future internet

Essay

When Atoms Meet Bits: Social Media, the Mobile Web and Augmented Revolution

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Abstract: The rise of mobile phones and social media may come to be historically coupled with a growing atmosphere of dissent that is enveloping much of the globe. The Arab Spring, UK Riots, Occupy and many other protests and so-called "flash-mobs" are all massive gatherings of digitally-connected individuals in physical space; and they have recently become the new normal. The primary role of technology in producing this atmosphere has, in part, been to effectively link the on and the offline. The trend to view these as separate spaces, what I call "digital dualism", is faulty. Instead, I argue that the digital and physical enmesh to form an "augmented reality". Linking the power of the digital–creating and disseminating networked information–with the power of the physical–occupying geographic space with flesh-and-blood bodies–is an important part of why we have this current flammable atmosphere of augmented revolution.

Keywords: augmented reality; collective action; mobile phones; occupy; protest; social media

1. Introduction

Much will likely be written about the role of new technologies in the current wave of massive collective action that is currently burgeoning across the globe. From the Arab Spring to the UK Riots to the Occupy movement, I am writing in the midst of a moment of global massive collective gatherings. And all of this is happening simultaneously with the historically recent rise of mobile "smart" phones and social media. Before looking specifically at how these technologies may or may not have been used in these massive gatherings of collective action, I want to start by stepping back

and pondering a bigger picture: It is my contention that it will be of no historical coincidence that the rise of mobile phones and social media will be forever linked with this global spread of mass mobilizations of people in physical space.

While the outcomes are unclear at this time, we are witnessing these mobilizations across much of the world, including the Middle East, North Africa, Asia and South America (which have been partially captured by the label 'Arab Spring'). Riots (large ones recently in the UK) and "flash mobs" are increasingly making the news. And the Occupy movement that started in the United States on Wall Street has spread across the country and even the globe. While it is much too early to tell what consequence the Occupy movement will have, there certainly is a feeling that we have entered into a new political moment; one of massive mobilizations of people attempting to change the existing order of society. Some have been overtly political, such as the Arab Spring, Occupy or the Tea Party, while others are not of the traditional sign-holding, slogan-chanting sort, including the 2010 Sanity/Fear Rallies in the United States or the UK Riots in 2011 (however even these events most certainly had political antecedent and consequence).

The first wave of reactions to the role of technology in these recent revolutions, specifically those in the Arab world, was of many journalists and pundits calling these "Twitter" or "Facebook" revolutions [1] as well as the counter-reaction that these terms offensively reduce vast political movements with complex histories to social networking sites [2–4].

However, calling the Arab Spring a "Twitter Revolution" or, as Jillian York [5] says, "Not a Twitter, Not a WikiLeaks: Human Revolution" *both* fail to account for how technology and society, the digital and the physical, media and humans, have imploded and augmented each other. We cannot focus on one side, be it human or technology, without deeply acknowledging the other. This perspective might best be summarized by N. Katherine Hayles [6],

"If media alone are not enough to determine our situation, neither is embodiment. […] Embodiment will not become obsolete because it is essential to human being, but it can and does transform in relation to environmental selective pressures, particularly through interactions with technology".

Simply, much of this debate, from all points of view, often suffers from the same conceptual fallacy: to view technology, especially social media, as too separate from the people who use it.

What I want to propose is that the new technologies in question—especially the highly interrelated mobile web and social media—effectively *merge* the digital and physical into an *augmented reality*. And the consequences—our global atmosphere of dissent—are erupting around us. I will begin by defining what I mean by 'augmented reality' and then will use the recent massive gatherings, especially the Occupy movements around the United States and increasingly the globe, to argue that what we are seeing is an *augmented revolution*.

2. Digital Dualism *versus* Augmented Reality

By "augmented", I am referring to a larger conceptual perspective that views our reality as the byproduct of the enmeshing of the on and offline. This is opposed to the view shared by both conceptual positions outlined above that views the digital and physical as separate spheres—what I have called "digital dualism" [7]. The term "augmented reality" intentionally makes reference to the software applications of the same name. We can contrast "virtual reality" hardware and software that

attempts to create a new, separate world to "augmented reality" applications that layer the digital and physical together. This distinction between dualistic and synthetic engineering is referenced by the "augmented reality" theoretical perspective I am supporting here. However, one should not confuse the software applications with the conceptual framework.

Examples of digital dualism come from both cyber-dystopianists and utopianists. Many journalists, pundits and essayists critique social media as displacing "real", offline and face-to-face connections with online, "virtual" connection (prominently Sherry Turkle's recent *Along Together* [8]). Indeed, this is the theme of popular books [9–11] and even the film *The Social Network* (2010). From the utopian perspective, others have conceptualized the Internet as a new and revolutionary space free of offline limitations and social structures. Still others have discussed an online "second self" (Case [12]; Turkle [13]) separate from the offline self.

These digital dualists conceptualize the Web similar to the film *The Matrix* (1999) where the on and offline are separate spaces. Alternatively, the augmented reality perspective holds that our reality is the blurring of the on and offline, perhaps best exemplified in film by Cronenberg's body-horror film *Videodrome* (1983) that illustrates the implosion of technology, media and the material body.

