Cities Remix a Playful Platform

Experiments to Embed Pokémon GO, from Open Street Festivals to Neighborhood Libraries

Playful Cities Group, American University

Cities Remix a Playful Platform: Experiments to Embed Pokémon GO, from Open Street Festivals to Neighborhood Libraries

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http://playfulcity.net/pogo

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Portions of this report will be republished in a longer book on cities and neighborhood empowerment with games by Benjamin Stokes, forthcoming 2019.

A Report from the Playful Cities Group, with American University Game Lab and the Center for Media and Social Impact (CMSI)
Washington, DC

GAME LAB

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KNIGHT
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Dear city planners, game scholars, and colleagues,

We began with a question: How can cities position large platforms – including those managed by game companies – for local goals? This report offers a deep dive into a series of city experiments, not just with the technology but with player networks and game mechanics.

A turning point came mid-2017, when a half-dozen cities responded to the rise of Pokémon GO. This was a full year after the initial release of the game, and millions were still playing. While most cities stood back to watch their residents play, these few conducted proactive experiments. Each embedded the game in a different local campaign.

For example, San Jose successfully recruited more than 35,000 people to play within an even larger street festival to reimagine the city, and in the process released more than $450,000 into the local economy. In Philadelphia, neighborhood libraries created special maps for players to learn about community murals and local culture. In Boston, youth rewrote game content to describe local monuments in their own voice.

These experiments tested how a highly-visible game might be aligned with local goals, from placemaking for smart cities to neighborhood empowerment and open data. Most were conducted through an unusual collaboration between the company behind Pokémon GO, Niantic Inc., and a major American funder of community innovation, the John S. and James L. Knight Foundation.

Like many experiments, the outcomes were hopeful yet uncertain. This independent report, led by the Playful Cities Group at American University, sets out to document and investigate what happened. Over six months, we flew around the country to observe, interview, survey and question what each city attempted to do.

A central finding is that cities have a surprisingly broad range of available tactics to adapt or "remix" the original platform. Some cities used the game as a simple lure, drawing players into physical space. Others sought strategic alignment, releasing players' latent desire to connect with their city and neighbors. As with any global infrastructure managed by a private firm, there are tradeoffs and risks too. For cities to maintain their unique flavor, they may need to find their own ways to position platforms like Pokémon GO for local goals, including through unexpected partnerships, content negotiation, networked outreach, and playful embedding.

We hope you enjoy the report, and look forward to hearing about your experiments too.

Sincerely,

Benjamin Stokes, Samantha Dols, and Aubrey Hill

American University Game Lab and the Center for Media and Social Impact (CMSI)

Provocations for readers (and the future of cities)

Good lenses can amplify insights. For novel designs[1], our mental models and categories may not fit cleanly. To guide our readers, we propose several provocations to help frame this report. For the future of cities, good lenses can make sure we focus on the right kind of success – and guide local investment. Or if you would rather, treat the following as discussion questions.

1. **Do playful approaches** to technology have different mechanisms than most **"Smart City"** movements and **civic tech**? Compared to games, civic tech often lacks frameworks to optimize engagement for satisfying choices, deliberate difficulty, and sustained uncertainty. Games are different, and are poorly explained as raw incentive systems. (For example, simply adding points rarely makes games fun.) The tactics in this report hint at different ways to optimize technology design for cities.

2. **If public space** is a **hybrid** of physical and digital, what are the hybrid **tactics** for civic engagement? Many places can no longer be understood by the physical experience alone. Navigating space and discovering place is happening in new ways. But do these new ways dampen the visibility of our cultural assets in favor of utilitarian goals? Several city strategies in this report point to new ways to surface – and allocate – the cultural assets that matter for neighborhood identity.

3. If civic life is about **networks in the public interest**, and games come with self-organizing groups, how should we respect those networks? Should we invite player leaders to help us organize, and let them speak at public events? Do we undermine local networks when our civic invitations are only to users and players as individuals?

4. Is this **augmented reality** (AR)? Yes, and yet many of the central mechanisms may depend more on human networks, fan culture and playful challenges than augmentation. If you are a technologist, what does it mean for AR to augment community and be "network first" with graphics second?

5. Who are the right **partners** for **localism**? Cities are vital in our modern world – but platforms like Pokémon GO are often globally managed. National funders like the Knight Foundation may serve as brokers between government and entertainment firms. How can a deliberate structuring of power relations be useful for cities that seek control over their local identity and experience?

Of course, this list can go on. More ideas will be posted on our project website (http://PlayfulCities.net/pogo). Have your own ideas? We would love to hear them for future versions and related research. The most powerful provocations are often tied to larger debates and controversies in fields from urban planning and media studies to neighborhood empowerment. Let us know how your work intersects.

1 Despite some important precedents, the platform and ecosystem described in this report represent something new. The network scale of *Pokémon GO* achieved a tipping point that opened new possibilities for embedding play in existing city campaigns, and for organizing players. Yes, there are important forbearers from academia – and from 15 years of GPS-based play, centuries of city-based play, and from massive networks of online games – just to name a few. Yet this report will argue these roots come together with new properties and implications for city organizers.

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> We are facing the challenge of engaging citizens with the data layer of the cities they inhabit.
>
> – Miguel Sicart, play scholar[2]

Introduction

Pokémon GO was an instant hit when Niantic released the game in 2016. The game attracted millions of fans—and, more importantly for the purposes of this report, brought new opportunities for city organizing to local streets. After the craze subsided a bit, the cities featured in this report began to experiment with the game. In campaigns and public events, they discovered new tactics for tapping play, networks of players, and local data.

Some city officials were surprised to discover that a year after Pokémon GO launched, millions were still playing[3] – and forming networks that mobilize around play. To tap into the game, the networks of players were as important to cities as the local data and history embedded in the game. The cities varied enormously in their approach. Taken together, the results hint at the future of cities and the choices they increasingly face.

Most cities leave the game entirely to the players and the company managing it. In that passive mode, games like Pokémon GO still function as a sort of augmented regionalism.[4] But this report looks at experiments that go further, when cities and their partners are proactive, and seek to shape the impact of the game to align with local needs and goals.

2 Miguel Sicart, "Play and the City," ed. Judith Ackermann, Andreas Rauscher, and Daniel Stein, *Navigationen*, Playin' the city – artistic and scientific approaches to playful urban arts, 16, no. 1 (2016): 30.

3 Six months after launch, approximately 5 million players were active daily. In the months that followed, this number remained relatively stable -- in contrast to the 2016 declines from the record-breaking launch that peaked with 45 million daily users. Sustained use of *Pokémon GO* is on the same order of magnitude as Ingress, the first augmented reality game released by the same company in 2012, which the company says was downloaded more than 20 million times in its first five years. See Sebastian Anthony, "A Year in, Millions Still Play Pokémon Go (and Will Likely Attend Its Festival)," Ars Technica, July 5, 2017, https://arstechnica.com/gaming/2017/07/a-year-in-millions-still-play-pokemon-go-and-will-likely-attend-its-festival/; "Press Release: Niantic Prepares to Reboot First Augmented Reality Game with Ingress Prime" (Niantic, Inc., December 4, 2017), http://nianticlabs.com/press/2017/ingressprime/.

4 Shira Chess, "Augmented Regionalism: Ingress as Geomediated Gaming Narrative," *Information, Communication & Society* 17, no. 9 (October 21, 2014): 1105–17, https://doi.org/10.1080/1369118X.2014.881903.

Along the way, this report sheds light on an unusual partnership that funded and gave legitimacy to the city experiments. One half of this partnership was Niantic -- the company behind Pokémon GO; their games are at the forefront of bringing play to local streets at scale. Crucially, Niantic provided cities with the in-kind staffing, advice and technical assistance to make most of the major experiments possible. The other half of the partnership was the philanthropic Knight Foundation, which has staff and local grantmaking in most of the featured cities. Knight leveraged existing funding and relationships for the project in the name of building vibrant communities. Weekly phone calls between these two national partners proved essential for coordinating most of the city efforts. (As researchers, we listened in to several of these calls.)

In 2017, our research team at American University proposed to track what cities were doing with Pokémon GO. We received joint funding from Knight and Niantic to spend half a year tracking a half-dozen cities, [5] [6] as outlined on the following page.

5 Our data collection included interviews with dozens of city leaders, players, and organizations. Hundreds of players filled out our surveys, dozens welcomed us to their raid groups for the game, and countless residents at public events shared their feelings about the possibilities of aligning play with the public good. Researchers Samantha Dols and Aubrey Hill were especially vital for the data and analysis of this report. Joint funding for our work came from the joint fund of the John S. and James L. Knight Foundation and Niantic, Inc., and included support for our travel city events, survey costs, and producing a white paper to inform city leaders about the emerging issues from embedding mainstream games in city campaigns.

6 The primary cities for the partnership included Charlotte (NC), two different projects in Philadelphia (PA), San Jose (CA), and Akron (OH). We also collaborated with researchers in Boston (MA) to track their independent project with Niantic, and monitored the Chester (UK) collaboration between Niantic and Big Heritage. We also gathered basic data on independent efforts in New Bedford (MA) and Atlanta (GA).

