11. Reframing the Arab Spring: On Data Mining and the Field of Arab Internet Studies

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Abstract

This chapter presents a basic genealogy of the existing literature on the 2010–2012 era of the Arab Spring within Middle East studies and media studies more broadly. The aim is to map the plurality of patterns, stories, ideas, and analyses networked across media forms. This chapter is designed to refute the possibility of a monolithic narrative about contemporary Egypt. It also situates the study within the growing scholarship on social media and political change and introduces key concepts in design research methodology.

Keywords: Egypt, glitch, internet studies, revolution

Introduction

When activists took to Twitter and Facebook in the Middle East and North Africa (MENA) region to push for political change, digital media captured the imagination of scholars, interest groups, and multiple publics. Pundits coined the uprisings of 2011 ‘Facebook and Twitter revolutions’. Arab activists’ use of social media became a model for other social movements. These included Occupy Wall Street, From Ferguson to Palestine, the Umbrella Revolution in Hong Kong, and 12M and 15M in Spain. These movements quickly adopted similar tactics, enabling people around the world to participate virtually as witnesses to contemporary events. In an act of transnational solidarity, in February 2011 an Egyptian activist ordered pizza for labour union protesters in Madison, Wisconsin. The international phone call from Egypt was just

one of many messages of solidarity streaming into Wisconsin from all over the world on mobile devices and social media.

The dramatic increase of virtual and on-the-ground revolutionary activism also inspired corporate interests and government entities such as the National Security Agency (NSA) to hijack or monitor social media for a variety of purposes. These included surveillance as well as monitoring consumer behaviour. In sum, movements, activists, and governments alike have radically transformed social media platforms. In many ways, the MENA region has been ground zero for some of the most dramatic and influential changes in the ever-widening spectrum of digital possibilities. This chapter explores our understanding of and approach to digital media in relation to human rights, political speech, and social change. It forms part of a larger study on glitch and resistance that traces the impact of social media on popular social movements in the early 21st century, focusing specifically on Egypt. By centring on Egypt, rather than on the United States or Europe, and by drawing on both design research and humanistic inquiry, this chapter aims to show how digital media and politics are co-creative.

The concept of 'glitch' comes from the mechanical term for a sudden interruption, noise, error, or malfunction. It broadens to what I call 'technical semiotics' as it expands the logic or language of algorithms within networked societies by introducing messiness and mistakes. Although the glitch has been closely associated with technology, it nevertheless has the potential to illuminate other areas of experience and understanding. As a form of noise, for instance, it brings a political dimension to its practice. Noise becomes political when it translates into voice – and succeeds in entering and interrupting the ordered political world of policy. Noise is produced by anyone who acts from outside the order and, hence, can be returned to no one in particular. Building on postcolonial theoretical approaches, I argue that glitches provide an important critical lens for understanding the operational logic of systems of power: through its cracks and failures, the dynamics of systems become visible.

Hence, the following question arises: Why do programmers situated in a particular context, at a particular moment, come up with new modalities for thinking about resistance? A glitch is not a thing but a command, a script, an algorithm, a procedural set of actions. Glitch is a queer modality that processes, redirects, and opens new pathways. The genealogy of my use of the term 'glitch resistance' is associated with sound studies, queer studies, and radical feminist studies. If 21st century capitalism is driven by the logic of maximum performance (Lyotard 1973), then the glitch or

failure of performance undermines the fetishizing of efficiency, accuracy, and predictability of producers, consumers, and drivers of capital. Glitch may sound undesirable in the parlance of late capitalism; however, it also serves as a point of entry for activists, hackers, or artists to resist.

