what can be authentic or real? [35]

This brief solipsistic crisis was resolved in academe by the understanding that we had all witnessed the Holocaust, or knew people who had; the implication that even this was subject to doubt raised objections too great to overcome. But that was within the academy: in the lunatic fringes of the right, Holocaust denial and white supremacy were not only acceptable consequences of Theory: they were reasons to embrace Theory. If the arc of history bends toward Justice, perhaps it could be unbent by inventing a different reality, a different history, and a different truth.

There are a million lies in the naked city, and only one truth. Our sanctimonious rivals will fight endlessly among themselves to define and refine that truth, even if the result is adverse to their personal and political interest. While they parse nuance and endure inconvenient truths, we invent our own, numerous truths and test them rigorously for efficacy. What is more, our untruths are more interesting than truth, and so our foul fantasies will be shared and retweeted more frequently than truthful reports [25].

3. Knowing Your Audience

The wise storyteller has always adapted the story to the interests and inclinations of each audience. Homer knew this: when Odysseus found it inconvenient or perilous to be a prince fallen among working people, he reinvented himself as a minor royal from a distant land — an amusing bum worth listening to, surely, but really just another working guy (*Odyssey* 19.172–184) [27].

Where Homer had to guess, we know. Readers of interactive digital stories tell us about themselves as they make choices that allow us to construct adaptive user models [28]. Given the opportunity, readers will unburden themselves to our systems with astonishing frankness: people Googling for information about possible symptoms of venereal disease frequently tell Google about their thoughts of suicide [29]. We need not depend on such trusting volubility, however; we can, for example, discover the household income of Twitter users from their Twitter preferences, even for passive users who seldom or never tweet [30]. We can also identify social media users who are secretive but who have chosen to retain default privacy settings; where researchers see users who might have failed to learn how to change their preference settings, the villain will recognize the familiar scent of people with something to hide and who feebly are striving to emulate those with nothing to fear [31]. We've been seeking out vulnerable marks for generations; now, neural networks can do the scouting for us.

Here again, our advantage is asymmetric. Diogenes endured a long and fruitless search for an honest man because he was looking for a single, rare strength. We look instead for any weakness, and of finding vice there is no end.

4. Disinformation And Discord

What is better than making one's fellow man believe something that is not true? Why, making multitudes believe something that is both preposterous and harmful! Systematically spreading false news has proven to be of enormous value, and those scientists and thinkers who seek to disrupt our despicable designs have few answers as to how they might limit the havoc that we can wreck [42].

Engagement aroused by provocative and targeted lies benefits us. Our opponents are bound to try to discredit our deceptions; their struggles only increase our reach. Discourse generation, machine translation, and assistive writing tools allow minions with limited skills to manage numerous online personae, each of which helps spread our message. A single semi-literate minion can, in favorable circumstances, engage several distinguished professors and authoritative experts. Because many of the bystanders witnessing the argument will undoubtedly resent teachers — who among us has no desire to avenge old classroom wrongs? — our minion sometimes achieve surprising success. Yet even if our minion is vanquished and today's lies are entirely discredited, no harm is done; our minion can go home, drink a beer, enjoy a good cackle with friends, and tomorrow our minion can pick up its new followers, put on a new persona, and try again. The more we engage, the more traffic we receive.

Disinformation promotes discord. We consider discord good in itself, of course, but discord also weakens our opponents while strengthening our other operations. Our truthiness itself promotes further discord among our enemies, as each invidious invention may provoke a new fissure among our fractious foes.

Disinformation has revived some of our oldest aspirations. The dream of a single vast database that identifies every prominent Jew (as defined by the *Nürnberger Gesetze!*) once seemed lost forever, but Wikipedia now labors daily to make it real. Wikipedia editors — often the same editors — work to render articles about marginal extremists more prominent and palatable, to excuse (and publicize) racist and anti-Semitic memes, and to defame both contemporary and historic figures. Deliberate

campaigns to move the Overton window target topics such as the virtues of Wehrmacht heroes or the revived Nordic Nazi Parties; if Sweden and Norway have white supremacists, they argue, perhaps Nazism is worth a second look?