Summary of City Experiments

Street festivals and crowd engagement

» Charlotte, NC: **Open Streets 704** (May 7, 2017)
» Akron, OH: **Downtown Akron** (August 26-27, 2017)
» San Jose, CA: **VivaCalleSJ** (September 17, 2017)
» Philadelphia, PA: **Philly Free Streets** (October 28, 2017)

Persistent neighborhood tours

» Philadelphia, PA: **Free Library System** – 5 branch libraries (July-August, 2017)
- Tacony LAB in the Northeast
- Queen Memorial Library in Point Breeze
- Fumo Family Library in South Philadelphia
- Lucien E. Blackwell West Philadelphia Regional Library in West Philadelphia
- Parkway Central Library in Logan Square

Data layer and sharing power

» Boston, MA: Participatory **Pokémon GO** and **AR Stories** (July-November 2017)

City models (misc.): tourism (Chester, UK – **Chester Heritage Festival** - July 17, 2017), do-it-yourself tours (New Bedford, MA, and beyond); see our website for more.

Additional civic campaigns (beyond the cities scope of this report): tsunami relief fundraising in Japan, Earth Day environmental trash collection, and awareness of the Sustainable Development Goals.


Three models

We take a deep dive into three models for how cities can engage with the platform and its players. Each has distinct tactics and implicit tradeoffs. They are:

1) Open Streets festivals – most prominently in San Jose, alongside similar efforts in Charlotte, NC, and Philadelphia, PA. This is a model for scale, with large events that often take over city streets.

2) Persistent neighborhood tours – featuring five branch libraries of the Free Library of Philadelphia. Strong neighborhoods often rely on libraries as community anchors, yet their role is changing – and increasingly they can host events that go beyond their walls.

3) Sharing power to negotiate the data layer – a provocative model that seeks to empower local groups with more control over the data that represents them. The implications, especially for marginalized groups, go beyond games to the data layers that increasingly shape cities, from navigation to finding restaurants and more.

These three models were selected for their contrast, and for how they represent the most prominent approaches we have seen. Additional city profiles are featured on our website.

Our story begins in San Jose, a city near the headquarters of Niantic. If you played the game in the early days, this scene will feel very different. Yes, players are still walking physical streets to catch virtual creatures[7] – but in 2017 new mechanics were added that require joining together in groups to reach higher levels of play. But in San Jose, even hardcore players could feel that the scene had changed …

7 The original version of *Pokémon GO* felt in many ways like insect collecting. As players walk down physical streets, their phone might alert them to a virtual creature called a Pokémon nearby. By following their map, they can reach the creature and attempt to capture it. Just like insect collecting, some Pokémon are rare and highly prized by players. Others are hard to capture, which in the game requires throwing a virtual ball at the Pokémon appearing on the mobile screen. The connection to insect collecting is not a coincidence, but traces back decades to the boyhood hobby of Pokémon creator, Satoshi Tajiri, who is one of the most well-known game designers in the world.

Model 1:

Open Streets (from San Jose to Philadelphia)

On a chilly autumn Sunday, city officials including the mayor of San Jose climb onto the temporary stage. They face a crowd of cyclists, walkers and Pokémon GO players. Players are clustered in small groups, often with the telltale cable trailing to a back pocket and their spare battery. (Drain is a real issue for serious play.) The Open Streets festival is about to begin.

At the podium, one official warms up the crowd. "Today," he announces, "we are going to turn seven miles of streets into the largest park in San Jose." The previous year, the city had convinced more than 100,000 people to attend Viva CalleSJ 2016 – their primary event for Open Streets.[8] This year, the city hopes to boost that number with Pokémon GO players, including with special rewards for players.

Worldwide, and quite apart from games, dozens of cities have joined the movement for Open Streets, which creates festivals by temporarily closing streets to motor vehicles – and opening them for biking, walking, and open-air activity. The goal in San Jose was also to provide the civic imagination; when Mayor Sam Liccardo took the podium, he called the day an opportunity "to reimagine our public spaces."

The movement for Open Streets is at the forefront of urban innovation in new ways to engage residents, including to "activate" public space with free and social programming. For the most part, this movement is non-digital, and even feels anti-digital at times, with an emphasis on getting people off their screens and interacting with each other in "real" life. City planners typically choose Open Streets routes to highlight specific neighborhoods and bring new business to local shops. They are community celebrations, with a little exercise built in.

The mayor ended with a little jesting advice. He warned cyclists that if they see people on their phones, "do not hit them… those are our Pokémon players!" His caution was not unusual; no one knew how many players were coming, or how they would mix. Implicitly, the mayor's tone also put a little distance between the cyclists and the players; he may be joining the bikers proudly, but he expressed no intention of visiting a PokéStop.

8 Viva Calle San Jose, "A Recap of Another Successful Viva CalleSJ," October 11, 2016, http://www.vivacallesj.org/blog/2016-recap.

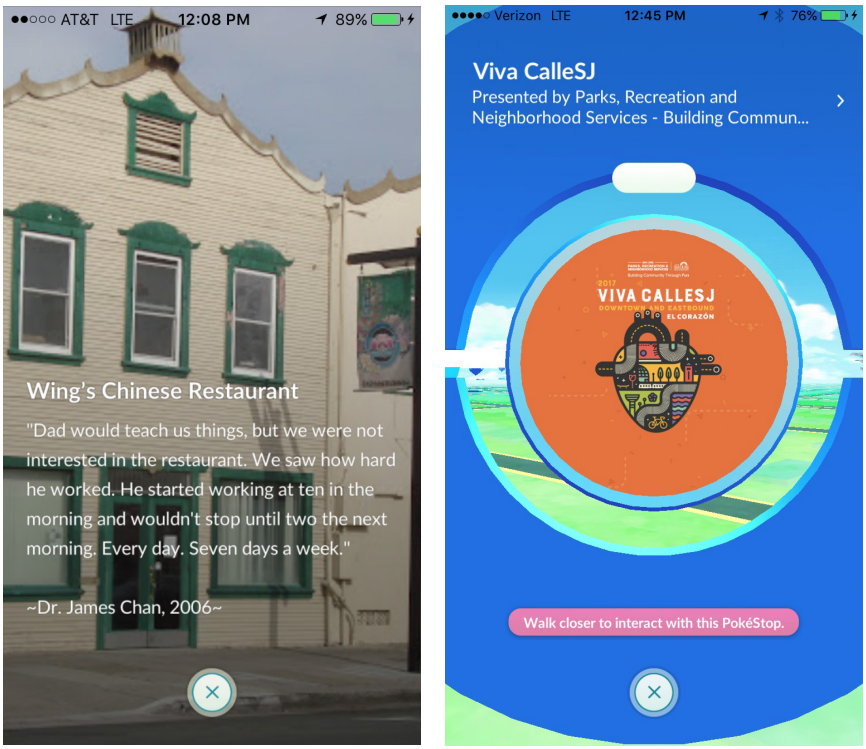

FIGURE 1. *Screenshots of two PokéStops along the route, as seen within the game. One featured an historic Chinese restaurant in Japan Town, and the other a new stop with the Viva CalleSJ branding.*

Nonetheless, by the end of the day, more than 35,000 players had shown up and boosted event attendance by nearly 25%.[9] The players came to play, and to see something new. According to our survey[10] of players who attended, more than 95% of players said it was their first time at Open Streets in San Jose. Most (65%) said they would not have come without Pokémon GO. The attendance boost is comparable to what would be seen at pure fan events for the game[11].

What forces brought the players out, and how did the city position the game to maximize local ties?

9 The city reported 135,000 participants based on counts at key intersections; Niantic, Inc. reported 35,000 unique players engaged with PokéStops and Gyms along the route during the event. As a validity check, an independent study of participants found that at least 20% of attendees claimed to be playing *Pokémon GO* at the event (with the actual number likely to be considerably higher, since it was a write-in question); see Asha Weinstein Agrawal, Hilary Nixon, and Cameron Simons, "A Survey of Viva CalleSJ Participants: San Jose, California 2017" (San José, CA: Mineta Transportation Institute, April 2018), http://transweb.sjsu.edu/research/Survey-Viva-CalleSJ-Participants-San-Jose-California-2017.

10 The margin of error for this survey is +/- 9.7%, given our sample size of 102 respondents, as compared to a population of 35,000 players who attended the event (assumes a 95% confidence interval). Our survey was conducted online after the event, with recruiting primarily to regional player groups on social media.

11 For cultural heritage, the largest prior event that year brought 17,000 players to Chester in the United Kington. For raw tourism, the largest 2017 event was a 3-day event in Japan that brought an estimated 90,000 players, as reported in *AdWeek*, i.e., Brandy Shaul, "Pokemon Go Update Adds Avatar Clothing Inspired by Pokemon Ultra Sun and Ultra Moon," *Adweek*, November 14, 2017, http://www.adweek.com/digital/pokemon-go-update-adds-avatar-clothing-inspired-by-pokemon-ultra-sun-and-ultra-moon/.

