Havana's StreetNet: Contending With Power and Privilege in a Grassroots Intranet

Michaelanne Dye
University of Michigan
Ann Arbor, MI, U.S.A.
mmtd@umich.edu

CHI'18 Extended Abstracts, April 21âĂŞ26, 2018, Montreal, QC, Canada

ACM ISBN 978-1-4503-5621-3/18/04
https://doi.org/10.1145/3170427.3173022

Abstract
This position paper draws on my work with StreetNet (SNET), a citizen-led intranet in Havana, Cuba. In Cuba's capital city of Havana, access to the world wide web (WWW) is severely restricted by high costs, limited access points, and slow speeds [8, 10]. In response to their exclusion from the WWW, technology enthusiasts have built SNET, a community network (CN) that serves as an alternative to the WWW for thousands of people in Havana. Based on fieldwork trips throughout 2015-2017, I describe experiences of power and privilege that surfaced during data collection and the ways in which they are embedded within wider political, technical, and social structures. By highlighting elements of power acting upon as well as within SNET, I conclude with open questions that I hope to explore more deeply in the Design and the Politics of Collaboration workshop.

Author Keywords
Social Computing, HCI4D, ICTD, internet access, social media, human infrastructure, Cuba

ACM Classification Keywords
H.5.3 [Group and Organization Interfaces]: Collaborative Computing

Introduction
In Cuba's capital city of Havana, access to the world wide web (WWW) is severely restricted by high costs, limited

access points, and slow speeds [8, 10]. In response to a lack of traditional internet access, technology enthusiasts have designed StreetNet (SNET), a community network (CN) that serves as an alternative to the WWW for thousands of people in Havana. As a distributed, grassroots network circumventing the need for outside intervention from the government or commercial entities, SNET relies on thousands of volunteers to maintain its physical and digital infrastructures. In prior work [9][1], I focused on the maintenance and care (M&C) that underpins the sustenance of this sociotechnical system. This work illuminated how repair practices draw on and shape community ties, while also fostering tensions and surfacing power entanglements. Building on that work, in this position paper, I reflect on issues of power and privilege that emerged during ongoing fieldwork with this community throughout 2015-2017.[2]

Related Work

As a community network (CN), SNET fits into previous categorizations of CNS, crowdsourced infrastructures collaboratively built by individuals and groups who pool resources and coordinate efforts to provide digital services to members [4, 3, 1, 6]. Work on CNs has celebrated the "liberating" attributes of CNs to varying degrees. Since the 1970s, "the euphoric hopes [CNs] inspired for more equity, participation, and civil society is typical of the technological optimism that has been identified as a characteristic of U.S. social thought, literature, and public debate" ([17]:291-2). Scholars have celebrated the decentralized structure and grassroots organizational style of CNs. De Filippi contrasts CNs to centralized network infrastructures owned by "powerful third parties" ([5]:3). Further, prior work has emphasized commitments to free speech and resistance to surveillance and repression as defining characteristics of CNs [5, 4, 18].

Although research celebrates the ad-hoc, decentralized, "by the users for the users," model, most CNs operate with the assistance of third parties, including governments, universities, research centers, and/or corporations. I encountered a different organization with SNET since it operates without the formal assistance of any third party. Additionally, the resource constraints, legal ambiguities, and the structures within which the network is embedded, provided an opportunity to tease apart both opportunities and tensions that result from involvement in this network.

Background

In order to better reflect on issues of power and privilege within SNET, it is necessary to acknowledge the sociopolitical, economic, and cultural structures within which this sociotechnical system is embedded. Since the end of the Cuban revolution in 1959, all business sectors have been under state ownership and Cubans' access to foreign press, entertainment, and other content has been restricted [2]. Up until 2014, only 5% of people in Cuba had access to the WWW [11]. Although the Cuban government introduced the first public, paid WiFi hotspots in March 2015, they are prohibitively expensive and slow [10].