A review of scholarship on media and the Middle East reveals a lack of engagement with digital media content, whether as primary sources or in critically questioning the tools and analytics provided. While many humanities scholars offer rich insights in history and culture, their analyses are often constrained by limited tools for understanding the ontology and syntax of digital production and social media networks. Arguments by writers such as Malcolm Gladwell, who writes that 'high risk social activism requires deep roots and strong ties' (2011), can likely be verified. Thus, literature that is more technologically literate helps revisiting those studies portraying the Arab Spring as a 'Facebook revolution' and broadens our understanding of networks, social media tools of counter-revolutionary bots, and fake news. Therefore, glitch theory provides an alternative to the celebration of social media in the 2010–2012 era and the demonization of the same technological platform.

When Mark Zuckerberg testified before US senators¹ in the first of two hearings about Facebook's role in the Cambridge Analytica scandal in April 2018 (i.e. the influence of Russian hacking on the 2016 US election), the gap between Silicon Valley technology giants and policymakers in Washington, DC became once more obvious. As the social media memes suggest, the gap itself was untranslatable. The Senate hearings displayed fundamental confusion in the public understanding of the meaning and implications of these technologies. Scientific and humanistic knowledge have long been recognized as dominating social, cultural, and educational systems. However, social media websites and apps can be seen as a legacy of the modernist Bauhaus movement. The expression 'form follows function' defined the European modernist design aesthetics, also known as the Bauhaus movement, originating specifically from Germany and then the United Kingdom. However, as Mohamed Elshahed has argued, there is significant difference between the European and the Arab modernist experience. While in Europe economic hardship, socialism, world wars, and the housing of soldiers drove the modern movement's development, in Egypt the wealthy capitalist elite embraced modernist design in their

1 C-SPAN, 'Facebook CEO Mark Zuckerberg Hearing on Data Privacy and Protection', 2018, Online Resource: <https://www.c-span.org/video/?443543-1/facebook-ceo-mark-zuckerberg-testifies-data-protection&live>

mid 20th-century grand apartments and aristocratic villas. To understand how a complex system such as Facebook might influence political change requires, however, literacy in design research (Cross 1982).

First, I will present a basic genealogy of the existing literature on the 2010–2012 era of the Arab Spring within Middle Eastern media studies. The aim of this is to map the plurality of patterns, stories, ideas, and analyses networked across media forms. It aims to refute the possibility of a monolithic narrative about contemporary Egypt. It also situates the study within the growing scholarship on social media and political change and introduces key concepts in design research methodology, which works specifically at intersections – between cultural and technical analytics, theory and practice, virtual and embodied practices, and Eastern and Western languages. These ideas are based in a multidimensional approach and thrive in situations in which differences between modalities of knowledge production, culture, and languages require one to translate and straddle these differences to create a cohesive form. Second, I will provide some context for the growing interest in the analytic properties of social media content. The stock of primary data is important, but is not determinant in creating nuanced cultural analyses. I will consider the work of data visualizations, especially in relationship to the stock of primary data (actual tweets, status updates, etc.). Third, I will argue for the importance of paying attention to the specific language of the stock of primary social media data. I focus specifically on the use of Arabic language online. This is critical for a number of reasons, one of which is the moment that has been dubbed the Arab Spring. However, most analyses of this so-called social media revolution have not taken into consideration the analysis of the meaning of actual Arabic language use. After harvesting and analysing Twitter posts for more than eight years (2010–2018), I became aware that the use of Arabic online was steadily rising. Hence, the critical analysis of digital information on the MENA region has to identify and address existing gaps in how the use of Arabic is perceived.

The medium of digital substance is computer code; the manner of its composition is through words and images that can be interactive and animated; and its form is the posted digital composition itself. Thus, to understand these factors and their influence on ideas such as political mobilization, scholars must take into account a host of variables. However, studying and interacting in a networked culture requires fluency in interfaces and digital software. Such literacy understands computational media at the level of its ‘rhetoric, aesthetics, and poetics encoded in any work’ (Mateas 2007). This language provides the conceptual framework for the research presented in the following.