Aligning game locations

What did the city do? To begin, the city refined 130 game locations (PokéStops/Gyms) along the Open Streets route. When players are physically near these locations, they can use their phones to retrieve game items or to battle in teams. Each location links to a physical landmark, business or important object. A photograph or graphic can be tied to each, along with a short text blurb.

The game developer granted the city of San Jose the power to select the locations – and revise their description. Such local control was highly unusual for the game, and only happened through the partnership negotiations of Knight and Niantic. (More on this later.)

Weeks before the event, one San Jose staffer investigated the hybrid geography. He biked the entire route, carefully noting each PokéStop along the way from within the game. (In essence, he conducted a survey of the game and the neighborhood aligned with the story the city wanted to tell.) To his surprise, most of the historical spots he was planning to add were already in the game in some form. Yet the full story was often missing.

For example, one of the PokéStops featured an historic business: Wing's Chinese Restaurant. After the city's intervention, the content shifted (see Figure 1 for how it appeared in the game), including a reflective quote by the owner's children. For players, these tiny bits of narrative could be attached to the places they saw. Some stops were quite mundane, like the park exercise station for "Leg Stretch." Others featured public art, including murals with local culture and stories.

The new content went beyond historical insight. The San Jose staffer focused on aligning the game with the event, including adding extra stops at the event "hubs." Each hub in the physical world would feature live music and local business booths, clustered at several places along the route. Especially for bikers, the hubs were a place to slow down, take in local culture and have conversations. The staffer sought to turn the hubs into stickier places for gamers – and in the process, increase the game's alignment with the event. When players gathered at PokéStops and Gyms, their social mixing would now better align with the event spaces.

Indeed, during the event players did concentrate at the city's event hubs. The night before the event, several players had scoped the route and one had created his own map with recommended spots (Figure 3).

Live incentives also helped – digital and physical. San Jose was the first city to offer special "Golden Raid Passes" to players. Niantic representatives wore yellow Pokémon hats and handed out the passes, which functioned like raffle tickets, at three of the event hubs. Approximately 1,000 were handed out at each hub, through bursts that happened every few hours. (Unfortunately, this led to some staff being unpleasantly swarmed; working with crowds in person comes with different dynamics than reaching them online.) One winner was selected for a tour of Niantic's San Francisco offices—a prize that some Niantic staff hoped would be reminiscent of the Golden Tickets that granted admittance to the mysterious factory in Charlie and the Chocolate Factory.

Most pass holders received a more ordinary prize: A glossy poster from Niantic (see Figure 2), which received a few complaints for being so ordinary – but was simultaneously thrilling to a good number of enthusiastic players.

FIGURE 2. *Fans show off the special poster they received during the San Jose event (left); a location shown in the map from the game interface (right) as captured by a fan on YouTube*[12].

In the game, players added temporary incentives of their own. Like special bait at a fishing competition, players can use "lures" to attract Pokémon -- and by extension other players. In San Jose, event staff along the route often took time to add lures to locations near them. Each lure lasted for a limited time (30 minutes).

The result: any player nearby would see event locations highlighted on the game map, and be tempted to head over. Some players used their own lures too, seeking to benefit the community. In other words, players took civic action in the game to affect the real world. For cities, the lures hinted at new staffing needs for civic events: volunteers on-site might serve the public good in person and (often simultaneously) within the game.

Yet the game also brought some unexpected constraints to telling a neighborhood story. In negotiations with Niantic to add PokéStops, city staff discovered that stops had to be separated by a short distance (similar to the width of a street), or they became awkward for players to identify on their mobile screens and interact with coherently. One city location of good repute was rejected for this reason. Niantic might also nix location clusters if cellphone coverage lacked good data (e.g., to ensure a positive crowd experience[13]). In sum, Niantic discouraged locations and monuments that might interfere with their understanding of a good player experience.

Such alterations underscore how games are not simply "civic tech," and reflect the values of the play experience – not just the city. Many city officials we interviewed described Pokémon GO as a kind of technology, but that view obscures some key tradeoffs. If this were technology alone, success would center on the tool's efficiency and the quality of the data. But the value here must also defend the sustained engagement of players. The tradeoff might be worth it, since city databases on their own do not draw crowds, and popular apps for city government tasks often come with a complaint-

12 *Pokemon GO Viva Calle SJ Event Part 2 - Secret Items for Golden Raid Pass Holders! Very Limited!*, accessed January 11, 2018, https://www.youtube.com/watch?v=16F4DBsFdUA.

13 Frustrated crowds at the first "Pokémon GO Fest" in Chicago earlier in that summer established the importance of aligning play with local cellular infrastructure. The aftershock led Niantic to cancel or delay similar events in Copenhagen, Prague, Stockholm, and Amsterdam. For local events to scale, spreading players along a route helps, and some gathering places like stadiums have likely been well tested for crowds, but cellular data in small parks and shopping centers can still vary considerably.

based model that is fairly individualistic.[14] Live crowds point to a new kind of hybrid engagement, but one that comes with tradeoffs. Again, cities should expect that optimizing the experience will affect the data, such as prioritizing cultural locations based not just on their historic value but the need for regularly spaced stops along the route. This is tricky for researchers as well, since subsequent analysis of landmark popularity is then colored by the event and the game structures as well.

Glocal Maps

Location-based games often bring their own map that may not align with standard city maps. Officially, all attendees were encouraged to use the same route. But rare Pokémon can appear anywhere – depending on the species. Some prefer to be near real-world grass (e.g., golf courses), and nearly all have "nests" where that species reliably appears. The game effectively has its own geography of probability for the 300-plus Pokémon species to spawn.

A map of nests near the route was created by one player (Figure 3). The visual gives a hint of how the game can feel to players, with large circles showing Pokémon nests. It is a glocal map, reflecting the global culture of Pokémon alongside the local terrain. For players, the event takes places on both levels, with the map guiding some of their behavior too.

Figure 3. *Custom map of the San Jose route by a Pokémon GO player; large circles are local nests where Pokémon spawn (Credit: Reddit user UnknownStrife.)*

The map hints at where players might detour along the route to catch a rare Pokémon. Like insect collectors, players are often highly motivated to track down a Pokémon they are missing. Such collecting is at the heart of the game. In fact, insect collecting inspired the whole Pokémon universe when it was created in 1996.[15]

14 For example, see Burcu Baykurt, "Redefining Citizenship and Civic Engagement: Political Values Embodied in FixMyStreet.Com," in *AoIR Selected Papers of Internet Research* (Association of Internet Researchers, Seattle, 2011).

15 Brendan Keogh, "Pokémon Go, the Novelty of Nostalgia, and the Ubiquity of the Smartphone," *Mobile Media & Communication* 5, no. 1 (January 1, 2017): 38–41, https://doi.org/10.1177/2050157916678025.

Even when players deviated from the route, the game helped enforce the city's desire for foot traffic. When we attempted to drive the route the day before Viva Calle, the game warned that we were moving too fast – and did not allow us to interact with PokéStops. The game requires a walking pace, with the occasional side-effect of very slow driving by players on local streets (e.g., on their commute, or when avoiding the rain). Such pressures from the game applied when players seek rare creatures near the Open Streets route, and amplified the city's rather blunt tactic of entirely closing the streets for cars.

Economic Battles

The city hoped Open Streets would support local business. Players spent an estimated $450,000 in San Jose for the event, based on survey responses after the event.[16] That is a relatively modest figure, given the raw number of players in attendance (equivalent to roughly $10-15 spent per person). Compared to a typical weekend, the boost in players at PokéStop was about 85 times higher than usual.[17]

For residents, some longer-term benefits will continue. As one player recounted in a survey afterward, "the game is what brought us to the event, but we discovered parts of San Jose we'd never been to before -- giving us ideas about restaurants and retailers that we will try in the future." Spending during the event is predictably focused on food trucks and restaurants.[18]

Not all spending was local. Global chains simultaneously used the game to market local stores, within the game and through custom programming for Viva Calle. Much of this globalization is an ordinary part of the game.

Corporations including McDonalds, Starbucks and Sprint pay to ensure their stores are featured as PokéStops and Gyms. Sponsored locations are thus a revenue stream for Niantic, designed to influence traffic on local streets. Unofficially, 500 million visitors were reportedly driven to sponsor locations in the first year. That is equivalent to roughly $100 million in revenue for location-based advertising.[19] The game effectively provides a new channel for location-based advertising, implicitly aligned with the scale of national chains.

16 This figure averages to $13.84 per player, for the 35,000 players. While nearly a fifth of our survey respondents said they spent nothing, they were balanced out by the 15% of players who spent over $30 per person. This figure is on-par with typical attendees the prior year, see Asha Weinstein Agrawal and Hilary Nixon, "A Survey of Viva CalleSJ Participants: San Jose, California 2016" (San Jose, CA: Mineta Transportation Institute, November 2016), http://transweb.sjsu.edu/project/1628.html.

