

URBAN INTELLIGENCE

Spring 2017 | Wednesdays 4 – 6:45pm | University Center #503
NMDS 5676 (CRN 5852) | URBS 4676 (CRN 7095)

Shannon Mattern | matterns@newschool.edu | office hours by appointment (write me!)
Teaching Assistant: Jonas Voigt | jonas.voigt@newschool.edu

We live amidst real-time data flows, with sensors measuring everything from air quality to traffic, with our own smart phones yielding information about our whereabouts and activity levels, with buildings reporting on their own energy consumption and maintenance. This urban “intelligence” ostensibly allows for the optimization of our environments and our selves – for the production of “smart cities” and smart citizens. In this hybrid theory-practice studio we’ll examine how the methods of data science and the tools of computational intelligence shape our civic values and urban imaginaries, and condition the work of urban design and administration. We’ll also assess the consequences – for the material environment, for urban citizenship, for quality of life, etc. – when data and efficiency drive design and development decisions. We’ll explore not only how “smartness” is operationalized in such new urban developments, but also what other kinds of intelligence have long been present in our cities. Students, individually or in small groups, will develop “urban intelligence test kits” – IQ tests, guidebooks, measurement instruments, field kits, etc. – to evaluate how human, other-species and machine logics, intelligences, and values are integrated and negotiated in our urban environments.

Our Tools

This is our class website: <http://www.wordsinspace.net/urbanintel/spring2018/>

Here you’ll find our most up-to-date schedule, pdfs or links for all the readings, catalogues of our work, etc. Most of our resources are available on the open web, but some materials are copyrighted; to access those, you’ll be prompted to enter a username and a password: **student** | **seecritfilez**

A few notes about the weekly readings/screenings/listenings:

- I believe we can better appreciate the complexity, relevance, and resonance of each of our weekly themes by approaching them from multiple theoretical, historical, practical, and creative directions. That’s why, for each week, I’ve put together a mini “anthology” rather than assigning a single definitive text. Yes, sometimes those reading lists might look intimidatingly long – but the total number of pages hardly ever exceeds 150 (and a lot of those pages are illustrated!), which is a more-than-reasonable workload for a graduate student. Plus, each text on that list is there because it has the potential to add a distinctive voice to our conversation (you should see the ridiculously long lists of readings that *didn’t* make the cut!).
- That said, my selection of a particular text does not constitute an *endorsement* of it. Sometimes I choose texts that annoy me, or with which I disagree, for a few reasons: because they’re widely cited and I think it’d behoove you to be aware of them, because I want to allow you to exercise your own judgment, and because I’m pretty sure they’ll make for good conversation – or, at the very least, food for thought.

- **We will not be able to address *all* the readings in our class discussions.** Some readings are primarily factual, some are self-explanatory, some simply present interesting illustrations or case studies; we needn't discuss these sorts of texts in-depth – but they're still worth your time. They provide valuable nuance and color that will inform our discussions, shape your own understanding, and, ideally, inspire ideas for your own projects. What's more, I'd rather the readings serve as a web of references that can inspire sustained thinking and even independent research about each week's themes and the big ideas animating our semester's work. Our "archive" shouldn't be bound by a class schedule 😊

I list some additional resources on our course website.

Requirements + Assignments

Attendance and Participation	20%
Reading Responses: 3x between January 31 and March 14; due Wednesdays @ noon	15%
Project Plan + Environmental Scan: Due Friday, March 16* @ 5pm.....	15%
Precedent Analysis: Due Wednesday, April 4 @ noon	15%
Final Project: Due Wednesday, May 9, before class.....	25%
Self- / Group-Analysis: Due Thursday, May 10 @ 5pm	10%

ATTENDANCE, PARTICIPATION + IN-CLASS LAB ACTIVITIES

Our class is a mix of seminar and workshop, and its success depends on your regular attendance and reliable participation. We need each other to show up on time, having completed the readings, and prepared to engage constructively and respectfully with one another.

[I apologize for the pedantry of the following, yet I've learned that it's necessary to spell this out:] If you must be absent, please notify me in advance. One absence will not affect your grade. **Two absences will result in a "one step" reduction** in your final grade (i.e., from an A to an A-). Three absences will result in a "two-step" reduction. **Four absences will result in failure** of the course; to avoid the 'F' on your transcript, I'll instead advise you to withdraw from the class. Please note that absences include those days you might miss at the beginning of the semester because of late registration, as well as your individual consultation during the week of April 2. Please note, too, that **an absence does not entitle you to a private reenactment** of the missed class.

I am required by The New School to take attendance at the start of class. Students who arrive **more than 15 minutes** late will thus be marked absent. Your timely arrival is appreciated. Students who are consistently late disrupt their classmates and impede our class progress.

[I have adapted the following from my colleague Amir Husak:] While I am happy to work with you to tailor the class's content and assignments to your interests, and to develop strategies for project planning and time management, I also recognize that "it is every student's right to fail." There are myriad circumstances — personal, professional, cultural, etc. — that might prevent you from fulfilling the class requirements. While I appreciate that these circumstances are often difficult, the **class requirements remain the same for everyone.**

Your attendance and participation account for **20% of your final grade**.

READING RESPONSES

As I explain in my “notes about the weekly readings/screenings/listenings,” we won’t discuss *everything* you’ve been asked to read for each week. And that’s okay; your thinking about our course material should extend beyond the brief time we spend together each week. Yet in order to make sure our in-class discussions *do* address those texts, themes, challenges that resonate amongst, or beset, many of you, I ask you to submit at least **three brief reading responses** during the first half of the semester, between January 31 and March 15. You’re encouraged to choose those weeks during which the readings evoke a strong response – whether epiphany, joy, rage, whatever. These **150- to 300-word** (maximum!) responses should involve some **critical, synthetic reflection** on the week’s assigned texts (by “synthetic,” I mean *thinking across* the texts, rather than focusing on one and ignoring all the rest), but would also ideally include: ideas and/or passages you find particularly captivating or frustrating; questions you’d like us to address as a group; connections you’ve drawn between the readings and your own interests (and which you might like to pursue in your final project); questions about method or relevance or ethics, etc. Please **post your responses as comments to the appropriate day’s page on our class website by noon on Wednesdays before class** (if you’re uncomfortable sharing your work online, talk to me; we’ll devise an alternative delivery method). Your responses account for **15% of your final grade**.

