THE journal OF CIVIC MEDIA

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The Journal of Civic Media is a semiannual journal published out of the Engagement Lab, Emerson College, in November and May. It is edited by the graduate students of the Media Design cohort and fosters an open dialogue on the emerging field of civic media. It welcomes submissions on current practices of media and technology use, ranging from global digital platforms to community-based media initiatives, in an attempt to facilitate the democratization process worldwide.

Engagement Lab, Emerson College
160 Boylston Street, Boston MA 02116
Tel.: (617) 824-8828
Email for Inquiries: journalofcivicmedia@gmail.com

CONTENTS

Editorial Policy **vi**

Foreward **08**

Welcome Letter **10**

Meaningful Transparencies: Strategies for Accessible Algorithms in the Smart City **12**

Equitable Cities Instead of Smart Cities: Race and Racism Within The Race For Smart Cities **34**

Can We Be Smart (City)?: Learnings from a Citizen-Led Pop-Up Engagement Exhibit **46**

Simple Quadrant Graphs: A Step Toward Citizen-Focused Design Tools to Inform Smart City Data Policy **58**

About the Journal **80**

Call for Submissions **81**

Editorial Policy

The Journal of Civic Media is a semiannual journal published out of the Engagement Lab, Emerson college, in November and May. Directly linked to the Civic Media: Art and Practice master's program at Emerson College, it is edited by the graduate students of the CMAP cohort. *The Journal of Civic Media* focuses on the art and practice of civic media and technology to facilitate the democratization process around the world by means of both local and global digital platforms and community-based media initiatives that promote participatory research methods and give voice to diverse communities. Its objective is to provide an open forum for scholars, practitioners, students and the general public, to harness civic engagement and rethink the complex and ever-changing landscape of the field in the digital era.

The editors of *The Journal of Civic Media* seek original columns between 1,500 and 2,500 words on a determined theme that contribute new ideas to the field of civic media and provoke further conversation research around the designated theme. Submissions will generally be submitted by academics, students or practitioners in the civic media field; however, all submissions will be considered. Requests and proposals regarding potential submissions are encouraged.

To be considered for publication

Papers should be emailed as attachments in .doc, .docx or Google doc format, double-spaced, in Chicago Style, with the author's name and contact information. Submissions should include relevant academic or practical references, cited at the end of the text. A brief biography (50 words) should be submitted for inclusion at the end of the column. Columnists are encouraged to include visual additions such as photos, videos, gifs, data visualizations or screen captures related to their content. There is no determined limit on number of submissions that will be accepted per issue. The editorial decision-making will be based on the quality of content. Also, cover art submissions are welcome.

Become a Regular Contributor

Regular contributors are asked to commit to writing four original columns over a two-year period (once per issue). These columns are meant to pose thoughtful or provocative questions for discussion, debate or future research and should follow the above guidelines for one-time contributions. Regular contributors are encouraged to include visual additions such as photos, videos or screen captures related to their content.

Digital/Multimedia Projects

The Journal of Civic Media encourages submission of digital, multimedia or design projects. These submissions are screened for quality and appropriateness by our editorial staff. Scholars wishing to share their digital work with the Journal of Civic Media community are encouraged to post them on Vimeo, YouTube, SlideShare, or other free services, then send us a URL and a short statement to accompany the submission.

Editorial Review Process

All content is reviewed and managed by the editorial team. Generally, two students will review each submission, critically analyzing the content and style and providing a rating for the submission. If the submission meets the editorial standards and aligns with the issue theme, any necessary revision requests are sent to the author prior to the editing submission deadline. Once necessary revisions are made, the project goes through a final evaluation by the advisory board.

CALL FOR SUBMISSIONS FOR THE SPRING 2019 ISSUE OF THE JOURNAL OF CIVIC MEDIA

VOLUME THEME

“Civic Imagination”

SUBMISSION DUE DATE

March 1, 2019

Foreward

ERIC GORDON

In 2016, Paul Mihailidis and I published the edited volume Civic Media: Technology, Design, Practice because we wanted to draw attention to the human side of civic tech. In addition to the 600-page book, we created an online compendium that included over 100 short case studies from scholars and practitioners around the world, sharing best practices, approaches, small victories and failures. The goal was to create lots of examples of people using media and tech to achieve some negotiated sense of "common good." We asked: How does the design process or the designed object create opportunities for discussion, or the negotiation within or between groups of how best to achieve their goals? Whether in government, activist networks, news organizations or schools, we were interested in how people were documenting their process of making and using tools, and not just whether or not the tool achieved some objective.

There are so many ways that practitioners and designers are creatively using media and technology to empower groups of people to get things done and connect with each other. Some of these stories are represented in existing publications like *Civicus* and *Gather* and by groups like *Allied Media*, but we felt that there was room for an academic publication that deliberately brings together scholarly debates with innovative practice. *The Journal of Civic Media* collects short,

1,500-2,500 word essays, in bi-annual themed issues. It is meant to be readable, shareable, and provocative, and seeks to build a readership of scholars, designers, activists and artists who are eager to think across disciplines and industries and take a hard look at practice and values.

Each issue of this journal is edited by one of the Masters students in the Civic Media Arts and Practice graduate program at Emerson College. The students are particularly invested in being practitioners who are connected to scholarly debates, and so they are looking for contributions that can convincingly make connections between these often disparate worlds. As the faculty advisor to the journal, I am thrilled, after over a year of planning, to see it take shape and I am confident that the thoughtful and informed perspective of the editorial staff will spark meaningful debate. Welcome to the discussion.

Sincerely,

Eric Gordon

Professor of Civic Media
Director of Engagement Lab
Emerson College

Welcome Letter

LAUREN STOTT

Powerful technology has transformed society in astonishing ways. Data networks track staggering amounts of information, personal devices put knowledge in our pockets, and we communicate and share information instantly across the globe.

But this transformation is not only digital; it affects our physical environments as well. Our concept of cities has historically centered on a geographic area, a space, a material environment. Now, though, technology is layering sensors, data, and surveillance atop tangible experiences. It complicates the way we interact with our built space and forces questions around whether government officials and technology experts might have improper control.

Why is this important? Billions of people call cities home, and if contemplative power over new technology possibilities is held by few stakeholders, the built and digital environment where we exist ceases to be inclusive or community-centric. If citizens had their way, “smart cities” would be sensitive, inclusive, and joyful places instead of big brother-esque havens of data control. In 2018, engagement on smart city initiatives is in its early stages, though a critical conception of the emerging discussion is crucial to the field of civic media.

In this introduction of *The Journal of Civic Media*, submitters ponder contemporary “right to the city” contemplations for civic media practitioners and community members alike. It is

necessary not only to develop critical thinking around smart city technology, but also for considerations to be responsive to conditions that put particular populations at risk. As they reinvisioned the way community members interact with so-called smart city technologies, the authors consider unjust biases, data ownership, and surveillance as a publicly-contemplated issues instead of privately-controlled decisions.

Authors

JESSICA WEAVER AND CHRIS BOUSQUET

Both from the Harvard Kennedy School's Ash Center for Democratic Governance and Innovation, they develop strategies for accessible algorithms in smart cities.

JENNY UNGBHA KORN

A Fellow at the Berkman Klein Center for Internet and Society at Harvard University, she highlights critiques about smart cities made by digital users of color to bring attention to the people overlooked by contemporary conceptions of the smart city.

NEIL PERRY

A 2018 Emerson College Civic Media graduate, pursues in his submission a "design narrative" that prompts community members and civic leaders to work cooperatively toward effective data policy.

AMY ZHOU

A Masters of Urban & Regional Planning student at UCLA, and her co-submitter, urban planner Howard Tam, they recount and critically analyze a smart city experimentation project in the public spaces of Ottawa, Ontario, Canada, and vet the results alongside concepts like Sherry Arnstein's Ladder of Citizen Participation.

The staff for the Fall 2018 edition of *The Journal of Civic Media* thanks all submitters for their thoughtful responses to the critical questions around smart city engagement. As they consume the stories and concepts shared in this edition of *The Journal of Civic Media*, readers are invited to contemplate the submissions alongside their own thoughts regarding smart city engagement and decide what might be appropriate in their own communities, now and into the future.

Meaningful Transparency

JESSICA WEAVER

Assistant Director of Civic Engagement and Social Innovation, North Central College

CHRIS BOUSQUET

Research Assistant/Writer, Harvard Kennedy School

Strategies for Accessible Algorithms in the Smart City

ABSTRACT

This paper responds to calls for algorithmic transparency emerging in cities such as New York. In addition to critiquing existing approaches to transparency, our policy recommendations span the design, disclosure, and governance of the code that influences citizens' lives. Our belief is that in addition to clear policies around ethical data disclosure and use, deeper public engagement in the design process, and greater civic data literacy through ongoing citizen education and outreach, is critical to achieve effective and just transparency.

Algorithms in Government

There's little doubt that today's America is one of widening divides, from increases in political polarization to income inequality.[1] Another significant gap looms on the horizon, and its effects have already wrought changes in our economy, our government, and our laws. That gap is one in knowledge, specifically, knowledge about the code that has come to profoundly shape many elements of American life. As the use of algorithms has proliferated in the last two decades, those who can understand them are holders of a treasured intellectual commodity shared by a limited elite (and the corporate behemoths who hire them), small in numbers but mighty in influence. In short, the code of an algorithm is known by few, but its effects are felt by multitudes, especially as data-driven decision-making has been adopted in government. The use cases have proliferated over the last few years, with city governments in particular eager to embrace digital transformation and use data to predict outcomes and improve services. New York City, for example, uses algorithms to determine which public schools students attend and which landlords are discriminating against tenants, while cities like Chicago and Boston are optimizing services such as food inspection and bus routes.[2] The code behind data-driven prediction - whether in health and human services or transportation - can save governments tremendous resources in response time or added staffing. Hire the coder, the logic goes, not the twelve customer service reps. While algorithms can save money, they still come with a high cost - especially when trust in government is at an all-time low.

1 Eidelson, J. (2018, March 01). U.S. Income Inequality Hits a Disturbing New Threshold. Retrieved from https://www.bloomberg.com/news/articles/2018-03-01/america-s-wage-growth-remains-slow-and-uneven.

2 Bousquet, C., & Goldsmith, S. (2018, April 3). The Right Way to Regulate Algorithms. Retrieved from https://datasmart.ash.harvard.edu/news/article/right-way-regulate-algorithms.

Limitations to Transparency

In December 2017, Mayor Bill DeBlasio passed an algorithmic transparency bill, responding to demands for accountability that followed assertions of bias[3] in machine learning, such as racial discrimination in algorithms used to predict recidivism in New York's criminal justice system. The bill will establish a taskforce to regulate New York's automated decision-making. What that might look like, however, is still very much emerging, alongside an evolving understanding of what effective transparency, accountability, and governance entail when it comes to the public's data. While citizens certainly have a right to understand the systems that are profoundly affecting their lives, the scope and mechanism of disclosure are subjects of heated debate.[4] Apart from legal issues surrounding the intellectual property of the source code that the bill seeks to make public, revealing it, even fully, is not likely to achieve two important measures that its supporters seek: understanding and trust.

When put in the hands of bad actors, access to an algorithm can jeopardize proprietary secrets and government cybersecurity, putting the personal data of citizens at risk of misuse. And regardless of safety risks, released source code is incomprehensible to the average American, meaning that source code disclosure may not translate to understanding or accountability. In fact, according to a study by Eric Baumer, when it comes to sharing "terms of service" or interpreting a complex technological process, information overload (i.e. multi-page narratives or code) can actually erode trust, just as too little information heightens suspicions: "Designing for trust requires balanced interface transparency—not too little and not too much."[5] In short, simply making code available won't solve the problem. As the public sector harnesses the power of data to optimize its systems, transparency will not ensure accountability and ethical data use if the public lacks the literacy to comprehend how, when, and by whom their information is being gathered and most

3 Angwin, J., Larson, J., Kirchner, L., & Mattu, S. (2016, May 23). Machine Bias. Retrieved from https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing.

4 Powles, J. (2017, December 21). New York City's Bold, Flawed Attempt to Make Algorithms Accountable. Retrieved from https://www.newyorker.com/tech/elements/new-york-citys-bold-flawed-attempt-to-make-algorithms-accountable.

5 Baumer, E. et. al. (2017, July – December). Towards human-centered algorithm design. Big Data & Society.

importantly - why. Ultimately, in addition to policy, governments need to initiate a culture shift, one that connects with the public not simply to inform them of decisions already made, but engages them in the design process and works to create a more informed citizenry. To achieve effective transparency without jeopardizing the public or stymying innovation, this paper outlines recommendations for governments using algorithms, spanning policy, technical strategies, public engagement indesign, and assessment of technologies that touch public data.