5. Procuring Victims

Social media and networked games generate vast resources of information about the interests, habits, and circumstances of millions of people throughout the world. Much information is, of course, contained in the users' profiles and user-generated content, data they freely make available for our use. Other useful information is implicit in their use of media to keep in touch with friends and family, to discover entertaining Web sites, or to purchase products — including the valueless but costly virtual products we sell in our storyworlds. We can use this vast stream of data to identify those to whom we most profitably might devote our attentions. Where an advertiser looks for a persuadable and remunerative prospect, villains seek a vulnerable and satisfying victim.

It is useful in this connection to distinguish between intrinsic and extrinsic vulnerability. The intrinsically vulnerable target is subject to attack because of their circumstances and context; the friendless are natural victims, of course, but so, too, are those whose friends are largely disjoint from ours. This is readily detected through the social graph [13]. Extrinsic vulnerability occurs when people have secrets: hidden families, complex love affairs, financial strain are all classic indicators, and these, too, may be detectable from social networks alone [3][31].

We now know it is possible to de-anonymize anonymous social graphs [2] and that private information like religious belief may be inferred from such secular statistics as Wikipedia edit counts [15]. Remember, too, that we are villains; sometimes, the old ways are the best ways, and a simple kidnapping or a short prison term can lead people otherwise hostile to us to help de-anonymize even the most obfuscated data or to give us the most closely guarded password [7] [17] [14].

Machine Learning provides many attractive ways to detect subtle patterns and to defeat attempts at anonymity. We can, for example, predict from the venues at which a young musician has performed whether they eventually will be rewarded by a recording contract [38]. The Good might use this to bet on the Eurovision contest. Villains like us, on the other hand, could use the same method to predict whether young musicians will follow the career trajectory of Jimmy Hendrix, Janis Joplin, Kurt Cobain and Amy Winehouse; armed with that intelligence, what havoc might we not wreak?

6. Finding Minions

Though extortion is fun reliable (and often fun), new media also allow new opportunities for engaging and recruiting individual members of our audience. A single minion, for example, can provide memorable, hand-crafted play experiences in real-time to numerous players [32]. Such specialized performances, of course, are most profitably provided to those who will pay well for them [33], bellwethers who will recruit many additional customers or those whose opinion and favor we most desire to cultivate. We might, for example, seek out proponents of a political party we oppose in order to distract them, frustrate them, or to mislead them into thinking their fellow-travelers

are their antagonists [34]. At the same time, our minion can identify prospects to enter our sinister service.

The power of story can itself be a potent tool for minion recruitment. First, we now understand the importance of *projection* in leading people to attribute complex emotional attributes to simple computational agents [22]. If a computational entity speaks to them, many are provisionally inclined to regard it as deserving politeness, sympathy, or consideration. If it offers to help them, many are inclined to experience gratitude. Seeking to assist storyworld entities or longing for their approval, our audience may be induced to emulate the entities' wicked beliefs and aspirations.

Not every member of the audience will be subject to projection. Indeed, the absence of such empathetic emotions might well merit our further attention as indicating a special aptitude for villainous enterprises. We have always sought out such persons in mean streets and dark corners; networked entertainments may let us pre-screen thousands or millions of would-be minions without tying up our costly personnel. Indeed, the *sorting hats* used for new player onboarding can themselves serve this purpose.

If projection is our ally, *transference* is a weapon honed expressly for our service. Large, persistent storyworlds with cooperating player protagonists naturally lead to hierarchical associations based on player skill and experience. Weak and inexperienced players are inducted into the service of their betters and of their guild. Experienced players offer advice and equipment the new player could not easily match, and their orders and directives give purpose and meaning to virtual existence. The devotion of susceptible audience members in these circumstances may extend to vast expenditures, devoted political service, and (apparently) to murder [43]. The gamification of scurrilous politics such as sexual harassment [44] and the promotion of racial violence [45] lets us deploy tools honed for managing multi-player games to benefit ourselves and our often-surprising allies [19].

