Paying attention, digital media, and community-based critical GIS

Forthcoming in *cultural geographies*

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Abstract
New web-based architectures and capacities for digital storage have made online social interactions more significant, discursively and materially. Increasingly, these media-centric shifts toward the online and the interactive have enabled for-profit and nonprofit organizations to capture the attention of potential customers and constituents through social and spatial media. In research on the everyday information- and data-practices of community-based organizations, websites and their mobile applications such as Facebook, Twitter, Foursquare, and Pinterest are examined as the emerging media toolset to build sustained connections to funders, constituents, and other members. These technologies and these new pressures around their utilization have made the daily work of nonprofits more complex. As the landscapes of digital media continually shift their interfaces, protocols, and membership settings (including privacy configurations), I suggest that this new normal -- persistent change -- presents challenges for collective memory and the attention-work of community-based organizations. Taking up and responding to concerns around the implications of digital information technologies on memory and culture, this paper highlights struggles over externalization as significant to the everyday work of collective action.

Key words: critical GIS, cultural industries, technology, action, memory, Stiegler

> It is far too simplistic to say that hyper attention represents a cognitive deficit or a decline in cognitive ability among young people… On the contrary, hyper attention can be seen as a positive adaptation that makes young people better suited to live in the information-intensive environments that are becoming ever more pervasive.[1]
>
> And this is occurring because the solicitation of attention has become the fundamental function of the economic system as a whole, meaning that biopower has become a psychopower.[2]

Alongside a rapid proliferation of online digital media, both academic and popular literature point to implications for the human capacity to pay attention. The two quotes above from N. Katherine Hayles and Bernard Stiegler, respectively, mark a particular tension around how to respond to the incursion of digital media into everyday life. Hayles adopts a more

productive reading of hyperattention, while recognizing the weight of retentional systems (such as long and short term memory) that are being reworked. Hyperattention effectively prepares individuals for the realities of living in current digital culture. For Stiegler however, the rapid reconfiguring of retention demands a more urgent (and more foundational) response. An industrial model fashioned around attention capture and control has managed to coordinate a range of media, from radio and television to the internet, in all its guises as web 1.0/2.0, collaborative and distributed, 'the cloud', among others. What is needed then, Stiegler continues, is nothing short of a new economic system[3].

Regardless of these distinct perspectives on shifting retentional demands, the pervasiveness of attention-control technologies would indicate that as geospatial technologies align with trends in consumer electronics, scholars of GIScience must begin to understand their work as part of a general mediatization of everyday life, that includes social networking, location-based services, and microblogging web-based tools[4]. In other words, GIS work is media work, and supporting community-based organizations (CBOs) with GIS is enacting media support. My focus on CBOs draws on the traditions of community-engaged GIS, including efforts in participatory and public participation GIS, as well as broader efforts in radical geography to affect change through scholarship.

After overviewing my efforts to promote community-based critical GIS in the undergraduate classroom, I analyze the broader implications for such media support with particular emphasis on attention. Stiegler critiques technologies which target attention as systems of care. Taking care then, as in to attend or to pay attention, for him, requires an extension of a Foucauldian notion of biopower toward that of psychopower. Stiegler insists that Foucault's later work on governmentality (as a cultivation of biopower through social regulation) could not take up the rapid ascension of marketing and advertising technologies[5].

His argument posits telecommunication systems along a continuum of technologies that enable the necessary retentions that form an individual's perceptions (primary retentions) and an individual's memory (secondary retentions), as well as collective memories, passed down through generations (tertiary retentions), and by extension the constitutive processes of human culture[6]. Advertising technologies (and more generally, the cultural industry) work to short-circuit these retentions. CBOs are but minor players, but their practices highlight the effects of the attention economy, and the constrained potential for transformations through university-community partnerships.

Stiegler critiques the long-range effects of attention control technologies, what he terms "psychotechnological systems of psychopower"[7], where human culture hangs in the balance. However, one does not need to adopt the entirety of Stiegler's argument on the derailing of neural capacities for the production of culture, in order to recognize the intense demands upon thought and action wrought by digital information technologies. As such, I suggest that community-based critical GIS can and must respond to these challenges.

