Pervasive Citizenship through #SenseCommons

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This essay proposes that the rise of sentient cities inaugurates an era of pervasive citizenship wherein individual citizens function as wearable devices for a collective body. To understand what rhetorical practices are available in this problematic, the essay proceeds in three parts. First, it surveys how information systems help determine rhetoric through and as a kind of systems theory. Second, the essay traces how technologies and techniques that form individual bodies are now emerging at larger scales and shape collective bodies. Through several examples, the essay shows how these multipartner ventures to install data collection sensors in cities are informing a new problematic that we term #SenseCommons. Third, the project offers extradisciplinary resources for rhetorically navigating today's increasingly pervasive information spaces. Ultimately, this essay proposes that the emergence of sentient cities introduces a system of continuous rhetoric whose primary function is not to persuade but to inform.

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> [D]o what the crowd does, but in a different way.
>
> —Seneca, Epistle 18

Asking if rhetoric or democracy came first is the scholarly version of the chicken and the egg. Rhetoric's mythic role in helping people peacefully organize and settle common matters is clear in Cicero's oft-cited note that "there was a time when men wandered at large in the fields like animals and lived on wild fare; they did nothing by the guidance of reason, but relied chiefly on physical strength" until "a man—great and wise I am sure" appeared who then "through reason and eloquence . . . transformed them from wild savages into a kind and gentle folk" (I.i–ii). Quintilian later echoes Cicero, musing that he "cannot imagine how the founders of cities would have made a homeless multitude come together to form a people, had they not moved them by their skillful speech" (223). No matter how persuasive a voice might have been, speech as an organizing medium had its limits. Long before Quintilian and Cicero praised speech, Aristotle noted in *Politics* the importance of

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the medium's limits when stipulating a state's ideal size should be restricted to the largest gathering in which a speaker could be heard by all (557) and a space that could be taken in at one view (559). Together these examples suggest that, even in antiquity, civic organization depends not only on persuasive debate but also on the means for circulating information.

A healthy flow of information is no less vital for today's cities. As current communication media afford the opportunity for someone in Sydney to send me an instant message to the wristwatch that I am wearing in Austin, we have obviously greatly expanded the limits of mediation available to those in antiquity. Many now race to build "smart cities" that rely on information technologies to improve communication between administrators and citizens. As digital tools mediate more of our activities—exemplified in the emergence of wearable devices that record and visualize the most minute of biological, physical, and financial data—every action we take now generates infinitesimal data points that then contribute to a growing store of data that are then used for policy decisions. Such arrangements make traditional spaces for democratic participation less effective for citizens but, paradoxically, increase the occasions for which a citizen must perform as a citizen. In the era of ubiquitous computing and smart cities, citizenship is becoming pervasive.

We see such advances toward data-driven governance take form in how many governments, corporations, and researchers laud "big data" as a panacea for many of our civic problems, creating so called "smart" and "sentient" cities. In *The Responsive City*, for example, Stephen Goldsmith and Susan Crawford offer a slate of case studies for how communication technologies help to inform a city's operations. They argue that "urban government in the United States today is at a critical juncture" since new technologies offer "new ways of gathering, storing, and analyzing data[;] new modes of communication; and the new world of social networks" (1). They offer examples that evoke many of Aristotle's discussions in *The Politics* about how efficient communication informs a civic body. Today, such practice positions citizens and their increasingly ubiquitous digital devices alongside a city's sensors to function *as* the wearable devices informing a larger, collective body. We can get a sense for how more data will effect how we govern ourselves when we consider how granular and detailed our congressional maps have become. The ability to carve up voting districts with such *partisanal* precision follows directly from being able to sift through an vastly increased amount of information about voters in any given area. This project, then, considers what rhetorics are possible in a time of *pervasive citizenship* wherein opportunities for traditional rhetorical appeals may be on the wane, but the number of occasions each of us perform as *speakers* for a public are multiplying. In place of a rhetoric based on the common sense of rational citizens persuading one another toward agreed ends, we are finding that city sensors and mobile devices are used to sense common practices that then exercise collective bodies. Where former understandings of democratic organization relied largely on the techniques of communicating language for deliberating civic activity, the latter

looks to sensor technologies and big data methodologies to track and nudge real-time movements and conditions. Such an innovation in civic administration stands to activate potentials for rhetorical intervention and make concrete rhetoric's recent expansions toward the ambient and transhuman.