7. Dismaying our enemies

Not only can we use new media for our dark purposes and analyze it for our nefarious ends, but at the same time we can prevent our enemies from enjoying its benefits.

Social media are exquisitely vulnerable to trolls[1]. Good people can sometimes tolerate unjust censure in referee reports or in the pages of an obscure and dusty journal; to be smeared before one's family and closest friends, on the other hand, will try the patience of saints. Helpfully, bystander apathy is the norm online [23].

We must also remember that conventional villainy may be employed with profit on the new media battlefield. Blackmail, for example, can effectively silence even the most influential and experienced Wikipedia opponent. Elaborate and inconvenient security arrangements can be defeated by accosting the target and displaying a weapon. Indeed, speculating about attacking a pet may suffice, not only from fear of losing the services and cost of the target's mangy little dog, but also because the target will understand that if villains know about Toto, they also know details of the rest of their beloved circle. Crowd-sourced research can uncover surprising insights into an anonymous writer's life [4], and these may be deployed through conventional means among the target's family, employers, and neighbors. Sometimes, we can sit back

and enjoy the fun while the asymmetries of public outrages and confusion do our work for us¹.

8. Mining

Because advertising is most profitably directed to those who require the advertised goods, great efforts have been dedicated to anticipating individual needs by mining users' online behavior. Algorithms can sometimes detect desires before they are consciously expressed — for example, we might deduce from her purchasing and browsing behavior that a woman may be pregnant before she (or her family) knows [11]. Might it be possible to identify women who will soon seek to terminate a pregnancy prior to conception? Even accepting a substantial error rate, great mayhem might be achieved at very little cost. Similar mining efforts directed at other behaviors — romantic entanglements, dread diseases — could yield spectacular dividends [8]. Powerful, well-established methods reliably trick people into revealing more than they intend [24]. The online world is our oyster.

Again, we observe a pronounced asymmetry in the villainous effects of data mining. Our opponents must make do with data that they can access freely or that they can purchase. Unlike them, we are free to use stolen data — either information that happens to have been stolen (John Podesta's emails, Vermeer's *The Concert*), or information whose theft, being advantageous to our plans, we commission. Co-occurrence in large, stolen data stores can be a powerful tool in itself; a cluster of healthy, athletic users of watch-based fitness apps who are geolocated in an area that is blank in Google Maps may be a secret military base [12]. Analysis of big data thrives on bigger data: our data will always be bigger than theirs, and we can always buy, borrow, and steal more.

9. Stealing Candy From A Baby

Although we now employ analytical tools that exceed the wildest dreams of our predecessors, it behooves us to remember the simple joys of bygone days. Let us consider, for example, stealing candy from a baby. Nothing could be easier. Yet, through a single act, we reap many benefits.

- The baby is wretched, naturally, and expresses its dismay with appropriate force.
- An infant's cry of distress cannot be ignored: its parents must stop what they were doing, however virtuous and important their plans may have been, to attend to the child.
- Bystanders will be annoyed and distracted, and may cast disparaging glances at the parents who permit such disruption. Discord is sown.
- The infant may have siblings; if so, they may take advantage of parental distraction to engage in roughhousing, casual vandalism, or indoor parkour practice.
- And, you get a lollipop!

The intent of this perfidious pastorate is not to indulge nostalgia for a simpler era, but to observe the powerful asymmetry we can so gainfully employ. To steal candy from

¹ <http://www.cbc.ca/news/canada/calgary/jeremy-quaile-knightley-dog-death-calgary-1.4602948>

a baby is proverbially easy, yet the theft does not merely please the thief and dismay the child; parents, siblings, bystanders, the owners of the candy shop, the paramedics summoned when indoor parkour practice goes awry, all share and multiply our iniquitous impact. Efforts to foil our scheme are disproportionately difficult: for example, handing out free lollipops to passing infants is unlikely to exert an equal effect.