GIS-support as media-support

Recognizing GIS-support as media-support brings new opportunities and challenges for community-based engagement. This recognition begins from two presuppositions. First, the notion of digital spatial technologies is expanded beyond 'GIS': these specific systems and the maps produced are just one part of a growing set of new spatial and social media. Second, the efforts to engage in collaborative and critical mapping practices, the hallmark of the critical GIS agenda, must be situated within our current moment, where digital information technologies are seemingly ubiquitous and increasingly pervasive.

In doing so, I suggest that societal challenges resulting from the proliferation of code and computing condition the potential of GIScience to realize its scholarly as well as academic agendas. The GISciences are not (nor were they ever, perhaps) hermetically sealed. By bringing a critical perspective to bear on the shifting conditions of digital technologies, I argue that practitioners, scholars, and students of GIS are better equipped to adapt and respond amidst the complex relationships constituted by the interplay of technology and culture.

Therefore, a renewed commitment to critical GIS as a vehicle for community engagement is increasingly confronted with the following question: What are the social implications of persistent change in digital media, or the way in which updates to software and shifts in online functionalities rapidly iterate? I take up this question in three moves: First, I'll reconsider the remit of a critical GIS research agenda amid the proliferation of digital culture. Here, I suggest that current critical GIS, as spatial media, must not remain silent on general technological shifts and intensifications in society. Second, I'll overview efforts to constitute university-community partnerships with digital spatial technologies, to illustrate how these classroom projects intersect qualitative research into the everyday data- and technology-practices of community-engagement. Finally, I'll draw out what I see to be the pressing concerns and opportunities of this evolving critical GIS research agenda, particularly focusing on challenges of the attention-work of community-based organizations in the wake of persistent change in online digital media. In doing so, I'll report on a series of interviews conducted with community partners in the context of engaged, critical GIS classrooms at the University of Kentucky in Lexington.

Reconsidering critical GIS

The study of persistent change in digital media benefits from being situated within a critical GIS research agenda. If critical GIS is, as I have previously suggested[8], a tacking back and forth between technical practice and critical practice, then it is this kind of techno-positionality that enables a different narration of persistent change. Working with digital media in partnerships with community organizations enables a witnessing of the vulnerabilities associated with an evolving digital culture[9]. As these collaborations with GIS unfold, the work of critical GIS becomes partially media strategy, to leverage the legitimacy afforded mapping to promote awareness and engaged thought in alignment with the community-based organization.

Practicing critical GIS with community partners is to engage in media production, and enables an active process by which issues of 'representation' and 'radical intervention' are not stuffy concepts reserved for abstract discussion, but are the flashpoints for theory-action. Critical GIS embraces these moments of contact between the map, the territory, and the map reader, but not by considering these as separable entities of calculated interaction[10]. Maps are representations, and as such, they intervene; they leave a mark. A critical GIS revels in the space between representation and intervention. It brings methods to examine and understand these moments, and does not seek to minimize their implications or cloak their position. Committed to anti-opacity, critical GIS enables a discussion of the mediating effects of mapping while remaining attentive to the more technical decisions of map production.

Mapping technologies have shifted alongside broader changes in digital information technologies[11]. Just as the ubiquity of digital information technologies has dramatically altered everyday life for some, so has the proliferation of social media augmented with

geographic technologies in creating further splinters in spaces of public engagement[12]. Indeed, since 2005, with the explosion of user-generated map-mashups with the Google Maps API, social networking tools have also underwent significant revision – with the move toward mobile as the primary development environment and the intensification of location-based services[13]. It is impossible to ignore these developments as somehow distinct from the developments that underlie the GISciences. Increasingly spatial media are interpellated by social media. Their logics of development, marketing, and use overlap and align.

Take just a few recent examples. The internet meme has been heralded as a leading form of viral engagement[14], a mash-up of various cultural and commercial content, while corporations compete for control of our attention, as seen in a recent marketing campaign by Microsoft to unseat Google as the primary internet search engine. New human-computer interactions further lock-in our ways of being in the world, as software like Apple's Siri constitute spaces where the friction between the material and the seemingly immaterial are made insignificant. These interactions are no longer exceptional, and instead signal a public increasingly demanding social-spatial mediation of everyday life[15]. And these devices are data hungry, leading to new 'opportunities' for innovation in digital infrastructure, as was seen at the 2012 SXSW gathering, where homeless bodies were enrolled as wireless infrastructure.