17 According to Niantic data, the unique player count increased by 8,846%, based on a sampling of PokéStops along the route, as compared to one week prior at those same locations.

18 These categories were the most popular in San Jose the prior year for Open Streets, according to an independent survey of attendees; see Agrawal and Nixon, "A Survey of Viva CalleSJ Participants." Modest economic gains for businesses along the route might be expected, if nearby San Francisco is a guide; see Anoshua Chaudhuri and Susan G. Zieff, "Do Open Streets Initiatives Impact Local Businesses? The Case of Sunday Streets in San Francisco, California," *Journal of Transport & Health* 2, no. 4 (December 2015): 529–39, https://doi.org/10.1016/j.jth.2015.07.001.

19 The estimated cost per visitor is roughly $0.15-50 USD, based on press reports from Niantic and others; see Josh Constine, "Pokémon GO Reveals Sponsors like McDonald's Pay It up to $0.50 per Visitor," *TechCrunch* (blog), May 31, 2017, http://social.techcrunch.com/2017/05/31/pokemon-go-sponsorship-price/.

Using market rates, Viva Calle landmarks received in-game advertising worth tens of thousands of dollars, for just one day.[20] Of course, at the city level the sum is greater than the parts, as the story of San Jose and Viva Calle breaks through at scale and with a portfolio of locations. Crowds matter for the news cycle and public conversation. Yet cities are constantly hungry to evaluate their events with dollar figures, and location-based marketing provides one clear metric.

Another yardstick for economic gain comes from local taxes. While few local governments are likely able to tax the location-based advertising revenue, sales tax can still be collected on in-game purchases, often used by Pokémon GO players to accelerate their play (e.g., buying items that would otherwise take dozens of hours to collect in ordinary play).[21] Such data is not currently made public, but as companies like Niantic increasingly seek to build goodwill with city and state government, they may need to offer transparency on such financials.

One large corporate sponsor went further, and remixed Pokémon GO during Viva Calle. A special "Gym battle" competition took place at two Sprint stores (a national wireless provider). For five hours, hundreds of players gathered at these stores near the event route, competing in one of three large teams. At 5pm, only members of the team in control of the Gym would be entered in a raffle. (Gyms are controlled by only one team at a time. All players are affiliated with one of three colored teams – red, blue, or yellow – that serve as factions in the game.[22])

To tether the game to the company, the "Sprint Gym Battle" required players to check in at the Sprint store in the game and at the store counter. This remix allowed the store to capture contact information for players, while aligning its brand with the event. It also excluded "spoofers," or players who falsify their GPS location.23 The game rewards sustained attention, since teams can help defend a Gym by recharging the Pokémon that defend it from other teams.

At the end of the day, the raffle prizes were for the global giant Amazon.com (hardly matching the "buy local" spirit of the overall event). 24 Informally, local nonprofits could host similar Gym battles, since nothing technical is required from Niantic. But the formal partnership with Niantic made cities feel they should ask before hosting; in at least one city, the request was denied. Thus partnerships can limit some tactics, even as other doors are opened.

20 If we assume that the 35,000 players visit five spots (on average), then the equivalent value as sponsored locations would be between $25,000 and $85,000. Of course, the full in-kind value from Niantic was likely much greater due to company promotions, but validating against corporate rates provides a useful external comparison.

21 The local tax implications are likely similar to Google Maps and other platforms for location-based advertising. Local government is often excluded from the revenue stream. A very small number of cities may benefit in locations where Niantic has offices or staff, by taxing revenue for the company (including payroll downstream). Other cities may benefit if the advertising paid for by a local company (e.g., as sales tax or value-added tax). But for a global or national chain, the purchase might be made in a separate state from the franchises it benefits. Such tax implications vary by country, and are still emerging as location-based advertising evolves. A similar logic can be applied to the substantial revenue from in-app purchases, as players accelerate their progress in the game by purchasing game items from Niantic; fees may go to app store owners like Apple, but rarely to local government.

22 Players choose their team when they reach level five in the game. That choice is nearly impossible to change, and affects who you might play or "raid" with. The teams have associated colors that can be useful for public events: Valor (red), Mystic (blue), and Instinct (yellow).

23 Spoofing is highly controversial in the player community, and is considered by many players (and Niantic) to be cheating since it involves tricking your phone or the app to "teleport" to any game location without physically traveling.

24 Each certificate was $50, and a total of 10 were distributed. The city lacked a similar mechanism to gather the email addresses of players at Viva CalleSJ.

Shifting the demographics

Event organizers can shape how participants come into contact, bridging groups and facilitating neighbors meeting. The first step in shaping the participant experience is recruiting, which is especially important for attaining goals of diversity and connecting residents across lines of race, class and geography. City leaders want press coverage of crowds to reflect the effort they put into making events inclusive and even representative. For issues of representation, public crowds tell a visible story in the press. For the live experience, crowds provide a mirror for the community to see itself, and can legitimize the hopes of attendees to see and celebrate their own diversity.

At Viva Calle, the influx of players was largely from out of town. Only a third of those playing Pokémon GO at the event lived in San Jose, compared to two-thirds of non-players.[25] Fortunately, the goals for San Jose included broader visibility and developing the city's reputation as a tech hub – so city officials expressed satisfaction. Cities seeking a more local mix, such as Philadelphia (see below) deliberately avoided showcasing high-value Pokémon in their marketing and live events; some described this as "not wanting to be too popular."

The balance of ethnic groups was different among players too. On the positive side, the event helped the city to counter-balance the under-attendance of Asians in an unusual way. The year before at Viva Calle, there were a third fewer Asians than San Jose demographics overall.[26] When Pokémon GO was added in 2017, Asian attendees increased by 50% (shifting from 22% in the prior year to 33% of attendees in the year with Pokémon GO [27]). This result hints that the city successfully used the game to shift the demographics of the event in ways they desired. Other shifts were less welcome; there were fewer Hispanic players of Pokémon GO at the event,[28] and as compared to the city's overall Hispanic representation.[29]

For game strategists, demographic goals have historically been secondary. Interventions with games are almost entirely focused on user effects (e.g., pre/post gains in individual learning), not social shifts and group effects. Yet at the city level, demographics can be primary to city goals and operations. In a democracy, representation and participation are not simply characteristics of the distribution channel– they are primary goals for design. For city leaders, demographics are a vital level of analysis – just think of prominent goals on race relations and inclusion. If we take seriously the idea of games with effects at the group, crowd and community level, demographic shifts are legitimate outcomes.

Yet to shift demographics by using games, cities often need a deeper sense of the player ecosystem and how player networks self-organize. Next, we turn to the case of Philadelphia to compare its different approach to using Pokémon GO, which emphasized not sheer numbers but the inclusivity of the event.

25 Based on an independent survey by the Mineta Transportation Institute; Agrawal, Nixon, and Simons, "A Survey of Viva CalleSJ Participants."

26 The city of San Jose was 34.1% Asian in 2016; see "2012-2016 American Community Survey 5-Year Estimates" (U.S. Census Bureau, December 7, 2017), https://factfinder.census.gov.

27 Based on independent surveys of the Mineta Transportation Institute; Agrawal and Nixon, "A Survey of Viva CalleSJ Participants"; Agrawal, Nixon, and Simons, "A Survey of Viva CalleSJ Participants."

28 At the 2017 event, 14% of attendees who played the game were Hispanic, compared to 31% Hispanic among those not playing; see Agrawal and Nixon, "A Survey of Viva CalleSJ Participants."

29 The city of San Jose was 32.6% Hispanic in 2016; see "2012-2016 American Community Survey 5-Year Estimates."

High contrast: Philly Free Streets

Just a month after San Jose's event, Philly Free Streets tried a different approach to embedding Pokémon GO. The approach was not to maximize turnout per se, but inclusion. This went so far as to offer a kind of playful experience to residents with no phones or interest in Pokémon. New kinds of design were needed.

Ironically, Philadelphia organizers feared the exact crowds that Pokémon GO attracted in San Jose; what was a positive in one city would have been a negative here. The reason was initially explained in terms of capacity, since Philadelphia's smaller event might easily have been overrun by 35,000 additional players. The route was 3.7 miles long – about half the distance of that in San Jose.

Fortunately, the Philadelphia event ended with about 40,000 people attending, and about 25% of them playing Pokémon GO.[30] The draw or "boost" for players was about thus half the strength of San Jose.[31] Most attendees were on foot, and their presence helped balance the bicyclists that had dominated the previous year. In comparison to San Jose, Philadelphia provided much clearer infrastructure, especially through temporary lanes and signage, to help pedestrians and cyclists share the event space.

Philadelphia wanted to resist the technology branding that could come with Pokémon GO, and tell a different city story. San Jose desired to be known as a high-tech destination, and branded itself as the "Capital of Silicon Valley" in the city logo. But in Philadelphia the story was about residents first, and the image of hordes of outsiders with cellphones posed a problem.