CUMULATIVE PROJECT

Throughout the semester we’ll examine the myriad human and non-human intelligences that are built into our smart cities, and that have historically been present over the *longue durée*. We’ll also examine different approaches to operationalizing and evaluating intelligence, including scientific, administrative, designerly, and artistic approaches to monitoring and testing smart cities. Your challenge will be to choose an epistemological and methodological orientation and **develop a “test kit”** (broadly conceived!) with which we can evaluate – earnestly, speculatively, or parodically – various forms of “urban intelligence.” Your kit might take any of a variety of forms: an instrument, an interface, a tool, a text, etc.

While you’re free to work independently on your projects, you’re also **welcome to join forces with one or more students** to produce a more comprehensive “kit of parts.” Ideally, our various group-project-based labs – from Week 3 through Week 8 – will help you to identify like-minded folks, and our proposal presentations on March 28 will tease out potential intersections.

Please note, too, that because our class is a practice-based seminar and not a traditional design studio, we’ll start the semester with several weeks of research (usually paired with labs in which we apply our theoretical and historical readings in a creative activity) before we turn our attention to the execution of your final projects. That said, **design-oriented students are welcome to begin thinking about potential final-project outcomes early in the semester** and to apply our critical lessons through independent prototyping.

You can read about last Spring’s student projects [here](#).

PROJECT PLAN + ENVIRONMENTAL SCAN

You are responsible for submitting a final project proposal **to Shannon and Jonas by Friday, March 16 @ 5pm, via Google Drive** (in edit-able form; i.e., no pdfs, please!). I set the deadline *before* Spring Break so as to preserve your vacation – but I’m happy to extend the deadline to Friday, March 23, if you’d like to use the break to develop your proposals.) Your 900- to 1500-word project plan and environmental scan (shorter for individual proposals, longer for groups) should address the following:

- the critical ideas informing your project
- the various stakeholders in those critical concerns
- your design concept (e.g., are you writing a policy paper, designing a guidebook, inventing an intelligence-testing instrument, creating a kit of tools, etc.?)
- your primary audiences / user groups, and the desired impact on each
- the “tone” of your project (realist, activist, speculative, functional – in other words: is it meant to *work* in the “real world,” or is it a utopian/dystopian/jokey thought experiment?)
- the material properties of your “deliverable,” and how that/those format(s) serve(s) your larger goals
- the environment(s) in which user groups will engage with your project
- your project’s functionality – or, how it will ideally work (particularly if you’re making something non-textual)
- precedent projects (include multimedia documentation, if appropriate)
- relevant critical literature
- a tentative development plan

These bullet points needn’t dictate the organization of your plan; you’re free to determine the structure of your document, so long as it addresses the above issues and any others that you regard as pertinent.

You’ll be sharing your proposal in class, in a five-minute-per-person presentation, on **March 28**. We’ll prepare a collaborative slideshow on Google Slides. Each student will be allocated five slides: (1) a title slide, where you’ll put your name and (tentative) project title; (2) a slide with a brief description of the critical themes and topics informing your project; (3) a slide describing the material format of your project; and (4-5) two slides to use as you wish. You’re encouraged to incorporate images and other media.

Your project plan and environmental scan account for **15% of your final grade**.

PRECEDENT ANALYSIS

We’ll be exploring precedent projects throughout the semester. Each of you should choose one project – a testing rubric, kit, plan, performance, method, etc. – that has some epistemological interest at its core, and that pertains to your *own* topical interests in the class. Ideally, your case study will be drawn from the “environmental scan” you completed for your proposal. Assess its (1) subject matter or purview; (2) its underlying epistemology and methodology; (3) how its format or mode of

execution serves, or fails to serve, its purposes; and (4) its weaknesses or unexplored critical dimensions. **By noon on April 4, please post your 600-word (undergrads) or 900-word (grads) analysis (with links and illustrations!) to our class website, and bring print-outs of a few images** illustrating the project you've studied. In class, we'll organize you into thematic groups, your groups will create "science fair posters," and then we'll do a show and tell.

You can see last Spring's precedent analyses [here](#). Your precedent analysis accounts for **15% of your final grade**.

FINAL SUBMISSION

Because we'll be **publishing our work in a booklet**, all individuals and groups will be responsible for submitting carefully edited and formatted documentation of their final projects. We'll discuss publication specifications in class near the end of the semester.

Final projects and documentation are due **before class begins on May 9**, and they account for **30% of your final grade**

SELF OR GROUP ASSESSMENT

By **5pm on Thursday, May 10**, each student must **submit to Shannon and Jonas, via Google Drive**, a brief evaluation of their own, or their group's, overall accomplishments and, if applicable, each group member's individual contribution. Self-assessments (**~600 words**) or group assessments (**~ 900 words**) should include the following:

- a brief restatement of what you or your group set out to accomplish and an evaluation of whether you met those initial goals, or how your goals might have evolved over the course of the semester
- if applicable, a brief discussion of your group's dynamic and work process, and how they might have evolved over the course of the semester
- if applicable, a brief discussion of each group member's contribution (including your own), including any challenges individual members might have presented
- any additional big-picture reflections or minor details you'd like to share.

Your assessment accounts for **10% of your final grade**.

LEARNING OBJECTIVES

Throughout the semester, we'll:

- Learn about various theories of “intelligence,” examine how epistemologies are operationalized through different methodologies and materialized in design and administrative processes, and consider how they shape our urban imaginaries
- Explore the connections between research methods, design strategies, politics, and cultural values
- Assess the politics and economics of data, the ethics of sensing and monitoring technologies, the environmental impacts of design, and the qualities of cities that make them livable and inclusive
- Model, and advocate for, a more inclusive, interdisciplinary, methodologically varied, critical approach to city-building – particularly in an age characterized by the fetishization of data, the reification of algorithms, and the privileging of growth and efficiency as prime urban and civic virtues.

Other Policies

SHARING YOUR WORK VIA GOOGLE DOCS

See the “Policies + Procedures” section of our website for more details.