The complicated, strained relationship between the U.S. and Cuba also underpins the nature of the engagements with SNET specifically and ICTs more broadly as the Cuban government seeks to both advance internet access while not accepting U.S. interventions due to ongoing efforts by the American government aimed at overthrowing the current regime. Although the U.S. government has stated that increased internet access should be a goal for Cuba, U.S. policy has also contributed to limiting information access in the country. This has occurred primarily through the

[1] This position paper includes excerpts and data from the author's dissertation [7] and a 2019 CSCW paper [9]

[2] To protect participants, I use pseudonyms for people's names, neighborhoods, and network nodes. For more details on methods, see [9].

U.S. embargo (which is still in effect), which often makes downloading software from servers hosted in the U.S. impossible, blocks websites for people in Cuba, and prevents companies and U.S. citizens from engaging with Cuba in a variety of ways [12].

What is SNET?
SNET evolved out of neighborhood local area network (LAN) parties, which eventually began to connect to each other as friends started to experiment with technical equipment, such as Ethernet cables, and eventually WiFi. Currently, SNET connects between 10 and 50,000 [16] and is composed of nine core nodes, or *pillars*, connected to each other through fixed wireless links.

Around 2011, groups of nodes began developing processes for cooperatively maintaining their growing networks [20]. Since many nodes on SNET formed independently of one another, each area had to negotiate to determine who would be responsible for various tasks of their network. The governance structure evolved over time with each region deciding on roles and responsibilities among themselves. Roles on SNET are determined by an individual's physical location in the network, when they joined, the type of equipment they have access to, technical knowledge, a willingness to undertake the work involved, and, for more formal roles, authorization from an admin. These roles include generals, admins, subnode admins, online admins, online moderators, and users.[3] All roles require individuals to be involved in collective acts of M&C for the network.

Stories of Power and Privilege

Through this workshop, I am particularly interested in exploring issues of power and privilege that surface within an information network that has been designed from the ground up in response to participants' feelings that they have been excluded from access to the WWW. Due to the ad-hoc nature of the network and Havana's sociopolitical context, I encountered a system where the material elements (such as routers, cables, antennas, etc.) were regularly breaking down. This work can be particularly strenuous because the network is maintained without any outside assistance or funding (unlike other successful CN systems) and resources are difficult to acquire. As a result, involvement in SNET requires participants to enroll the assistance of a variety of people. This collaboration surfaces instances of privilege and power as the community seeks to resist forces that they perceive to be denying them information access, while also contending with what some consider to be unfair treatment within the network. In this section, I reflect on certain instances where the SNET community experienced issues of power and privilege.

An 'A-legal' System
Due to the political context of Cuba, SNET is technically illegal, however, due to participants' intimate knowledge of what is legally and culturally appropriate, people have been able to design something that is "alegal," which people in Cuba use to describe things that exist "beside" the law. SNET has adopted several strategies in order to protect the network, including strict rules regarding content, private businesses, and connecting SNET to the WWW.

In regards to online content, SNET has banned all political, religious, and sexually explicit content. However, as with online moderation in social media sites on the WWW, interpretation of these rules varies across admins. One of my participants, Enrique explained how people "*everywhere in Cuba*" have internalized the notion that one does not discuss politics anywhere so on SNET, this is seen as normal. According to Enrique, "*There may be times that someone on SNET says something they shouldn't, and admins sanc-*

[3] For a full description of roles see [9].

tion them, even to the point of banning them. They don't do it because they want to, but to avoid reprisal." The shared objective of protecting the network from government shutdown (and the shared cultural understanding of what is permissible) facilitates and motivates users to cooperate in the monitoring and reporting of activity that may threaten the network. However, it also means that certain users worry about losing access because of something they say that may be perceived as a rule violation.

Technology is Designed to Break
Yordani is one of the informal admins of SurNet, a node serving a neighborhood on the outskirts of Havana. Yordani spends most of his time helping SNET users in his node by fixing equipment because SNET is composed of reused and repurposed materials, which have to be carefully and artfully maintained. Yordani explained that, "*manufacturers make [equipment] to last 5 years, no more, otherwise the capitalists would not survive*."