Arabic Language Analysis and the Glitch

Before 2010, much of the scholarly research published on new media in the Middle East dealt with television politics and big broadcasters such as Al Jazeera (El-Nawawy and Iskandar 2003; Seib 2008; Kraidy 2009; Kraidy and Khalil 2010). Social media, blogs, and other online publications became part of the socio-digital convergence of technology, cultural transformations, and national narratives enabling the mobilization of the popular uprisings in the MENA region after 2010. These events raised questions about the role of communication technology in the development of social movements: Do the political uprisings in Egypt, Spain, and on Wall Street confirm the horizontal networks paradigm? What kind of hierarchical relations are undermined and which are confirmed in the stream of social media patterns that emerged?

The ongoing Egyptian uprising offers a unique case to research how political agency is mediated and how these voices are connected, creating – thanks to the characteristics of digital media – more transnational political identities and political subjectivities. An important shift is that contemporary mediation blurred the online–offline and digital–paper separation. Merged, they may represent a convergence culture (Jenkins 2008), produsage (Bruns 2007), or media synchronization. The political changes and outcomes in turn raise new questions about the efficacy of prior empirical methods and tools. Further obscuring the difficulty of analysing complex developments are the differences between the distinct theoretical and methodological foci among academic disciplines.

Recent studies about the influences of technology on social movements such as the Arab uprisings have rarely incorporated rigorous Arabic language analyses on a large scale in social media (billions of tweets and millions of website articles over several years). This is partly due to the lack of natural language processing tools to conduct computational linguistic research in languages other than English but also because of the lack of access to appropriate large-scale data collections. The growth of big data, particularly collections of social media trends, has enabled more in-depth examination of the role of digital networks, allowing scientific and policy communities to direct their attention to aggregated imprints of online and social media activity, without engaging in critical methodological analyses that take into account the historical and cultural basis to inform meaningful critique. This fetishization of data over meaning has produced much research that examines the scale, speed, and directional influences in digital networks and social media.

However, complementary approaches engaging in historical, cultural, and textual analysis can reveal richer insights to explain the wider context of such phenomena.

For example, in 2009, Harvard University's Berkman Center for Internet and Society conducted one of the first research initiatives on political dissent and digital content. The resulting publication, *Mapping the Arabic Blogosphere: Politics, Culture, and Dissent*, focused on node-to-node interaction and general demographics of bloggers. While the report marked a new direction in this field of research, it lacked explanation about the data modelling and sampling methods that were used. Moreover, the model focused on defining groups of people, rather than combining the resulting empirical data with historical and cultural understandings of the region or the transmission of ideas across multilingual discussions in the blogosphere.

In the case of the Egyptian revolution, the challenge scholars face when examining contemporary digital media and political change is how to analyse information quantitatively about groups of people in a region where, historically, data science has been used to support forms of colonialism. As Timothy Mitchell explains in *Colonising Egypt*, the practice of science and systems of ordering national standards are modern projects that enable governments to maintain discipline and surveillance. A cog in the colonial project, the science of documenting every political act reflected a 'tendency of disciplinary mechanisms, as Michel Foucault has called these modern strategies of control, not to expect and dissipate as before, but to infiltrate, and colonise' (Mitchell 1991, p. 38). Indeed, before and even after the uprisings of 2011, there was a clear divide between the qualitative, humanistic research Middle East media scholars produced and the quantitative approach of traditional communications scholars. For example, in the articles of Volume 5 of *Middle East Journal of Culture and Communication* (2012), the authors do not employ methods to examine large data sets of digital media content specifically, yet they address important sociopolitical concerns about Middle East media.

On the other hand, in his 2013 book *The Arab Uprising: The Unfinished Revolutions of the Middle East*, Marc Lynch works towards defining a political history of the Arab public sphere. Though also engaged in the subject of 'the Arab public sphere', like Anderson and Eickelman in 2003, Lynch writes post-2011 and specifically takes a stance on the role of social media in the uprisings early on in his book.