Not only do the asymmetric effects of villainy benefit from network, but our villainy itself benefits the platform. On the internet, wronged innocents wail online, and their cries attract clicks (which improve the platform's stock valuation) and viewers (to whom advertising may be displayed). Crowds that gather at the crime scene are themselves famously vulnerable to villainous exploitation [9], and a modest effort can keep an event like Gamergate or Pizzagate in play for weeks or months. Virtuous peacemakers, in contrast, diminish platform profits.

Analyzing the crowds gathered at these events may yield useful leads for staffing malevolent enterprises. Conventional global villainy once entailed a costly array of mad scientists and renegade warlords. These indispensable personnel were difficult to manage. Armies of minor minions, moreover, required salaries, training, and cool uniforms. Though villains were pioneers in employing the physically challenged [16], those challenges brought expense, inconvenience, and sometimes betrayal [20]. Much recruitment and support can now be automated; indeed, minions often appear at our crime scenes and volunteer for service. Nor should we neglect the former costs of maintaining entire districts to serve as vile dens and wretched hives of scum and villainy. We can now recruit minions in their own basements to support our repellent endeavor. They advance our dark designs without expensive secret bases or inconvenient hidden fortresses.

10. Abusing Agents and Blowing Stuff Up

In interactive digital stories and immersive games, computational agents and characters offer intriguing opportunities to corrupt the naïve and mislead the unwary. In the realm of the (notionally) imaginary, even the good may indulge the darker angels of their nature. In *Call Of Duty* or *Dying Light*, accidental judgments and casual slaughter are delightful fun. Better yet, by situating the action as fictive while rendering with the greatest possible sensual fidelity, we may be able to finesse or obscure complex moral choices, making the same choices equally obscure in the mundane world. If we are Prince Hamlet on the holodeck [36], can we marry Ophelia? Might we seduce her? Marriage requires consent: in what sense can a computational construct give consent if the alternative is to rust unused on the shelf? In the theater, Ophelia drowns nightly (and twice on Sunday) but it's not our fault; on the Holodeck, she suffers just for us. [37] By giving permission to ignore these questions in a fictive context, we may in time convince people to overlook them elsewhere[47].

Though deep learning methods have proven surprisingly powerful, neural networks can be fooled. From satire to bias, from fantasy news to intentional misrepresentation of the truth, the truth itself has never been so complicated [39]. Fake content can fool seasoned journalists, and neural nets know even less of the world than cub reporters. For example, consider transfer learning, a machine learning technique, where a 'student' model learns from a centralized 'teacher' dataset. This approach is exquisitely

vulnerable when the ‘teacher’ dataset is publicly available [40] or when the system is available for reverse-engineering or steganographic attack. This promises many an opportunity to the savvy villain.

Recent research extols just how many routes exist for introducing bias into online material. Flavors of bias include algorithmic, data, second-order and interaction bias. Second-order bias is particularly delicious as a ‘rich get richer’ phenomenon: for example, the top items in ranked lists receive more clicks and thereby increase their rank. Personal recommendation systems may notionally address this, but their use may confine the audience to closed worlds (‘filter bubbles’), without exposure to other views and news. What’s more, personalization algorithms collect even more user data for us to exploit [41].

11. Related Work

Though early villainy was sometimes conceived at surprising scale (see *Paradise Lost*, or the *Prose Edda*), it was only after J. Moriarty’s invention of organized crime that technology could properly be applied to our ends. The early work of Sauron is typical in its acceptance of the limitations of scale, targeting a mere nineteen initial victims: as the nineteen designated targets were the rulers of the known world, the scheme did demonstrate commendable audacity. Computational efforts to summon the elder gods [18], to mock creation [16] or to bring on the end of the universe [6] anticipate the approaches described here.

Preliminary efforts known as Gamergate, though unsuccessful in reforming ethics in game journalism, did succeed in harming a handful of targeted victims while requiring our opponents to expend thousands of hours in order to oppose our handful of amateur villains. The same methods are believed to have been applied to the 2016 US Presidential Election and to the 2016 Brexit vote with surprising success [34].