Just two years prior, a visit from Pope Francis had unexpectedly inspired the Philadelphia version of Open Streets. As a security perimeter for the Pope, the city blocked car traffic for five square miles around downtown. At first the streets were empty, but soon word spread crowds of cyclists and walkers poured in, reclaiming the space; an unofficial Open Streets celebration began. City leaders were surprised. As one metro journalist observed, "closing the streets opened up the town." [32] The city decided to organize Open Streets officially, and initial funding from the Knight Foundation led to the collaboration around Pokémon GO.

City leaders desired particularly to integrate marginalized neighborhoods in the event. The route itself sought to link the downtown historic core with more historically marginalized and lower-income neighborhoods to the north. Offering an experience solely for players could undermine the desired message of inclusion.

30 Attendance estimates are from players and for the general populace are, respectively, from Niantic, Inc. and "PhillyFreeStreets October 28, 2017 Program Summary" (Philadelphia, PA: City of Philadelphia, January 10, 2018), http://www.phillyfreestreets.com/.

31 The draw (or "boost") for players can be understood as the increase in players for a typical PokéStop. Based on data from Niantic, the typical PokéStop along the Philadelphia route had 4,108% more unique visitors than normal (i.e., compared to one week prior). This is less than half the boost that was observed in San Jose.

32 Importantly, the journalist was not a gamer per se, but rather the architecture critic at the Philadelphia Inquirer; see: Inga Saffron, "Papal Weekend: Closing the Streets Opened up the Town," *The Philadelphia Inquirer*, September 28, 2015, http://www.philly.com/philly/columnists/inga_saffron/20150928_Papal_Weekend__Closing_the_streets_opened_up_the_town.html.

Scavenger hunt (meta-game)

Philadelphia introduced a new meta-game as an umbrella for players and non-players alike. Specifically, city officials created a 10-location scavenger hunt. One version used paper and no apps. As a genre, the scavenger hunt is valuable for its nearly-universal recognition. Such accessibility is crucial for public events with goals of high accessibility that require virtually no instruction.

For players of Pokémon GO, the city hid clues in the game itself, in collaboration with Niantic. Players who correctly identified all ten locations would receive a poster of Pokémon GO. Simultaneously, non-players could participate with a paper-based version, with the same clues – and no mention of Pokémon GO.

From the minute players arrived, they were eager to start the scavenger hunt they had heard about. Their behavior looked different than that of participants in San Jose, where players had arrived at a hub and stayed put for a while, excited for the lures in the game. In Philadelphia, most lined up immediately for their scavenger answer sheet and then headed out.

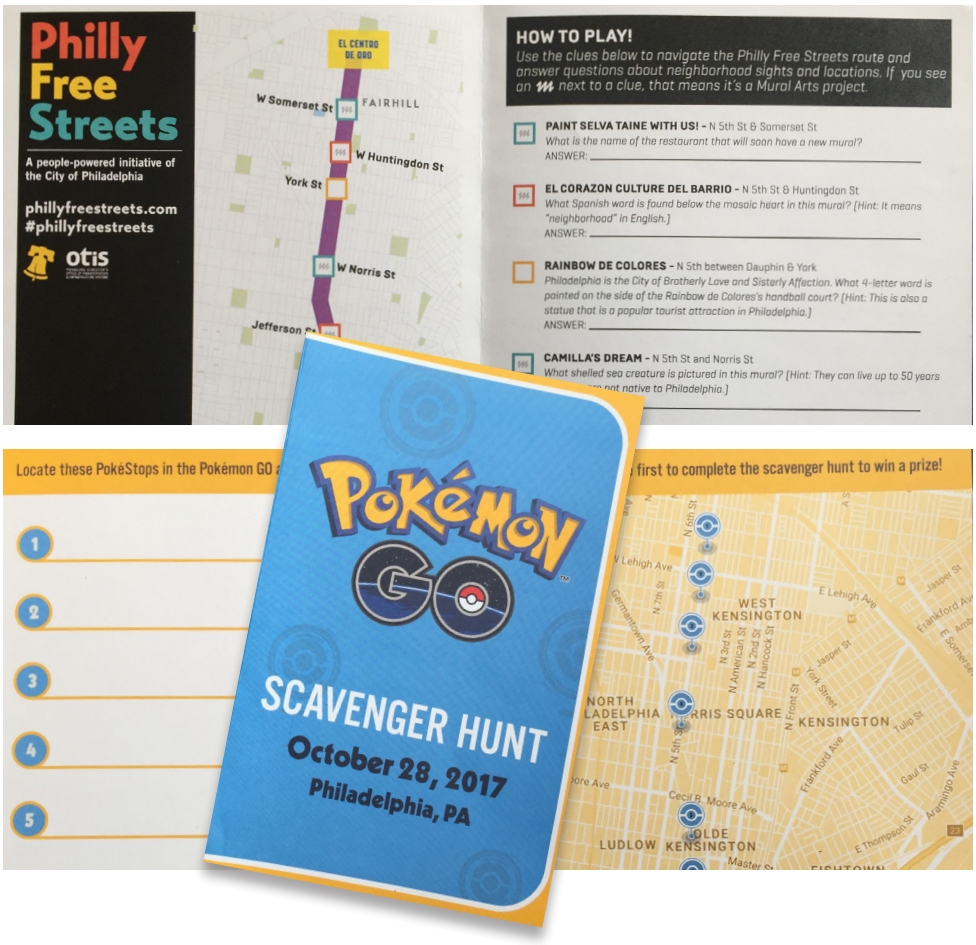

Figure 4. *Paper guides for dual scavenger hunts, one for Pokémon GO players (bottom), and one for all attendees of Philly Free Streets (top).*

Each clue drew players into the cultural identity of Philadelphia and its story as a city. Several drew attention to the city's 3,000 murals. Murals are a key differentiator for the city, which is sometimes called the "City of Murals" [33] and has been known internationally for its murals since the 1970s.[34] But for large public events, murals can be lost in the background.

The scavenger hunt was designed to bring the murals into the foreground of the event, and implicitly link them. One clue revealed where a forthcoming mural was scheduled to appear. Another contrasted the materials of one to the norm. Together the clues revealed the murals as a dynamic portfolio at the heart of the city, beyond the Pokémon GO database with its opaque algorithms.

Through remix, cities can introduce new game mechanics. In Philadelphia, the scavenger hunt added a need for players to repeatedly look closely at their surroundings to advance. The original game only requires going to the locations – not looking at them in person, or even in the game. But the hunt required players to read the game's landmarks for clues, and then to scan the physical world for the answers. Yet the invitation to the worldwide audience of Pokémon GO players attempted to set expectations that the event would be social and for those who wanted to connect locally; the player guide from Niantic declared (in both Spanish and English) that "the focus will be on exploring the community and enjoying Pokémon GO alongside other [players]."

Opportunities for social alignment emerged unexpectedly. In Philadelphia, the apparent failure of one mural clue led to a workaround that was even better. At the center of the situation was a volunteer, who we met on the route. He was volunteering for a nonprofit that raises awareness and protects the murals.

The problem began when a crowd of players started to gather, complaining that the mural didn't match the clue. Unbeknownst to the hunt organizers, the mural had just recently been repainted in a way that inadvertently hid the answer to the puzzle. Thinking on his feet, the volunteer figured out what was happening… and started giving hints to players about the solution.

Throughout the day, the volunteer had a great time helping the players out. More importantly, the volunteer began having conversations with a few of the more inquisitive players. They spoke of the mural, preservation, his job and even mural tours nearby. In game terms, the conversation sparked by an unexpected barrier made the game harder.

Embracing a certain amount of difficulty – rather than eliminating it – is part of what makes games effective (and different from civic tools). By recognizing this principle, cities can better optimize their meta designs. The right type of difficulty also matters; for community goals, the best aligned may be social and organizational challenges, not just difficult visual puzzles, and certainly not pointless difficulty like requiring players to travel long distances. The result can be summarized as a design principle: to facilitate local conversation, embed cooperative hints and solutions in interactions between players and with local organizations that are stewards of community assets and knowledge.

33 See the nonprofit Mural Arts organization (https://www.muralarts.org/about/) and Kristin Lee Moss, "Cultural Representation in Philadelphia Murals: Images of Resistance and Sites of Identity Negotiation," *Western Journal of Communication* 74, no. 4 (2010): 372–395.

34 Jane Golden, Robin Rice, and Monica Yant Kinney, *Philadelphia Murals and the Stories They Tell* (Temple University Press, 2002).

We also encountered a number of players who worried they might be cheating if they helped another player with a tough clue. Quite the opposite; in a non-competitive game, such social behavior might well be encouraged. Good design helps guide players to understand the non-competitive nature of the system. Thus a social shift can come in how the game is framed, along with new clues.

The meta game improved the alignment with local culture, and the integration with local networks. Social mixing was considerably greater between players of Pokémon GO and neighborhood leaders and organizations. And alignment improved with the local identity of Philadelphia as the City of Murals, to name one prominent goal. Of course, the social interaction often ended after just a few seconds. But that is how social ties are seeded – and over time, some deeper relations may grow.