Therefore, I suggest that engagement in critical GIS, in the study of mapping as a cultural practice, demands an attention to the myriad intersections of capital and innovation, devices and desires, imaginations and urban governance. This attentiveness can begin, I argue, by recognizing GIS as but one part of an expanding digital culture[16].

Technological engagements

Conventional GIScience is being confronted with new technologies and new forms of data[17]. This is not necessarily forming a radical break, but is placing new societal importance on geographic representations and constituting new pedagogical challenges for GIScience training. These engagements are inextricably bound-up in the *practice* of critical GIS. As such, I draw forward these epistemological and ontological critiques of the GIS as an object, in order to imagine GIS differently. To take geospatial technologies as an object of study enables inquiry into the social and political implications of this specific software and hardware as well as the habits of thought promoted by the use of such tools.

For instance, there are distinct challenges around privacy that become particularly pressing once GIS is recognized more broadly as media. Elwood and Leszczynski analyze the various discursive strategies employed around the question of privacy and the geospatial web, while Obermeyer targets an assumed voluntarism at the heart of the geoweb, noting the growing ways in which geographic information is collected through the use of consumer electronics and social media websites[18]. Indeed, "the geoweb forces us to think beyond a singular technology (GIS) and its primary representational output, the map"[19]. These technologies are necessarily more, exceeding our conventional understandings of the relationship between maps, territory, and reader, while introducing new problematics as these technologies expand into many conspicuous and inconspicuous facets of everyday life.

Further, a political economy of the geoweb views continuities between the map that serves the interests of the state and emerging geospatial data[20]. Leszczynski argues that a "complementarity" exists between the mapping regimes of the state and the market, complicating any simple delineation between the state and the market, between 'roll-back' and 'roll-out' narrations of neoliberalism[21]. Positioned within critical GIS, this scholarship

works to situate the technologies signaled by use of the acronym 'GIS' within much broader political and economic conditions -- including the uneven neoliberal restructuring of governance and the rapid commercialization of digital spatial information.

An expanded critical GIS research agenda places this work more directly in conversation with broader research within critical technology studies, conducted both by geographers and more generally by media studies scholars. That the constitutive relationship between technology and society is spaced is a long-held tenant within geography, and most recently elaborated by geographers attuned to the digital as an intensification of this relationship. Geographers temper the notion that technology determines space and spatial relations[22], by recognizing the multiple facets of socio-technical relationality[23]. To recognize geospatial technologies as productive of these relations, effectively widens the discussions within GIScience to include not only the social and political implications of GIS (a hallmark of the GIS & Society agenda), but also the proliferation of digital media more generally.

While an emerging literature within the digital humanities and critical media studies examines demands of attention by current digital technologies[24], discussion of geospatial technologies (such as location-based services) as conditioned by these demands have largely been absent. The implications of this absence has meant that participatory engagement with these techniques and technologies have underexamined the noetic, or the conditioning of thought and focus that comes with digital technologies. The paying of attention to attention itself is an important consideration in technological engagement with geospatial technologies, and this is evident in current work with community organizations around the use of digital spatial media, as I examine below.

Community-based organizations are but minor players in a rapidly unfolding attention economy, where Stiegler argues cultural industries dominate, including TV and

radio conglomerates, the entertainment sector, and digital social media, albeit with different speeds and histories of involvement[25]. Such cultural industries manage this through attention control, according to Stiegler, by directly targeting the human capacity to pay attention. "For Stiegler every technics (for instance, pottery) carries the memory of a past experience; but only mnemotechnics (for instance, writing) are conceived with the primary *purpose* of carrying the memory of a past experience. In Stiegler's argument, the emphasis is on the aim, or end, of different technologies: some technologies are conceived just for recording, others are not."[26] Indeed, as Frabetti continues, software is not just about recording but about making "things happen in the world"[27].

Stiegler encourages an investigation of these attention demands across a range of media. For example, James Ash has examined how first-person shooter video games produce and alter notions of temporality[28]. The technicity of such video games enables multiple understandings of the passing of time, and highlights, for Ash, the ways in which technological objects are constitutive of being and becoming. These objects and the techniques that shape them have technicity -- or the capacity to constitute beings. This technicity is also fundamentally material, in the ways in which the shaping of attention is predicated upon microelectronic devices, an argument furthered by Sy Taffel[29]. In other words, these devices also have ecological costs. Further, attention control can be examined as a process of transindividuation; Ben Roberts examines free software as a process of public-making, through which individuals are constituted as people who 'tinker' and invent[30].