Changing material forms make technologies more difficult to repair [21] and, "corporate values in repair impact local repair worlds" ([14]:8). Focusing on OLPC in Paraguay and fixer spaces in Northern California, Rosner and Ames highlight how technologies are not designed for repair, thereby exacerbating power asymmetries [21]. Similarly, in Havana, people anticipated items breaking, partially because they believed technology had been designed to be replaced. Further, when new types of technology have to be incorporated within the system (a new router, for instance) there are times that this technology is not compatible with preexisting configurations. Not only does this require more work on behalf of participants, it also erodes trust in other community members.

Participants are not always aware as to whether breakdowns or being excluded from the network are due to a technical issue (like incompatible equipment, which Jonny said) or unfair treatment by another user. Therefore, although SNET (as a network) has been designed by users to work within the local conditions of Havana, technology design by companies outside of Cuba still impacts experiences of users.

(In)visibility & Accountability
Another consequence of the network being "a-legal" and informal is that online administrators are often difficult to track down, especially if one has been banned from a site. Due to the distribute nature of SNET, network sites are hosted across several different servers and there is not a central repository of accounts. Users must create new accounts for each site that requires an account (forums, sales pages, social networking sites, etc.) and there is no central email system. Since users do not maintain a continuous online identity across the network, it can difficult to contact site-specific users or admins if one gets banned from a site. Further, in order to protect the network, online admins are often extra cautious since they don't want to allow activity that might get them in trouble with the government. Due to the constant M&C work that admins undertake, many admins have less patience if a user violates rules (or others complain about them) too often. If a user gets banned from a specific site online, and they believe they should be let back in, it can be difficult to negotiate, as Antonio, a subnode representative explained to me.

> *"If you violate a rule too many times, even a small one, [the admins] cancel the account. To get access again, you have to contact the admin of that page. And that is a problem because you don't know who they are and you don't have access to that page anymore. Maybe someone who knows can find that person, and*

locate the admin so he can remove the ban on that page. But it is difficult."—Antonio (M,27)

Not all users felt as though their admins were helpful, often because it was hard to reach them if they did not know who they were off of SNET. This was especially difficult when managing breakdowns since, if your equipment breaks and you're disconnected from the network, there is no way for you to log on from your connection to contact an admin. In these cases, people need to either try to track down their admin in person or try to get on SNET through another user's connection to try to contact the admin digitally. The lack of visibility on the network provides admins with a level of privacy but it also makes it difficult for users to have their concerns addressed. However, I did find nodes where they were able to better mitigate issues due to a lack of transparency. This mainly occurred in nodes on the outskirts of the city in neighborhoods where the population density is not as high and admins are more easily identifiable and, therefore, socially accountable. In the center of the city, on the other hand, it's more difficult to identify certain admins.

Lack of Choice

As I have mentioned previously, SNET is the only option that participants have for regular access to digital content from their homes. This includes the ability to buy, sell, or trade items (which several participants mentioned was critical for their jobs) as well as the ability to get resources for school and collaborate on projects. As a "mini internet," SNET has been designed to replicate services of the WWW. Therefore, when a participant loses access to SNET, they aren't simply losing access to a gaming network — they are losing access to their version of the internet. Participants described how they had to put up with unfair admins, frustrating users, and constantly repairing broken equipment because they did not have another choice.

Although SNET is a source of pride for participants, every person with whom we spoke desired to have the ability to choose to have access to the WWW (many said they would choose that over SNET). Therefore, participation on SNET serves to reinforce their exclusion from the wider milieu of global flows of information, namely the WWW. Participants felt, therefore, that they had a lack of choice in the types of services they could use. This is similar to findings from Ghoshal and Bruckman [13], whose participants felt that they had to use sites like Facebook in their organization, although using this network was problematic.

Open Questions

Although the community I worked with may not define themselves as a grassroots social movement, I think there are several issues raised in this work that are of relevance when studying the interplay between CSCW systems and the politics of collaboration. In this section, I conclude with open questions that surfaced from my work and that I would like to discuss at the workshop.

What might be learned from collaborations in environments of constraint?

SNET operates within an environment of constraint as participants often describe resource, technical, and political constraints that they contend with on a daily basis. Examining the practices that contribute to the maintenance of SNET in this environment complicates egalitarian notions of decentralized, sociotechnical infrastructures, surfacing power tensions embedded within engagements [15]. This is not to say that similar tensions do not exist in environments with access to a variety of resources. Instead, in a context where material elements are regularly breaking down provide an opportunity to examine the tensions that surface.