Existing Efforts at Transparency We Can Look To and Strengthen

As the limitations of simply revealing code have been articulated, many academics and policymakers have proposed more nuanced frameworks for transparency. Testimony during New York's hearings provided a particularly timely opportunity for researchers to outline principles for accountability, and we've taken the most compelling proposals from a variety of sources and synthesized them below.

I.

DETERMINE WHICH ALGORITHMS SHOULD BE SUBJECT TO TRANSPARENCY REQUIREMENTS

Not all automated decision support tools present the same risks when deployed by government agencies, and therefore should be held to different standards for scrutiny to avoid allocating resources inefficiently.

While an algorithm that predicts recidivism risk used by judges to help determine sentences could have seriously harmful consequences if misused, a program that rates street condition based on public works data poses much smaller dangers. With this in mind, researchers have recommended that cities develop criteria for determining which algorithms have more serious potential for harm and therefore should be subject to increased transparency.

New York's initial proposed bill specified that agencies publish information on algorithms used "for the purposes of targeting services to persons, imposing penalties upon persons or policing."[6] Expanding beyond simply law enforcement and criminal justice, researchers from MIT Media Lab and the Berkman-Klein Center at Harvard Law School developed a framework for AI ethical risk, which offers a schema through which to assess the riskiness of automated tools, and could be used to determine those requiring heightened transparency.[7] The framework considers the seriousness and likelihood of possible harm, the potential for

6 A Local Law in relation to automated decision systems used by agencies, No. 49, New York City Council Committee on Technology (2018). Retrieved from http://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3137815&GUID=437A6A6D-62E1-47E2-9C42-461253F9C6D0&Options=&Search=.

7 Greene, G. (2018, April 19). Potholes, Rats and Criminals. Retrieved from https://datasmart.ash.harvard.edu/news/article/potholes-rats-and-criminals.

bias in underlying datasets, the algorithm choice, evaluation results, and more. The final version of the New York City Council bill—which did not impose any specific transparency regulations but convened a task force to make recommendations about algorithmic transparency—did not outline specific categories to be governed by transparency rules, but called for the task force to develop "criteria for identifying which agency automated decision systems should be subject to one or more of the procedures recommended by such task force."[8]

II.

DISCLOSE THE PURPOSE BEHIND ALGORITHMS

In order to help citizens understand and assess government motivations for creating different algorithms, legal scholars Robert Brauneis and Ellen P. Goodman call for articulating both the specific predictive goal and larger policy problem that drove the government to use an algorithm. The same predictive goal may have different policy motivations in two different jurisdictions. A government that wants to predict which prisoners are most likely to commit crimes if released on parole "may want to reduce the prison population because of overcrowding; or it may want to reduce the number of parolees who commit new crimes; or it may be facing challenges about the fairness of its parole decision practices."[9] Releasing information on the predictive goal and policy motivations would allow residents to scrutinize government intentions and evaluate the results. A report on algorithmic accountability from the Omidyar Network similarly explained, "Understanding a system's intended purpose creates the opportunity to debate that system's role in society, even without more specific details about how it operates."[10] Understanding the purpose behind automated tools allows the public to assess the ethics of employing that tool and identify potentially harmful consequences.

8 A Local Law in relation to automated decision systems used by agencies, Int. No. 1696, New York City Council Committee on Technology (2017). Retrieved from http://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3137815&GUID=437A6A6D-62E1-47E2-9C42-461253F9C6D0&Options=&Search=.

9 Brauneis, R., & Goodman, E. P. (2017). Algorithmic Transparency for the Smart City. SSRN Electronic Journal. doi:10.2139/ssrn.3012499.

10 Omidyar Network, & Upturn. (2018, February 27). Public Scrutiny of Automated Decisions: Early Lessons and Emerging Methods. Retrieved from https://www.omidyar.com/insights/public-scrutiny-automated-decisions-early-lessons-and-emerging-methods.

III.

DISCLOSE DATA AND ANALYTICS TECHNIQUES

Most transparency advocates agree that information on the data an algorithm considers is critical for transparency.[11] This info will help the public identify any places where bias or inaccuracy might enter the system—for example, if an algorithm that helps determine police officer deployment looks at historical minor drug offenses, a statistic that will likely be affected by racial profiling. Advocates have also argued that governments should disclose information on what data was excluded for policy or other reasons. Data-driven policing company Azavea chose to exclude non-violent offenses from its police deployment algorithm in an effort to mitigate bias from historic police practices.[12] For similar reasons, many have also called for agencies to disclose training data, which algorithms use to determine correlations between factors and ultimately develop predictions. If the data on which the algorithm is trained contains biases or inaccuracies, this will be baked into the outputs the algorithm produces. According to the Omidyar Network's report, "Inaccurate, incomplete, or irrelevant data will lead to poor results, no matter how sophisticated the mathematical algorithm used to learn from it."[13]

Transparency advocates have also argued that governments should describe the process by which algorithms get from inputs to outputs, including the weights assigned to different factors and the analytics techniques used. Short of revealing source code, this description would help the more data-savvy public understand why an algorithm made a certain determination based on the data considered, and whether or not that technique fits the data best, or serves some other purpose.[14]

IV.

TEST ALGORITHMS AND PUBLISH RESULTS

Perhaps the most important question surrounding algorithms is whether they are successfully predictive. With this in mind, algorithmic transparency advocates and researchers have argued that governments need to rigorously test automated systems for their ability to

11 Brauneis & Goodman, 2017; Omidyar Network & Upturn, 2018.

12 Goldsmith, S. and Bousquet, C., & Harvard Kennedy School. (2018, April 05). Behind the Curtain of Code: The Algorithms Controlling Your Life. Retrieved from https://www.citylab.com/equity/2018/03/the-right-way-to-regulate-algorithms/555998/.

13 Omidyar Network & Upturn, 2018.

14 Brauneis & Goodman, 2017.

meet initial goals and release the results of these tests publicly. According to Brauneis and Goodman, pre-implementation tests are already standard practice when governments work with vendors to deploy algorithms. However, advocates demand that governments become more transparent with the results of these tests, as well as release validation studies post-implementation that provide insights into "the predictive strength of the algorithm, and any output biases that it may be producing, under real-world conditions."[15] These results would help the public understand whether or not the automated tool is accomplishing the desired results. For example, if a law enforcement agency deployed a recidivism risk algorithm to reduce the number of parolees committing crimes, the government could release tests on false negatives—showing the number of predicted low-risk residents who committed another crime—as well as data on false negatives and false positives broken down by race to reveal potential biases. Using this information, governments can also adjust models to more effectively accomplish their goals.

The other type of evaluation that many transparency advocates have proposed is black-box testing. In the simplest form of black-box testing, citizens interested in how a particular algorithm will affect them give their relevant data to a public agency, which puts this data through and algorithm and shows citizens their outputs. Advocacy groups and others may also wish to complete more complex forms of black-box testing by analyzing large historical records of inputs and outputs to better understand a model's behavior, much as ProPublica did with Northpointe's COMPAS tool.[16] In their testimony, Nissembaum et. al. called for New York to "establish how black-box testing requirements are going to be managed at a practical level. Provide examples for how outputs of user-submitted tests will be provided to users."[17] Establishing ways for citizens to understand how these systems will interpret their data without overburdening agencies with additional tasks is one of the key challenges to black-box testing.

15 Ibid., 56.

16 Angwin, J., Larson, J., Kirchner, L., Mattu, S., & ProPublica. (2016, May 23). Machine Bias. Retrieved from https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing.

17 Testimony of Professor Helen Nissenbaum, Dr. Julia Powles, and Associate Professor Thomas Ristenpart (Cornell Tech) Before the New York City Council Committee On Technology (2017).

V.

ESTABLISHING PROCEDURES FOR REDRESS

What are the options for a resident who finds out that a biased or inaccurate algorithm has indeed made a bad prediction that kept her in jail or sent her kid off to child protective services? Advocates have argued that for algorithmic tools to be not only transparent but also accountable to the public, there needs to be a method for residents to hold the city responsible. "There is a need for accountable systems, including clear processes for calling to account responsible parties (those designing, procuring, or using systems), if there is cause for complaint, or even suspicion that systems under consideration or in use are failing to meet aims and values," explained Nissembaum et al in their testimony.[18] While it is still unclear what such a system of redress would look like, the final version of the bill at least requires the taskforce develop these procedures. The bill calls for the "development and implementation of a procedure for addressing instances in which a person is harmed by an agency automated decision system if any such system is found to disproportionately impact persons" based on age, race, creed, color, religion, national origin, gender, disability, marital status, partnership status, caregiver status, sexual orientation, alienage or citizenship status.

18 Ibid.

Achieving Accessibility

While recent approaches to algorithmic accountability have focused on the ethical imperatives that government should fulfill, they have often overlooked practicality. One of the critical problems plaguing transparency efforts is accessibility: How does a government explain a technically complex algorithm to the public in a way they can understand? While some might comprehend a linear regression, how many would know what a random forest model or support vector machine does to data?

Others have offered that citizens need not understand the nuts and bolts of an algorithm if a government releases information on validation studies that demonstrate the effectiveness of the tool. That rationale, though, is like asking someone to take a mystery drug and telling them not to worry—it has performed well in tests! Testing is also not always as straightforward in practice as many researchers make it out to be. Validating a tool like a recidivism risk algorithm can be fairly simple—you look at the predictions the algorithm made, and compare them to actual incidences of recidivism over the relevant time period. But how do you test an algorithm that decides what high school a child will attend? It's not clear what success looks like: is it sending everyone to one of their top five schools, or would that be a disappointment to all the kids who end up in their fifth choicel? Is it putting high-performing students into their top choice, or does that stack the educational deck against kids who've struggled early on? Measuring the success of algorithms with these added layers of complexity is difficult, especially without any degree of data literacy.

Following a set of ethical guidelines is critical, but cities need to think just as much about how to make information about algorithms accessible. Just as open data developed from a box cities checked to prove their commitment to transparency into a tool for resident understanding and civic activity, algorithmic accountability needs to prioritize meaningful access to automated tools. We propose three strategies governments can employ to make their algorithmic tools more comprehensible to the public: simplifying models for the sake of explanation, visualizing algorithms, and involving end-users in the design of both technologies and the practices for assessing them.

I.

SIMPLIFY MODELS FOR EXPLANATION

One proposed strategy for explaining complex code is creating approximate algorithms that incorporate all the relevant aspects of the original but present this information in a more accessible way. An example is called LIME— Local Interpretable Model-agnostic Explanations. LIME involves building surrogate models around single observations. Developers run an algorithm on a set of explainable records, and then create a linear model that approximates the result in order to help explain the prediction.[19] This technique provides insight into the most important variables and their relative weights for specific data points. And, by running LIME on a number of data points and predictions, developers can create a more comprehensive picture of an algorithm.[20]

In experiments, LIME has successfully made intricate machine learning algorithms comprehensible to those without technical savvy. A study by Ribeiro, Singh, and Guestrin showed that "non-experts using LIME are able to pick which classifier from a pair generalizes better in the real world. Further, they are able to greatly improve an untrustworthy classifier trained on 20 newsgroups, by doing feature engineering using LIME."[21] In other words, participants in the study were able to meaningfully assess the quality of the algorithms produced via LIME.

II.

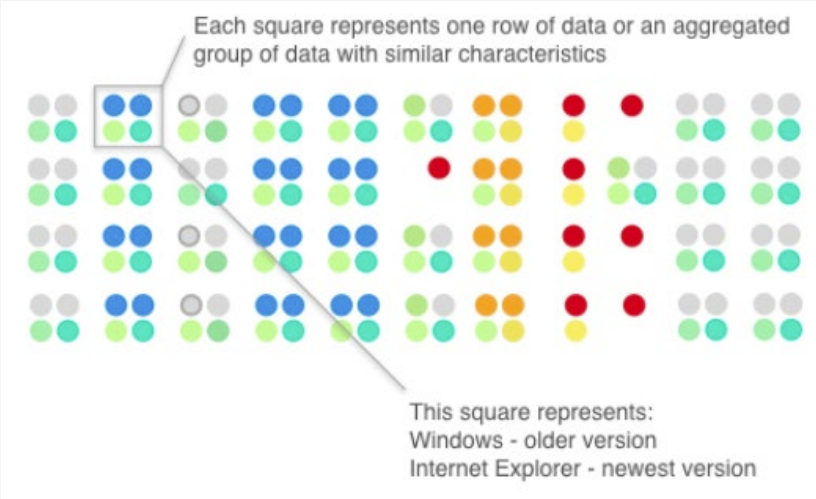
VISUALIZE ALGORITHMS TO MAXIMIZE LITERACY

Creating data visualizations has been one of the core strategies in the revolution to make data more intelligible and actionable to citizens. The same strategy applies to algorithmic transparency. One of the largest barriers to making algorithms accessible is that many automated systems use non-linear multivariate models in order to make predictions—models that are difficult to conceptualize. However, through data visualization, governments can simplify these models and make automated tools much more accessible to citizens, thereby truly ensuring accountability.