Opposed to the zero-sum view that the offline displaces the online, research (for a great list, see [14]) has demonstrated that sites like Facebook have everything to do with the offline. Our offline lives drive whom we are Facebook-friends with (as PEW data highlights [15]) and what we post about [16]. Our offline histories, social-locatedness in various structures, demographics, epistemological standpoints, *etc*. all influence how we behave online. And what happens on Facebook influences how we experience life when we are not logged in and staring at some glowing screen. For example, social media users are being trained [17] to experience the world always as a potential photo, tweet, check-in or status update. The logic of social media sites and smart phone technologies fundamentally influence how we experience reality even when offline.

It is because social media *augments* our offline lives (rather than replaces them) that research shows Facebook users have more offline contacts, are more civically engaged, and so on [14–16]. The online and offline are not separate spheres and are thus not zero-sum. Dialectically related, one can be used to bolster the other.

Other digital dualists have viewed, and continue to view, the Internet as a "flat world" [18]. Indeed, digitality promised a Wild-West-like frontier built without replicating the problems of our offline world; fixing the oppressive realities such as skin color, physical ability, resource scarcity as well as time and space constraints. The digital was thought to be a new frontier where information could flow freely, national boundaries could be overcome, expertism and authority could be upended. Those old structures could be wiped away in the name of a utopian and revolutionary cyber-libertarian path blazed by our heroic cyber-punk and hacker digital cowboys (indeed, those were boy's clubs).

This dream could only be maintained by holding the digital as conceptually distinct from the physical. Perhaps this is understandable given this new space was literally being invented. However, the novelty of the new digital reality betrayed the ultimate reality that none of this digitality really existed outside of long-standing social constructions, institutions and inequalities. This digital dualist utopianism was in reality always deeply embedded in (or augmented by) offline social structures. As I have argued before, our augmented reality is one where the politics, structures and inequalities of the

physical world are part of the very essence of the digital domain; a domain built by human beings with histories, standpoints, interests, morals and biases [19].

These points become especially clear when thinking about the role of *mobile* social networking (e.g., using the Facebook smart phone application) [20–22]. Castells *et al.*, in their compressive outline of mobile technologies on private and public life provide a series of global case studies on the important role of mobile devices for political mobilization. There has come to be a "symbolic meaning" to the mobile phone [21]. Campbell and Kwak have described the link between mobile devices and political participation [22]. This research demonstrates what mobile phone users already know: that mobile networking precipitates a blending of the on and offline.

Standing in social space at once on and offline becomes the paradigmatic example of augmentation in action. Simultaneously physical and digital, the Facebook user is the paradigmatic example of the Harawaysian "cyborg" [23]. The physicality of atoms, the structures of the social world and offline identities "interpenetrate" the online [6]. Simultaneously, the properties of the digital also implode into the offline, be it through the ubiquity of web-connected electronic gadgets in our world and on our bodies or through the way digitality interpenetrates the way we understand and make meaning of the world around us [17].

No longer can we use the terms "real" and "virtual" to describe the physical and the digital. That terminology is woefully inadequate given what I have described above: Facebook *is* real as the rest of the world grows increasingly virtual.

3. Augmented Revolution

It is this massive implosion of atoms and bits that has created an augmented reality where the advantages of digitality—information spreads faster, more voices become empowered, enhanced organization and consensus capabilities—intersect with the importance of occupying physical space with flesh-and-blood bodies. Indeed, it should be clear that the differences between the physical and digital always remain important even when acknowledging that our reality is always some combination of the two [24]. These differences are something I have written about elsewhere [25].

As part of the global augmented revolution, the Occupy Wall Street and subsequent occupation movement across the United States and recently the globe has from the very beginning utilized the Web while always focusing on the importance of (occupying) physical space.

Openly inspired by the Arab Spring, Adbusters initially established the Occupy Wall Street protests [26]. Much of the early organization occurred online, especially when the Internet hacktivist/anarchist group Anonymous joined in. Social media has been used to organize local occupations as well as spread news about the movement, sidestepping traditional media outlets that remained confused and largely ignored the movement. Once organized, occupy protesters often armed with smart phones are taking photos, tweeting, streaming live video and recording harsh police tactics (which, arguably, and perhaps ironically, has been a primary factor in getting the attention of traditional news media [27]). When journalists were not allowed to cover the November 15, 2011 clearing of Zuccotti Park where Occupy Wall Street had been centered, the primary images of the events came from the protesters themselves [28].

Given all of this, it certainly would not be correct to call this an "Internet Revolution". Much more than a "digital" protest, the movement has been fundamentally concerned with taking over geographic space, mobilizing bodies in an area, yelling, walking, breathing, sleeping and doing what physical bodies do. There is also an embrace of low-tech at Occupy Wall Street, where retro and analogue technologies augment the high-tech at the park [29]. And, of course, the Occupy movement, like most others, is most fundamentally concerned with issues very real to our offline lives, such as economic inequalities, social injustices, global politics and so on.