Deliberately lowering the stakes – and framing the social rewards – emerged as design principles too, based on the specific goals Philadelphia city officials had for their event. Niantic wanted to follow the lead of each city. As they experimented in different cities, Niantic staff placed growing emphasis on matching the incentives for players with the city goals. More modest rewards for fans in Philadelphia helped shift the balance toward the local. In contrast to San Jose, the event description on the Niantic website for Philadelphia made very clear that the Pokémon would be ordinary – not rare or "legendary."

Designing the hunt required real game design, not simply using the platform of Pokémon GO. For Philadelphia, the game design team implicitly included city staff and Niantic. The partnership provided vital reassurance to city staff, who felt out of their depth in dealing with games. In part, the city had minimal staffing and struggled to address players. Ironically, the Niantic staff assigned to the task were not necessarily experienced in creating hunts within large events with civic goals. But they brought an eager confidence to the task.

To increase alignment with city goals on a small budget, a light hand is required. Social interaction must work with the networks that players bring to the event.

Self-mobilizing groups

When players arrive as a network or group, different tactics are possible for recruiting, mobilization and public engagement. In Philadelphia and San Jose, approximately 75% of players who attended came with friends or family.[35] Major cities in the US have thousands of players in self-organized groups online.

Most eye-catching in Philadelphia were the groups with custom t-shirts and sweatshirts. One such group was from North Jersey (see Figure 5). Such groups were proud to visibly associate with their region. Even before events like Open Streets, players were mobilizing and coordinating action – including travel to nearby states.

35 Based on our team's player surveys during the event, after the event, and qualitative observations of player behavior throughout.

FIGURE 5: *Players from North Jersey wore custom sweatshirts to the Philadelphia event; the boy with the avian sweatshirt also shows one of the game's three factions*[36]

What makes such groups remarkable is that they are organized from the bottom-up, with no facilitation from the Pokémon GO platform. Players can get to know each other well when they play together several times a week. Some groups regularly go out for pizza and beer afterward; others meet at dawn before work, or in countless local variations.

Too often, credit for the success of the events was implicitly given to Niantic for pushing the invitation to players. In fact, the recruiting for Open Streets depended on open player networks and peer information circulation.[37] The most basic logistics had to begin with city and Niantic staff, but then word spread to and among players through their own networks and tools.

For ordinary gameplay, bottom-up tools for discussion are invaluable for players, helping them network and cooperate. Days before we drove up to Philadelphia for Open Streets, one of us requested to join the city-wide Facebook group for players. The group has more than 5,000 active members. Our request was quickly accepted. At the top of the group page, we found a pinned post from the moderator, urging all players to join even more hyper-local chat for "specific areas of the city/suburbs." The game provided the justification, since "a chat is a lot more efficient to round people up... [so] if anyone is a member of an active chat group, please post…" Dozens of suggestions followed, inviting more players to coordinate.

Much of the chat between players takes place using Discord (a third-party chat service that is free and marketed to gamers). In social media and on Discord, the substance of conversation is often dominated by talk of the game. Yet peripheral news sneaks in – from city parades that affect public space, to tales of braving snowstorms.

Some groups helped organize the event, almost accidentally. One player group distributed lures up and down the route in a coordinated fashion, simply to make the event more worthwhile for the community. Cities can encourage such behavior, including by inviting group leaders to take

36 The avian is Moltres, the mascot of one of the game's three factions.

37 In our post-event survey, word of mouth and social media accounted for well over 50% of players hearing about the Open Streets event; far fewer heard about the event from Niantic emails or the game's push-notifications (combined under 25%). San Jose had similar numbers. While the surveys have some bias toward social media users, the finding is echoed in our conversations with players, and in a systematic sampling we conducted of players at events in other cities, including smaller cities like Akron, Ohio.

on a civic role. Alternatively, cities can keep discourse civil by retaining some of the tone and accountability established in player groups.

How players talk about neighborhoods can affect them. In Philadelphia, we observed some players posting warnings to their group that discouraged visiting the northern end of the route, saying that it was a dangerous area that lacked enough PokéStops to be worth the trouble. Such messaging contradicts the goals of the event, and the city's implicit assurances that the route was safe. When players reinforce stereotypes of places, they can perpetuate some of the inequity that clusters by geography. A counter tactic: group leaders can be invited to play a more active role, and raise these concerns when neighborhood stereotypes arise, including to remind the most points-obsessed that other players are actively seeking to explore new parts of their city.

Relationships were a primary reason for playing the game for more than a third of players we surveyed at the Philadelphia event. (Most of the other players still said that relationships are a positive factor.) Importantly, the socializing is not forced and so remains compatible with strong player motivations to get outdoors and a sense of accomplishment.[38]

Surprisingly, a lack of social networking within the game may help the broader community. The initial version of Pokémon GO lacked social networking tools to connect players within the game, leading groups to organize on their own – often with Facebook groups. There are several benefits. Perhaps most importantly, Facebook friends can stay in contact when one player stops playing. In addition, for civic news Facebook brings a host of tools for easily posting stories. And tactically, cities with social media staff and strategies can interface more naturally and independently with player groups. Doing so can improve the alignment of the game to community flows of information and to persistent networks. We are not recommending Facebook per se, but to keeping channels for civic discourse outside the game, both to build persistent networks and for healthier civic discourse that can cross platforms and silos.

Coupling to social media loosely – rather than building it in – may be an uphill battle. Niantic had social awareness and networking features built into Ingress (their prior game), and has slowly been adding them into Pokémon GO. For more than a decade before Pokémon GO, mobile platforms have offered social "check-ins", with pioneers like Dodgeball showing how location-based activities can build social awareness to where your friends are, turning physical locations into third spaces. [39] The question is whether features that are better for players might be in tension with open conversation and public discourse, especially around neighborhood civic engagement.

Player groups can bring diverse populations into contact. The resulting social capital can be compared to the bowling leagues so celebrated by Robert Putnam as a prerequisite for civic life in America.[40] Perhaps by chance, the bowling story was echoed by Niantic as well. In our interview with Niantic's CEO John Hanke, he brought up without prompting his belief that Pokémon-like games may be the bowling leagues for the gamer generation. Of course, the full societal effect of such games will take years and decades to unfold.

38 Each of these was listed as a primary reason for playing for more than 50% of players in both San Jose and Philadelphia.

39 Lee Humphreys, "Mobile Social Networks and Social Practice: A Case Study of Dodgeball," *Journal of Computer-Mediated Communication* 13, no. 1 (October 1, 2007): 341–60, https://doi.org/10.1111/j.1083-6101.2007.00399.x.

40 Robert D. Putnam, *Bowling Alone: The Collapse and Revival of American Community* (New York, NY: Simon & Schuster, 2000).

Most of the cities we tracked ignored the group level, and were simply glad that players showed up. But over time, more ambitious cities (and partners) will attempt to build a ladder from game to civic networks. One of the most promising strategies is for cities to legitimize existing groups, and acknowledge their civic potential. The strongest player groups could be recognized during Open Streets events, and given a voice in discussing public space.[41] Yet this strategy depends on sharing power, and even some control, as we see in the next case – where local libraries host players and articulate a neighborhood identity.

41 For example, prizes for groups that show up in force – not just by headcount, but visible presence (think of the North Jersey players with their matching sweatshirts).

Model 2:

Persistent neighborhood routes and tours (Philadelphia libraries)

Months earlier, an experiment in five libraries in Philadelphia took place at the neighborhood level. For weeks that summer, each physical library served as the launching point to explore the neighborhood. Each library created a sightseeing route for players to walk in about an hour, and many hosted additional activities to connect fans with library goals.

Library staff had several ways to align the game with their aims. Most importantly, each library had a print "Sightseeing Map" for the neighborhood, complete with photographs and local landmarks. The map for Point Breeze is shown in Figure 6. Most of the key locations became PokéStops, with Niantic adding or updating approximately five locations to the game for each library. With the map in hand, players could do their own "PokéCrawl" along the route, with friends or solo. The game's social element varies; there are some players who use the game as a social shield to avoid interaction, but many others use it as a social catalyst.[42]

Several libraries advertised special walks, with large groups following the map and listening to local tour guides. The personal connection is important for local organizing. We visited the Queen Library, and met the children's librarian who led their organizing with Pokémon GO. She confessed that her first videogame, many years before, was a Pokémon game for the Game Boy. Since the launch of Pokémon GO, she had already been tapping into players' passion to introduce them to related books, media literacy on gaming, and maker activities from Minecraft to graphic design. Youth librarians in particular are often experts in aligning popular culture with institutional engagement, from Harry Potter to Star Wars.

When the central library asked her to pilot a month-long route, the librarian at the Queen Library was eager to join in. In fact, she continued the programming long after the month officially ended. She even brought a large stuffed Pikachu (a prominent Pokémon creature) to library events. For little kids, she hosted drawing events that showed them how to sketch their favorite Pokémon creatures step-by-step, with the best displayed proudly on library walls. At other libraries, staff found their own ways to engage residents, especially in the city-wide "reading and exploration" campaign for students on summer break.