19 Hall, P., Phan, W., & Ambati, S. (2017, March 15). Ideas on interpreting machine learning. Retrieved from https://www.oreilly.com/ideas/ideas-on-interpreting-machine-learning.

20 Ribeiro, M., Singh, S., & Guestrin, C. (2016). "Why Should I Trust You?": Explaining the Predictions of Any Classifier. Proceedings of the 2016 Conference of the North American Chapter of the Association for Computational Linguistics: Demonstrations. doi:10.18653/v1/n16-3020.

21 Ibid., p. 2.

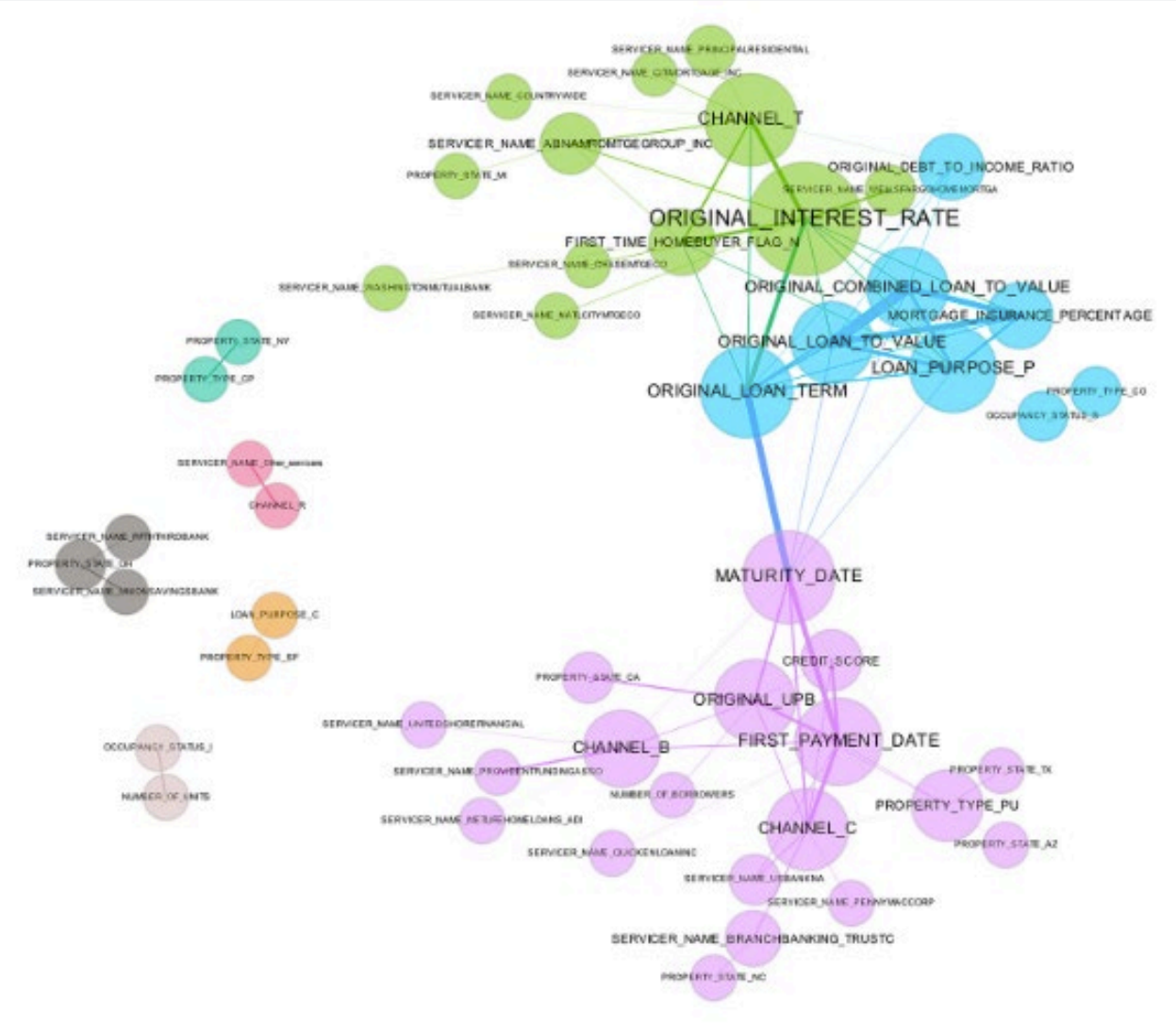


Glyphs are one useful type of visualization— symbols that use color, texture, and alignment to represent multivariate datasets in two-dimensional space. Groupings of glyphs can reveal trends in data, especially when designers use bright colors or unique alignments for events of interest or outliers.[22] For example, the glyph below is able to represent a four-dimensional dataset in a two-dimensional space, revealing common combinations (like Windows and Internet Explorer or OS X and Safari) and showing that using Windows and Safari is correlated with using newer operating system and browser versions, among other insights.

Correlation graphs are another useful tool for creating two-dimensional representations of more complex datasets. These visualizations present the relationships in a dataset and allow users to see groups of correlated variables, identify irrelevant factors, and discover or identify important relationships that machine learning models should incorporate.[23] The correlation graph below shows the relationships between a number of variables in a loan dataset. The size of a node is determined by the number of connections it has to other variables, and the thickness of the connecting lines shows the strength of the correlation between

22 Hall et al.

23 Ibid.



two factors. For example, one can see that maturity data and original loan term are strongly correlated, as are original loan term and original combined loan to value. Even though a visualization of this type is not explicitly about how an algorithm works, it could help residents understand how correlations are revealed through analysis, providing a foundation of understanding that could complement to explanations from agencies on what factors went into the algorithm and their relative weights.

One final type of visualization worth considering is a partial dependence plot. These plots can show how the results of a machine-learned response function change based on the values of one or two independent variables while averaging out the effects of all other independent variables, again reducing the complexi-

ty of the model into a two-dimensional graph.[24] The idea is to show the relationship between the most important independent variables and the dependent variable. For example, the creators of a predictive policing algorithm might show that as incidences of violent crime in a neighborhood go up, so too does the neighborhood's risk score.

III.

TRANSPARENCY THROUGH HUMAN-CENTERED DESIGN

Human-centered design has become an integral part of government efforts to create technological tools for resident and employee use. In a human-centered design process, designers cultivate empathy and engage with users throughout the development process—learning about their needs, generating ideas, prototyping ideas, testing, and then iterating on designs. Originally used in the private sector, human-centered design has become increasingly prevalent for creating effective tools in the public sector. In Pittsburgh, city analysts followed public works employees around on the job in order to understand the paperwork-laden process for filling potholes, uncover pain points, and design solutions.[25] Before releasing the city's new open data portal, Chicago's Department of Innovation and Technology (DoIT) led demos on a beta version and solicited feedback at civic tech meetups, and then incorporated feedback into a final version.[26] And in Gainesville, FL, the city worked with local business owners to map all 13 steps of the permitting process in order to understand points of confusion, and launched a Department of Doing and web platform to provide guidance on the prickliest elements.[27]

Governments should apply this same process to ensuring algorithmic transparency. Agencies need to understand at what level to present algorithmic information so that it accurately represents an automated tool and yet remains accessible to residents. User-testing methods for transparency or relying on literature that has already user-tested these techniques—like Ribeiro, Singh, and Guestrin's study—will ensure that efforts

24 Ibid.

25 Burack, R. (2017, December 5). Putting Users First: Human-Centered Approaches in the Data-Smart City. Retrieved from https://datasmart.ash.harvard.edu/news/article/putting-users-first-human-centered-approaches-in-the-data-smart-city-1176.

26 Thornton, S. (2017). User-Friendliness Defines Chicago's New Data Portal. Retrieved from https://datasmart.ash.harvard.edu/news/article/user-friendliness-defines-chicagos-new-data-portal-1026.

27 Goldsmith, S. (2017, June 7). Three Tips for Designing Municipal Tools with Employees in Mind. Retrieved from https://datasmart.ash.harvard.edu/news/article/3-tips-for-designing-municipal-tools-with-employees-in-mind-1059.

towards transparency are truly accessible to residents, rather than merely fulfilling an agency head's conception of accessibility. These tests should make sure that residents are able to differentiate between good and bad algorithmic tools based on the information provided, and feel comfortable with the amount of information disclosed.

IV.

ENGAGE RESIDENTS IN DESIGN

Citizens need to be involved not only in designing transparency, but also in designing the technologies that affect their lives. While governments have become increasingly reliant upon human-centered design to create optimal services or products, especially in digital service delivery, cities such as Gainesville, FL, and Grand Rapids, MI, are going a step further: actually engaging in a participatory design process to ensure that citizens understand how the most intractable issues in their communities are being addressed.

In human-centered design in the public sector, residents are typically engaged in how challenges are understood, but not how strategies or responses are developed. Models for participatory design, even involving complex technologies, however, are viable, and should be more deeply explored by governments. The previously mentioned Gainesville website overhaul, as well as a full redesign in Grand Rapids, MI, involved citizens not simply as behaviors to observe, but leaders involved in testing and translating the needs of residents to technologists. The Chicago Tech Collaborative, for instance, created a "citizen user testing" group (or CUT group), which recruits community members across geographic and demographic ranges to test city products (including apps and digital interfaces) and prototypes. The CUT group provides both public sector employees and citizens the opportunity to interface, establishing both trust and, on behalf of the public, a greater literacy in the design and development process. Citizen testers receive compensation and can become "proctors." According to the "Civic Media Practice" report by the Engagement Lab at Emerson College for the MacArthur Foundation, this participatory and mutually beneficial structure is critical to the organization not merely ethically, but structurally and organizationally, noting "cultivating stewardship was a core component of their strategy for long-term sustainability."[28]

In cities such as Louisville, KY, non-technologists have participated in local hackathons with both government and civic hacker representatives; as evident in

28 Gordon, E. and Mugar, G. (2017). Civic Media Practice. Retrieved from https://elab.emerson.edu/projects/civic-media-practice.

projects like the Robert Wood Johnson Foundation's "Make the Breast Pump Not Suck" hackathon, initiatives like this can also attract considerable external funding that allows stakeholders into the conversation who otherwise would not be able to participate. In addition to its higher ethical standard, codesign activates a broader range of expertise, as the MacArthur report aptly summarizes: "This asymmetry in who shapes project objectives and deployment is sometimes addressed through a process of co-design, where the opportunity to provide expertise is distributed to across multiple stakeholders. The designer brings design expertise, the reporter another expertise, and the community member brings local expertise and proximity to an issue."[29]

Entities with decision-making power in which citizens are involved can also be looked to for models of innovative resident participation with the public sector. Participatory budgeting, for instance, offers citizens direct access to determine how a city allocates its discretionary resources, and a similar model could be used to either establish emerging concerns around bias in technology, or help prioritize which issues (perhaps in particular those that city employees might not immediately identify) might be viable for a predictive or algorithmic problem.

These initiatives are worth mentioning because they are examples of both engaging residents in understanding a problem and designing as solution, but also offer residents opportunities for building their civic muscle and greater literacy - be it in budgeting, critical thinking, or data analysis. The need for a more "data literate citizen" has been discussed by Professors Michael B. Twidale, Associate Professor Catherine Blake, and Research Associate Professor Jon Gant of the Graduate School of Library and Information Science University of Illinois at Urbana-Champaign. Their recommendations for cultivating greater citizen data literacy include utilizing public spaces for public education series, experimenting with online communities in fostering conversation between the public and government employees, and investing in robust outreach to multiple sectors to explore opportunities for mutual learning and skill-building.[30] It is true that the regulatory field in artificial intelligence, particularly for governments, is still young, but community data scientists, consumer advocacy organizations, and nonprofits committed to diversifying the pipeline of AI developers can play an important role in bridging the knowledge gaps between technologists, residents, and policymakers. Multi-stakeholder bodies such as the taskforce prescribed for New York City can serve as an organizing framework for soliciting and am-

29 Gordon, E. and Mugar, G. (2017).

30 Twidale, M. B., Blake, C., & Gant, J. (December, 2013). Towards a data literate citizenry. iConference 2013 Proceedings (pp. 247–257).

plifying diverse perspectives. Bringing in experts from outside government - from residents to nonprofits to academics - can also aid in advising on strategies (such as evaluation mechanisms or data-sharing agreements) to counter-weigh or contextualize an algorithm's singular directive.