Villainy is not new, but the asymmetric advantages that new media provide to villainy are arguably without precedent. Propaganda mattered in WW2, but it mattered equally to allies and axis [46]. That the fascists had better graphic design need not lead us to conclude that graphic design is intrinsically fascist, any more than the superiority of Sergei Eisenstein to Leni Riefenstahl can be taken as evidence that Communism is better suited to film theory than Fascism. When the Melians debated the Athenians, both used the same rhetoric to convince the same audience: the situation was essentially symmetric. That is not the case for contemporary new media and digital narrative: through contrivance or (mis)chance, current technology asymmetrically assists villains in our eternal struggle.

12. Conclusion

Much though we deplore the fact, technological progress can benefit the virtuous as well as the evil. What seems striking in this brief and anecdotal survey of new techniques and recent developments are the prominent asymmetries that redound to the benefit of villainy.

- The villain can lie, the good should not. Disinformation is villainous in itself and leads to discord, which is even better.

- The villain can steal, the good must not. Data mining is powerful, but its power increases as more data becomes available. Our neural networks do not care that some of our data is pilfered.
- Disinformation and rumor may be spread by the idle, the unskilled, and the robot. To confound them requires the attention of skilled advocates.
- We can choose the lies that serve us best; our enemies cannot. There are a million lies but only one truth.
- A working minion, stymied, can dust itself off and work on a new meme. A true believer in the same position may experience profound humiliation.
- The villain, on encountering weakness or derangement, asks “how can this benefit me?” The good must ask, “how can I lend my strength or aid to this sufferer?” Encountering the disordered and distressed, the villain profits while the good suffer delay and distraction.
- A single scurrilous word or damaging disclosure can do lasting harm that a thousand well-intentioned and sympathetic notes will not repair.

Our great opportunity thus lies not in mere network effects or our first-mover advantage. Nor (fortunately for us, because true black-hearted villainy is a rare gift) do our asymmetric advantages depend on superior numbers, talent or funding. It is said that the arc of the moral universe is long and it bends toward justice; with the aid of these advantages, we may at long last hammer it flat. Current research efforts have done little to foil these infernal schemes or to reverse our precious asymmetries, but we should remain vigilant lest researchers shift their focus from winning employment with advertising platforms to saving freedom and democracy.

It has always been the case that some people like to inflict pain, but previous technologies — schools of martial arts, for example — have been hedged with the kinds of disciplines, hierarchies and rituals that villains like us dislike. Today’s new media are not encumbered with fun-killing folderol. Publishers profit alike from the cruel and the kind, but because villainy attracts crowds, villains accrue unexpected benefits and unlooked-for allies. If we have not yet achieved planetary super-villainy on the desktop, it may be feasible to fit it into a suburban office suite [5].

Acknowledgments

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References

- [1] Ammann, R. 2009. “Jorn Barger, The Newspaper Network And The Emergence Of The Weblog Community,” Proceedings Of The 20th ACM Conference On Hypertext And Hypermedia”. *HT '09*. 279-288.