The role of social media and the internet in the Arab uprisings has often been exaggerated, with too much focus on Facebook or Twitter rather than

the underlying political struggles. However, Timothy Mitchell's concern about the disciplinary and colonizing purposes of data science (1988) must be carefully employed in these empirical critiques on the popular uprisings in the MENA region. Many of the research projects, conferences, and publications that have conducted in-depth data analytics from social media and other internet content about the popular uprisings in the MENA region are sponsored by think tanks such as RAND and political organizations such as the National Endowment for Democracy or the Dubai School of Governance.

Two years after *Mapping the Arabic Blogosphere: Politics, Culture and Dissent Online* (Etling et al. 2009), and following the uprisings in Tunisia and Egypt, the same core group of scholars organized a round-table conference entitled 'Blogs and Bullets II'. Following the conference, the *Journal of Communications* published a special edition on 'Social Media and Political Change: Capacity, Constraint, and Consequence'. A year later, Rob Lever interviewed the same group of scholars who participated in the 'Blogs and Bullets II' conference for his article 'Debate Flares on "Twitter Revolutions" Arab Spring' (2013). The common thread in all these discussions has been the focus on debating the role of social media in the revolutionary praxis of the MENA region, perpetuating the debate on the causal impact social media supposedly has on social movements.

One comprehensive research effort to study the impact of social media on the MENA region is a three-part series co-authored by Racha Mourtada and Fadi Salem. Their intention was to make sense of Twitter by recoding it into geolocation/geo-coordinates; this, however, is a way to estimate, not an actual statistical method (Salem and Mourtada 2011).² It is important to note the effort put into translating the numerical estimate that could represent the data in terms of nation states and populations, rather than simply exploring what is in the data imprints. Geolocation is not a common data imprint. This top-down approach to data mining allowed the researchers to find answers about Facebook usage based on gender, age, and national origin. However, the categories chosen left no space for including hybrid or shifting identities. In the second report of the series, the authors built upon their previous research on Facebook and introduced Twitter analytics. By

2 They explain their statistical methods as, 'with a sample of about 10,000,000 tweets among 190,000 Twitter users, estimating the size of a Twitter population was a simple two-step process: capture a number of samples (or "sweeps") of users from each country, and use a mark-recapture based technique to compute a population estimate' (Salem and Mourtada 2011, p. 63).

the time Mourtada and Salem authored the third part of the Arab Social Media Report, 'The Role of Social Media in Arab Women's Empowerment', they had started to discuss 'netizens' (online communities) in more detail. Each of their charts provides a demographic breakdown by country (Salem and Mourtada 2011). However, their approach remained unable to account for transnational netizens, or any individuals, for that matter, who did not fit neatly into predetermined categories.

While technology enthusiasts are being heard, so are voices that are more conservative. In an article that appeared in *The Atlantic*, Megan Garber warned, 'a year after the Egyptian revolution, 10 per cent of its social media is already gone' (2011). Earlier, Bassem Youssef argued 'one of the difficulties with efforts to understand the role of social media in the successful North Africa uprising (Tunisia and Egypt) is a paucity of theory' (2011). He builds his argument on highlighting three problems in internet studies: (1) internet studies theorize new media using theories that have been shown to be unsophisticated even when applied to old media, seeing media primarily as a vehicle for the more or less passive receipt of information; (2) internet studies fail to theorize the specific elements that make new media 'new', and (3) internet studies ignore the active ingenuity, creativity, and agency of users, who not only receive but also write new narratives, and generate such innovations as the Bassem Youssef Show and Pigipedia. Furthermore, only about 20 per cent of people in Egypt are online, and they fall into specific age groups, income divides, and education demographics; yet the resistance movement itself clearly extends into many other walks of society (Youssef 2011, p. 4). An example of the kind of writing on new media that Youssef is criticizing might be the 2012 report by the Center for International Media Assistance (CIMA) and the National Endowment for Democracy (NED), 'Digital Media in the Arab World: One Year After the Revolutions'. According to its author, Jeffrey Ghannam, the research was conducted through a series of '35 interviews in person, by telephone, email, and Skype: primary and secondary documents; commentaries; websites; blogs, and other sources' (2012, p. 3). This research provided an overly optimistic conclusion:

Social media's potential represents the brightest hope for the greater freedom of expression in the Arab region, enabling tens of millions of people, and ultimately many more, to actively pursue civic engagement, free and fair elections, political accountability, the eradication of corruption, as well as free, independent, and pluralistic media in a rapidly changing media environment. (Ghannam 2012, p. 3)

Most striking in this investigation into digital media is the absence of any analysis of primary digital information. One might appropriately ask whether publishing on digital humanities without speaking digital languages or engaging primary digital media is akin to publishing on France without knowing French or engaging with any French primary material. Furthermore, the choice to interview '35 key individuals' does not speak to the scale of the research question the report poses. It also negatively reinforces the top-down authority structures that these very upheavals have been resisting. Outside of the MENA region, Twitter data have been used for forecasting or measurement in a variety of domains, such as stock markets, politics, and social movements. In 2011, Murphy Choy's Twitter sentiment failed to predict Singapore's 2011 presidential election (Choy et al. 2011). Several research projects on Twitter sentiment analysis in particular have emerged during the last few years, including one 80-page report by the RAND Corporation that uses tweets by Iranians to measure public opinion in the aftermath of the 2009 presidential election (Elson and et al. 2011).

This research was one of the first projects to use natural language processing and text analysis to determine sentiment in tweets. Without much of a review of the historical scholarship on public opinion in Iran, this research focuses on a linguistic approach to understanding how people communicate and the functions of the words they use. In practical terms, this approach suggests that it is possible to gain insights into the emotional states and social dispositions of users, regardless of the content of the writing. It is important to note that all of this analysis to measure a Persian/Farsi-speaking public was conducted on English-language tweets, blind to tweets in any other language. Despite RAND's efforts, their computer-driven analytics recently transitioned from manual analysis to applied simple computing techniques using a free Twitter archive service that is no longer in service (TwapperKeeper.com). RAND's analysis relies on other sources to provide the technical analysis. However, these secondary sources and their methodologies are not examined in their larger research.

Few monographs provide critical analysis at the intersection of media studies and the popular uprisings in the MENA region. Zeynep Tufekci, a sociologist and associate professor in the School of Information and Library Science at the University of North Carolina, writes to the public while maintaining scholarly rigour in her first single-authored monograph, *Twitter and Tear Gas: The Power and Fragility of Networked Protest* (2017). Within Middle Eastern studies, there are a number of important works, such as Paul

Amar's *The Security Archipelago: Human-Security States, Sexual Politics, and the End of Neoliberalism* (2013), in which he charts the rise of what he calls the 'human-security state', and immerses his readers in urban laboratories of human security in both Cairo and Rio de Janeiro. Vijay Prashad also provides a global comparative analysis in *The Death of the Nation and the Future of the Arab Revolution* (2016); his underlying premise, which is central to my approach as well, is that revolutions are ongoing.³