The work ahead is undoubtedly messy, as all meaningful public engagement is. However, deep involvement is the only way to truly address the public's very valid concerns about their estrangement from the very systems that direct their interactions with the government and oftentimes, their lives. Ultimately, ethical algorithms require a shared agreement between governments and citizens about the definition of risk and transparency, contingent upon practices in design, disclosure, and assessment.

Jessica Weaver

Jessica Weaver leads campus-community partnerships and civic engagement initiatives at North Central College, one of only fifty institutions in the world to receive designation as an Ashoka Changemaker Campus. She previously contributed writing and research to Data-Smart City Solutions at the Harvard Kennedy School's Ash Center for Democratic Governance and Innovation.

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Chris Bousquet

Chris Bousquet has written about data-driven city government for a number of publications including Harvard Kennedy School's Data-Smart City Solutions, CityLab, Wired, Government Technology, and Governing. He is also an incoming PhD student in philosophy at Syracuse University.

Equitable Cities Instead of Smart Cities

JENNY UNGBHA KORN

Fellow at the Berkman Klein Center for Internet and Society at Harvard University

Race and Racism Within The Race For Smart Cities

The Race by Smart Cities

A glance at the headlines involving smart cities reveals that the "race for smart cities" is happening.[1, 2] The word "race" is frequently associated with "smart city," but that usage of race emphasizes competition, speed, and regulation, while masking power, equity, and justice for the people of different races living in those smart cities. Public resistance to the neoliberal value of efficiency as the impetus behind civic policies may be found online, as more individuals acknowledge that government plans to become smart cities have not considered certain groups of people, historically and currently. I use this essay to highlight critiques about smart cities made by digital users of color to bring attention to the people overlooked by contemporary conceptions of the smart city. Besides emphasizing concerns broadcasted publicly online to be addressed by those responsible for smart cities and civic engagement, I also analyze the philosophies imbued within those concerns to make explicit the values embedded in current discourse related to smart cities.

All the things people don't mention when they talk about smart cities and more technology. Power consumption, Generation of heat, Infrastructure, Mining, Pollution, Recycling. That's if you forget about the racism.

1 James Calder, "The Race For Smart Cities From The Leading Edge," Huffington Post, September 5, 2016, retrieved from https://www.huffingtonpost.com/entry/the-race-for-smart-cities-from-the-leading-edge_us_57cdc93ee4b07addc413e1f3.

2 Daniel Castro, "If Only One U.S. City Wins the Smart City Race, the Whole Nation Loses," Government Technology, October/November 2016, retrieved from http://www.govtech.com/opinion/If-Only-One-US-City-Wins-the-Smart-City-Race-the-Whole-Nation-Loses.html.

The Technochauvinism of Smart Cities

A common theme to discourses related to turning a town into a smart city is the focus of technology as the solution to civic issues. Problems related to power, heat, infrastructure, mining, pollution, recycling and more, as the tweet above references, will be fixed if we add more technology for the city to use. In this example, the online user highlights fundamental inequities with resource management based on historic discrimination tied to race that has been labelled environmental racism. To combat environmental racism, grassroots efforts in environmental justice have garnered public attention about how toxic waste incinerators have been located in residences where the majority is a community of color, whose residents corporations believe will not be likely to protest because of their ethnic make-up.[3] In this example related to pollution, recycling, and waste, the additive of technology does not address the physical positions where such undesirable and unhealthy sites will be placed.

Smart city discourse is built upon technochauvinism. As Meredith Broussard writes, technochauvinism is the philosophy that technology, including quantification, algorithms, and data, is an all-applicable solution to civic issues and social challenges.[4] Technochauvinists prefer to give tasks to computers, rather than individuals, because computers are rooted in mathematical logic, which ushers in better calculations. The "race for smart cities" is imbued with technochauvinism that leads to outcomes of racial inequality and environmental injustice. Instead of valuing equity and justice, existing divides along axes of race, gender, class, sexuality, ability, religion, language, immigration/citizenship status, and more are worsened, as technochauvinists create and perpetuate problematic policies. The race by cities to become smart has resulted in a proliferation of technochauvinist plans that do not take adequate account of the limits of computers.

Technochauvinist plans presume that policies for smart cities set in place will eventually reach marginalized populations. However, in practice, only through prioritizing the vulnerable as primary participants in the decision-making process, and not as secondary, tertiary, or eventual

3 Luke W. Cole and Sheila R. Foster, From the Ground Up: Environmental Racism and the Rise of the Environmental Justice Movement (New York University Press, 2001).

4 Meredith Broussard, Artificial Unintelligence: How Computers Misunderstand The World (MIT Press, 2018).

recipients, will we help ensure that equitable cities might develop.[5] As the online user in the above example reminds us, implementation of technochauvinist policies should be replaced by plans prefacing equity as a goal because a wifi-equipped streetlight is not going to solve racism and poverty.

5 Laura Bliss, "Who Wins When a City Gets Smart?," CityLab, November 1, 2017, retrieved from https://www.citylab.com/transportation/2017/11/when-a-smart-city-doesnt-have-all-the-answers/542976/.

The Racist Algorithms of Smart Cities

Tied to environmental racism and technochauvinist philosophy is the issue of the heavy reliance upon algorithms by smart cities. As the above online user highlights, algorithms are embedded with the values of their programmers and coders.[6] Those presumptions translate into biases within software, including racism against individuals of color in new predictive policing programs and continued, structural surveillance technologies regarding crime.[7, 8] Because humans are behind the programming, racism, classism, ableism, colonialism, patriarchy, and kyriarchy are inherent within algorithms, information, interfaces, and other technologies.

As a critical race theorist, I tie interventions into my analyses. One action step for programmers, coders, and others that have the power to create, modify, and influence algorithms is to make them more aware that the output of their work has real-life consequences on marginalized populations. We need programmers to undertake feminist and critical studies training for them to understand how biases influence their programming.[9] For too long, computer science departments, from high school through the university level, have overlooked how the technologies on which they are training future coders and programmers are impacted by and imbricated with race, gender, sexuality, religion, and other axes of identity. Presumptions about the neutrality of algorithms have resulted in the biases we see today in the design and output of various technologies.[10, 11, 12] Countering

6 Safiya Umoja Noble, Algorithms of Oppression: How Search Engines Reinforce Racism (New York University Press, 2018).

7 Angelique Carson, "Surveillance as a Tool for Racism," TechCrunch, April 25, 2016, retrieved from https://techcrunch.com/2016/04/25/surveillance-as-a-tool-for-racism/.

8 Dorothy Roberts and Jeffrey Vagle, "Racial Surveillance Has a Long History," The Hill, January 4, 2016, retrieved from http://thehill.com/opinion/op-ed/264710-racial-surveillance-has-a-long-history.

9 Jenny Ungbha Korn, "From Academia, to Programmers: Critical Race Training to Incorporate Race into Ethics and Technology," (presentation, Honoring All Expertise: Social Responsibility and Ethics in Tech, Harvard University, Cambridge, MA, April 17, 2018).

10 Keith Kirkpatrick, "Battling Algorithmic Bias: How Do We Ensure Algorithms Treat Us Fairly?," Communication of the ACM 59, no. 10 (2016): 16–17.

11 Will Knight, "Biased Algorithms Are Everywhere, and No One Seems to Care," MIT Technology Review, July 12, 2017, retrieved from https://www.technologyreview.com/s/608248/biased-algorithms-are-everywhere-and-no-one-seems-to-care/.

12 Safiya Umoja Noble, 2018.

those biases through targeted training of programmers and coders on power dynamics and sociopolitical differences will be helpful in reducing unfair and unrealistic outcomes based on algorithms.

A Provocation for Funders of Smart Cities

Smart cities rely upon funding from the government, corporations, and other sources to pay for the development of technologies to collect data, surveil citizens, and more. A change to those funding applications should involve the mandate to include individuals from diverse populations as part of the decision-making body. On the application itself, part of the evaluation criteria for granting money to cities should ask government applicants about their plans to involve individuals across races, genders, sexualities, classes, languages, abilities, and more. Community participation is crucial in helping to make sure that marginalized populations are represented during the creation of smart city policies. Though changing federal government applications might take a bit of time, private sources for smart city funding, including AT&T and Intel, could implement revisions to their application process immediately.[13]

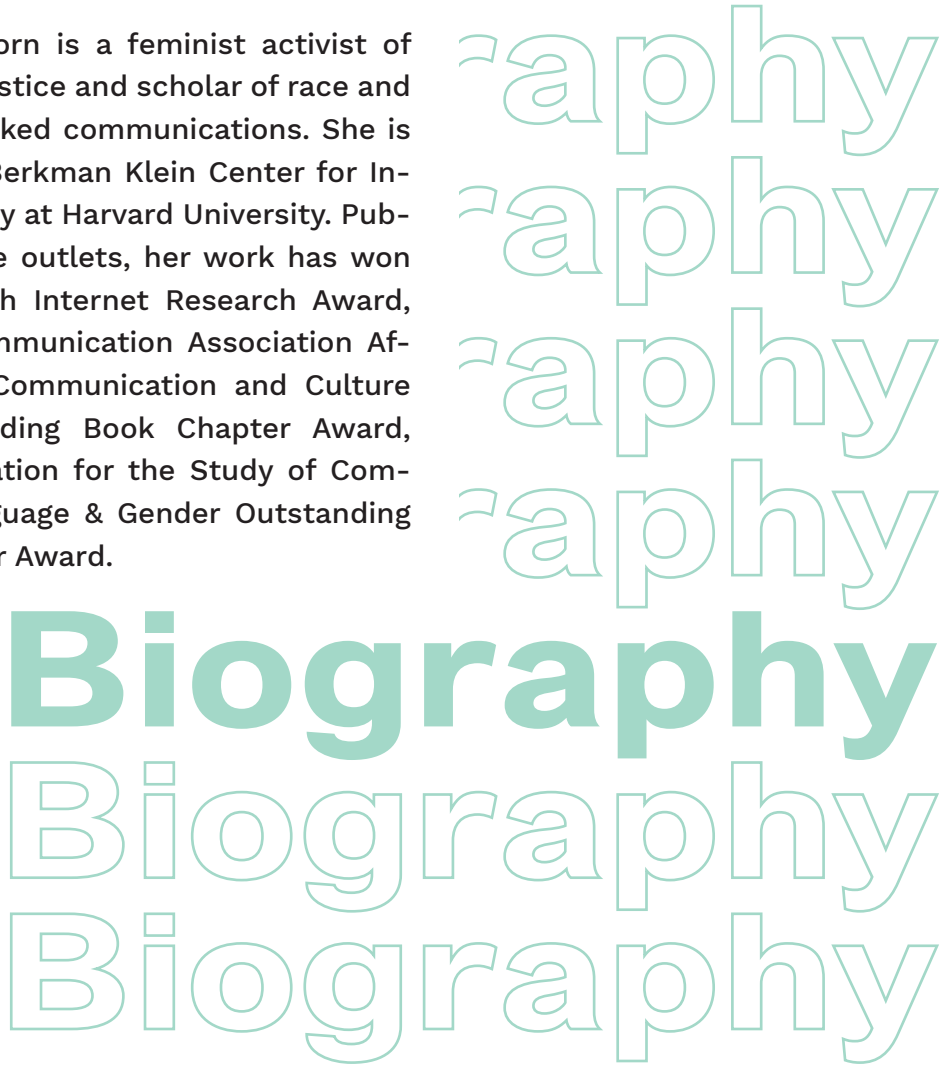
13 Jesse Berst, "Need Smart Cities Funding? There's a New Source of Help," American City & Country (blog), April 3, 2017, retrieved from http://americancityandcounty.com/blog/need-smart-cities-funding-there-s-new-source-help.

C O N C L U S I O N

I advocate greater frequency of the phrase “race for smart cities,” but not in its current usage as a reflection of neoliberalism. Rather, race for smart cities should be a reminder to funders and planners for smart cities that racial diversity, equity, and justice should be explicit components of applications and evaluations of smart cities. The algorithms, and philosophies fueling those algorithms, are not value-neutral; in fact, they are racist and technochauvinist … but they do not have to be discriminatory. Users online engage in digital activism to remind us all that we need to be more vigilant, vocal, and participatory in focusing on the creation of equitable cities for us all.

Jenny Ungbha Korn

Jenny Ungbha Korn is a feminist activist of color for social justice and scholar of race and gender in networked communications. She is a Fellow at the Berkman Klein Center for Internet and Society at Harvard University. Published in multiple outlets, her work has won the Carl J. Couch Internet Research Award, the National Communication Association African American Communication and Culture Division Outstanding Book Chapter Award, and the Organization for the Study of Communication, Language & Gender Outstanding Conference Paper Award.



Can We Be Smart (City)?