Toward informing a rhetoric that responds to the *pervasive citizenship* taking residence in emerging sentient cities, this essay proceeds in three parts, each revolving around a primary but short example. First, I survey how emerging information systems help determine rhetoric as a kind of systems theory. Second, I show how technologies and techniques used for the formation of an individual are now emerging at a larger scale shaping collective bodies. Through a series of minor examples, I show how these multipartner ventures to install data collection sensors in cities are informing a new problematic I term #SenseCommons (adopting the "#" as the social media metadata shorthand to group together a wide swath of related but disparate items). Third, I offer extradisciplinary resources for rhetorically navigating our increasing pervasive information spaces. Ultimately, my project proposes that the emergence of sentient cities—by adopting logics of wearable devices—inaugurates a system of *continuous rhetoric* whose primary function is not to persuade but to inform.

Rhetoric and/as Systems

An example.

In Bristol, academic researchers, city officials, and private corporations have deployed an extensive network of sensors and data management applications to found an ambitious project called *Bristol Is Open*. The project capitalizes on recent advances in big data methodology with data harvested from inexpensive sensors and citizens' mobile devices. Their project seeks to leverage "urban data to reconfigure all aspects of city life to 'program' Bristol into a more efficient, democratic, and generally nicer place to live for its almost half-million residents" ("The City"). Right away, we notice that efficiency and democracy are seen as partners for "programing" a "nicer place to live." This pairing implicitly proposes an involvement in democratic governance not conducted by those we might find in elections and visits to government offices but one that is continuously shaped by the information generated by one's everyday activities. According to the project's website, the project moves toward this continuous informing by "creating an open programmable city region that gives citizens more ways to participate-in and contribute-to the way their city works" by using "[s]mall sensors, including the smartphones and Global Positioning System (GPS) devices of willing participants" that will "supply the three new fast networks in the centre of Bristol, with information about many aspects of city life, including energy, air quality and traffic flows" (*Bristol Is Open*). Citizens may participate in the city's operations by a number of ways including instant reporting of service interruptions or by merely allowing their mobile device data to be used by city planners. Where rhetoric was once used to persuade a "for" or an

"against," what might be considered ones and zeros by another name, rhetoric must now contend with the incessant strings of ones and zeros generated by information systems like *Bristol Is Open*. At stake for rhetoric in these sentient environs is an obligation to recast rhetorical practice to be as continuous as today's information systems. In an era of big data, we are always speaking, debating, voting, informing.

Bristol Is Open materializes an avalanche of recent speculations concerning the efficacy of big data for organizing our cities, schools, and offices as complex systems. Technology writer Chris Anderson strikes a bold claim about the effectivity of today's technological systems to manage everyday life. Since we can now collect and analyze massive amounts of data covering an array of activities, as seen in *Bristol Is Open*, we are no longer beholden to theory or interpretation since we are now equipped to just trace facts. Chris Anderson calls into question the whole of scientific method, arguing that "faced with massive data, this approach to science—hypothesize, model, test—is becoming obsolete." Big data's promise compels Anderson to further claim, "'Correlation is enough.' We can stop looking for models. We can analyze the data without hypotheses about what it might show. We can throw the numbers into the biggest computing clusters the world has ever seen and let statistical algorithms find patterns where science cannot." Anderson's tone is hyperbolic to be sure, but his position is one that finds purchase in government, commerce, education, civic planning, and any number of amalgamations between those entities. Further, considering how amalgamated each of these relationships are becoming, we might now explore what rhetorical practices are equipped to respond to these increasingly complex systems.