All the above efforts, while paving the way for new grounds in research, have highlighted a growing and very tangible need for more research to interpret aggregated mediated interactions, as well as a different set of tools and languages that take seriously the digital as an archive of primary material. By the end of the first decade of the 21st century, we clearly have moved from the world of 'new' media to a world of 'more' media. When we reached 2011 and the Egyptian uprisings – which many hailed as the revolution brought about by Facebook – the ubiquity of computers, digital media software, and computer networks had led to an exponential rise in the number of cultural producers worldwide. No longer simply a matter of the rise of new media production in new global contexts, these social media platforms served as the database architectures for the accumulation of data on a scale heretofore unknown. This over-proliferation of data challenges research methodologies – the impossibility of knowing or representing such a mass of information requires new ways of investigation and interpretation. In just a few years, a plethora of articles and books on the popular uprisings in the MENA region were published, and trillions of Twitter and Facebook postings were micro-blogged in multiple languages. Though social media is often considered co-authored by the public, much research on the Arab public has focused on political histories, public opinion through traditional polling, or ethnographic investigations. In this regard, they have tended to undercut the mechanisms for verification and authority within the domain of the digital. Digital knowledge production is not like pop culture or traditional public texts, such as newspapers or legal documents. Rather, it offers a redefinition of 'the public' as societies systematically and increasingly engaged in the internet, open-source transactions, and mobile devices, for example, worthy of rigorous study.

3 Several excellent studies on contemporary resistance include Joel Beinin and Frédéric Vairel's *Social Movements, Mobilization, and Contestation in the Middle East and North Africa* (2011), in which the contributors forsake the cultural and political exceptionalism of the Middle East, and *Revolution Without Revolutionaries: Making Sense of the Arab Spring* (2017), in which Asef Bayat laments the lack of revolutionary ideology.

Network, not Geography

On 20 March 2004, Alaa Abd El Fattah and Manal Bahey El-Din Hassan, in Cairo, Egypt, first went live with their blog, *Manal and Alaa's bit bucket: free speech from the bletches*.⁴ They explored and experimented with web publishing platforms that would help other groups and small initiatives have web presence. Alaa and Manal's 'bit bucket' was one of the earliest blogs to come out of Egypt and the region. Its content was simply born of the public event of the day: 20 March 2004 was also the first anniversary of the massive global protests against the war in Iraq.

At the time, I was a fellow open-source designer building Arabic and English websites for academic and activist communities in Washington, DC. I met Alaa and Manal in 2007 through the Arabic network of designers and programmers on Drupal while building the beta version of the R-Shief software system.⁵ This informal network of Arab techies grew over the years as we forged new relationships and initiatives, including my own Twitter archiving project in 2008. By 2011, the US Secretary of State invited me to Washington, DC to explain how my software enabled me to predict within six hours of accuracy when Muammar Qaddafi would fall from power. This research on global, emergent media analytics became my doctoral scholarship and a guiding focus of my career as a scholar: understanding digital communication as an indispensable component of living in the 21st century, and the importance of accessing information across borders and languages.

Two trends – one organized by activists and one by academics – seemed to run parallel to each other rather than converging. The set of research practices that emerge at the intersection of both cultural and technical analytics in the fields of media studies is born out of the contemporary socio-historical moment as we face new scales of information that demand machinated computation and political influences on our cultural practices that are systematic, transnational, and mobile. Similar to the non-linear narrative form of a NoSQL database, data-driven narratives are also mapped relationally and within larger systems and orders (Figure 11.1).

This problem in scholarship continues today. In an edited volume that came out in late 2014, *Media Evolution on the Eve of the Arab Spring* (Hudson et al.), the original 2009 Berkman Center article was republished with no critical reflection on its lack of textual analysis. This brings into urgent question the standards in this field. How can academics repeatedly engage

4 <https://manalaa.net/>.

5 r-shief.org.

Figure 11.1: Network graph of Arab blogosphere, published in *Mapping the Arab Blogosphere* article by Etling *et al.* the Harvard Berkman Center (2009).

with the Berkman Center's article on the 'Arab Blogosphere' (which even includes the word 'culture' in its subtitle) as a scholarly work, when the writers of the article did not discuss the contents of a single primary source?