After years of pop-culture engagement with Pokémon, Pokémon GO allowed librarians to connect mass culture to local stories and assets. The maps provided a crucial template for localization, with support from Knight and Niantic. At face value, the maps oriented players to local geography. But each map also introduced the neighborhood identity and framed participation in community terms. For example, the Tacony map told the legend of how the neighborhood was named from a Native American word for "wilderness." For the West Philadelphia map, the map proclaimed that "green space, community life, and food" were the heart of the neighborhood. Piles of a map at the library invited browsing and conversation – and reframed the game as a way to better know your community.

42 Lee Humphreys, "Involvement Shield or Social Catalyst: Thoughts on Sociospatial Practice of Pokémon GO," *Mobile Media & Communication* 5, no. 1 (January 1, 2017): 15–19, https://doi.org/10.1177/2050157916677864.

FIGURE 6. *Sightseeing map for library PokéCrawl in Point Breeze (at left). At right, the layers overlap, from the paint on the building, to the activity guide that moves people through physical space. A mural by prominent artist Keith Haring is shown in both.*

For neighborhood sites of resistance, grassroots tours can help bring the color and context back. In Philadelphia, many murals are heavily negotiated sites of identity. Local groups have fought long battles for the right to use public walls to counter dominant media images, especially African Americans. [43] Yet when such locations appear in Pokémon GO in many neighborhoods, they are described minimally (e.g., "colorful mural," with no extended description beyond a photograph). While some murals may be entirely self-evident, others have deep history and may be tied to current controversies. Structurally, the platform simply does not allow links for learning more, even to Wikipedia. Fortunately, tour leaders almost inevitably tell much deeper stories than the game text alone, and residents themselves often add backstory and ways to get involved.

The library itself provides a critical contextual bookend for the tour – if the librarian is ready. When players return, a simple question of "What did you see?" can spark a conversation and recommendations on where to read more, including pointing players to ready-made displays on local mythology, news and debates. But such engagement depends profoundly on the specific librarian. In Philadelphia, the staff approach varied widely.

43 Moss, "Cultural Representation in Philadelphia Murals," 372.

Libraries are a powerful way to scale and localize a game. The Philadelphia system has 54 different neighborhood libraries. Later that same year, the city announced a $500 million-dollar investment over seven years in neighborhood libraries, parks and recreation centers.[44] But it is unclear how much of that funding will go to physical infrastructure versus staffing and activities – including games. Nationwide, public libraries have considerable reach in the United States, with more than half of youth age 16-29 visiting a library or bookmobile each year.[45] In a digital age, neighborhood libraries are shifting from storing books to engagement, including videogame tournaments [46]. Some libraries already host edit-a-thons for Wikipedia pages on local history to engage residents and make the local visible.

The most important factor for success with the five libraries was the passion of a staff advocate. Without an excited librarian, the players may gain little context. More importantly, the library may simply not promote the activity, or fit it into their programming. Too often, games are discussed as if they have impact on their own. Especially for local goals, we may do better to define the game system as including the librarian, much as educators have found that the most important learning often requires a nearby teacher for players to see the implications for their own lives. Game scholar Katie Salen Tekinbaş calls this the ecology of the game.[47] In this case, we might say that the impact of the neighborhood tours depends centrally on their staffing.

For motivated librarians, it was second nature to fit the game into local flows of communication. Library windows advertised the maps to passersby on the street. News of PokéCrawls circulated by branch library Twitter accounts and monthly email blasts to patrons. Conversations started in person when parents visited the library and discovered a stack of maps on the library counter. To cross the digital divide, patrons without smartphones could still join library events and participate using the paper map to visit sites.

Bridging generations is important for many cities, especially in public space. The librarians we spoke with in Philadelphia saw this as one the greatest strengths of the project. More generally, the same held in Open Streets events as well; in San Jose, nearly a third of local players came with family, and 80% of players with family were playing together.[48] In the libraries, counting the families – or just the players – was a frustration for staff. Several had hoped the game might provide statistics on how many players visited, and what kind of player (such as children, and whether they were local or had traveled to visit); but the game was not designed to provide data to partners, and in fact, for privacy and legal reasons such disclosure was understandably not allowed by the company. Yet for cities, the value of the partnership could increase considerably at many small locations if basic (and anonymized) counts of participation were built in – or even made part of the library activities (e.g., with check-ins or badges).

44 Jen Kinney, "Philadelphia's Placing a $500 Million Bet on Play," *Next City*, September 11, 2017, https://nextcity.org/features/view/philadelphia-rebuild-initiative-park-rec-center-design.

45 John Horrigan, "Libraries at the Crossroads" (PewResearchCenter, September 15, 2015), http://www.pewinternet.org/2015/09/15/libraries-at-the-crossroads/.

46 Eli Neiburger, *Gamers–in the Library?!: The Why, What, and How of Videogame Tournaments for All Ages* (Chicago, IL: American Library Association, 2007).

47 Katie Salen, ed., *The Ecology of Games: Connecting Youth, Games, and Learning*, John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning (Cambridge, MA: MIT Press, 2008).

48 Per our survey of local players who attended the event

Model 3:

Sharing power to negotiate the data layer (Boston)

What control do cities have over games like Pokémon GO? The power of cities to alter global platforms is often limited, but can still be real. An experiment in Boston reveals some of the potential to directly shape game content, including for community engagement.

The fandom often comes before the data layer. For passionate fans, the first remix may concern the Pokémon characters they love. Several cities we tracked were frustrated to learn they were officially not allowed to use the Pokémon characters – even in chalk art contests or to advertise for the event. These limits are part of a larger legal system, inherited by Niantic in their own agreements with the Pokémon Company, and the decades-old web of Pokémon properties and history.

In the spirit of fair use, many fans already tap into game assets and graphics informally, such as to write fan fiction. But for cities and organizations, the legal bar can be higher – and vary by country. For games tied to fan culture, such negotiations are at the heart of engagement in remix. To scale, cities need to develop legal templates and informal tactics to engage fans and foster a participatory culture (to borrow a term from Henry Jenkins and colleagues[49]).

More boldly, appropriation is another way to understand what cities can do with global platforms and data. In the tradition of locals reclaiming technology tools and platforms, appropriation can be described as a process:

"…through which technology users go beyond mere adoption to make technology their own and to embed it within their social, economic, and political practices. The appropriation process is a negotiation about power and control over the configuration of technology, its uses, and the distribution of its benefits." [50]

It is bold and empowering when cities assert some local control of the game. It is also quite difficult. At best, most cities negotiate on behalf of their residents. Philadelphia, for example, sought to include content about marginalized neighborhoods on the north side, and local organizers leaders spent considerably more time preparing their basic map and stops to maximize inclusivity.

In cities like Philadelphia, trust at the local level benefited from the Knight Foundation's local staff and brokering. Weekly phone calls between Knight and Niantic established a line of communication that persisted across organizations and beyond the ebb and flow of brief events in various cities. As large as they are, companies like Niantic cannot staff local offices and so do not have the same local relationships.

Even when successful, consulting with locals is only halfway along the "ladder of participation," as Sherry Arnstein described it in 1969 for city planning. [51] Fortunately, the possibilities are growing

49 Henry Jenkins et al., *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century* (MIT Press, 2007).

50 François Bar, Matthew S. Weber, and Francis Pisani, "Mobile Technology Appropriation in a Distant Mirror: Baroquization, Creolization, and Cannibalism," *New Media & Society*, February 5, 2016, https://doi.org/10.1177/1461444816629474.

51 Sherry R. Arnstein, "A Ladder Of Citizen Participation," *Journal of the American Institute of Planners* 35, no. 4 (1969): 216, https://doi.org/10.1080/01944366908977225.

to deepen participation around media.[52] If a city wants to go higher on the ladder of participation, the delegation of power is one way.

Youth voice and a Boston rewrite

A deliberate attempt to share power with citizens took place in Boston. Led by the Engagement Lab of Emerson College, a coalition tackled the "PokéDesert" problem. The term invokes the urban campaign against food deserts[53], where there is little or no access to healthy food in grocery stores and restaurants. In the Boston case, the parallel problem is an impoverished data layer (including PokéStops) in lower-income neighborhoods.

The experiment in Boston sought to empower high school students, and connect them to community channels for organizing and communication. Ultimately the students rewrote the game text for dozens of PokéStops. The scale was small, with just a few hundred students involved, but the experiment reveals key tactics for aligning global games by sharing power.

The roots of the dilemma are complex, and go beyond any one city. Disparities by geography – and even how racism is baked into geography – predate the game. Shortly after the launch of Pokémon GO, the discussion continued with the game, and how it reflected that inequality, and whether it might make it worse or better. Such debates foreshadow accusations that will likely plague future games with a global data layer. Urban think tanks[54] and academics[55] alike have argued that such platforms can reinforced geographic bias, and privilege neighborhoods with smaller minority populations. For example, some African American players who play in richer and whiter neighborhoods worry they will be targets for harassment, e.g., for "playing while black"[56]. Clearly, the pressures of race and class do not disappear, just because something is added to a game.