Any given system of rhetoric, Douglas Ehninger claims, "arises out of a felt need and is shaped by the intellectual and social milieu in which rhetoric today finds itself" (21). Similar to Ehninger's project of tracing out three systems of rhetoric (grammatical, psychological, and sociological), Gilbert Simondon's "The Limits of Human Progress" offers similar stages of development. Simondon also proposes that we view human progress as a series of systems (language, religion, and technology) that emerge through resolving problematic tensions. Simondon writes that "human progress consists in the way man, having pushed the possibilities of language to the point of saturation, turns towards technics, and enters upon a new domain of development" (230). It would be easy to assign the progression of systems as a positive succession of overcoming, but we should avoid writing such narratives. Not unlike Ehninger's account of rhetorical systems, Simondon explains how change happens *without* resorting to a narrative of progress as a rational development. A system moves towards new problematics and phases when its relations reach resonance and become saturated. Or, as Simondon writes:

> To put it another way, after a leap imbued with the power of universality manifesting a high degree of internal resonance in the system formed by man and his language, or man and his religion, there comes a closure, a progressive saturation of the autonomous system of objective concretization, to the same degree reducing the system's internal resonance, initially much vaster, formed by man and the

> objective concretization. The real center of *systematization* shifts. (232, emphasis
> in the original)

A system (at any scale) comes together and advances not through central direction or feedback mechanisms but as a result of that system's elements reaching what Simondon calls "resonance." Resonance introduces an alternative concept from deliberation (or homeostasis from traditional systems theory) since resonance describes how components function together and not how those components reach some teleological end of balance. Putting Simondon in conversation with Ehninger's project, then, helps resituate rhetoric itself as an ongoing invention whose development leads not toward some perfected state but as attempting to generate resonance and respond to saturation within any given system.

While our current media saturated milieu is one not quite envisioned by Ehninger or Simondon, their projects suggest that we are entering a new phase of rhetoric. This new phase is one that puts technology into intense social relations with itself, which then helps explain and make applicable recent accounts of rhetoric that expand beyond its practices from traditional linguistic persuasion. For example, in Thomas Rickert's "ambient rhetoric" and Jeff Pruchnic's articulation of the "transhuman condition," rhetoric strives to account for emerging conditions that offer less attention to the individual subject and more on the dynamics of distributed systems. In the former, Rickert advances "ambience" as the defining character of rhetoric by using the rise of ambient technologies—location aware computing devices that include wearable technologies and sensors—as emblematic of rhetoric writ large. Writing about ambient media directly, Rickert argues that they are rhetorical, "not in the sense that we have rhetorical deliberation or exchange" but, instead, "in the sense that the values and decisions that emerge from and are built into the ensemble of interacting elements result from rhetoric, and, conversely, in rhetorical interaction" (32). The "ensemble of interacting elements" echoes Simondon's notion of a system's inventional capacity in its ability to find resonance among its elements. Or, as Rickert claims, a system is not dependent on deliberative persuasion but on the ensembles produced by rhetorical interactions. Jeff Pruchnic's project focuses more explicitly on technological aspects by arguing that contemporary computational technologies are not inhuman forces of calculation but evidence of an increased humanization of social and technological processes (1). Taken together, both projects help us reconsider how rhetorical theory and practice respond from, and not simply to, emerging technological contexts.

My project extends Rickert and Pruchnic by focusing on rhetoric's possibilities through pervasive computing infrastructures. As Bristol's project and Anderson's claims show, the increased desire for and implementation of sentient cities compel rhetorical scholars to investigate their emerging problematics. To further understand the broad contours of pervasive computing, Alex Pentland proposes, boldly, that "[w]e're going to reinvent what it means to have a human society" ("Reinventing Society"). Pentland argues that social theorists like Adam Smith and

Karl Marx relied too heavily on aggregates for social dynamics but that we are not beholden to the same mistakes. Not unlike Anderson and others addressed above, Pentland finds in big data and ubiquitous computing an opportunity toward a new governing doctrine, "social physics," that he describes as follows:

> Social physics is a quantitative social science that describes reliable, mathematical connections between information and idea flow on the one hand and people's behavior on the other. Social physics helps us understand how ideas flow from person to person through the mechanism of social learning and how this flow of ideas ends up shaping the norms, productivity and creative output of our companies, cities and societies. (*Social Physics* 4)

What makes big data so enormous, as we might glean from *Bristol Is Open*, is the ability to leverage a multiplicity of tiny transactions. Pentland advances a case for turning ubiquitous computing onto a range of collective activities including the workplace, school, and government. Speaking toward what he calls, "sensing cities," Pentland proposes that "we must use our new technologies to create a 'nervous system' that maintains the stability of government, energy, and public health systems around the globe" and, further, that "[w]e must use these technologies to reinvent societies' systems within a control framework: one that first senses the situation; then combines these observations with models of demand and dynamic reaction and, finally, uses the resulting predictions to tune the systems to match the demands being made of them" (*Social Physics,* 138).