Perhaps one reason they did not analyse or read the blogs is that most of the blogs are in Arabic. More specifically, it was crucial to overcome problems of web accessibility inherent in Arabic fonts. There was a time, right before the Arab blogosphere developed, when programmers could not encode the Arabic glyph for web interfaces. In addition, we could not get those interfaces to read from right to left. These two basic limitations presented quite a challenge from both technological and visual design perspectives and took some time to resolve. One problem was that the Arabic glyph appeared much smaller than the Roman glyph. In developing a bilingual site, it was very difficult to design the Arabic legibly without the English looking dramatically large. That relationship between the Arabic and English text is reminiscent of the

English language's power in the internet's early years. Later, open-source projects such as Wikipedia and Drupal worked to change that. This is an interesting friction point between technology and scholarship.

Accessing primary materials in their native language is essential to rigorous scholarship; it allows researchers to raise the standards of what we think about social media, and elevates the scholarship and expectations from people who study social media to a set of standards. Arab digital activists addressed this issue in an interesting email thread on the Arab Techies email listserv. Sami Ben Gharbia, Slim Amamou, and Alaa Abd El Fattah expressed grievances to the University of Toronto's Citizen Lab when they approached activists on the listserv for data about open and collaborative research:

It seems like there is a new field in academia that uses the 'newness' of the Internet as an excuse to get rid of the guidelines, ethics and traditions developed in the humanities, so results are published without using the tools, algorithms or data, bringing into question how peer review is possible. The problem would be mitigated if local academia were consulted. Why seek stewards among practitioners and not engage with local universities and researchers? Sure our brown universities are as messed up as our brown lives here in the brown south but I assure you the difficulties in working with them are nothing compared to the difficulty of doing accurate research without their understanding of the context. (2012)

Ben Gharbia, Amamou, and Abd El Fattah suggest here that academia needs to shift from building tools that further reinforce hegemonic divides between cultures and peoples, to building tools that extend the work and agency of local digital activists themselves. The set of research practices that emerge at the intersection of both cultural and technical analytics in the fields of new media studies⁶ is born out of the contemporary socio-historical moment as we face new scales of information that demand machinated computation and political influences on our cultural practices that are systematic, transnational, and mobile. Similar to the non-linear narrative form of a NoSQL database, data-driven narratives are also mapped relationally and within larger systems and orders.

6 Outside of the sciences, studying technology must also instil fear among many academics. As Franklin and Rodriguez introduce their argument, 'Hypertext. Hypermedia. High Performance Computing. It's enough to make a humanities scholar hyperventilate. A debate has raged in the last decade (at least) about whether or not the Digital Age will see the death of The Book, The Library and perhaps, The Humanities more broadly' (2008).

Alaa, Manal, and I were among the group of Arab Techies who gathered on the American University of Cairo's Tahrir campus in July 2011. At the time, we thought we would be able to go to Syria and support activists. We had no way of imagining the devastation that would engulf the region after the disruptive, destabilizing glitch that shook the MENA region. We also never imagined that Alaa would end up serving a five-year sentence in Tora prison for protesting or that we would mourn the deaths of Aaron Swartz, Bassel Safadi, Ali Shaath, and many more. We were preoccupied celebrating our faults, failures, malfunctions, disturbances, anomalies, bugs, errors, and noises.

Conclusion

By 2004, two important movements in Egypt had emerged: the open-source software and localization movement, and the Kefaya political party and movement. Kefaya made its first public appearance in December 2004, when more than 50 people gathered outside the attorney general's office, making demands far beyond the established boundaries of free expression at the time. Their banners read 'Down with Hosni Mubarak', and 'The Egyptian Movement for Change'. Also founded in 2004, Open Craft is one of Egypt's prominent web-building companies that, according to their website, supports 'the values of the open-source movement to provide Drupal Web application development: implementation, integration, and internationalization'.⁷ Open Craft served as a network hub of progressive, feminist programmers and designers: founder of SuperMama, Zeinab Samir, and activists Manal Bahey El-Din Hassan, Maggie Osama, and Mira Loutfi also worked at Open Craft. This network built on the online forums built by developers at Drupal. As recently as 2006, developers were still building applications to enable Arabic characters on a keyboard. Several open-source projects to develop software for Arabic on Drupal, Yamli, Kalimaat, GNOME, and other platforms enabled Arabic-language content to grow dramatically in the years to follow. There are activist platforms such as Katib and Take Back the Tech based in Lebanon. In addition, a great deal of work has gone into Arabic language analyses, from e-Space's Arabic Morphological Analyser, to Taha Zerrouki's Arabic conjugator project, Qutrub.⁸

I conceived R-Shief to fill the gap. I built the prototype in Drupal because of its free Arabic localization modules. The use of creative commons licensing

7 <http://open-craft.com>.