DEADLINES

Assignment deadlines are clearly noted on the syllabus. In all cases, you are made aware of these deadlines weeks in advance, and in some cases you even choose your own assignment deadlines. I am also more than happy to work with you, in advance of assignments deadlines, to develop your projects. Thus, there is little reason for you to miss deadlines. Work that is late for any reason will be **penalized one-half letter grade for each 24-hour period** and will not be accepted after a week. Extensions will be granted only rarely, and only after consulting with me at least two days in advance of the assignment deadline. Deadlines are rigid in the professional world, and I expect similar conscientiousness and courtesy in the classroom.

I take your work seriously, I read it closely, and I’m known for providing substantial, thorough, constructive feedback. I set aside big blocks of time for assignment review immediately after each deadline. Missing deadlines means you miss your “window of opportunity” for review, which is an essential part of your learning in this course (and any course, for that matter). **Late work = no comments.**

A student who has not submitted all assigned work by the end of the semester does not receive an “Incomplete” by default. “Incompletes” are assigned only in extreme circumstances, and require that the student consult with me well before the end of the semester and sign a contract obligating him or her to complete all outstanding work by a date that we agree upon. Again, late work will not receive feedback.

CHANGES TO THE SYLLABUS

I make every effort to map out the entire semester before the semester begins, so we both know what we’re in for. Yet we may need to make a few small alterations to our schedule: we might host a guest who’s passing through town, I might decide to cut a couple of our readings or substitute new material that’s published over the course of the semester, etc. I will never *add* to your workload. Any changes will be noted, with plenty of advance notice, on **our class website, which will always be the most the most accurate, up-to-date “control center” for our class.** This printed syllabus is really just an administrative document.

ACADEMIC HONESTY

All students are expected to familiarize themselves with the University’s [academic honesty policy](#). Plagiarism or cheating of any form will result in immediate failure of the course. No joke. If you have any questions regarding proper citation of sources or other academic integrity matters, consult the [University Learning Center](#).

January 24: Enlightened Urban Futures

Today we'll meet one another, discuss our preliminary interests, examine some aspirational and dystopian visions for our urban futures, and lay out our plans for the semester.

To be enjoyed/endured in class (you needn't review in advance or afterward, unless you want to!):

- Excerpts from “[World’s Smart Cities: San Diego](#),” National Geographic Channel [video: 0:44].
- [Cisco’s Smart + Connected Communities](#) + [IBM Smarter Cities](#).
- Kohn Pedersen Fox’s [Urban Interface](#) [ppt].
- The U.S. Department of Transportation’s 2016 Smart City Challenge Finalist [Pitches](#).
- [Bits and Atoms](#).
- Brian Petchers, Tim Pierson, Chloe Sorvino and Kirsten Taggart, *Forbes*’ [Hudson Yards video](#) (May 31, 2016) [02:26] + Hudson Yards’ [promo videos](#)
- Patrick Sisson, “[An Idiot’s Guide to Futuristic Smart Cities Under Development](#),” *Curbed* (November 17, 2017).*
- Andrew Blum, “[Oil Won’t Last Forever, so Dubai is Betting Big on Science and Tech](#),” *Popular Science* (May 15, 2017).*
- Sara Blom and Dorien Zandbergen, *Smart City: In Search of the Smart Citizen* (2015) [video: 1:04].
- Liam Young and Tim Maughan, *In the Robot Skies* (2016) [film teaser: 1:38].
- Wes Goatley and Georgina Voss, [Ground Resistance](#) (2016) [exhibition].
- [Google Urbanism](#).
- Josh Chin and Clément Bürge, “[Twelve Days in Xinjiang: How China’s Surveillance State Overwhelms Daily Life](#),” *Wall Street Journal* (December 19, 2017).
- Keller Easterling’s [Presentation Images](#).
- Sidewalk Labs, “[Sidewalk Toronto: The Neighborhood of the Future Starts With Your Ideas](#)” (2017) [3:53].*
- [The \(much debated\) Data – Information – Knowledge – Wisdom pyramid](#).

January 31: What *are* smart cities? (And why are they often so dumb and scary?)

Lab: 5:30-6:45: Today we'll be holding a Mock Town Hall regarding the hypothetical implementation of a new "smart infrastructure" in a fictional city.

- Anthony Townsend, "Urbanization and Ubiquity" in *Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia* (New York: Norton, 2013): 1-18 [I encourage you to read the entire book when you've got time].
- Orit Halpern, Jesse LeCavalier, Nerea Calvillo, and Wolfgang Pietsch, "Test-Bed Urbanism," *Public Culture* 25:2 (2013): 273-306.
- Rob Kitchin, "Making Sense of Smart Cities: Addressing Present Shortcomings," *Cambridge Journal of Regions, Economy and Society* 8 (2015): 131-36.
- Rob Kitchin, "Rethinking, Reimagining and Remaking Smart Cities," *Programmable City Working Paper* 20 (August 2016) [13 pp].
- *You'll want to sit down for this:* Reeves Wiedeman, "[The Big Hack](#)," *New York Magazine* (June 19, 2016).
- Consider also the stupidity of much "smart" technology, the biases of artificial intelligence, and the capacity for algorithms to perpetuate prejudices. See, for instance, [Simone Browne's work](#).
- *Skim* Seattle's [Digital Equity initiative](#) and NYC's [Guidelines for the Internet of Things](#).
- Post a reading response? Remaining options: 2/7, 2/14, 2/21, 2/28, 3/7, 3/14
- Supplemental Resources¹

February 7: Visit to Alphabet's Intersection / Sidewalk Labs

Field Trip (4:15 – 6:15): We'll visit Intersection / Sidewalk Labs to meet with Max Oglesbee, Intersection's Head of Client Strategy, and Jesse Shapins, Sidewalk Labs' Director of Design, at 10 Hudson Yards, 26th Floor; please arrive as early as possible (ideally before 4), so we can all have security badges printed in the lobby!