AMY ZHOU

Co-Lead for the Smart City Playground

HOWARD TAM

Founder and Principal at ThinkFresh Group

Learnings from a Citizen-Led Pop-Up Engagement Exhibit

It's a sunny Saturday morning not too far off in the future.

ON YOUR WAY TO LUNCH WITH A FRIEND, YOU DECIDE TO CUT THROUGH A PARK TO SAVE TIME AND ENJOY SOME SCENERY. APPROACHING THE ENTRANCE, YOU NOTICE A NEW SIGN: ENTERING THIS PARK MEANS YOU AGREE TO HAVE YOUR DATA & MOVEMENTS TRACKED. WAIT - WHAT? YOU'VE HEARD OF DIGITAL TRAILS AND PRIVACY BUT THIS SOUNDS TRULY INVASIVE.

While this might sound like a dystopic vision of the future, it is a fundamental question around the future of "smart" cities. Public spaces are vital to the healthy functioning of a city and the idea of "opting in/out," among many other questions of access, social justice and privacy related to urban digital features definitely requires further public dialogue. Unfortunately, this dialogue isn't happening at the moment, despite a push from governments and the private sector to roll out these technologies.

In June 2018, a group of Canadians launched Smart City Playground – a community project aimed at fostering more of these discussions with the public (readers can check out smartcitytomorrow.today for more details). The goal of the playground is to host pop-up engagements that bring up these issues directly to members of the public. So, in downtown Ottawa, Ontario, Canada, residents entering a downtown park walked past signs proclaiming "ENTERING THIS PARK MEANS YOU AGREE TO HAVE YOUR DATA & MOVEMENTS TRACKED." Indeed, many were baffled by this sign: Numerous residents did double-takes as they walked by, another mouthed "What the f*ck?" as he entered. One woman refused to enter the park.

Rest assured, no data or movements were actually being tracked: The signs were part of Smart City Playground's #CANwebesmart pop-up in Canada's capital that day. #CANwebesmart aims to pop-up provocative future scenarios around digital technologies to inspire public dialogue around what this could mean in the future. Over a 3-hour period, #CANwebesmart was able to engage with a couple dozen park users - many of whom expressed concern about the future of these technologies, but also a sense of resignation that it was inevitable.

Canada's Diverse Smart City Responses

#CANwebesmart was inspired by a number of recent smart city developments across Canada.

A few days before the intervention, Infrastructure Canada, a Canadian federal department, announced shortlisted municipalities in contention for the Smart City Challenge (more information here: https://impact.canada.ca/en/challenges/smart-cities). Finalists included initiatives on app development to assist with food security in Indigenous communities, multimodal transportation network development, and data-driven program development for children and youth. Winning municipalities are to receive up to $10 million in implementation funds.

In Toronto, Ontario, residents are grappling with the implications of private sector driven smart city planning. As of August 2018, Sidewalk Labs, a subsidiary of Google's parent Alphabet Inc., is continuing the consultation process of their smart neighbourhood development on the city's Waterfront-- prime real estate in the City of Toronto. The controversial project has drawn hundreds to its public meetings, in addition to thousands of public comments while generating much discussion on the nature and purpose of its consultations and concerns surrounding privacy and data collection.[1] Sidewalk has invested heavily in a citizen engagement process that includes meetings, workshops, pop-up station, kids summer camps, and a fellowship program for youth that includes a tour of "smart" global cities.

In Ottawa, some efforts have been made to engage citizens on smart city proposals: a survey was conducted, and focus groups were held. As a whole, the Canadian public conversation on smart cities has reached unprecedented levels (though the quality and depth of which differs vastly between different regions). It's a topic that deserves considerable attention: Smart city issues will affect every city's entire population, from the onset of surveillance technologies in public spaces, to "smart" traffic management, to service delivery applications that may change the way residents interact with their municipal governments.

1 Barth, Brian. "The fight against Google's smart city." The Washington Post, August 8, 2018.

Why We Need More Engagement

A fundamental issue rarely discussed is how informed the general population is when it comes to the understanding of these smart city technologies and their potential implications. While the importance of engaging residents grows, the quality of the engagement for both the municipality and the resident is contingent on the individual and collective level of understanding of smart cities, how cities function, what they encapsulate, their definition, and more.

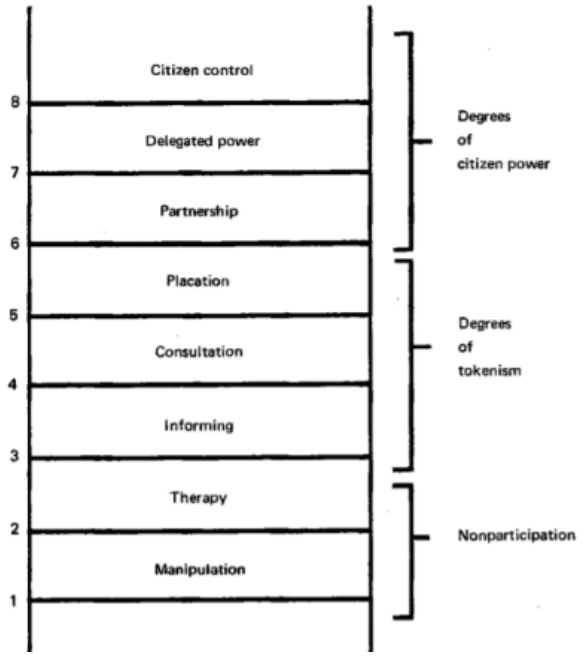


Figure 1: A diagram of Arnstein's Ladder of Civic Participation

In a recent smart city panel discussion in Toronto hosted by City Councillor Kristyn Wong-Tam, a panelist asked how many knew how even data flows on the internet. Only a handful of audience members put up their hands.

As a citizen-driven initiative, #CANwebesmart is meant to educate and empower residents to learn more about smart cities. Viewed from the lens of critical academic analysis, the initiative would be considered ineffective: Sherry Arnstein's seminal conceptualization of citizen participation (the "ladder of citizen participation")[2] categorized specific types of civic participation into eight separate "rungs," ranging from manipulation, to partnership, to citizen control. These eight rungs are further separated into three distinct categories that describe the meaningfulness of this participation: non-participation, tokenism, and citizen power (Figure 1).

2 Arnstein, Sherry. 1969. "A Ladder of Citizen Participation." Journal of American Institute of Planners 35 (July): 216 – 224.

However, #CANwebesmart's educational function would likely lie outside of the scope of Arnstein's ladder. In a revision to the original ladder,[3] sociologist Desmond Connor was firm in including "education" as a core component of a public participation framework, citing it as preventative.

And this is one of #CANwebesmart's core goals: to educate the public. Residents that the organizers encountered expressed surprise at the level of surveillance and technological advancement that was already in the works, and many stopped and were inspired to have meaningful conversations about privacy, sensors, and tracking with the volunteers that day. This type of role-playing provided residents with an opportunity to directly engage with potential scenarios in spaces where the objects had a high possibility of being installed in the future.

3 Connor, Desmond. 1988. "A New Ladder of Citizen Participation." National Civic Review 77 (May): 249 – 257.

Direct engagement of this sort does enhance the participant experience. In a similar study by Wilson et al.,[4] the study gave residents Apple watches that would ping them when they were coming to a section that needed maintenance-- and residents would have the opportunity to send comments to local politicians. The study participants greatly appreciated the spatial awareness of the app because it prompted them to seriously think about the implications of the space that they were currently occupying.

Currently, many cities emphasize the importance of citizen educational capacity building through a variety of courses (like Civics 101 in Toronto, Ottawa Citizen Academy in Ottawa, and CityStudio in Vancouver) with the understanding that it will improve the quality of civic engagement and participation through direct and experiential learning.

While education certainly empowers residents and acts as a preventative measure for more serious problems down the road, it would be likely that Arnstein would categorize an important function of #CANwebesmart as nothing more than "tokenism" for the residents, in the sense that the feedback being collected had no major output. The result would be similar

4 Wilson, Alexander, Tewdwr-Jones, Mark, and Comber, Rob. 2017. "Urban planning, public participation and digital technology: App development as a method of generating citizen involvement in local planning processes." Environment and Planning B: Urban Analytics and City Science 0: 1–17.

to the oft-criticized model of municipal administrators seeing consultation as a check-box exercise or a hurdle to clear towards final approval of a development project. #CANwebesmart did not have the ability to transmit the feedback and opinions of residents directly to decision-makers, (especially on such an important topic!). Feedback was collected by volunteers and placed on a laundry line in Confederation Park, but none of these comments or concerns were being brought back to the decision-makers or stakeholders.

To rectify this, #CANwebesmart's next steps are to advocate and help build meaningful pathways between residents and decision makers on smart cities, all while continuing to provide educational experiences for as many diverse residents and audiences as possible. Municipalities are scrambling for opportunities to engage their residents and while it is becoming more and more fashionable to involve residents in city-building and community development, in many instances, the residents getting selected are those with existing interests/knowledge (as seen in the Irish National Citizen's Vision consultation process[5]), or are those who are already naturally inclined to participate in typical engagement processes (the "Usual Suspects" problem[6]).

In a future world where smart technologies and vendors will affect every single resident and citizen, it is critical that all municipalities, as they develop their smart city policies, engage as many residents from diverse communities and perspectives as possible. We need to ensure that future cities continue to be human-centric and built to serve the needs of the diverse populations that makes cities great and not for the technology that may end up stifling this.

5 Fitzgerald, Ciara, McCarthy, Stephen, et al. 2016. "Citizen participation in decision-making: can one make a difference?" Journal of Decision Systems 25 (June): 248 – 260.

6 Michels, Ank and De Graaf, Laurens. 2017. "Examining citizen participation : local participatory policymaking and democracy revisited." Local Government Studies 43 (August): 875–881.

Biography

Biography
Biography
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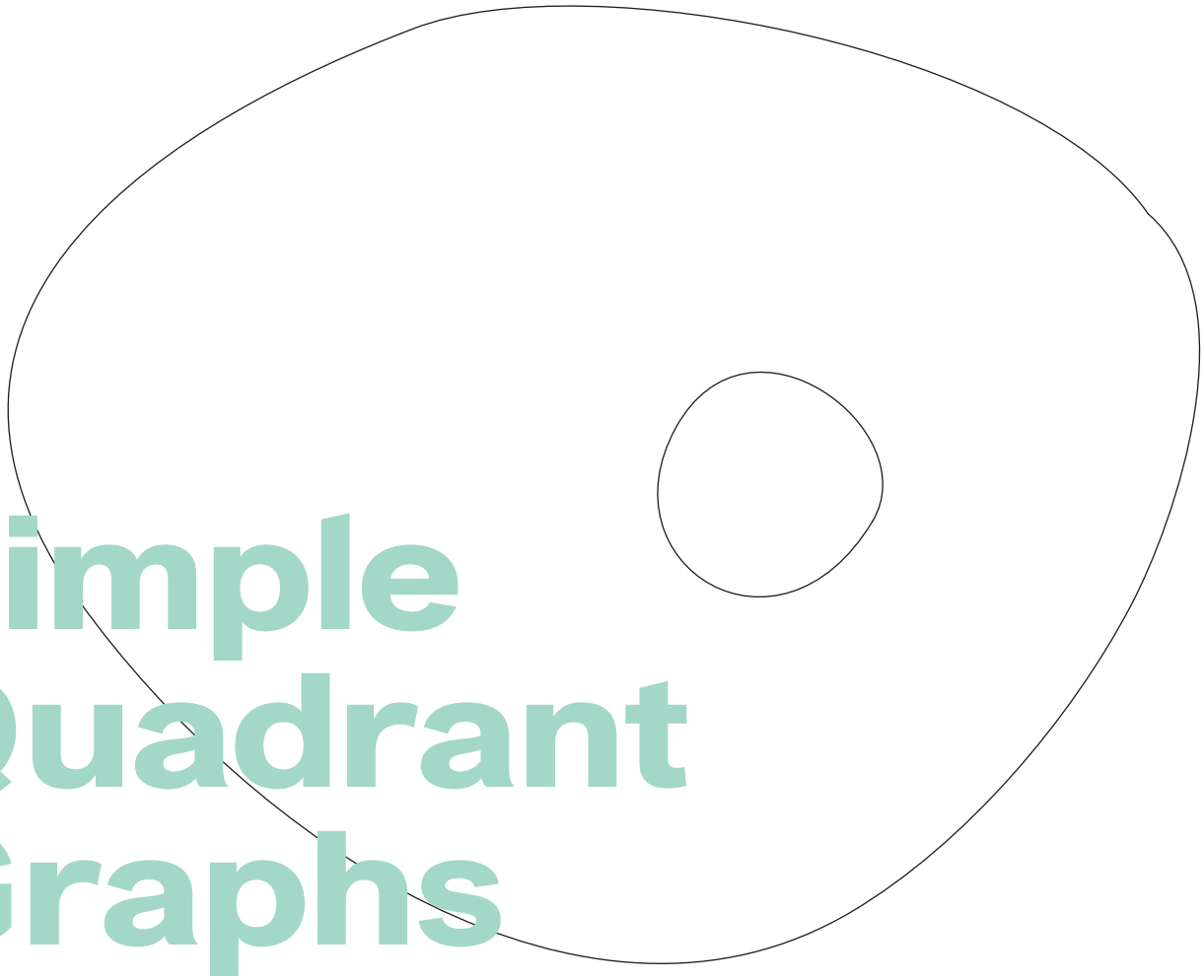
Amy Zhou

Amy Zhou is a community builder based in Ottawa and Los Angeles. She is the Co-Lead for the Smart City Playground, a tactile engagement tool for making smart cities accessible (with Howard Tam) and was the Co-Founder of the Chinese Canadian Collective (based in Ottawa). Currently, Amy is a Masters of Urban & Regional Planning student at UCLA, focusing on Design & Development and Community Economic Development. She can be found on Twitter at @amyczhou talking about urbanism, Asian American/Chinese Canadian spaces, and smart city development

Howard Tam

Howard Tam is a Designer and Urban Planner, based in Toronto, Canada. He is Founder and Principal at ThinkFresh Group, a city building consultancy. Howard has worked with government and private sector clients in Canada to facilitate community engagement and development processes that co-create urban spaces with amazing human experiences. Previous clients include property developers, government, universities, community and arts groups. Howard is super excited about the future of cities and how we might design them (and the emerging technology) to better adhere to human values and experiences.