It is a mistake to view the Occupy movement as a bunch of young people who all blindly buy the latest smart phones and utilize Facebook, Twitter, digital photography and so on. While this characterization is partially true, not everyone in the Occupy movement is young; and, secondly, the movement as a whole is in no way centered on the new, the high-tech, smart phones or social media. The movement utilizes both high and low-tech. Indeed, the embracing of low/retro/vintage technologies implies a critique of the role of high-tech gadgets and massive social media corporations play in our society. Protesters both utilize the technological possibilities of new, social and mobile technologies while also holding some skepticism of how the devices are built (often in under questionable working conditions is less advantaged areas of the world), its role in consumer capitalism as well as Google, Facebook and other companies' often monopolistic and intrusive handling of data about ourselves and our lives. Given this complicated relationship, the movement should not be reductively defined by novel technologies.

The lesson that is playing out over and over is that utilizing both physicality and digitality and the important intersection of the two can effectively mobilize massive numbers of people. The tactic of augmented revolution is becoming increasingly refined. Those organizing the Occupy protests learned from the Egyptian uprisings, which were also augmented by utilizing both the on and offline to more effectively create change [30]. As mentioned above, this was not a "Twitter" or "Facebook" revolution, but certainly part of a larger set of recent uprisings that utilized these tools. For example, protesters in Egypt disseminated information online about how to deal with tear gas containers and how the crowds should most effectively move about the city [31]. The U.K. riots and the subsequent cleanup effort also followed the same trend of augmentation [32].

Thus, the implosion of atoms and bits gives new power to both the physical and digital. People have access to more information; the Internet allows for ideas created by just about anyone to spread rapidly across the globe; people can more effectively network and organize; and so on. Perhaps most importantly, social media and mobile phones allow protests occurring both on and offline to be far more *participatory* than ever before. In physical space, one's potential audience is often small. An underlying threat for any protest movement is that ambition, motivation and a sense of hope that each individual is making a difference might fade. With social media, *people can see the difference they are making*. They are not just passively consuming dissent but are more actively involved with creating it. If old media centered on "manufacturing consent", as Chomsky famously said, social media allows for the increased possibility of "manufacturing dissent" [33,34].

Utilizing these technologies, the Occupy protests, like those other uprisings around the globe, were able to sidestep traditional media outlets to garner attention and grow in numbers. The traditional news-gatekeepers have been so-far left scratching their heads, unable to frame and understand the Occupy movement thus far. Instead, the media produced from protests is increasingly created by those

protesting. Many of the smart-phone-armed-protesters-turned-cyborgs can snap photos, shoot videos, organize on Facebook and tweet to the world (keeping in mind that mobile phones have spread throughout income demographics in the United States as well as the developing world [35]). This is participatory, prosumer dissent [36].

Moreover, what is often overlooked is how social media promises an audience for this content. This is an important change. No longer are protesters just shouting into the wind (made of atoms), they are also shouting into a network (made of bits); a network where there may be an audience receptive to the message. To illustrate this point that providing an audience also imparts motive to behave: Would we feel the necessity to take a picture of the breakfast we just made if Facebook could not guarantee that others might "like" and comment on that photo? As a protester simultaneously marching in physical space *and* documenting what we do online, we can watch the stream of activity by following hashtags on Twitter and see our tweet retweeted by someone else on the other end of the globe. We can post our photos to Facebook and watch the comments come in. Augmented by the Internet, what we are doing seems to *matter more*. This is the not-so-secret weapon of augmented revolution.

4. Conclusion

I argue that new technologies effectively merging the on and offline are part of the story for why we are currently living in this flammable atmosphere of mobilization that is growing around the globe (however, while not the topic of this essay, an equally important point is that this same merging has also engendered new possibilities for repression [37]). Protest and rioting are all more possible, perhaps likely, because social media and smart phone technologies have united the power of both physical space and networked digitality. Some have even argued that the organizational structures of the Occupy movement mimic the network logic of the Internet [38].

The perspective that physicality and digitality are separate has always been, and is increasingly, false. I have argued that this "digital dualism" could be profitably replaced by viewing the on and offline as enmeshed, what I call augmented reality. And this augmented perspective, I think, best captures why mobile and social technologies are so closely associated with the atmosphere of dissent proliferating across the globe. Simply, thanks to the effective merging of the on and offline, massive gatherings of people attempting to change the order of the world around them is now the new normal.

My goal here is to argue that the intersection of the on and offline, facilitated by interrelating new technologies, is a particularly flammable space. Moving forward, it is my hope that future research can describe in much more detail than I have here the numerous ways in which contemporary protests are situated at this intersection. Researchers with more direct knowledge about, for example, the Arab Spring, can more effectively describe the role of mobile phones and social media by understanding them as technologies of implosion rather than separation. My larger theoretical provocation here is for further empirical work to be done not under the digital dualist fallacy of separate digital and physical spheres but instead with the understanding atoms and bits augment each other. And this understanding is dramatically made evident by the atmosphere of augmented dissent budding across the globe.

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