- John Hockenberry, "[The Future of the 'Smart City,'](#)" *The Takeaway* (June 23, 2016) [radio: 0:52] (consider the gendered roles various spokespeople play here – as well as [Hockenberry's recent downfall](#)).
- Check out [Intersection](#) and [Sidewalk Labs](#) and skim through [Sidewalk Talk](#).
- Shannon Mattern, "[Instrumental City: The View from Hudson Yards, circa 2019,](#)" *Places Journal* (April 2016).
- Nick Pinto, "[Google is Transforming NYC's Payphones into a 'Personalized Propaganda Engine,'](#)" *Village Voice* (July 6, 2016).
- Sidewalk does Toronto!: Henry Grabar, "[Building Googletown,](#)" *Slate* (October 25, 2017) + Katie Toth, "[A Google-Related Plan Brings Futuristic Vision, Privacy Concerns to Toronto,](#)" *All Things Considered*, WNYC (November 20, 2017) [...and if you want more, here's the [Sidewalk Toronto Community Hall](#) (November 1, 2017) [video]].*
- Post a reading response? Remaining options: 2/14, 2/21, 2/28, 3/7, 3/14

February 14: Urban Intelligence Before “Smartness”™

Screening: Chad Freidrichs’ *The Experimental City*, 2017

- Shannon Mattern, “Of Mud, Media and the Metropolis: Aggregating Histories of Writing and Urbanization,” *Code + Clay, Data + Dirt: 5000 Years of Urban Media* (Minneapolis: University of Minnesota Press, 2017): 85-114.
- Malcolm McCullough, “Ambient” and “Information,” in *Ambient Commons: Attention in the Age of Embodied Information* (Cambridge, MIT Press, 2013): 7-45.
- Excerpt from Orit Halpern, *Beautiful Data: A History of Vision and Reason Since 1945* (Durham: Duke University Press, 2014): 110-22.
- “Urbanizing Military Information Technology: Interview with Jennifer Light,” *Harvard Design Magazine* 38 (Spring/Summer 2014): 139-47.
- Margaret O’Mara, “Landscapes of Knowledge and High Technology,” *Places* 19:1 (2007): 48-53.*
- Keller Easterling, “[Zone: The Spatial Softwares of Extrastatecraft](#),” *Places Journal* (June 2012).
- Post a reading response? Remaining options: 2/21, 2/28, 3/7, 3/14
- Supplemental Resources²

February 21: What’s “smart”? And how do we know it when we see it?

Lab 1: 4-4:30pm: Making Center Tour with Abby Mechanic: meet @ Tool Checkout, west end of 2 W 13th St, 2nd Floor

Back in the classroom, we’ll talk about “smartness” and develop metadata schemes for next week’s cataloguing exercise: what criteria are most salient in unifying and distinguishing between various forms of “intelligence”? We’ll also examine test kits created to measure and cultivate intelligence.

- William H. Calvin, “The Emergence of Intelligence,” *Scientific American* 271:4 (October 1994): 100-7.
- Mark Dery and Steven Pinker, “[Smart Bombs: Mark Dery, Steven Pinker on the Nature-Nurture Wars and the Politics of IQ](#),” *BoingBoing* (August 14, 2009) [for more on the history of measuring intelligence, see Mackintosh and Urbina, below].
- Gideon Lewis-Kraus, “[The Great A.I. Awakening](#),” *New York Times Magazine* (December 14, 2016).*
- Saqr Eriqat, “[Blockchain in Dubai: Smart Cities from Concept to Reality](#),” *IBM* (April 10, 2017).
- Elvia Wilk with Jenna Sutela, “[Slime Intelligence](#),” *Rhizome* (August 16, 2016).
- Shannon Mattern, “[A City Is Not a Computer](#),” *Places Journal* (February 2017).
- Browse through the [Parsons Making Center Resources](#).
- Post a reading response? Remaining options: 2/28, 3/7, 3/14
- Supplemental Resources³

February 28: Other Spatial Intelligences (i.e., Beyond “Smart”)

Lab: Developing a catalogue of spatial intelligences based on the typology we constructed last week. As each of you produces and shares your catalogue entry/entries, **we’ll start to get a sense of what topics and themes will be animating each of your final projects.**

Yes, this is a long list, but they’re (mostly) short pieces. Our goal is to explore a wide variety of “other” intelligences:

- Gautam Bhan, “Metrocalypse Now,” *India Today* (January 12, 2018).
- Jane Jacobs, “The Uses of Sidewalks: Safety” and “...Contact” in *The Death and Life of Great American Cities* (New York: Vintage Books, 1992 [1961]): 29-73.
- Jennifer Gabrys, excerpts from “Engaging the Idiot in Participatory Digital Urbanism” in *Program Earth: Environmental Sensing Technology and the Making of a Computational Planet* (Minneapolis: University of Minnesota Press, 2016): 233-8, 241-5.
- Eric Gordon and Stephen Walter, “Meaningful Inefficiencies: Resisting the Logic of Technological Efficiency in...Civic Systems” in Gordon and Mihailidis, eds., *Civic Media: Technology | Design | Practice* (Cambridge: MIT Press, 2016): 243-66 – **focus on 253-63.**
- Felipe Vera and Rahul Mehrotra, “[Temporary Flows & Ephemeral Cities](#),” *Room One Thousand 3* (2015).
- Check out some of [Matthew Gandy’s work](#), and see Andrew Karvonen’s profile of Gandy in Regan Koch and Alan Latham, eds., *Key Thinkers on Cities* (Sage, 2017): 87-92. Think, too, about how local “resilience” strategies – responses / adaptations to climate change – represent a form of local intelligence.
- Ellie Irons, “[Weedy Resistance: Multispecies Tactics for Contesting “The Age of Man,”](#)” *Inhabiting the Anthropocene* (May 3, 2017).
- John Metcalfe, “[How Squirrels, Pigeons...Are All Smarter Than You](#),” *CityLab* (July 23, 2013).
- Post a reading response? Remaining options: 3/7, 3/14
- Supplemental Resources⁴

How do we make urban intelligences visible, sense-able, intelligible, operationalizable, measurable, testable, actionable?

March 7: Observing + Operationalizing Spatial Intelligences I: Simulations, Models + Games

Lab: Using the Extrapolation Factory's [Alternative Unknowns method](#), we'll model a smart-city disaster scenario: what "old school" intelligences would we have to rely on if our smart city suffered a massive-long-term power outage?