- [2] Backstrom, L., Dworkin, C., and Kleinberg, J. 2011. "Wherefore Art Thou R3579x?: Anonymized Social Networks, Hidden Patterns, And Structural Steganography". *Commun. ACM*. 54, 12, 133-141.
- [3] Backstrom, L. And Kleinberg, J. 2014. "Romantic Partnerships And The Dispersion Of Social Ties: A Network Analysis Of Relationship Status On Facebook Proceedings Of The 17th Acm Conference On Computer Supported Cooperative Work & Social Computing". *CSCW '14*. 831-841.
- [4] Johnson, B. 2001. "The Short Life Of Kaycee Nicole". *The Guardian*.
- [5] Chen, A. 2015. "The Agency". *New York Times Magazine*.
- [6] Clarke, A. C. 1967 *The Nine Billion Names Of God; The Best Short Stories Of Arthur C. Clarke*. Harcourt, Brace & World.
- [7] Derakhshan, H. 2016. "Killing The Hyperlink, Killing The Web: The Shift From Library-Internet To Television-Internet Proceedings Of The 27th Acm Conference On Hypertext And Social Media". *HT '16*. 3-3.
- [8] Dick, P. K. 2016 *The Minority Report : And Other Classic Stories*. Citadel Press.
- [9] Dickens, C. 1870 *The Adventures Of Oliver Twist*. Fields, Osgood & Co.
- [10] Edwards, M., Peersman, C., And Rashid, A. 2017. "Scamming The Scammers: Towards Automatic Detection Of Persuasion In Advance Fee Frauds Proceedings Of The 26th International Conference On World Wide Web Companion". *WWW '17 Companion*. 1291-1299.
- [11] Hamilton, D. 2016 *The Thinking Machine*. In *Echoes Of Sherlock Holmes : Stories Inspired By The Holmes Canon*, L. R. King, L. S. Klinger, J. Connolly, M. Gardiner, D. Cameron, T. Alexander, D. Morrell, T. Lee, B. Musson, H. P. Ryan, A. Perry, M. Scott, H. Ephron, G. Phillips, W. K. Krueger, C. Mcpherson, D. Crombie, J. Maberry, D. Mina, And C. Doctorow, Eds. Pegasus Books.
- [12] Hern, A. 2018. "Fitness Tracking App Strava Gives Away Location Of Secret Us Army Bases". *The Guardian*.
- [13] Huang, Q., Singh, V. K., And Atrey, P. K. 2014. "Cyber Bullying Detection Using Social And Textual Analysis Proceedings Of The 3rd International Workshop On Socially-Aware Multimedia". *SAM '14*. 3-6.
- [14] Le Carré, J.. 1980 *Smiley's People*. Knopf.
- [15] Rizoiu, M.-A., Xie, L., Caetano, T., And Cebrian, M. 2016. "Evolution Of Privacy Loss In Wikipedia Proceedings Of The Ninth Acm International Conference On Web Search And Data Mining". *WSDM '16*. 215-224.
- [16] Shelley, M. W. 1984 *Frankenstein, Or, The Modern Prometheus*. Modern Library.
- [17] Sofia El Amine, S. B., Sabrine Saad, Addis Tesfa And Christophe Varin "Infowar In Syria: The Web Between Liberation And Repression". *Web Science 2012*.
- [18] Stross, C. 2006 *The Jennifer Morgue*. Golden Gryphon Press.
- [19] Mueller, R. S. "Indictment: United States of America vs. Viktor Borisovich Netyksho et al.", U. S. District Court for the District of Columbia, 13 July 2018.
- [20] Czege, P. *My Life With Master*, Half-Meme Press, 2003.
- [21] Timberg, C. and Harwell, D. 2018 "We studied thousands of anonymous posts about the Parkland attack — and found a conspiracy in the making", *The Washington Post* (28 February 2018)
- [22] Reeves B, Nass C (1996) THE MEDIA EQUATION - HOW PEOPLE TREAT COMPUTERS, TELEVISION, AND NEW MEDIA LIKE REAL PEOPLE AND PLACES. Cambridge University Press, Cambridge, MA
- [23] DiFranzo, D., Taylor, S. H. et al., 2018, "Upstanding by Design: Bystander Intervention in Cyberbullying", *CHI 18* (Montréal 21-26 April 2018)