This approach, of interrogating the productivity of digital information technologies, situates scholarship on attention as an examination of the operative work of power. I suggest that technological support of community-based organizations is situated within these power dynamics, and therefore requires participatory work with GIS to consider the attention

demands of digital media. The ongoing work of partnership with GIS is increasingly confronted by the effects of an attention economy that Stiegler examines with great urgency.

Partnering with community-based organizations

Classroom partnerships with community-based organizations around the use of GIS enables a range of student mapping projects, conducted with community-partner direction and oversight. The maps demonstrate a commitment to the process of *mapping to learn*, to enroll mapping not as the final, static product of geographic investigation, but as the mile-marker of an unfolding partnership. These partnerships have culminated into what I and Sarah Elwood call, 'GIS Workshops', a capstone GIScience course designed for advanced GIS students. GIS Workshop has similar models of classroom partnership as that facilitated by the Syracuse Community Geography program which facilitates community-led research projects, akin to public participation GIS[31]. While the mapping projects begin and end with the course, the partnerships are sustained through continued year-long follow-ups with community-based organizations, to establish strategies that make best use of student expertise and university technology resources. See Table 1 for a selected list of these partnerships.

Table 1. Examples of community-based critical GIS partnerships, 2010-2013

Community Partners	**Classroom-Based Support**
nonprofit healthcare	better understand healthcare service areas, analyze and represent the expansion of their spatial footprint
urban community development	map predatory lending activities in the city, analyze the ways in which more unsavory capitalistic activities have targeted areas of poverty
nonprofit food support	track and map grocery stores, community gardens, and restaurant inventories, analyze and represent local food systems
rural community development	map the social implications of post office closures in rural Appalachian counties, document the myriad relationships between the post office and small communities and the

	adverse effects for an aging population
tourism development	map opportunities for historical tours
animal services	map the locations of animals picked up by municipal animal control, and analyze the implications for reduced city services
preservation advocacy	analyze and represent multi-decade efforts of a historical preservation efforts in a rust-belt city
environmental advocacy	analyze and map volunteer-generated data about water quality in/near the Kentucky River

These projects demand an expansive set of technical facility while providing students with a cross-disciplinary approach to better understand a diversity of human-environmental conditions. Students map in order to learn about their local communities, and many use the classroom-based projects as a springboard for greater public involvement during their college career and beyond, as some projects turn into volunteering opportunities and internships.

While engaging in these projects since 2010, the students and I have witnessed how data and the representation of data figure into the everyday practices of nonprofit organizations. The workshops are increasingly impacted by the persistent change of digital media, namely as new spatial media creates alternative mapping practices. Therefore, I argue that the work of building and sustaining these partnerships increasingly demands a more general media strategy that begins through an inventory of the ways in which community-based organizations use digital information technologies. In what follows, I present some my observations and interviews with community partners as they discuss the current challenges of working with digital media[32]. Being attuned to community organizations' needs for spatial analysis and representation, as part of a community-based critical GIS agenda, means also recognizing the myriad ways in which these organizations use digital technologies.

Digital media and community work

> The effort takes a network of volunteers to 'glean' and distribute produce to neighborhoods where it is needed, farmers and farmers' markets that are willing to donate leftovers and neighborhood captains like Torp who help distribute the produce and build communities.[33]

A long-standing community organizer, Tanya Torp was featured in the *Lexington Herald-Leader* to highlight a broad effort to tackle food security issues in the northeast end of the city -- the location of historically black and lower-income neighborhoods. Increasingly, Torp's everyday work in communities is the work of networking and distribution, of connecting individuals and organizations, of building community through these connections. Her work -- like that of many of the individuals I meet and partner with through GIS Workshop -- is increasingly dependent upon mediation by digital information technologies.

At the outset, however, many partners recognize that while digital tools are useful for fundraising and creating awareness, the bulk of community outreach necessarily requires face-to-face interactions.