- World Expos + Fairs: *Skim through* "[World's Fairs: A Global History of Expositions](#)" (Wiltshire, UK: Adam Matthew Digital, 2016) [for centuries, fair organizers have used these events to prototype future technologies and cities].
- Models of Spatial Dynamics: Chris Woebken and Javier Arbona, "[Variable World: Bay Model Tour & Salon](#)," *Avant* (January 21, 2015).*
- Simulations: Aubrey Anable, "The Architecture Machine Group's *Aspen Movie Map*: Mediating Urban Crisis in the 1970s," *Television & New Media* 13:6 (2012): 498-519. And just for fun: skim through [the program](#) for the International Conference on Exercises, Gaming, and Simulations for Intelligence and National Security, Georgetown University, March 24-25, 2015.*
- More Simulations: Kyle Chayka, "[The Future Agency](#)," *The Verge* (March 30, 2017).
- Games: Jennifer Light, "Taking Games Seriously," *Technology and Culture* 49 (April 2008): 347-75.*
- And more Games: Will Partin, "[A Short Conversation About 'Everything' with Creator David O'Reilly](#)," *Rolling Stone* (March 31, 2017) + [EVERYTHING](#) demo.
- Post a reading response? Remaining options: 3/14
- Supplemental Resources⁵

March 14: Observing + Operationalizing Spatial Intelligences II: Illustrations + Interfaces, Kits + Guides

IMAGINARIES + INTERFACES (Sorry there's so much of me; I just happen to have collected lots of relevant examples in these essays!)

- Shannon Mattern, "[Interfacing Urban Intelligence](#)," *Places Journal* (April 2014).
- Shannon Mattern, "[Mission Control: A History of the Urban Dashboard](#)," *Places Journal* (March 2015).
- Carlo Ratti and Daniele Belleri, "[Sense and the City: Towards a New Digital Urbanism](#)," *urbanNext* (n.d.).

KITS + GUIDES

- Christine Gaspar, "Images of the City: The Work of the Center for Urban Pedagogy" and Kadambari Baxi and Irene Cheng, "Citizenship by Design" in Miodrag Mitrasinovic, ed., *Concurrent Urbanities: Designing Infrastructures of Inclusion* (NY: Routledge, 2016): 76-86, 114-23.
- Shannon Mattern, "[Infrastructural Tourism](#)," *Places Journal* (July 2013).
- Shannon Mattern, "[Cloud and Field](#)," *Places Journal* (August 2016).
- Post a reading response?
- Supplemental Resources⁶

Lab: In today's class, we'll split into small groups to study and critique a few projects (you needn't review the following materials before class):

Imaginations + Interfaces

- Adam Rothstein, "[The Cities Science Fiction Built](#)," *Motherboard* (April 20, 2015) + consider other sci-fi films or smart-city promotional videos.
- Gillian Rose, "[Top Ten Tips for Making a Smart City Promotional Video](#)," *Visual/Method/Culture* (September 19, 2016).
- Jennifer Gabrys, "[Smart Cities as Sustainable Cities: A Visual Essay](#)," *Society & Space* (2014).
- UK Government Office for Science, "[Future Cities: A Visual History of the Future](#)" (2014).
- Consider some of the interfaces + dashboards referenced in the readings. And [here's a new-ish one](#) from Banco Interamericano de Desarrollo.

Gadgets, Kits + Guides

- Sara Dean and Beth Ferguson, [Climate Kit](#) + more documentation @ [VUCA](#) + [Zero](#).
- Natalie Jeremijenko et al., [Environmental Health Clinic + Lab](#) + Public Lab's [Tools + Methods](#).
- Parsons & Charlesworth, [New Survivalism Kits](#).
- Check out the work of the [Extrapolation Factory](#).
- Kevin Gaunt, "[Bots – Collaborative AI for the Smart Home](#)," *Core 77* (2016) + [video](#).
- Julian Bleecker and Barry Brown, [InterIKEA Systems](#) (2015) [more from [NearFutureLab](#)].
- Consider some of the projects referenced in the readings, too.

March 16 @ 5pm: Project Proposals Due

See “Requirements + Assignments” for more details. I’ll respond to your proposals over the break, and you can prepare to share your proposed projects in class on March 28.

March 21: No Class – Spring Break

March 28: Workshopping Project Ideas + Finding Intersections

In today’s class, you’ll each have **five minutes** to share your project proposal. We’ll prepare a collaborative slideshow on Google Slides. Each student will be allocated five slides: (1) a title slide, where you’ll put your name and (tentative) project title; (2) a slide with a brief description of the critical themes and topics informing your project; (3) a slide describing the material format of your project; and (4-5) two slides to use as you wish. You can save your “environmental scan” for next week’s Precedent Studies workshop. You’re encouraged to incorporate images and other media.

And while you’re free to work independently on your projects, you’re also welcome to join forces with one or more students to produce a more comprehensive “kit of parts.” Those presenting as part of a group can simply multiply their time and slide count by the number of group members. These collaboration resources might be of use:

- Marc Downie, Shelley Eshkar & Paul Kaiser, *Creative Collaborations* (Helsinki Design Lab / Sitra, 2012).
- Bryan Boyer, Justin W. Cook and Marco Steinberg, *Recipes for Systemic Change* (Helsinki Design Lab / Sitra, 2011) – in particular, the description of HDL’s studio process on 97-119.
- This [group Project Brief](#), from our Spring 2017 Urban Intelligence class, which can help to make sure everyone’s on the same page.

April 4: Observing + Operationalizing Spatial Intelligences III: Show + Tell of Precedent Studies

Due by Noon Today: Please post your **600-word (undergrads) or 900-word (grads) precedent analysis** to our class website, and **bring with you to class print-outs of a few images** illustrating the project you’ve studied. See the “Requirements + Assignments” section for more details.

Jacob and I will review your posts before class and organize you into thematic clusters. You’ll share your critiques with your groupmates and create a collective “science fair poster” using art materials we’ll bring to class. Then, for the last half of our session, each group will share its work.

April 11: Methods + Instruments

Today, we'll take a little break from *your* projects and explore *another* researcher/designer's methods for exploring urban intelligences. Then we'll play around with our own measurement instruments.