- [24] Brignull, Harry. "Types of Dark Patterns," <https://darkpatterns.org/types-of-dark-pattern>
- [25] Vosoughi, S., Roy, D., and Aral, S. 2018 "The spread of true and false news online" *Science* (9 March 20-18) pp. 1146-1151
- [26] Ramachandran A, Wang L, Chaintreau dynamics and prediction of clicks on news from Twitter. In: Sastry, N., Weber, I. (eds.) PROCEEDINGS OF THE 29TH ON HYPERTEXT AND SOCIAL MEDIA. HT '18 pp. 210–214 A (2018)
- [27] Gregory Nagy, A Cretan Odyssey, Part 1. Classical Inquiries *Studies on the Ancient World from CHS*, <https://classical-inquiries.chs.harvard.edu/a-cretan-odyssey-part-1/>
- [28] Brusilovskiy P. and Millán, E, User Models for Adaptive Hypermedia and Adaptive Educational Systems. In: P. Brusilovskiy, A. Kobsa, and W. Nejdl (Eds.): The Adaptive Web, LNCS 4321, pp. 3 – 53 Springer-Verlag Heidelberg (2007)
- [29] Stephens-Davidowitz S (2017) EVERYBODY LIES : BIG DATA, NEW DATA, AND WHAT THE INTERNET CAN TELL US ABOUT WHO WE REALLY ARE. Dey St., an imprint of William Morrow, [New York, NY]
- [30] Aletras N, Chamberlain BP. Predicting twitter user socioeconomic attributes with network and language information PROCEEDINGS OF THE 29TH ON HYPERTEXT AND SOCIAL MEDIA. HT '18 20–24 (2018)
- [31] Khazaei T, Xiao L, Mercer RE, Khan A. Understanding privacy dichotomy in Twitter PROCEEDINGS OF THE 29TH ON HYPERTEXT AND SOCIAL MEDIA. HT '18 156–164 (2018)
- [32] Goodman, A. THE CHALK ARTIST : A NOVEL. The Dial Press, New York (2017)
- [33] Milad Soroush, Mark Hancock, Vanessa K. Bohns Self-control in casual games: the relationship between candy crush saga; players' in-app purchases and self-control. IEEE GAMES MEDIA ENTERTAINMENT 1–6 (2014)
- [34] Mazetti, M. and Benner, K. "12 Russian Agents Indicted In Mueller Investigation," THE New York Times (13 July 2018) <https://www.nytimes.com/2018/07/13/us/politics/mueller-indictment-russian-intelligence-hacking.html>
- [35] Eagleton T AFTER THEORY. Basic Books, New York (2003)
- [36] Murray J HAMLET ON THE HOLODECK: THE FUTURE OF NARRATIVE IN CYBERSPACE. The Free Press, New York. (1997)
- [37] Bernstein M. As we may hear: our slaves of steel II PROCEEDINGS OF THE 29TH ACM CONFERENCE ON HYPERTEXT AND SOCIAL MEDIA. HT '18 242–245 (2018)
- [38] Arakelyan S, Morstatter F, Martin M, Ferrara E, Galstyan A mining and forecasting career trajectories of music artists PROCEEDINGS OF THE 29TH ACM CONFERENCE ON HYPERTEXT AND SOCIAL MEDIA. HT '18 11–19(2018)
- [39] Ben Y. Zhao. 2018. Insecure Machine Learning Systems and Their Impact on the Web. In *Proceedings of the 29th on Hypertext and Social Media* (HT '18). ACM, New York, NY, USA, 63-63. DOI: <https://doi.org/10.1145/3209542.3209544>
- [40] Wang B, Yao Y, Viswanath B, Zheng H, Zhao BY. With Great Training Comes Great Vulnerability: Practical Attacks against Transfer Learning. In 27th {USENIX} Security Symposium ({USENIX} Security 18) 2018 Aug. USENIX} Association}.
- [41] Baeza-Yates, Ricardo. "Bias on the web." *Communications of the ACM* 61.6 (2018): 54-61.
- [42] Lazer, David MJ, et al. "The science of fake news." *Science* 359.6380 (2018): 1094-1096.
- [43] McCurry, J. "Japanese blogger stabbed to death after internet abuse seminar", THE GUARDIAN (26 June 2018) <https://www.theguardian.com/world/2018/jun/26/japanese-blogger-kenichiro-okamoto-stabbed-to-death-after-internet-abuse-seminar>

[44] Jason, Z. "Game of Fear." BOSTON MAGAZINE (28 April 2015)
<https://www.bostonmagazine.com/news/2015/04/28/gamergate/>

[45] Feinberg, Ashley. "The Alt-Right Can't Disown Charlottesville." WIRED (13 August 2017) <https://www.wired.com/story/alt-right-charlottesville-reddit-4chan/>

[46] Orwell, George. "Politics and the English Languages." HORIZON 13 (76) (April 1946)

[47] Flanagan, C. "I Believe Her." THE ATLANTIC MONTHLY (17 September 2018)
<https://www.theatlantic.com/ideas/archive/2018/09/me-too/570520/>