> And that's the thing in our neighborhood… being able to reach people. You've got to go old school and knock on doors because a lot of people don't have access to a computer.[34]

This community organizer, who focuses on self-esteem among young women in Lexington's east end, knows that outreach is primarily "old school". Indeed, during my meetings with community partners, there is a general sense that while digital information technologies are certainly being taken up for the management of volunteer resources and for communication with constituents, many of the recipients of the services provided by these organizations do not have basic access to current digital information technologies.

Community partners suspect this divide. Nonetheless, their everyday engagements with the technologies speak to particular challenges in the rise of digital cultures. For some

partners, social media websites such as Twitter and Facebook are useful to gather information and perhaps less useful in getting information to the individuals they service.

> I was wanting to start a Twitter account for us, but I think Twitter is more useful for us in bringing in information. Because farmers don't Twitter.[35]

For this staffer at a nonprofit that advocates on behalf of Kentucky farmers, the work of communicating with communities sometimes means posting information on doors. The rise of digital culture is unevenly experienced, a well-documented phenomena within geographies of ICTs[36].

Furthermore, the digital information technologies that are used by community partners are subject to technological shifts and evolutions. Many of these changes and adjustments are frustrating, if mundane, and yet demand vigilance by partners who want to remain connected, who want to make certain they have the latest and most widely used platforms for online presence – platforms that seem to be in a constant state of change.

> And then I ended up changing our Facebook page to a page for a non-profit organization as opposed to a group. … So then I'm trying to move people and go: 'This is gonna go away. Stop liking this!' … You have to just ditch it and start over from scratch, which is kind of what we did.[37]

Most commonly referenced by community organizations is the frustration of the forced shift from Facebook 'groups' to Facebook 'pages', a slight change in functionality, as is demonstrated by this quote from an individual that works for a faith-based nonprofit that facilitates charitable food donations from local grocery stores. This shift in functionality caused this community organization, which relies upon Facebook as a primary vehicle to communicate with volunteers, to "start over from scratch". And while this may seem like a minor implication for using 'free' web-based resources, it underlines the potential consequences for organizations that utilize online social media corporations for their primary form of communication and engagement.

For organizations that must make budget-neutral decisions about their media strategies, it is difficult to know which digital information technologies are appropriate to adopt and which ones might likely "wither":

> So I don't know if there's a good gauge about which things to adopt, which things to pass while they wither on a vine somewhere.[38]

Website designs may eventually appear dated. Social networking applications may go out of business. Free functionalities may risk being rolled into paid subscription services. And when staffed by low-paid or unpaid volunteers, nonprofits may not feel particularly compelled to invest that time, when the knowledge required to maintain such online commitments may disappear with the frequent shifts in a primarily volunteer labor force.

For organizations that recognize the opportunity of personalizing their mission through digital information technologies, the topic of digital data storage is one of additional frustration. Many sites that store photos, videos, and documentation have free data storage under a certain threshold. As a nonprofit organization, the management of that threshold becomes part of the mundane practices that surround digital work:

> I've pulled the pictures out because of course we're using the free Dropbox. So, I've pulled the pictures out and I started putting them on Picasa.[39]

Here, a volunteer describes a decision to transfer digital content from one free service to another, as a way to manage the threshold for free online storage. In an environment of increased competition for a finite group of volunteers, community-based organizations necessarily engage in online social media as a way to market their specific mission. As a result, Facebook, Twitter, and even YouTube become the everyday tools to facilitate that communication and engagement.

However, community-based organizations must make decisions about where to best spend their energies:

> As a director, I do make time to be in front of a computer 1 or 2 hours each day. And that's a tension for me, because on one hand I understand that time in front of the computer can help time in the garden, but … If I'm not in a garden, SeedLeaf work isn't happening.[40]

For this director of SeedLeaf, the tension over this kind of digital media work is significant. Time spent on Facebook and Google Docs is in direct competition with time spent in the gardens. Indeed there are trade-offs between fully engaging digital information technologies, such as social media, and engaging in the core mission of the organization. If the director is not in the garden, "SeedLeaf work isn't happening".

For many of the community-based organizations in Lexington I've met with, volunteers, potential donors, and partner groups are kept informed through email marketing companies such as MailChimp[41]. However, according to some community-based organizations, the free functionalities of these kinds of web-based marketing management companies shift, requiring organizations to either start paying for subscriptions to services or migrate their contacts and content to another marketing company with similar free features.