Guest: Bryan Boyer @ 4pm (in-person or via Skype)

- Check out [Bryan's work](#) and [his writing on Medium](#).
- Kathleen H. Pine and Max Liboiron, "The Politics of Measurement and Action," *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (CHI, 2015): 3147-56.
- Marcus Foth and Martin Brynskov, "Participatory Action Research for Civic Engagement," in Eric Gordon and Paul Mihailidis, eds., *Civic Media: Technology | Design | Practice* (Cambridge, MIT Press, 2016): 563-80.
- Excerpts from Elliott Montgomery and Chris Woebken, *Extrapolation Factory: Operator's Manual* (CreateSpace, 2016).
- Supplemental Resources⁷

Instrument-Building Lab: After our methods discussion, we'll build some speculative measurement tools using the [Extrapolation Factory's 99-cent Futures method!](#) Check out [what we did last year](#).

April 18:

(A-Good-Bit-Past-)Mid-Semester Review

Guest Critics: Andrew Blum, design journalist and author of *Tubes: A Journey to the Center of the Internet*; Melissa Reanne De La Cruz, Urban Intelligence / GPIA Alum and Researcher @ Bits and Atoms; Jilly Traganou, Associate Professor of Spatial Design at Parsons and author of *Designing the Olympics: Representation, Participation, Contestation* among other titles

We'll organize you into thematic clusters – primarily for the sake of our guests, who can probably more comfortably endure five "acts" rather than 15 separate soliloquys ☺ We'll prepare a collaborative slideshow on Google Slides in the week leading up to class. Each student will be allocated seven slides; you choose how to use them!

Your primary agenda item is to share a "prototype" (or an intelligible outline, sketch, or model) of your final project, including each of its components. Ideally, you'd share a physical model or a comprehensive representation that conveys the material or conceptual form and "look + feel" of what you'll ultimately submit at the end of the semester. **Lead with "the thing" itself**, so our visitors can quickly begin thinking concretely about your work, then provide some context: your conceptual foundation, your process, your timeline for development, etc. Consider what kind of feedback you want and need at this stage, and pose questions to solicit that input.

April 25: Workshop + Desk Consultations

Publication Template: We'll discuss formatting guidelines for your final documentation.

Individual Meetings: We'll meet briefly with each of you to discuss how you've incorporated, rejected, or modified the critics' feedback from last week. Please bring work to occupy yourselves while you're waiting for your appointment!

May 2: Final Presentations

May 9: Final Presentations | Projects + Publication Materials Due

May 10 @ 5pm: Self/Group Assessment Due via Google Docs

¹ February 7: *What are smart cities?: Supplemental: Plenty more people (mostly guys) to choose from!!*

- Michael Anft, "[The New Urban Science](#)," *Chronicle of Higher Education* (July 30, 2017).
- Michael Batty, *The New Science of Cities* (Cambridge: MIT Press, 2013).
- Armin Beverungen, Florian Sprenger, and Susan Ballard, eds., "[Computing the City](#)," *Fibreculture* 29 (2017): especially Halpern and Gunel on resilience and Mertia on Delhi.*
- Dan Hill's [City of Sound](#) and [Medium channel](#).
- Adam Greenfield, *Against the Smart City* (Do Projects, 2013).
- Constantine Kontokosta, "[CUSP Quantified Community and Neighborhood Labs](#)," AEC Technology Symposium (September 25, 2015).
- Keiichi Matsuda, [Hyper-Reality](#) (2016) [film]
- William Mitchell, *Me++: The Cyborg Self and the Networked City* (Cambridge, MIT Press, 2003) and *e-topia: Urban Life, Jim – But Not as We Know It* (Cambridge: MIT Press, 1999).
- Brian Nussbaum, "[Smart Cities – The Cyber Security and Privacy Implications of Ubiquitous Urban Computing](#)," *Stanford Center for Internet and Society* (February 9, 2016).
- Antoine Picon, *Smart Cities: A Spatialized Intelligence* (Wiley, 2015).
- Carlo Ratti and Matthew Claudel, *The City of Tomorrow: Sensors, Networks, Hackers, and the Future of Urban Life* (New Haven: Yale University Press, 2016).
- Jathan Sadowski and Frank Pasquale, "[The Spectrum of Control: A Social Theory of the Smart City](#)," *First Monday* 20:7 (2015).
- Mark Shepard, *Ubiquitous Computing, Architecture, and the Future of Urban Space* (Cambridge: MIT Press, 2011).
- Anthony Townsend, "[Cities of Data: Exploring the New Urban Science](#)."
- Liesbet van Zoonen, "[Privacy Concerns in Smart Cities](#)," *Gov't Info Quarterly* 33:3 (July 2016).
- Alan Wiig, Taylor Shelton, and Matthew Zook, "The 'Actually Existing Smart City,'" *Cambridge Journal of Regions, Economy, and Society* 8 (2015): 13-25.*
- Liam Young, "An Atlas of Fiducial Landscapes: Touring the Architectures of Machine Vision," *Log* 36 (Winter 2016): 125-34.

² February 14: *Urban Intelligence Before "Smartness": Supplemental Resources:*

- Armin Beverungen, Florian Sprenger, and Susan Ballard, eds., "[Computing the City](#)," *Fibreculture* 29 (2017): especially Apprich on smart city precursors and Rossiter on data center sovereignty.*

- Cambridge's [Centre for Urban Conflicts Research](#).
- John de Boer, "[Resilience and the Fragile City](#)," *Our World* (August 25, 2015).
- Keller Easterling, *Extrastatecraft: The Power of Infrastructure Space* (New York: Verso, 2014).
- "[Indexical Landscapes](#)" Symposium, ArtCenter College of Design, October 2016.
- Jesse LeCavalier, *The Rule of Logistics: Walmart and the Architecture of Fulfillment* (Minneapolis: University of Minnesota Press, 2016).
- Jennifer Light, *From Warfare to Welfare: Defense Intellectuals and Urban Problems in Cold War America* (Baltimore: Johns Hopkins University Press, 2003).
- Clare Lyster, *Learning from Logistics: How Networks Change our Cities* (Basel: Birkhäuser, 2016).
- Shannon Mattern, *Code and Clay, Data and Dirt: 5000 Years of Urban Media* (Minneapolis: University of Minnesota Press, 2017).*
- Shannon Mattern, "[Indexing the World of Tomorrow](#)," *Places Journal* (February 2016) [on an index-card-and-clerical-worker-based form of urban smartness].
- Margaret Pugh O'Mara, *Cities of Knowledge: Cold War Science and the Search for the Next Silicon Valley* (Princeton: Princeton University Press, 2005).*
- Margaret O'Mara, "Media Space," UWTV [video: 26:23].
- Margaret O'Mara, "Silicon Valleys," *Boom: A Journal of California* 1:2 (Summer 2011): 75-81.
- Ned Rossiter, *Software, Infrastructure, Labor: A Media Theory of Logistical Nightmares* (New York: Routledge, 2016).
- Anthony Townsend, "The \$100 Billion Jackpot," "Cybernetics Redux," "Cities of Tomorrow" in *Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia* (New York: Norton, 2013): 19-114.
- Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago: University of Chicago Press, 2006).
- Mark Wigley, "[Network Fever](#)," *Grey Room* 4 (2001): 82-122.