What about omissions, or rewriting content? The Boston group began with a call for youth to propose locations to add. For the first time, playing the game was not the point of the activity. Instead, the idea was that young people would create 60-second videos to propose locations for the game, based on their neighborhood explorations. Approximately 50 videos came in, with hundreds of youth engaged with the project site.

Although the project was inspired by limitations of the Pokémon GO data, it was also funded by Niantic. "Cities deserve some kind of editorial influence," Niantic CEO Hanke told us in an interview before Boston launched its experiment. Cities are always changing, and Hanke feared that city staff would not be a sustainable solution for long-term data work. He was looking for experiments that might point to new solutions. In my interview with him, Hanke asserted that in the long term, encouraging citizens to be involved in "working together to make this an ongoing and cooperative thing is the best way to do it."

52 For a particularly in-depth overview, see Nico Carpentier, *Media and Participation: A Site of Ideological-Democratic Struggle* (Bristol, UK and Chicago, USA: Intellect, The University of Chicago Press, 2011).

53 Food deserts are urban areas, typically low-income, with very limited options for healthy food.

54 Shiva Kooragayala and Tanaya Srini, "Pokémon GO Is Changing How Cities Use Public Space, but Could It Be More Inclusive?," *Urban Wire: Neighborhoods, Cities, and Metros (Urban Institute)* (blog), August 2, 2016, https://www.urban.org/urban-wire/pokemon-go-changing-how-cities-use-public-space-could-it-be-more-inclusive.

55 Ashley Colley et al., "The Geography of Pokémon GO: Beneficial and Problematic Effects on Places and Movement," in *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, CHI '17 (New York, NY, USA: ACM, 2017), 1179–1192, https://doi.org/10.1145/3025453.3025495.

56 e.g., Jessica Guynn, "Playing Pokémon Go While Black: Fear Stifles the Fun," *USA Today*, July 12, 2016, https://www.usatoday.com/story/tech/news/2016/07/12/playing-pokemon-go-while-black/86989554/.

Yet for presumably practical reasons, Niantic had not come forward with tools to help the public. The company struggled to provide a clear and responsive process for adding missing locations or for revising contested text.[57] While this was likely due in part to the company pursuing other priorities including operational stability and growth, it is also a genuinely hard problem to solve. Even the most successful crowd-sourcing systems (like Wikipedia) struggle to reach critical mass for describing local neighborhoods – let alone single monuments. Niantic has good reason to pay attention to bottom-up experiments.

The Boston experiment underscored the need for better alignment, both with youth and with neighborhood organizations. Each was addressed in a very different phase two of the project.

For young participants, the game was unexpectedly a neutral or even negative incentive at times. This surprised city leaders, who expected the game to be a universal carrot, especially for youth. Yet the project found that some students were actively opposed to playing Pokémon GO. Some project staff summarized the student attitude toward the game as ranging from being "not their thing" to simply not being a fad among their friends at the moment. Such resistance provides a good reminder that games are not monolithic (even when highly visible), and that fan culture is rarely universal (even among youth).

On the organizational side, staff at Boston Public Schools and local community groups pushed back in different ways. The groups – including a historical society – felt uncomfortable promoting a program tied to a product or for-profit company. Such resistance is a major obstacle that should be expected across cities, and for nearly any global platform. The stakes are considerable: without the full support of local groups, participation almost entirely goes away. In the Boston case, video submissions were a fraction of what was initially expected.

To address both challenges, Boston leaders repositioned the game. They discovered that youth and community organizations were excited about something: the opportunity to have voice and reach thousands of players with the game platform. But the program had to be bigger than one game. Moreover, their participation must be framed in those larger terms, not as players. Surprisingly, the motivating force appeared to be civic: to have an impact, and reach a real-world audience.

The program pivoted, and renamed itself "AR Stories." In phase two, Boston organizers focused on one neighborhood: Dudley Square. More importantly, they doubled down on impact and equity. In this phase, they partnered directly with neighborhood organizations to offer a guided program for youth to have voice and write deeply grounded text for local landmarks and community assets.

Niantic delegated power to the Engagement Lab, which in turn deferred to several community groups -- including a local historical society. Neighborhood identity was a priority. As one staffer at the society explained, she collaborated because she wanted youth to understand how their neighborhood "was so integral to the history of Boston."

The program culminated in a day-long workshop. Several of the young people had previously trained as guides for the neighborhood, and were now positioned as leaders. These leaders hosted a tour that included Pokémon GO stops, featuring direct comparisons between the physical world, the game, and their insights on the tour.

57 A vague form was briefly up, then disconnected soon after launch. Much of the location database inherited from Ingress and even from volunteers

Afterward, the creative writing process began, led by 826 Boston – a nonprofit youth writing organization. The young people sought language to make the locations accessible to their peers and the masses playing the game. Staff from the historical society were on hand to answer further questions about the neighborhood.

By the end of the workshop, participants had rewritten text for a handful of locations and suggested 18 new locations for the game. As promised, Niantic added this content to the game. The content was also treated as a public good, and will be made available for use in other activities, mapping projects or even with other games.

The scale of this initiative was small, as is common in power-sharing projects. But the tactics were deeply aligned with community strength, and existing capacity in the neighborhood. In contrast to fantasies of empowerment that are "platform first," the approach relied on community stakeholders. The delegation of authority was incredibly layered: from Niantic to the Engagement Lab, to the youth organizations, to peer leaders, to ordinary youth participants. Such an approach naturally comes with some trade-offs, but it also elevated community networks at each phase along with the institutions that provide accountability. The channels for circulating local news and civic data are tied to these same organizations, and to the organizing practices that keep them in contact.

The Boston experiment revealed some of the assumptions that city leaders can bring to repurposing games like Pokémon GO. Yet the solutions are more general than one game. To engage at the data layer, communities may need to approach their data as a public good – worth investment and stewardship. To scale, the upkeep of the data layer may be too expensive to fund directly. But as platforms like Pokémon GO increase the value and visibility of local data, groups like the Boston Public Schools and many of the local nonprofits are already networked and engaging communities in telling their own history and stories.

Conclusions

For cities, games like Pokémon GO will increasingly intertwine global platforms with local streets. As mass media, games like Pokémon GO bring new culture into local parks and public space. Simultaneously players can use the platform to go deeper into their own neighborhoods and history, building social ties and interests that may persist after the game is over.

This report revealed some of the tactics that city leaders can use to align such games with local goals, organizations and networks. For city leaders, turnout is often a primary justification for tapping into large games. But as this report has shown, players do not simply arrive as individuals; they mobilize as networks, teams and families. Similarly, the mechanics of the game are only part of the story. When cities remix global platforms, they can introduce new feedback loops and incentives, from scavenger hunts to mural tours. For many players, the game is not the only motivating force; contributing to their team or the public good can be a motivating force – even as they play.

If cities want to align play with local goals, they may need to offer real voice to group leaders and ordinary players in return. To pick one example, the opening ceremonies in most cities spoke at players more than with players. Meanwhile, cities can also play a critical role as brokers to local business associations, neighborhood libraries and community groups. Such groups can increase the value of community events for players, and even be part of the live experience, as seen in the missing clue at the Philadelphia mural.

As a framework, remix is a powerful way to celebrate the work of cities to adapt the game. Remix shifts our focus to the work of cities in shaping networks, organizations and culture. For cities, remix is not entirely new – it is implicit in architecture that matches its surroundings, and necessary for community plans and engagement. In a digital age, the concept of remix continues to gain traction, from sampling in music (where the term gained much of its momentum[58]) to video editing and game modding. Now with global platforms, cities can increasingly remix games to advance local goals.

To bring remix to scale may require some additional templates. Cities would benefit from legal frameworks and umbrella agreements to tap into the momentum of games like Pokémon GO, including to measure impact. As one librarian explained, right now they count people entering library turnstiles; the game offered the opportunity to understand how local populations (as groups, not individuals) move and engage in public space. Setting expectations about the kind of impact measures that are feasible and still respect privacy is an understandably hard challenge for technology companies, and a possible opportunity for groups like Knight to facilitate.

58 Aram Sinnreich, "Something Borrowed, Something New: The Original/Copy Binary," in Mashed Up: Music, Technology, and the Rise of Configurable Culture (University of Massachusetts Press, 2010), 124–47.

Finally, games like Pokémon GO may be especially valuable for building persistent networks around public space. Playful engagement can build new connections, and leave room for conversation between groups that do not often connect. Deliberate strategies for large events may help to balance demographics (as in San Jose), while smaller events can bring residents together to remix game content and share their own stories.

The opportunity for cities to position games like Pokémon GO are growing. Although the experiments analyzed in this report depended on companies like Niantic and influential civic brokers like the Knight Foundation, many of the tactics can be pursued as part of existing city initiatives. Some of the larger questions for the future of our cities, such as sharing power at the data layer, go beyond any one platform. Yet playful tactics point to new opportunities for cities to invite participation, and to explore how emerging platforms and networks can strengthen the fabric of our local communities.

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