> You basically go with an email marketing company. And there's several out there. So you look through them all, but since we're small and have no money, we get the free ones. So then you spend all this time transferring your stuff from there, trying to figure out how to use that program.[42]

The frustrations of time spent learning new web-based programs to continue the infrastructural work of building followers, to connect and network, is a palpable concern across these community-based organizations. While perhaps mundane, this work takes on particular importance, I suggest, in the context of increasing competition among systems of attention control.

The anxieties evoked by digital information technology work conditions the possibilities for a community-based critical GIS. The technological concerns of volunteers and staffers at community organizations must, therefore, be more fully considered as part of

an unfolding process of technological engagement. Web-based software changes at a more rapid pace than desktop software on personal computers. For organizations, this means choosing among several tools, and engaging in that decision-making work continually as web-based tools shift their functionalities from free to subscription-based services. This work is compounded by personnel changes, as account passwords get lost, and the everyday work of maintaining digital information technologies must be re-learned by new volunteers and new staff. The tools that are used often have limited free functionality, causing some workers to be creative in the distribution of web-based content to manage things like free storage ceilings and the need for multiple strategies to communicate in an uneven digital culture. These concerns extend long-standing issues around equipment needs and bandwidth requirements for the latest iterations of digital information technologies, in the context of expanding impact and measurement regimes necessary to keep nonprofit community-based organizations funded.

Paying attention

Persistent change in online digital media has specific implications for attention. This is illustrated by briefly examining the promoted features of MailChimp, the email marketing company often referenced in discussions with community partners. These capabilities underscore the concerns and opportunities for the capturing of attention. MailChimp helps users to build a list, with custom forms and Facebook integration, to create a template, with web-based images and file hosting, and to send a specific campaign to that list, with segmentation by location, activity, interest, with autoresponder bots, enhanced through social networking. Importantly, MailChimp allows users to track the results of their campaign, with automated reports, Twitter trending data, and Google Analytics integration.

MailChimp enables a systematic and even automatic communication and then provides the calculative tools to access communication campaigns -- in order to best craft and control attention.

However, MailChimp is just one of the many digital information technologies enrolled by community-based partners to support the core work of their organizations. There are also sites used to gather information and connect with online social networks, such as Facebook, Twitter, and even Pinterest, as well as sites used to quickly publish information to free-hosted websites, like WordPress and Weebly. Community-based organizations use digital information technologies for web-based storage of documentation, videos, and images, through sites like Dropbox, Google Docs, Flickr, and YouTube, as well as enrolling more specialized sites to manage financial and volunteer resources.

These sites necessitate an assemblage of account names, passwords, security questions, and mobile phone backups. They generate scores of automated emails to account holders, reminding them of new content in the network, new activity, new followers, new requests, and account privacy changes. In addition to these daily reminders, changes in functionality and changes in personnel burden community-based organizations with the mundane work of maintaining sites, and thereby maintaining visibility within diverse networks.

Community-based organizations' struggles over digital information technologies are real challenges: to have and maintain a Facebook page, to Tweet and to follow other Twitter users, to engage in the personalization of their campaigns using email marketing websites. This is a struggle over capacity. And yet, as I'm attempting to argue here, these everyday practices are more than a struggle for the capacity (both technological and personnel) to engage diverse publics. These struggles are more, both interior to these more technical

concerns and external, situational, conditional. There are broader challenges that are productive of the conditions that give rise to the more mundane struggles of these organizations. In other words, these struggles over the maintenance of digital information technologies are but symptoms of an attention economy increasingly dominated by the cultural industry. The strategies to respond are not well-traced[43].

Strategies amidst attention overload

Recognizing the pervasiveness of attention control highlights the challenges for strategic response. The persistence of change in online digital media has meant that short-range solutions offer only short-term resolution. Here, I would place efforts like the retooling of personnel in the use of digital media at CBOs as more immediately necessary but actually sustaining of the more negative aspects of the attention economy. Research in public participation GIS has long understood this tension in organizations with high turnover (particularly among more technically-trained staff). Other strategies leverage a range of immediacies and effectiveness, to include sustained access to digital information technologies, a stabilization or centralization of frequently used web-based functions, better or more university-community partnerships, or the development of new and tailored digital information tools for the nonprofit sector (or for the food-security organizations within the nonprofit sector or for the organic advocates within the food-security organizations within the nonprofit sector, etc.).