8 *Arabeyes*, Online Resource: qutrub.arabeyes.org.

and praxis of free/libre/open-source software such as MediaWiki, Ning, and WordPress emphasizes R-Shief's commitment to a collaborative, participatory model of archiving. However, Drupal had proven Arabic-language programming abilities. There are all sorts of issues concerning right-to-left non-roman script languages. Drupal's Arabic-language developers have been building modules to fix the various problems. For example, Drupal developer @Amr recently released the FireFox Yamli⁹ extension and spent some time packaging a Drupal module to integrate the Arabic comma as a separator for Drupal tags.

Drupal development in Arabic¹⁰ (right-to-left programming and UTF-8 encoding for Arabic script) grew tremendously in the years that followed, with over 50 software developers contributing to Drupal's open-source platform. One of the Arabic team administrators for Drupal is blogger and activist Alaa Abd El Fattah. He posted the following biography on his profile in 2004:

From his work with children using Facebook to ridicule their teachers in the Arab digital expression camps, to his work with pro-democracy activists using blogs to mobilize thousands of Egyptians against the government in the Kefaya movement, Alaa just loves helping people use ICTs to stick it to the man. By day he works as a Free/Open Source Software developer, by night he dons his mask and cape and patrols the streets of Cairo, jumping from campaign to campaign, building websites, providing support and training, looking out for activists in need. He likes to pretend that his work on the Egyptian Blogs Aggregator helped bring in a new era of citizen journalism and usher in a new generation of digital activists, while the rest of the world acts as if his blog is relevant.¹¹

One thing Alaa was mistaken about was that his work did not 'pretend' to 'bring in a new era of citizen journalism'. In fact, this work *did* usher in a new generation of digital activists. Between 2004 and 2011, the rise of the Arab blogosphere demanded rigorous attention. Alaa's blog posts swung like a pendulum between RSS aggregators and the Egyptian constitution. He was first jailed in 2006, along with other bloggers, while calling for an independent judiciary in Egypt. At the same time, citizen journalist

9 <https://www.yamli.com/>.

10 Drupal Translations, *Arabic Overview*, Online Resource: <https://localize.drupal.org/translate/languages/ar>.

11 Drupal Translations, *Alaa's profile*, Online Resource: <https://www.drupal.org/user/8991>.

Noha Atef began a crucial website and blog called Torture in Egypt,¹² Mark Zuckerberg launched Facebook in 2004, and Twitter launched in 2006. At the same time, the largest forum on the World Wide Web was a community for Egyptian women called Fatakat. From 2008 to 2010, bloggers continued to report on more violence by the state and growing social unrest.

I have argued that the scientific project of Arabic software localization (adapting computer software to different languages and regional differences) requires humanistic critical thinking (Sakr 2013). At an even deeper level, the shift in programming from C++ (a highly mathematical computer language) to Java (a computer language that contains lots of English-based vocabulary) has meant a shift into what is culturally and hegemonically English-based. The budding academic field of internet studies (i.e. the Association of Internet Researchers) is so young, however, that its ethical standards and traditions are still in formation. Scholarship on internet studies is often published without providing public access to the data or tools used in the analysis. Critiques of race, power, and colonialism are rarely brought into studies on how activists from the MENA region have used Silicon Valley tools to design their own virtualities specific to local culture and history.

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