Simple Quadrant Graphs

NEIL PERRY

Emerson College

A Step toward Citizen-Focused Design Tools to Inform Smart City Data Policy

ABSTRACT

Smart city development is trending up while trust in government continues to decline and concern over personal data privacy and security becomes more acute. As such, city agencies and policy designers must develop tools to more deeply engage and leverage public voices in the creation of smart interventions. As engaging the public can be a challenge, it is beneficial to all parties that simple, easily implemented tools be developed that lead to practical, high-impact applications. The purpose of this paper is to conceptualize one such intervention in the pursuit of creating a “design narrative” with respect to data policy that unlocks a cooperative relationship between city government and the people for whom they design and build smart cities.

Introduction and Purpose

It is difficult to overstate the degree to which the revolution in data-driven decision-making has impacted the American economic, social and political landscapes over the past quarter century or so. While often creating enormous wealth and efficiency in some sectors, the intersection of big data and information & communication technology (ICT) has introduced the public to a wide range of worries from labor automation and universal basic income to the future of political efficacy, data privacy and data security. As cities continue to develop smart technologies to connect citizens with infrastructure, the opportunities these interventions present are mixed with questions about data agency, vulnerability and what the government/public partnership in smart city design should look like moving forward.

The purpose of this paper is to explore a remedy that aids data policy designers in understanding the privacy and security concerns that people may have with respect to their data in smart city environments. The concept is built upon by the work of Liesbet van Zoonen at Erasmus University in Rotterdam, Netherlands, who has outlined a framework that "hypothesizes which technologies and data-applications in smart cities are likely to raise people's privacy concerns, distinguishing between raising hardly any concern (impersonal data, service purpose), to raising controversy (personal data, surveillance purpose)."[1] The work presented here takes citizen positionality within van Zoonen's matrix into account and uses it as a foundation for a collaborative tool for designers and citizens to identify and measure data privacy preferences and develop ameliorative efforts that can be designed into policy development "rules." In addition, a data visualization element is introduced to give the outcome of this intervention a public face to alert citizens, workers and visitors to the type of data being collected in a given environment. This, it is hoped, will help cities to define a techno-ethical partnership with its population, inform the creation of citizen-focused design boundaries and create a participatory design intervention for data policy that places citizens ahead of alternative (corporate, financial, law enforcement, etc.) authorities. Furthermore, this tool seeks to create norms between citizens and government in smart city data sharing so as to work around delays, inaction or indecision in legislation. The ultimate goal of this work is to advance the development of a design mechanism that builds citizen confidence in government so as to create meaningful and durable technologies toward solving municipal problems.

1 Liesbet Van Zoonen,"Privacy Concerns in Smart Cities. Government Information Quarterly 33, no. 3 (July 2016): 472–480.

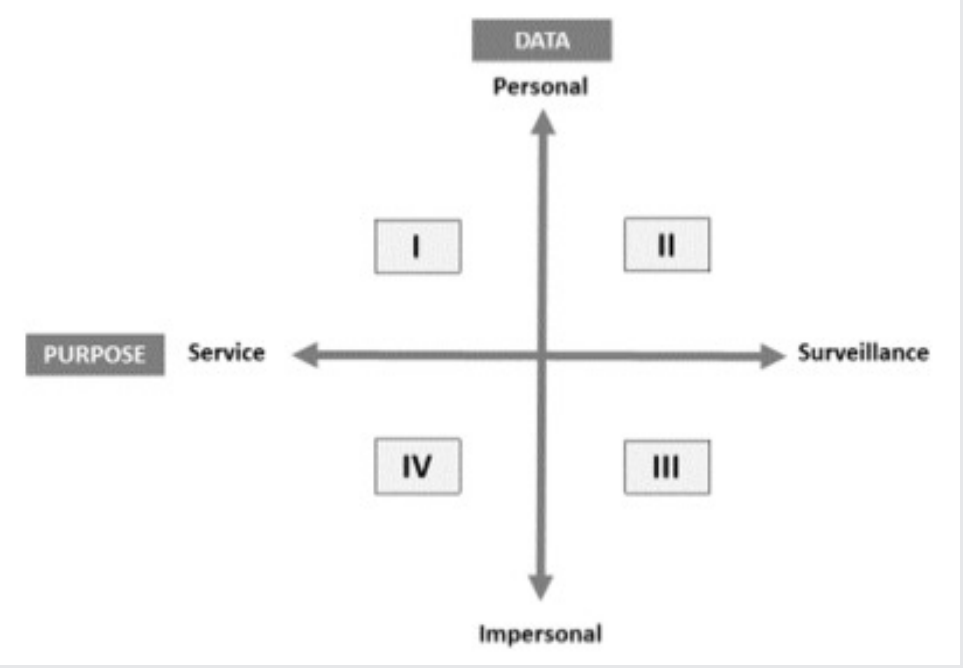


Fig.1. Liesbet van Zoonen's matrix for evaluating smart city data privacy concerns. Positioning within the quadrants represents the level of anonymity of the data being collected along the y-axis with the use purpose of the data along the x-axis. (2016).

Development of smart city infrastructure is trending up; according to a recent report by the National League of Cities (NLC,) "66 percent of (American) cities have invested in some type of smart city technology" while "of the 34% of cities without any smart city systems, 25% said they were currently exploring implementing some sort of smart city application."[2] The International Data Corporation (IDC), in a report issued in 2018, estimates that spending on smart city technology will reach $80 billion this year, rising to $135 billion by 2021. Investment will be lead, they report, by the US with $22 billion followed by China with $21 billion in smart city spending.[3]

Meanwhile, global populations are moving toward cities, especially in the developing world. The United Nations Department of Economic and Social Affairs finds that "68% of the world population (is) projected to live in urban areas by 2050."[4] The World Health Organization (WHO) expects

2 Nicole DuPuis and Brooks Rainwater, Cities and the Innovation Economy: Perceptions of Local Leaders. Washington, DC: National League of Cities, 2017, 14.

3 Teena Maddox. "Smart cities expected to invest $80B in technolgy in 2018." Techrepublic.com. 20 Feb, 2018. https://www.techrepublic.com/article/smart-cities-expected-to-invest-80b-in-technologies-in-2018/.

4 "68% of the World Population Projected to Live in Urban Areas by 2050, says UN," United Nations Dept. of Social and Economic Affairs. https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html, (May 16, 2018).

to see 1.63% growth in urbanization between 2020 and 2025 and 1.44% between 2025 and 2030.[5]

Finally, in terms of the technology under development to facilitate smart city applications, research giant Gartner concludes that smart cities will use 9.7 billion connected things by 2020, up from 1.1 billion in 2015 (2015).[6] Taken together, these findings suggest that smart city development will continue to accelerate as the technology that enables it becomes ever smaller, cheaper and more mobile and urban populations boom. Although smart city development is well underway, what can we do to ensure that future development reflects the collective interests of citizens while making usage transparent enough to hold government accountable when and if these systems fail? How can the public be reassured that the government will treat the data that they share with respect for privacy and that it won't be used against their best interests? In light of the often tumultuous relationship society has encountered as it attempts to further integrate data and technology into myriad traditional systems, it is critical that city administrations, the public and civic media designers work together to establish processes and governing principles that promote "citizen first" data agency and control in advance of designing and implementing smart city systems.

5 "Global Health Observatory Data." World Health Organization, (2018). http://www.who.int/gho/urban_health/situation_trends/urban_population_growth_text/en/

6 "Gartner Says Smart Cities Will Use 1.1 Billion Connected Things in 2015". Gartner.com. https://www.gartner.com/newsroom/id/3008917.

Problem Overview

Cities are not orderly places and predictable problems with "one size fits all" solutions are elusive. Instead, cities are living organisms made up of thousands or millions of moving parts, both human and non-human, whose uses, motivations and preferences evolve every millisecond of every day. As mobile technology has become more advanced, less expensive and increasingly ubiquitous, it is commonly used to collect large sets of personal user data, including location information, search history and purchasing preferences. This information is used by the collecting agents and their partners (businesses, government, etc.) to, ostensibly, improve, innovate or disrupt myriad business, lifestyle and municipal inefficiencies. Bringing these technologies to bear in creating responsive urban environments is at the heart of smart city design and implementation. As a reflection of the relationship between citizens and their environment, smart city development must, therefore, be an ongoing participatory design process between city government administrators and citizens themselves. This fact necessitates the development of a toolset that both civic designers and citizens can use to evaluate the data that they prefer to share in order to co-create interventions that work to alleviate the problems endemic to city life for the benefit of all. As Ingrid Mulder of Delft University points out, "while initial debates mainly highlighted the potential of smart technologies as catalysts for future city developments related to societal challenges, more recent debates have increasingly stressed the voice of the citizen. Deploying Internet of Things (IoT) technologies or Open Data in order to increase efficiency of public services such as public transportation, traffic management, or energy management do not necessarily lead to an improved experience of city life and increased well-being of citizens."[7]

In addition to concerns of citizen voice in the design of smart city technologies, there is also the need for cities to address technological problems with the utmost attention to privacy and security. Although social media platforms have grown into primary communication tools, for example -- according to a 2018 Pew Research survey, 88% of American adults "say they use social media sites"[8] -- citizens are in-

7 Peter Van Waart, Ingrid Mulder, I. & Cees de Bont, "Participatory Prototyping for Future Cities." Presented at Participatory Innovation Conference 2015. The Hague, Netherlands. Retrieved from: https://www.researchgate.net/publication/276290920_PARTICIPATORY_PROTOTYPING_FOR_FUTURE_CITIES.

8 Lee Rainie, "Americans Complicated Feelings About Social Media in an Era of Privacy Concerns." Washington, D.C., Pew Research Center (March 2018): http://www.pewresearch.org/fact-tank/2018/03/27/americans-complicated-feelings-about-social-media-in-an-era-of-privacy-concerns/.

creasingly worried that their personal data is jeopardized by businesses and governments that collect and process it. The same Pew report states that "a 2014 survey found that 91% of Americans 'agree' or 'strongly agree' that people have lost control over how personal information is collected and used by all kinds of entities. Some 80% of social media users said they were concerned about advertisers and businesses accessing the data they share on social media platforms, and 64% said the government should do more to regulate advertisers."[9] Furthermore, "Six-in-ten Americans (61%) have said they would like to do more to protect their privacy. Additionally, two-thirds have said current laws are not good enough in protecting people's privacy, and 64% support more regulation of advertisers."[10] In light of the diminished reputation of Facebook in response to the Cambridge Analytica scandal, for example, this attitude toward data agency seems likely to remain in place.