In contrast, Simon Mills, informed by Gilbert Simondon's work on information theory, argues directly against Pentland writing that "[o]ne danger of such a proposition is that it aims towards the development of hypertelic social structures" (*Social Physics*, 62). Also, in that it overly focuses on a system's ability to maintain a homeostatic resonance, Pentland's ideal does not account for how systems are open to change and further re-invention. Mills, in contrast, argues that "Big Data fails to account for the importance of the extent and nature of relations social systems have with each other and the environment" that might include social formations that intersect with but cut across the individual citizen and the collective city or state (*Social Physics,* 71). While I share Mills's position, Pentland's proclamations need not be correct for the practices of Big Data governance to take hold. As I have shown with *Bristol Is Open* and will further show in the next section, city and state officials, corporate leaders, and critical infrastructure are already leveraging sensing technologies and big data analytics for use in real time response. Just as Aristotle keenly noted rhetoric's ambivalence to actual psychology in favor of that which *seems* to be the case, so too would rhetoric respond to Pentland's proposal as it *seems* to be unfolding.

As an orientation toward the problematic of pervasive computing, a *continuous rhetoric* adopts Simondon's orientation to technological advancement as itself continuous: "The threshold of non-decentering, and thus of non-alienation, will only be crossed if man intervenes in technical activity in the dual role of operator and

object of the operation" (233). That is, to participate in such an intensely socialized system situated by communication technologies is to acknowledge that we are irreducible to but not removed from either subject or object positions. I contend that a different sense of rhetoric is possible when we leverage the continuous series of big data practices that are emerging from a multiplicity of data points in our most minor of daily interactions. We might simply state then that rhetoric operates in and as a system, and rhetorical practices respond to emerging technological systems by generating resonance. Resonance—inclusive of but irreducible to categories of subject and objects—emerges in systems but should not be understood as deliberation in the traditional sense (even if resonance fulfills some of the functions deliberation may have once performed). Resonance, as proposed here, leads to a saturation of relations that then leads to new problematics. As our interwoven institutional relations have reached saturation, rhetoric must now respond to a new problematic.

The Sentient City as #SenseCommons

In this section, I work from the above accounts for multiple systems of rhetoric and rhetoric as a system to trace how the *techniques* involved in creating, training, and sustaining an individual body—exemplified in wearable technologies—are becoming transposed to shaping collective bodies. Not unlike the task taken up by Rickert or Pruchnic from above, I seek to examine the function of rhetorical practice in the emerging problematic of pervasive computing, showing how sensing technologies are documenting everyday interactions in increasingly granular ways. To do so, I propose that the activities we find in sensor technologies and big data are not radically different from the kinds of data collection we find even in our oldest writing technologies.

To start, we can draw on the function of wearable devices. In *Ready to Wear*, Isabel Pederson defines wearables as "sit[ing] midway between media that you carry (e.g., laptops, BlackBerrys®, memory sticks) and media that you become (e.g., devices implanted in the body, future nanotechnological manipulation, prostheses)" (1). The devices are designed as feedback mechanisms that sense some phenomenon (biological, financial, medial) and then record information about that phenomenon for improving one's performance or behavior. This logic of improvement through information also works at the level of the group and extends outside the wearable as defined by Pederson.

One example more.

Residents at a Dartmouth college dorm participated in a project—"Unplug or the Polar Bear Gets It!"—for which researchers installed an energy monitor designed to compel dorm residents to reduce energy consumption (Tice et al.). The monitor included traditional energy usage statistics but also displayed an animated polar bear whose fate rested on how much energy dorm residents used. If the dorm used too much energy, the visual display animated the ice beneath the polar bear melting and, if residents expended too much energy, the polar bear would plunge into an icy

sea. If the dorm used a sustainable amount of energy, however, the polar bear would be happy and healthy on firm footing.