³ February 21: What's "smart"? Supplemental Resources:

- William H. Calvin, "The Emergence of Intelligence," *Scientific American* 271:4 (October 1994): 100-7.
- "[Controversy of Intelligence](#)," *Crash Course Psychology* 23 [video: 12:38].
- "[Emergence](#)," *RadioLab* 1:3 (2005).
- Mark Dery, "[Cortex Envy](#)," *Cabinet* 34 (Summer 2009).
- "[An Ethereal Future](#)," *Reddit* (2014) [on blockchain futures].
- Mariusz Flasiński, "Theories of Intelligence in Philosophy and Psychology" in *Introduction to Artificial Intelligence* (Springer, 2011): 213-23.
- Natasha Frost, "[What Is It Like to Be a Bee?](#)" *Atlas Obscura* (December 6, 2017).
- Michelle G., "[Picture Yourself as a Stereotypical Male](#)," *MIT Admissions* (September 5, 2015).
- Gary Groth-Marnat, *Handbook of Psychological Assessment*, 5th Ed. (New York: John Wiley & Sons, 2009).
- Orit Halpern, Robert Mitchell, and Bernard Dionysius Geoghegan, "The Smartness Mandate: Notes Toward a Critique," *Grey Room* 58 (Summer 2017): 106-29.
- Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14:3 (Autumn 1988): 575-99.*
- Institute for the Future, "[Understand the Blockchain in Two Minutes](#)" [video]
- Olivia Judson, "[What the Octopus Knows](#)," *The Atlantic* (January/February 2017).
- Raffi Khatchadourian, "[The Doomsday Invention](#)," *New Yorker* (November 23, 2015).
- Eduardo Kohn, *How Forests Think: Toward an Anthropology Beyond the Human* (Berkeley: University of CA Press, 2013).
- Shane Legg and Marcus Hutter, "Universal Intelligence: A Definition of Machine Intelligence," *Minds & Machines* 17:4 (2007): 391-444.
- Stefan Junstrand, "[How Can Blockchain Help Smart Cities?](#)" *Blockchain Revolution* (August 9, 2017).
- N. J. Mackintosh, "History of Theories and Measurement of Intelligence," in Robert J. Sternberg and Scott Barry Kaufman, *The Cambridge Handbook of Intelligence* (Cambridge University Press, 2011): 1-19.*
- Colin McFarlane and Ola Söderström, "On Alternative Smart Cities," *City* (2017): 10.1080/13604813.2017.132716.*

- Perluigi Serraino, *The Creative Architect: Inside the Great Midcentury Personality Study* (New York: Monacelli Press, 2016).*
- Murray Shanahan, “[Consciousness Exotica](#),” *Aeon* (October 19, 2016).
- Tom Stonier, *Beyond Information: The Natural History of Intelligence* (New York: Springer-Verlag, 1992).
- Don Tapscott, “[How Blockchains Could Change the World](#),” *McKinsey & Company High Tech* (May 2016).
- Anna Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (Princeton: Princeton University Press, 2015).
- Susana Urbina, “Tests of Intelligence” in Robert J. Sternberg and Scott Barry Kaufman, *The Cambridge Handbook of Intelligence* (Cambridge University Press, 2011): 20-38.*

More Supplemental Resources re: Intelligence Test + Educational Kits:

- Kelli Anderson, *This Book is a Planetarium* (Chronicle Books, 2017) [+ [video](#)].*
- “[Bell System has New Teaching Aids for High School, Elementary School](#),” *The Journal of the Telephone Industry* (February 27, 1965).
- [Brainiac Advertisement](#), *Computers and Automation* 8:1 (January 1959): 21.
- Adam Cohen, “[This Jigsaw Puzzle Was Given to Ellis Island Immigrants to Test Their Intelligence](#),” *Smithsonian Magazine* (May 2017).*
- Ann-Sophie Lehmann, “Cube of Wood: Material Literacy for Art History” (Groningen: Rijksuniversiteit, 2016).
- Ann-Sophie Lehmann, “Material Literacy,” *Bauhaus Zeitschrift* 9 (2007): 20-7.
- Museum der Dinge’s “[Object Lesson: The Story of Material Education in 8 Chapters](#)” exhibition and the [exhibition texts](#). [search for images, too!]
 - Haidy Geismar, “[Object Lessons: The Story of Material Education in Eight Chapters](#),” *Material World* (August 31, 2016).
- John T.E. Richardson, *Howard Andrew Knox: Pioneer of Intelligence Testing at Ellis Island* (New York: Columbia University Press, 2011).
- Jentery Sayers, “[Kits for Cultural History](#),” *Hyperbizz* 13 (Fall 2015) – and skim through the other articles in this [special issue on “Kits, Plans, Schematics.”](#)
- Alexandra Minna Stern, “An Empire of Tests: Psychometrics and the Paradoxes of Nationalism in the Americas,” in Ann Laura Stoler, ed., *Haunted by Empire: Geographies of Intimacy in North American History* (Durham: Duke University Press, 2006): 325-43. [NYU](#)
- “[Testing, Testing](#),” *things magazine* (September 28, 2012).
- More Test Kits: [blood tests](#), [drug ID tests](#), Octavia Butler’s “[survival kits](#),” [pool tests](#), [pregnancy tests](#), [rape kits](#), [water tests](#).