Moments of breakdown highlight tensions from varying positions of power—from neighbors who can prohibit users from stringing cables through their balconies to admins whose management styles impact the experience of others. Mohan and Stokke have discussed the tendency to romanticize "the local," thereby downplaying social inequalities and power relations that SNET brings light [19].

Although CNs have been said to facilitate more inclusive access [6], my work found that certain users have been excluded from the network. While SNET connects between 10-50,000 computers, this is only a fraction of the population of Havana. In addition to particular users being excluded from the network for various reasons, SNET is not widely available to people in Havana due to many reasons—cost of equipment, distance from the nearest node, limited router slots and IP addresses, as well as unwillingness by some admins to connect new users. Therefore, although SNET seeks to provide digital services to people who have limited (or no) access to the WWW, many people are unable to join the network.

While participants sought to design a system that was more equitable in providing people with digital services, there are issues of inequity and injustice present within SNET. Instead of battling against inequitable features of the system, when users are treated unfairly, these actions are often considered commonplace. I heard several instances of people explaining away unfair treatment with phrases like, "*this is how things are in Cuba*." At times, I spoke with participants who said that, in SNET, they did not have the luxury of being open and inclusive (although they would like to be) due to the context in which they operate. In this case, we see how values of inclusivity conflict with the need to protect the network from shutdown due to political tensions or resource scarcity. When limited resources or fear of government shut down threaten the network, some individuals or groups sacrificed the inclusion of certain individuals in order to protect the network as a whole.

How might we consider different values and perceptions of power across diverse communities?

A growing body of CSCW research situates itself in diverse, global contexts, fostering conversations on diversity, equity, and inclusion. As this trend (hopefully) continues, we need to engage more deeply with questions regarding issues of power and privilege in these communities as well as the values that are reflected within sociotechnical systems. Within SNET, we see how values that are hotly debated in current social media work in the U.S. and Europe (i.e. freedom of speech) play out much differently. Prior work describes user autonomy as a distinctive feature of CNs, emphasizing a commitment to free speech and resistance to surveillance and repression [6, 1, 18]. However, SNET has adopted strict policies banning content the government might deem controversial, including politics, religion, and pornography.

Although some CNs may seek to enable individuals to challenge preexisting power structures [5], SNET members actively avoid challenging the Cuban government by banning activity that may be considered subversive, thereby sacrificing user autonomy for network autonomy. Further, due to the labor involved in policing online content, participants did not view network autonomy positively; instead, they would much rather have the government assist in these endeavors. Similar to instrumental arguments for technology use, overly positivist framing of CNs as "sites of grassroots mobilisation and resistance" ([19]:263) risks ignoring power asymmetries entangled in these networks, as well as participants' desire to have more assistance from formal structures in the maintenance of this system.

Author Biography

Michaelanne Dye is a Presidential Postdoctoral Fellow in the School of Information at the University of Michigan. Spanning the fields of CSCW, ICTD, and anthropology, her research examines the social processes involved in navigating political and economic duress and how this is mediated by social computing technologies, particularly among Latin American communities. Michaelanne is specifically interested in the design of citizen-led information systems and the ways that underrepresented groups collectively "make do" in contexts that require them to be innovative. Her She received her PhD in Human-Centered Computing from Georgia Tech She has worked with under-served populations in Latin America and the United States for more than 15 years.