These strategies, while indeed noble and incredibly useful within precise space-times, might instead be considered band-aids on a much more widespread problem of attention overload. Community-based work increasingly necessitates digital work. Interestingly this work not only can pull the attention of organization staff away from their core mission, but

much of this digital work is about fostering audiences through attention control. The work of building Facebook pages, following Twitter users, posting blog entries, and managing web-based content is largely the work of drawing people into the mission of an organization, to personalize the organization while promoting their agenda. Persistent changes in online digital information technologies necessitate an organization's vigilance in the maintenance of their online presence.

Community partners understand these practices as the necessary work of building and strengthening organizational networks and providing opportunities for further engagement and promotion of an organization's agenda. However, re-conceptualizing this work as part of an attention economy overrun by the cultural industry perhaps underlines the complex interactions and potential implications of such attention strategies. Following Stiegler, this struggle over attention unravels the core of humanities' practices of exteriorization – of retention, collective memory, and the production of culture. Digital information technologies, in extension of Stiegler's critique of telecommunication systems, rewire the conduits through which collectives are made possible, and further, how culture is produced.

Further examination of the use of digital information technologies by community-based organizations can yield a more complex understanding of the short and long-range challenges of their utilization, a tracing of these nomadic practices to mobilize a collective. As community-based organizations move from website to website in order to increase cost savings, they are also enrolling new attention controls to build a collective. These technologies are thus both a problem and a solution. And the tradition of critical GIS as well as the broader GIS & Society movement is able to recognize the possibility of the enabling and disabling effects of psychopower, the pharmakon as the cure as well as the poison[44]. In

other words, while it is important to document the numerous ways in which digital information technologies as utilized by community-based organizations work to channel and control attention, it is equally important to develop new practices that build forms of awareness that constitute collective memories and cultures of action.

Conclusions

> Thinking is not merely involved in knowing, explaining, representing, evaluating, and judging. … To think is to move something. And to modify a pattern of body/brain connections helps to draw a habit, a disposition to judgment, or a capacity of action into being.[45]

How to practically respond to the attention challenges of persistent change in digital media is not entirely clear -- perhaps unsurprising given the pharmacological framing of the problem. As both poison and cure, the 'problem' cannot simply be resolved through technological disengagement. To return to the manuscript's epigraph by Hayles, hyperattentiveness is an immediate resource to a generation of digital cultural workers. Instead, perhaps technological engagement requires an awareness of the *conditions* of thought-action, to better frame interventions with technology by being aware of the tendencies toward attention craft and control. In concluding, I briefly consider what this might look like in the practice of critical GIS with community-based organizations, with three jumping-off points to hopefully continue the conversation.

First, research as to the digital information technology work of community organizations has made me think more long-term about partnerships. This means that work with community partners never really begins and ends with the GIS course. Instead, partnering has different speeds and volumes, and occurs within the context of an attention economy. To prevent the short-circuiting of retentional systems, Stiegler[46] has highlighted the long-wave processes of intergenerational sedimentation -- the passing along of memories

(and culture) through the generations by an investment in technics, as care of the self and others.

Second, taking these partnerships seriously has meant developing a full range of technological inventories and digital strategies for building audiences and, thereby, collective memories. In other words, it is not sufficient to partner only around GIS or new spatial media, broadly understood. Instead, partnerships in order to build collectives require a multi-media approach, to leverage pervasive digital information technologies. The point is to pay attention to attention as an object, to cultivate *attention as care* through technological engagements to confront what Stiegler considers a "systemic carelessness"[47] or, more profane, where "I don't give a fuck" *(je-m'en-foutiste)*[48] has become a persistent affect toward societal (human, environmental, cultural) challenges.

Finally, this research into the implications for persistent change in online digital media has underlined attention work as a key aspect of action. Recognizing this places the work of partnering as part of that culture of action, to act on strategies for building a collective through recognition of the multiple aspects of the struggle for attention. This collective assumes responsibility in a new economy of contribution; according to Stiegler, "[r]esponsibility is *shared* through attention formation, and this sharing is the grounding condition for solidarity"[49]. What is needed is not necessarily new technologies or new technical practices to alleviate the anxieties of digital culture, but perhaps an awakening as to the ways in which digital information technologies, including new spatial media, capture our attention, and an awakening as to how to foster new and shared attention practices.

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Author biography

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