⁴ February 28: *Other Spatial Intelligences Supplemental Resources: Supplemental Resources*

- Other Logics:
 - Brad Hargreaves, “[We’re Already Building New Cities](#),” *Medium Hothouse* (January 16, 2017).
 - Harvey Molotch, “The City as Growth Machine: Toward a Political Economy of Place,” *American Journal of Sociology* 82:2 (September 1976): 309-32.
- Civic Intelligence:
 - Dan Hill, “[On the Smart City: Or, a ‘Manifesto’ for Smart Citizens](#),” *City of Sound* (February 1, 2013).
 - [Ubiquitous Commons](#) + [Human Ecosystems](#)
 - John Elrick and Will Payne, “[Model City: Rule of Innovation](#),” *New New Games*.
 - Aparna Piramal Raje and Saskia Sassen, “[Redefining Notions of Urban Intelligence](#),” *Live Mint* (June 29, 2016).
 - Amy Starecheski, “[The Story of Squats](#),” *Urban Omnibus* (February 1, 2017).*
- Media/Data Literacies and Civic Media as Counterbalances to Smart Technologies:
 - Shannon Mattern, “[Public In/formation](#),” *Places Journal* (November 2016).
 - Paul Mihailidis and Roman Gerodimos, “Connecting Pedagogies of Civic Media: The Literacies, Connected Civics, and Engagement in Daily Life” in Eric Gordon and Eric Gordon and Paul Mihailidis, eds., *Civic Media: Technology | Design | Practice* (Cambridge, MIT Press, 2016): 371-91.
- Actor-Networked/Cyborgian/Ecological Intelligences:
 - Ashley Dawson, *Extreme Cities: The Peril and Promise of Urban Life in the Age of Climate Change* (Verso, 2017).

-
- Matthew Gandy, “Cyborg Urbanization: Complexity and Monstrosity in the Contemporary City,” *International Journal of Urban and Regional Research* 29:1 (March 2005): 26-49.
 - Owain Jones, “After Nature: Entangled Worlds,” in Noel Castree, David Demeritt, Diana Liverman, and Bruce Rhoads, eds., *A Companion to Environmental Humanities* (Oxford, UK: Wiley-Blackwell, 2009): 294-312.
 - Adhijnan Rej, “[Jugaad: Frugal Innovation or \[Indian\] Hacking...?](#)” *Wired Innovation Insights* (October 23, 2013).
 - Rockefeller Foundation’s [100 Resilient Cities](#).*
 - Erik Swyngedouw, “The City as a Hybrid – On Nature, Society and Cyborg Urbanization,” *Capitalism, Nature, Socialism* 7:25 (March 1996): 65-80.
 - Stephanie Wakefield, “[Inhabiting the Anthropocene Back Loop](#),” *Resilience: International Policies, Practices and Discourses* (2017) [18pp].

⁵ *March 7: Observing + Operationalizing Spatial Intelligences I: Simulations, Models + Games: Supplemental Resources:*

- “[America’s Last Top Model](#),” *99% Invisible* 221 (July 16, 2016) [podcast: 20:40]
- Michael Batty, “Fifty Years of Urban Modeling: Macro Statics to Micro Dynamics,” in S. Albeverio, D. Andrey, P. Giordano, and A. Vancheri, eds., *The Dynamics of Complex Urban Systems: An Interdisciplinary Approach* (Heidelberg: Physica-Verlag, 2008): 1-20. See also his work on [urban models](#); “[Simulating Geodesign: Designers as Agents](#)” (April 16, 2013).
- Kristi Dykema Chermie, “[The Scale of Nature: Modeling the Mississippi River](#),” *Places Journal* (March 2011).
- John Elrick, “[The World a Model Makes](#),” *AAG Newsletter* (February 10, 2016).
- Jay Forrester, *Urban Dynamics* (Cambridge: MIT Press, 1969).
- Daniel Gethmann, “Integrated Planning and the Design of Urban Agglomeration: Bernard Hafner’s Comparative Simulation of Alternative Urban Prototypes,” *Architecture Research Quarterly* 21:1 (2017): 10-20.
- Orit Halpern, “[Inhuman Vision](#),” *Media-N* 10:3 (Fall 2014).
- Orit Halpern, “The Trauma Machine: Demos, Immersive Technologies and the Politics of Simulation,” in Matteo Pasquinelli, ed., *Alleys of Your Mind: Augmented Intelligence and Its Traumas* (Lüneburg: meson press, 2015): 53-67
- André Jansson, “Encapsulations: The Production of a Future Gaze at Montreal’s Expo 67,” *Space and Culture* 10:4 (2007).
- Shannon Mattern, “The Spectacle of Data: A Century of Fairs, *Fiches*, and Fantasies,” *Theory, Culture & Society* (forthcoming 2018).
- Cesare Silla, “[Chicago World’s Fair of 1893: Marketing the Modern Imaginary of the City and urban Everyday Life Through Representation](#),” *First Monday* 18:11 (November 2013).
- McKenzie Wark, “[Capture All: SimCity, Gamespace, and Play](#),” *Avery Review* 6 (March 2015).
- Michael Weisberg, *Simulation and Similarity: Using Models to Understand the World* (New York: Oxford University Press, 2013).
- Alexander Hilton Wood, “[The Engineers and the Urban System, 1969-1974](#),” M.Arch. Thesis, MIT, 2012.

⁶ *March 14: Observing + Operationalizing Spatial Intelligences II: Illustrations + Interfaces, Kits + Guides: Supplemental Resources:*

- Christopher Alexander, *A Pattern Language: Towns, Buildings, Construction* (New York: Oxford University Press, 1977).
- Carl Abbott, *Imagining Urban Futures: Cities in Science Fiction and What We Might Learn from Them* (Middletown, CT: Wesleyan University Press, 2016).
- Martijn de Waal, *The City as Interface: How New Media Are Changing the City* (nai010, 2014).
- Carla Leitão and Ed Keller, “[Drive](#),” *Volume 49: Learning Network* (November 2016).
- Shannon Mattern, “[Methodolatry and the Art of Urban Measure](#),” *Places Journal* (November 2013).

⁷ *April 11: Methods + Instruments: Supplemental Resources:*

- Francisco Laranjo, “[Critical Everything](#),” *Grafik* (March 8, 2015).
- Bryan Boyer, Justin W. Cook and Marco Steinberg, *Legible Practices: Six Stories about the Craft of Stewardship* (Sitra, 2013) – particularly their one-page method profiles on pp. 34-40, 53-7, 68-75, 86-93, 104-11, 123-8.