There is, however, a very real "privacy paradox" at play in the relationship between people and their data security preferences which must be addressed at the design stage. The tension between what personal data end users are willing to give up, what they expect in return for it and what privacy and security expectations they place on collecting agencies can be difficult to assess and assuage. An understanding of how citizens see data privacy in the context of governing their living environment as opposed to their online activities shopping or engaging in social media is primary to smart city design.[11]

Finally, in addition to these problems is the fact that trust in government remains near historic lows.[12] "Only 18% of Americans today say they can trust the government in Washington to do what is right "just about always" (3%) or "most of the time" (15%)."[13] Attempting to reframe the compromised relationship between citizen and government through civic interventions may be difficult to envision but there are many examples of a demonstrated interest on behalf of citizens to engage government when approached. "Several diverse initiatives at the state and local level have shown in recent years that the public will, if asked, provide their input into government decision-making or

9 Ibid.

10 Ibid.

11 Luke Younghoon Chang, Siew Fan Wong and Hwansoo Lee, "Understanding Perceived Privacy: A Privacy Boundary Management Model." Paper presented at the 19th Pacific Asia Conference on Information Systems, Singapore, July 2015: https://www.researchgate.net/publication/276028181_UNDERSTANDING_PERCEIVED_PRIVACY_A_PRIVACY_BOUNDARY_MANAGEMENT_MODEL.

12 Jane Wiseman, "Customer-driven Government: How to Listen, Learn and Leverage Data for Service Delivery Improvement." Data Smart City Solutions, (August 20, 2015). https://datasmart.ash.harvard.edu/news/article/customer-driven-government-721.

13 Pew Research Center, Public Trust in Government: 1958-2017. Washington D.C., December 4, 2017: http://www.people-press.org/2017/12/14/public-trust-in-government-1958-2017/.

service delivery improvement."[14] Wiseman cites a variety of projects in New York, Pittsburgh and Philadelphia for support, while Boston, San Francisco and Austin (among many others) also feature forward looking citizen engagement activities to inform government.[15]

Enabling citizens to play a primary role in developing procedural fairness is an important way for city administrators to gain popular insight as well as consent.[16] A fundamental goal of this work to create further inroads into normalizing the relationship that citizens experience when working with their own civic representatives.

14 Ibid.

15 Wiseman, "Customer-driven Government," 2015.

16 Mary J Culnan and Pamela K. Armstrong, "Information Privacy Concerns, Procedural Fairness, and Impersonal Trust: An Empirical Investigation." Organization Science. 10(1). (January/February 1999),104-115: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.483.7568&rep=rep1&type=pdf.

Description and Use Case Example

Van Zoonen developed her framework as a way for researchers that to understand data preferences rather than to create an actionable, practical intervention. "The privacy framework can be used in two combined ways: first, to develop a set of academic hypotheses that contribute to a more situated understanding of people's privacy concerns; and second, to understand the policy challenges that specific smart city technologies and data usage may throw up to local governments."[17] The development presented here seeks to take this work a step further: to engage citizen end users in a participatory design intervention using these matrices and to then measure and analyze the results to inform broad data policy for city administrators, provide guidance for civic design choices and, ultimately, to help create a design system based on the preferences expressed by the participants. Finally, a design outcome specific to this work is produced that enables the citizen to visualize and make informed decisions about where their data is collected, how it will be used and whether they want to actively mediate that collection by opting in or out.

Using van Zoonen's matrix in a practical workshop environment can be carried out, employing simple paper and pencil or, if budget, time or funding constraints necessitate, with commonly accessible digital tools. As shown in fig. 2, the work takes place within a simple 2 x 2 matrix that places data use (from data collected to provide service on the left to data for surveillance on the right) on either end of the horizontal axis and anonymization on the vertical axis from personalized data at the top and impersonal at the bottom. This creates a quadrant system that asks end users to place data privacy preferences within a quadrant in response to specific questions about policy and smart city designs.

The matrix itself is a fairly straightforward representation of a multiple choice selection graph that is commonly used for a number of purposes. However, a short explanation of the kinds of information that has the potential for collection can be relayed before workshopping begins.

17 Liesbet van Zoonen, "Privacy Concerns in Smart Cities," 2015.

I.

SERVICE/ANONYMOUS

In this quadrant we might find data being collected to provide a broad set of services. A transit authority that monitors turnstile use so as to better understand capacity and build out infrastructure in response is an example of data collected in this quadrant.

II.

SURVEILLANCE/ANONYMOUS

Anonymized surveillance data such as security cameras that simply record but do not save or transmit further user data or traffic sensors that monitor flow to maximize traffic regulation but are not used by law enforcement to identify criminal activity might be collected in this quadrant.

III.

SERVICE/PERSONAL

The data collected in this quadrant is non-anonymized and will be used for the purpose of supplying a service. Examples might be retail or restaurants who collect location data in order to tailor advertising to a particular user. Data collected in this quadrant is valuable and may be sold on to other interested parties.

IV.

SURVEILLANCE/PERSONAL

This quadrant contains data that is non-anonymized and used for surveillance purposes. Security cameras and sensors that connect location/GPS data to device IP addresses or that collect license plate numbers along with vehicle position are some of the data collected in this quadrant.

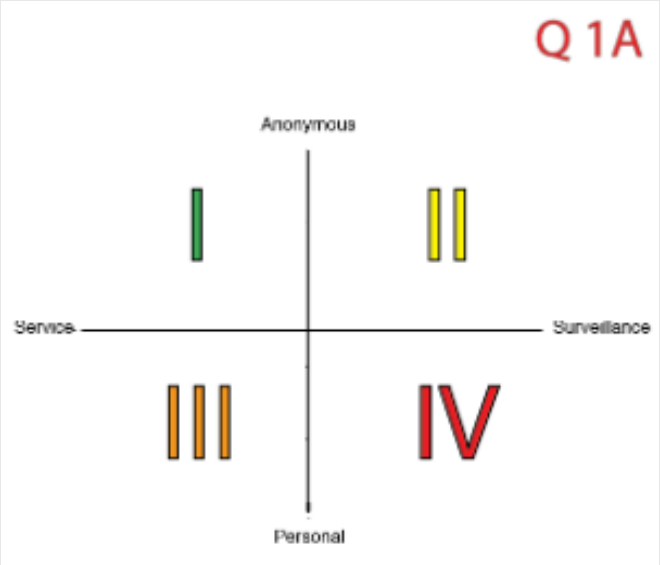


Fig. 2. An example of an updated design for van Zoonen's matrix reimagined as a card to present to the public during a data policy design workshop.

As an example of this matrix in practice, a participant is given a card with a blank 2 x 2 matrix on one side and is asked to circle the number (I, II, III, IV) in the quadrant that best represents their data collection preference based on a question about an actual or hypothetical intervention written on the other side of the card.

Initially, the questions begin at their broadest. In this example, the question seeks to gain insight to the general disposition of the end user toward city-sponsored data collection for surveillance use. As answers are returned and tallied, further questions can be tailored to ever more narrow queries. As the questions narrow, the answers should become more revelatory and clear patterns should emerge as to where participants draw the line on privacy. This should provide even more clarity as answers from a number of workshops are compiled and trends are discovered. The following is a practical sample of instructions, questions and results using the matrix.

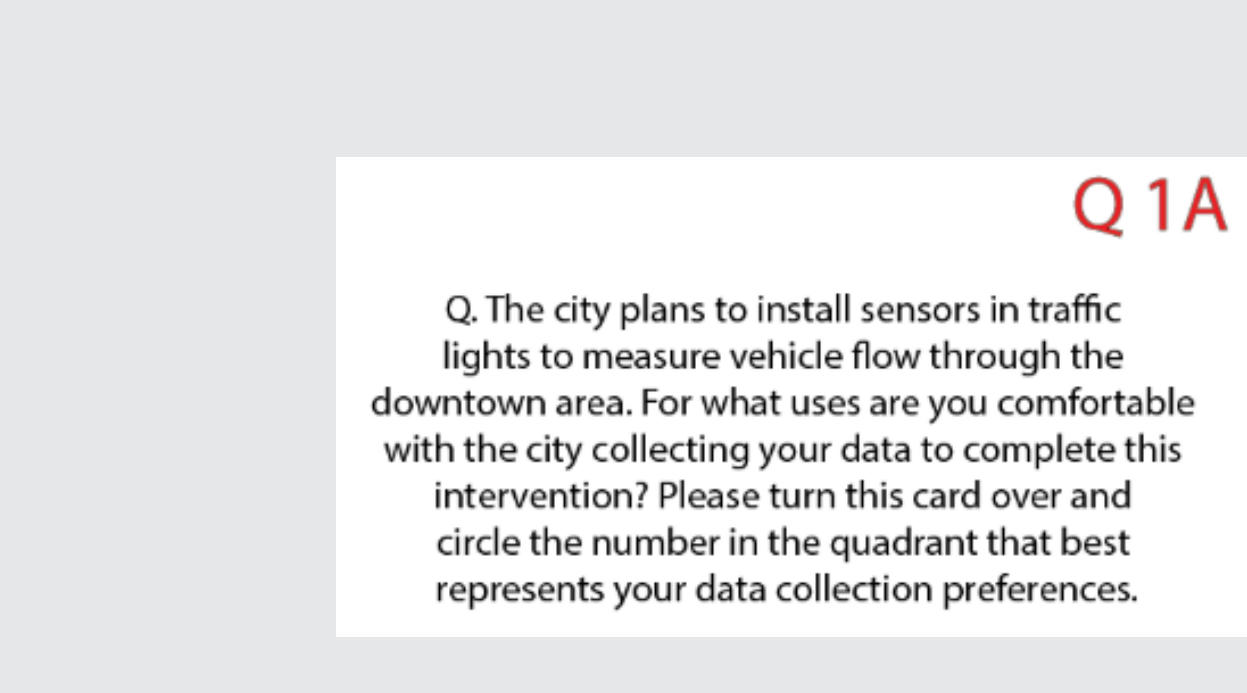


Fig. 3. The opposite side of the quadrant graph which features the main question to be addressed.

Viewing and Analyzing Outcomes

While cities that utilize this concept as a policy design aid may develop their own tools to analyze the outcomes uncovered through the workshops, one simple way of viewing this data to give it clarity and make it more actionable is to tally the returns on a blank quadrant chart as shown in fig. 4. To expand upon the example given previously, each set of questions will have their own tallies and will feature responses of greater detail as the questioning narrows. In the case of the above question, fig. 4 shows a return of 16 users who prefer that the city collect anonymized data for traffic surveillance while 6 would find personalized data to be acceptable. The next question (Q1B) might suggest that the city is considering collecting license plate information under this data collection campaign. The returns from that question should see a change in the number of responses that would find that to be agreeable. To illustrate, perhaps the number in quadrant 2 rises to 19 while quadrant 4 falls to 3. This would suggest that collecting license plate numbers crosses the line for several more end users. A next question (Q1C) might ask about facial recognition or automatic ticket generation. The outcomes of these questions as revealed in the tallies should show a trend in one direction or the other. Each question and its responses should build on each other to present an increasingly clearer picture of the data policy preferences of the workgroup. This should provide high quality information to policy designers with respect to focusing their data collection efforts.

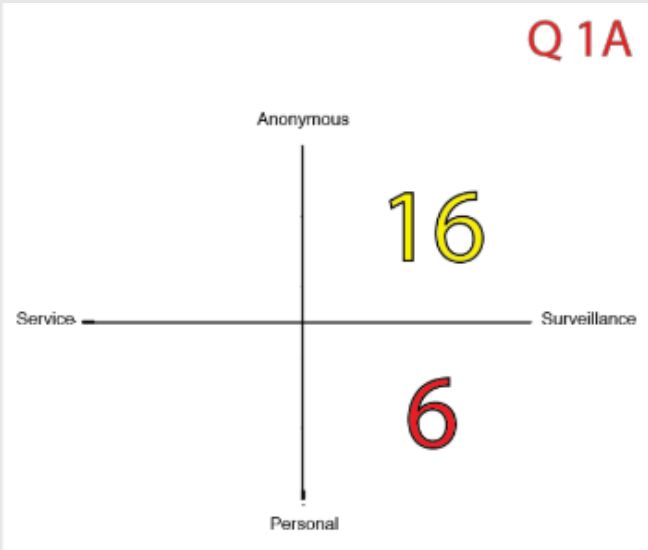
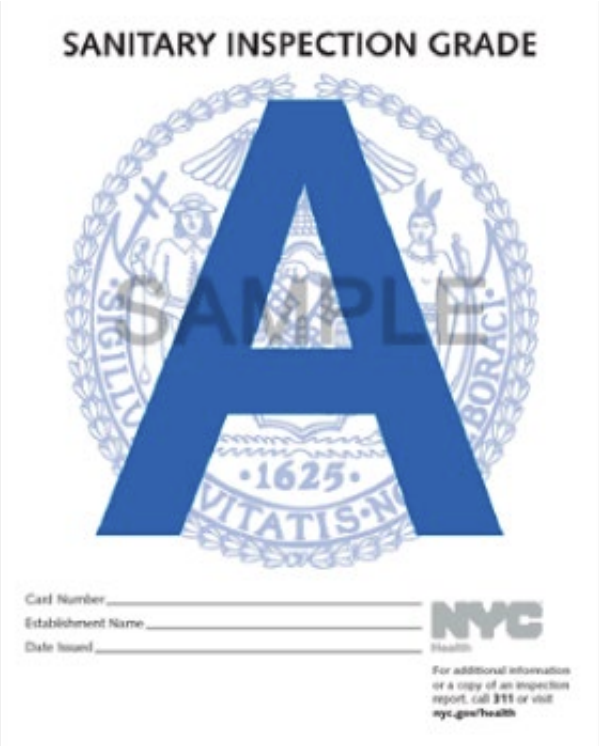


Fig. 4. A blank quadrant graph is used to tally the returns. The mark in the top right corner signifies that these results relate to Question 1A. Further, more narrow questions will carry the demarcation of Q1B, Q1C, etc. A new, unrelated question will be Q2A

Engagement in the Field

Now that an intervention has been developed to inform policy designers and government administration of data collection preferences, how might the government let the public know that they have used this information to design civic media interventions? One way for the public to visualize these results and make real time determinations as to whether they are comfortable with data collection in a given environment can be found in the sanitary inspection grade system used across American cities for consumers to understand to what extent a food establishment adheres to public health standards. Reports show that these posters have "lead to significant improvements in restaurant sanitary practices."[18] The report also finds that the signage has been helpful to consumers, with "81 percent report seeing the letter grades in restaurant windows, and 88 percent consider the grades in their dining decisions."[19] Along with interventions like the 311 service, the sanitary inspection grade posters are a good example of government and citizen working symbiotically to improve city life.