The rhetorical force of sensors and visualization, seen in this polar bear example, is less about persuasion or information in their traditional senses. Persuasion holds sway in a rhetorical system whose infrastructures (e.g., Agora, Forum) are built around the individual subject. A rhetoric embedded within pervasive computing environments is chiefly interested in creating situations that *in-form* sets of practices toward establishing new habits. It was not that the dorm residents were simply given information that persuaded them to make better decisions about energy consumption; rather, the residents, dormitory, and electrical infrastructure were all aligned as a system whose interactions achieved a greater degree of resonance between their activities, energy consumption, and maintenance of the life of a cute, albeit digital, polar bear.

While recent innovations in feedback-based wearable devices and monitoring sensors promise new ways to regulate an individual and collective body's health and wellbeing, the information processes underpinning these technologies stretch back to antiquity. In Michel Foucault's short essay "Self Writing," we find an early example of an informing system in the stoic practices of writing notebooks (*hypomnemata*) and letters (epistles). Using Seneca as a case study, Foucault argues that simple, daily writing exercise in a notebook, as a "regular practice of the disparate" and a "a selection of heterogeneous elements," actually creates and sustains a "self," and does not, as we might understand today, provide expressions of a prior individual self (212). "The role of writing," Foucault claims, "is to constitute, along with all that reading has constituted, a 'body'" (213). Such practices are analogous to rhetorical exercises that create and train rhetors through regular practices with/as *techne* (cf. Walker). So, at the level of the individual rhetor, the function of wearables and biofeedback sensors offers less innovation than their advertisements might attempt to persuade. This is not to say, though, that nothing is new.

The function of self-writing that Foucault discusses at the level of an individual writer can now be seen as being honed at the scale of collective bodies through Big Data collection and visualization. In *Becoming Besides Ourselves,* Brian Rotman elaborates on Foucault's position and argues that as our literacy practices become more networked, they lead to the creation of "networked selves" that are not based on notions of selves as individual, rational subjects. Rotman posits that "within the contemporary digitally enabled scene, a network 'I' is being heralded" and that "such an 'I' is porous, spilling out of itself, traversed by other 'I's networked to it, permeated by the collectives of other selves and avatars via apparatuses" (8). Nigel Thrift echoes such concerns by proposing a new paradigm of writing practices that work their way into exercising collective political bodies. In response to the proliferation of sensor technologies, Thrift writes that "[i]t becomes possible to write the world through 'images' produced by sensors and software in ways which were never possible when writing was associated simply with print" ("The 'Sentient'

City" 9). However, such writing does not merely resemble as much continuously re-assemble. That is, in speaking to the development of "sentient cities," Mark Shepard writes that "rather than a map that informs how one moves through a city, one's movements inform the map" (26).

It is easy to see how often the individual body forms the model for developing smart cities. For instance, in New York City, Steven Koonin, Director of New York University's Center for Urban Science and Progress, is responsible for designing, gathering, and analyzing big data about New York City, explaining his role to be "like a doctor holding a prodigious stethoscope to New York City's skyscrapers" (Frizzell). In addition to the model of the individual human body, advocates for smart cities laud the benefits of increasing our accounting of the sociality between people, places, and things. The benefits of intense sociality are often proclaimed in the language of efficiency, pleasure, and cost-savings. Again, Thrift offers a helpful note about the intensification of sociality:

> Yet, ironically, and at exactly the same time as these critiques of the term and its content are being mounted, a strong notion of sociality is being inserted into the interstices of everyday life by means of information and communications technology and especially through the practices of "pervasive sociality," practices which aim to make sociality into something that is always and everywhere augmented by information and communications technology so that, for example, no social event has ever to be laid aside or forgotten. ("Sentient" 2)

In response to Thrift's "pervasive sociality" and how that converses with "pervasive computing," we begin to see the condition for what I am calling *pervasive citizenship*. This situation is characterized by the logic of the wearable device wherein our smartphones and mobile devices actually perform the function of reporting and accounting for a collective body that wearables are typically expected to perform for an individual body. As citizens today, we increasingly function as wearable devices for the collective body.