REFERENCES

1. Roger Baig, Ramon Roca, Felix Freitag, and Leandro Navarro. 2015. Guifi. net, a crowdsourced network infrastructure held in common. *Computer Networks* 90 (2015), 150–165.
2. Ellery Roberts Biddle. 2013. Rationing the Digital: The Politics and Policy of Internet Use in Cuba Today. *Internet Monitor Special Report Series* 1 (7 2013). DOI: http://dx.doi.org/10.2139/ssrn.2291721
3. John M Carroll and Mary Beth Rosson. 2001. Better home shopping or new democracy?: evaluating community network outcomes. In *Proceedings of the SIGCHI conference on Human factors in computing systems*. ACM, 372–379.
4. Stefano Crabu and Paolo Magaudda. 2018. Bottom-up infrastructures: Aligning politics and technology in building a wireless community network. *Computer Supported Cooperative Work (CSCW)* 27, 2 (2018), 149–176.
5. Primavera De Filippi and Felix Treguer. 2016. Expanding the Internet Commons: The Subversive Potential of Wireless Community. *Journal of Peer Production* (2016).
6. Emmanouil Dimogerontakis, Roc Meseguer, Leandro Navarro, Sergio Ochoa, and Luis Veiga. 2017. Design trade-offs of crowdsourced web access in community networks. *Proceedings of the 2017 IEEE 21st International Conference on Computer Supported Cooperative Work in Design, CSCWD 2017* (2017), 24–29.
7. Michaelanne Dye. 2019. *Vamos a Resolver: Collaboratively Configuring the Internet in Havana*. Ph.D. Dissertation. Georgia Institute of Technology.
8. Michaelanne Dye, Annie Antón, and Amy S Bruckman. 2016. Early Adopters of the Internet and Social Media in Cuba. *CSCW* (2016).
9. Michaelanne Dye, David Nemer, Neha Kumar, and Amy Bruckman. 2019. When it Rains, Ask Grandma to Disconnect the Nano: Maintenance and Care in Havana's SNET. *CSCW* (2019).
10. Michaelanne Dye, David Nemer, Laura Pina, Nithya Sambasivan, Amy S. Bruckman, and Neha Kumar. 2017. Locating the Internet in the Parks of Havana. *CHI* (2017).
11. Lorenzo Francheschi-Bicchierai. 2014. The Internet in Cuba: 5 Things You Need to Know. (2014). http://mashable.com/2014/04/03/internet-freedom-cuba/
12. Rudy Gevaert. 2011. A sustainable model for ICT capacity building in developing countries. (2011), 123–134.

13. Sucheta Ghoshal and Amy Bruckman. 2019. The Role of Social Computing Technologies in Grassroots Movement Building. *ACM Transactions on Computer-Human Interaction (TOCHI)* 26, 3 (2019), 18.

14. Lara Houston, Steven J. Jackson, Daniela K. Rosner, Syed Ishtiaque Ahmed, Meg Young, and Laewoo Kang. 2016. Values in Repair. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems - CHI '16* (2016), 1403–1414. DOI: http://dx.doi.org/10.1145/2858036.2858470

15. Steven J Jackson. 2014. Rethinking Repair. *Media technologies: Essays on communication, materiality, and society* (2014), 221–39.

16. Sam P Kellogg. 2016. Digitizing dissent : cyborg politics and fluid networks in contemporary Cuban activism. *Revista Teknocultura* 13, 1 (2016), 19–53.

17. Herbert Kubicek and Rose M. Wagner. 2003. Community Networks in a Generational Perspective: The Change of an Electronic Medium Within Three Decades. *Information, Communication & Society* 5, 3 (2003), 291–319. DOI: http://dx.doi.org/10.1080/13691180210159274

18. Panagiota Micholia, Merkouris Karaliopoulos, Iordanis Koutsopoulos, Leandro Navarro, Roger Baig Vias, Dimitris Boucas, Maria Michalis, and Panayotis Antoniadis. 2018. Community networks and sustainability: a survey of perceptions, practices, and proposed solutions. *IEEE Communications Surveys & Tutorials* 20, 4 (2018), 3581–3606.

19. Giles Mohan and Kristian Stokke. 2000. Participatory development and empowerment: the dangers of localism. *Third world quarterly* 21, 2 (2000), 247–268.

20. Eduardo E. P. Pujol, Will Scott, Eric Wustrow, and J. Alex Halderman. 2017. Initial measurements of the cuban street network. In *In Proceedings of IMC '17*. DOI: http://dx.doi.org/https://doi.org/10.1145/3131365.3131395

21. Daniela K Rosner and Morgan Ames. 2014. Designing for repair?: infrastructures and materialities of breakdown. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*. ACM, 319–331.