Fig. 5. A health grade sign used by the city of New York to demonstrate adherence to sanitary regulations. The sign is required by law to be displayed in the front window of food establishments.



18 NYC Health. Restaurant grading in New York City at 18 months. New York, NY: https://www1.nyc.gov/assets/doh/downloads/pdf/rii/restaurant-grading-18-month-report.pdf

19 Ibid.

Inspired by the clear information that these health grade signs transmit, a similar solution to display the outcomes of citizen data preferences could be developed. Below is an example that:

- Clearly indicates the quadrant where the data collection of a given data intervention falls. A restaurant that collects personalized information for surveillance purposes, for example, might display a sign with the Roman "II" to signify this.
- Provides a QR code that links to the city website with a simple definition of the information this quadrant number collects along with greater detail, perhaps provided by the vendor themselves, that gives greater context to the data collected there.
- The QR code can be used as a data source to inform mobile application-level solutions that limit or block data collection that is represented by this quadrant.
- Supply a link to city developers/designers should the user wish to engage further.

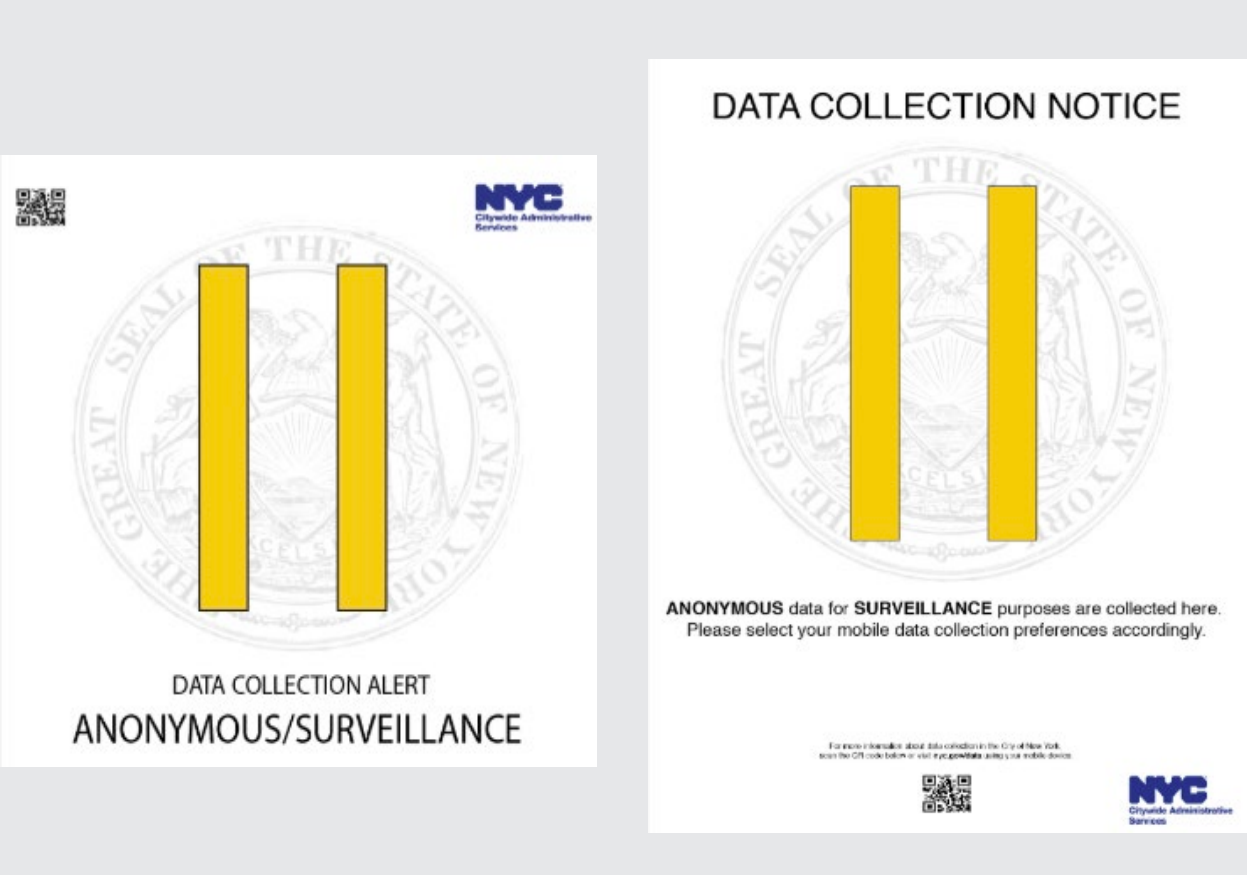


Fig. 7. A mockup of a sticker of the same poster to affix to smaller and odd-shaped surfaces.

Fig. 6. A mockup of a Data Collection Notice poster, inspired by the NYC Sanitary Inspection Grade poster in use today.

In some cases, such as on a lightpost or utility box, a poster is impractical. For those situations, a sticker such as those used by the Bureau of Weights and Measures to ensure gasoline pump accuracy could be affixed.

Ultimately, the public display of data preferences will enable citizens to engage with this valuable dataset that helps determine how these important policies develop. It gives a level of transparency to government at the policy creation level and asks the public into the process. This adds a level of legitimacy seldom experienced by the public in policy development which seeks to result in a far higher level of trust that government is taking user preferences into account as they design interventions that will have a dramatic effect on the livability of their city.

Potential Outcomes

As a result of this kind of design thinking, what kind of preferences might we discover and what kind of rights and rules might they encourage in our civic designs? While the public cohort who participate in workshops or other design methods will ultimately articulate the values they want expressed in data policy, three particular characteristics are central to citizen-focused policy: transparency, accountability and empowerment. The following are some examples of the kinds of policy preferences designers might better understand as a result of using the intervention outlined here:

TRANSPARENCY

A clear directive as to what data is being collected and where. At a minimum, this would give users the ability to make meaningful personal decisions about whether they wish to be present in locations where they have an aversion to having data collected or not.

OPT IN/OUT

The ability for citizens to opt out of data sharing completely or on a case by case basis. This allows those that object to being a data source to have their data ignored. As an additional benefit, this scenario forces municipalities to publicly identify what data sets will be used for and make a cogent case for opting in. Over time, patterns may emerge as a function of opt in/out policies which establishes a certain character for the city. It may become clear, therefore, that a potential intervention would or would not be broadly acceptable based on historical opt in/out preferences.

CLARIFYING OPEN DATA

This gives the public an awareness of the data that is collected that they cannot exercise control over. Anonymous data that measures how many cars pass through an intersection and at what speed is different than collecting detailed data such as license plates or photographs of driver/passenger faces. Data collection doesn't always mean surveillance.

ACCOUNTABILITY

Mechanisms for stopping, suspending or reigning in projects that rely on public data if the projects swell in cost or introduce unintended consequences. Accountability at this level is uncommon as projects already have momentum, approved budgets and contracts that will pay out whether projects proceed or not. Citizens of smart cities, however, should be able to exercise control over whether they will live under an unsustainable technology or intervention, especially if they will be paying for it. This may be as simple as designing a way to withhold data collection or as difficult as shutting down an entire operation.

SHARED ACCESS

The ability for the public to take advantage of city data collection efforts in order to build upon them and create new interventions themselves. Many users may be able to envision uses for city data that go otherwise undiscovered and aid in innovating the next generation of smart city technology.

Limitations and Challenges

There are some limitations to this intervention. First, it is imperative that more detailed information be collected to offer a more complete picture of citizen data policy preferences. One of the strengths of interventions like this is its simplicity; designers and researchers can gain clear and actionable information with easily understood buy-in from end users. The information here lacks nuance, however, and although many interventions could start here, they will likely need to be expanded upon.

Importantly, this intervention as described is hypothetical and must be tested in an actual workshop environment. As in many cases, the information collected in use may yield outcomes that stray from expectations. The next step in this research is to put the matrix to the test in a participatory design process to discover how closely the outcomes align with those as described in this paper.

C O N C L U S I O N

As technology continues to permeate every facet of our lives, smart city tech will continue to advance and connect us to ever more products and services including directly interacting with our own cities. The public are primary stakeholders in the development of smart environments; they are invested physically, economically and politically. If their activity will be captured in the form of data and used as the resource that drives infrastructure investment and responsive services, they should have a defined and powerful voice in the conversation that decides how smart city technologies will redefine how they'll live. The design tool outlined in this paper suggests a simple intervention that most citizens can understand and that can, when used to capture citizen preferences over data privacy in a workshop environment, be used to inform policies and directives that prioritize these preferences. This seeks to strengthen the bonds between citizen and government by providing actionable outcomes to give people increased agency over their increasingly valuable and important transactional data.

Biography

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Neil Perry

Neil Perry is a civic media designer and researcher with a focus on the impacts of big data on society. Neil holds an undergraduate degree in Government from Harvard and an MA in Civic Media from Emerson College. He is currently finalizing applications for doctoral study.

About the Journal

The Journal of Civic Media seeks submissions for its second issue. Published by the Engagement Lab and directly linked to its Media Design master's program at Emerson College, *The Journal of Civic Media* is a semiannual publication. It focuses on the art and practice of civic media and technology to facilitate the democratization process around the world, by means of both local and global digital platforms and community-based media initiatives that promote participatory research methods and give voice to diverse communities. The objective of *The Journal of Civic Media* is to provide an open forum for scholars, practitioners, students and the general public, to harness civic engagement and to rethink the complex and ever-changing landscape of the field in the digital era.

Call For Submissions

Civic imagination, a term coined and largely explored by Henry Jenkins, refers to "the capacity to imagine alternatives to current cultural, social, political, or economic conditions." The act of imagining civic futures for the sake of a better world is not progressive necessarily. What civic futures are? How does civic imagination differ from utopias or dystopias? What challenges does civic imagination entail? What does it take to mobilize citizens and communities to imagine themselves as civic agents, capable of imagining their own futures? How are the notions of "change" and "progress" embedded in civic imagination? How can civic imagination be implemented in the real world and what is the role of technology in this process of change? These are some of the issues that the second issue of The Journal of Civic Media seeks to address from a variety of perspectives. Submissions across disciplines, comparative media and methodologies as well as case studies are highly encouraged.

The Journal of Civic Media seeks submissions on all aspects related to civic imagination, including but not limited to:

THEORIES OF CIVIC IMAGINATION
EFFECTIVE CIVIC LEADERSHIP: LESSONS FROM THE PAST
GENDER AND CLASS IN CIVIC IMAGINATION
IMAGINING CIVIC FUTURES
CHALLENGES AND OPPORTUNITIES FOR CIVIC FUTURES
ANALOG/NON-DIGITAL APPROACHES TO CIVIC IMAGINATION-RELATED ENGAGEMENT AND RELEVANT CASE STUDIES
THE RACIAL IMAGINARY

We invite scholars and practitioners, graduate students and faculty in the civic media field to submit paper proposals. Papers should be between 1,500 and 2,500 words, including references in the Chicago Manual Style.

Please review *The Journal of Civic Media*'s full Editorial Policies prior to submission. Inquiries and submissions should be sent to journalofcivicmedia@gmail.com by 5 p.m. on March 1, 2019. Selected submissions for the current call will be published in the spring 2019 volume of *The Journal of Civic Media*.

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