While I have alluded generally to the hope of smart city proclamations, a number of smart city initiatives routinely make news. Researchers at MIT orchestrate a project, Placelet, that uses physical and human sensors to collect data about pedestrian traffic. The project is "a system for collecting, analyzing and visualizing data on the human experience of urban places" and its "physical sensor network collects movement, audio and air quality data with the goal of better correlating physical conditions and activity to the invisible economic and social patterns that shape the public realm at the scale of a single urban block or streetscape" (Poon). In another example, administrators at Carnegie Mellon University have teamed with Google to install a sensor network across campus that would be "wired with temperature sensors, cameras, microphones, humidity sensors, vibration sensors, and more in order to provide people with information about the physical world around them," which could allow students to know if professors are in their offices, building managers to monitor energy usage, course schedulers to study room occupancies (Bernhard). In

Barcelona, the city has deployed "smart trashcans" that monitor their content but also collect traffic data through Wi-Fi and Bluetooth signals (Thomson).

In perhaps the most extensive example, Chicago has launched the "Array of Things" project, described on its site as a "network of interactive, modular sensor boxes around Chicago collecting real-time data on the city's environment, infrastructure for research" (para. 2). The project's stated goals echo language about the body that we see all over such projects: "AoT will essentially serve as a 'fitness tracker' for the city, measuring factors that impact livability in Chicago such as climate, air quality and noise" (para. 2). "Array of Things" aims to be the foundation of a much larger expansion for Chicago's aspirations toward sentience. For starters, the physical sensors that are being installed will monitor an expansive list of environmental conditions while human sensors will collect signals from Bluetooth or Wi-Fi enabled devices (smartphones, tablets, laptop computers) for studying traffic patterns. The project's stated goal is to collect data to then offer citizens resources. For instance, "[s]ensors monitoring air quality, sound and vibration (to detect heavy vehicle traffic), and temperature can be used to suggest the healthiest and unhealthiest walking times and routes through the city" (para. 8). "Array of Things" offers a limit case. Its stated goal is to collect ambient data for city management and as a public utility. While its initial plans are to protect personal data and to offer its services as a public utility, we are all too familiar with how such an infrastructure, once set into motion, can be transposed to other motives. For instance, Chicago not long ago sold its entire system of parking meters—an infrastructure designed to keep cars circulating—to a foreign investor and, shortly after, the rates for those meters skyrocketed. Again, more than ever, ours are spaces that are entangled; public and private, corporate and civic, are becoming indistinguishable. What resources does rhetoric have in such an environment? To what does such a rhetoric even respond?

In response to *pervasive citizenship* emerging across disparate domains (as demonstrated by my choice to rely on multiple examples), I propose the concept of #SenseCommons as a reference for pervasive information spaces that use big data analytics to combine unlikely partners of civic and commerce, public and private. In #SenseCommons we are not afforded as many traditional avenues for rhetorical appeal but must instead rely on continuous rhetorical tactics that leverage not only the human subject or multiple human subjects but also the human as object whose own mobile devices, physical body, and daily movements contribute to and participate in the in-forming of a system. This term is not unlike Peter Simonson's *inventional media*, which refers to the interconnected systems of culture and technology and human bodies that then serve as a medium for "invention's simultaneous emplacement and dispersal across processes of discovery, creativity, and rhetorical reproduction" (299). #SenseCommons also converses with a host of similar articulations of our current computational-spatial problematic. I refer here to Nigel Thrift's use of "Lifeworld, Inc." as a way to describe a movement from the "military-industrial complex to the security-entertainment complex" (7); Rob Kitchin and Martin Dodge's "Code/Space" that describes how programming

code and space are co-articulating one another; and, of course, Adam Greenfield's "everyware" that described the rise of ubiquitous computing environments posed for civic and democratic participation. What these diverse concepts share is a recognition of the pervasive and increasing rise in how information systems are augmenting and relating physical spaces behind and beyond our screens. Such information-rich spaces are not so much designed for our notice and examination as they are being automated and interlinked in ways that are becoming increasingly essential but that fewer and fewer people are able to access. #SenseCommons differs from those articulations primarily as it looks to leverage the citizen's role as a wearable for a collective body as a resource from which to invent and, primarily, not as an opponent to counter. In #SenseCommons, *we place less emphasis on persuasion or identification but are chiefly interested in rhetoric as information, as an ongoing in-forming of practices*. As such, rhetoric becomes a continuous activity of exercising possibilities across the individual and collective bodies of a city. A continuous rhetoric would then be characterized as a (transindividual) process exercised across the individual and the collective.

Rhetorical Handbooks for a New Millennium

One example more.

It has become commonplace for many corporations, mostly insurance companies, to harvest customer data from all sorts of devices as a way to study and better adjust their own actuarial processes. Automobile insurance policies now offer "discounts" for its subscribers who volunteer to install data collection devices in their cars that track driving patterns. Health insurance companies are getting in on the act as well by offering similar rate discounts for customers through requiring the use of and collection from fitness tracking devices like the Fitbit that measure health data such as movement and heart rates (Bernard). We can deliberate about the no-win solution offered by these projects and question what "discount" really means and craft arguments against the erosion of privacy or, perhaps, we can find that rhetoric can operate in a different way. In addition to arguing for or against these projects, one might argue with it by exercising the system toward different practices. For instance, a recent project was launched to share how customers of such companies might work within the system of rewards without exactly giving up privacy or data. In the project, *Unfit Bits*, organizers "are investigating DIY fitness spoofing techniques to allow you to create walking datasets without actually having to share your personal data. These techniques help produce personal data to qualify you for insurance rewards even if you can't afford a high exercise lifestyle" (*Unfit Bits*). Such techniques include attaching a motion-detecting FitBit wearable device to a drill or a metronome to create (spoof) the data insurance companies seeks without actually recording one's physical activity. Not unlike the polar bear display from earlier, providing the same data in a different way speaks to a dimension of rhetorical practice that is more informative than persuasive. This is yet one more example for

how the individual body might help inform collective bodies of sentient cities, and developing/collecting such techniques is a task rhetorical study is well positioned to do.

This brief, final section gestures toward rhetoric as an informative practice. I do so by offering two models that, while outside of the discipline of rhetoric, hold possibilities for rhetoric's future in an era of *pervasive citizenship*. While spaces for traditional appeals are not gone, rhetorical practice and study should respond to emerging problematics presented by sentient environments. My overall claim is that *when rhetoric leverages the pragmatics of minor interactions found in #SenseCommons, interactions that link to globalized conditions of contemporary capital and governmental surveillance, rhetoric paradoxically becomes a pervasive, continuous enterprise.* Just as big data is predicated on the collection of tiny but well-structured bytes of data, so too can rhetoric as practiced in #SenseCommons be the accumulation of tiny tactics found throughout a multiplicity of spaces where the individual can help inform the collective.

We find today much rhetorical potential in disciplines outside of rhetoric proper but whose practices might be a proper rhetoric in the twenty-first century. Just as our traditional styles of rhetoric emerged in and through handbooks designed to provide speakers heuristics for speaking in public forums, we are witnessing a similar rise of pseudo-handbooks that describe techniques for redirecting continuous information systems that compose #SenseCommons. A spate of recent work equips readers with catalogs of new modes of invention within our media saturated publics. We are, in short, witnessing the emergence of rhetorical handbooks for the new millennia.

In *Obfuscation: A User's Guide to Privacy and Protest,* Finn Brunton and Helen Nissenbaum offer a host of tactics for preserving some semblance of privacy in a data hungry world. Not unlike *Unfit Bits*, obfuscation tactics—noisy bots, identical confederates, excessive documentation, and false tells—aim to produce noisy data within the confines of otherwise clean and neat big data environs. For Brunton and Nissembaum, "[o]bfuscation is the deliberate addition of ambiguous, confusing, or misleading information to interfere with surveillance and data collection" (1). Such a tract has, in their own words, "only begun the work by naming, identifying, and defining," arguing that "[t]his book is a collection of starting points for understanding and making use of obfuscation" (97). The efficacy of such tactics are measured less by reaching a desired end than by their ability to provide a new practice of information. By making transactions noisy, we expand the limits initially imposed by big data analytics.

In another model, architectural theorists prove once more to be an ally for rhetorical practice. Not unlike my term #SenseCommons for the situated civic mediascapes informed by pervasive computing, Keller Easterling has identified and responds to "extrastatecraft" as the international infrastructural dynamic that threads through our contemporary political landscape connecting information, commerce, labor, production, population control, and governing bodies. Easterling

also acknowledges the dangers of relying on traditional models of political intervention, writing that

> [s]howing up at the local site and getting one's hands dirty is considered to be a sign of political authenticity . . . . Yet there may be no great virtue in exclusively local action on the ground when the powerful remote controls in the networks of extrastatecraft may be businesses, governments, or international organizations halfway around the world. (227)

Because of the pervasiveness of communication technologies, especially easily traceable mobile and sensor devices, Easterling advocates for a number of techniques that look much different from traditional rhetoric but, I argue, are key for a rhetorical response to *pervasive citizenship*. In place of catalogs of linguistic tropes and figures that we find in our earliest rhetorical systems, Easterling, like Brunton and Nissembaum, offers interventions unmoored to traditional statecraft icons, turning our attention instead to a tangled conglomeration of extrastatecraft. Easterling argues that in a space of extrastatecraft, "[a]n unorthodox auxiliary entertains techniques that are less heroic, less automatically oppositional, more effective, and sneakier—techniques like gossip, rumor, gift-giving, compliance, mimicry, comedy, remote control, meaninglessness, misdirection, distraction, hacking, or entrepreneurialism" (213–14). What characterizes these tactics is a reliance on response that cannot be reduced to antagonistic opposition since we cannot step outside of the pervasive media problematic. In place of arguing for or against, Easterling's tactics look to harvest the force and strength of that which one would oppose, risking being taken up in its motion. In referring to her tactic of "exaggerated compliance," Easterling writes that "[i]n extrastatecraft, picking one's submissions rather than one's battles is an almost invisible, non-controversial means of gaining advantage in the field without drawing attention to a broader strategy" (222). We witness a similar dynamic in #SenseCommons. While participating in these new civic environs is fast becoming an offer we cannot refuse, *how* one participates could offer inventive possibilities.

Further unlike the catalogs of rhetorical appeals and tropes, Easterling writes that "[w]orking together in different constellations, these techniques cannot be isolated or pedantically defined. While they are long-standing practices, for designers accustomed to making object forms or for activists accustomed to making declarations, this alternative aesthetic and political repertoire is perhaps unfamiliar" (222). Certainly such tactics may be unfamiliar for a contemporary rhetorical system that remains beholden to its earliest system of emergence but, nevertheless, they are rhetorical in that they help advance new resonances. The projects offered by Brunton and Nissenbaum and Easterling present rhetoric an opportunity to resonate #SenseCommons differently by relying on and developing a repertoire of techniques that differ from traditional appeals.

As we become more dependent on ambient technologies and pervasive computing, our environments disorient us and our modes of engagement. Rhetoric's long

traditions call back to practices germane to democratic deliberation but those spaces and activities have become eroded in civic activity. Discussing how networked technologies are confusing public and private spaces, particularly in the surveillance register, James J. Brown, Jr. argues that "[w]hile these attempts to censor and track introduce threats to democracy and to public space, they also reveal how the 'home' is not only perverted by a network connection but also *constituted by it*" (28, emphasis in original). I read Brown here to say that while we might be experiencing a loss of an ideal home, the very apparatuses responsible for that loss are also extensions of the apparatuses that created it. We might not be witnessing a break of social or rhetorical systems but an intensification of elements within those systems. Instead of the common sense of rational citizens arriving at conclusions through deliberative debates, sensor and networked technology are shaping the conditions through which we *sense a commons*. As I noted above, a continuous rhetoric *informs* new practices as a way to introduce different resonances for complex systems. This informing is rarely located only at the scale of an individual subject or even a collective, which as formulated above is merely an individual at another scale, but might best be characterized as *transindividual* as it cuts across biology, culture, technology, and psychology to inform different practices. It is becoming increasingly clear that in building our sentient spaces, our public and private spheres are being replaced by the entangled spaces of public and private sectors. There is need elsewhere to argue for preserving the "private" lost in this configuration, but my task here aimed to explore ways to practice these environs to activate rhetoric differently, as a continuous activity of informing new practices. While civic organization as traditionally understood might be difficult to discern in this entanglement, rhetoric continues.

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