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**Jordan Geiger**

Architect and Assistant Professor  
University at Buffalo  
Department of Architecture  
114 Diefendorf Hall  
Buffalo, NY 14214  
USA  
jordang@buffalo.edu

Jordan Geiger

## ABSTRACT

**Looking at new public-space formations today, the roles of new technologies grow not only prominent but also noticeably time-sensitive. Due in part to the rapidly changing nature of communications media and the diverse stakeholders, the theatrical “entr’acte” appears to be an apt model for forms and durations of public space with diverse performers (both human and material elements) of different sorts: entr’acteurs. How is public space as physical construct changing with new embedded forms of computing? How is a public formed? What new material sensibilities emerge? And what role does their essentially fleeting or transitional character play?**

The proliferation of embedded technologies over the past 20 years – the gradual migration of human-computer interaction from desktop to things, place-based, wearable and otherwise, situated often invisibly but strategically in the routine situations of daily life – has starkly affected both the conception and use of public space. Thanks to the evolving forms and practices of urban computing [1] – ranging from instant messaging to successful organizing and demonstrating in city squares against dictators to everyday navigation for a coffee date – place-based, wearable, and mobile electronics represent a current iteration of the phenomenon identified in 1991 by Mark Weiser as “ubiquitous computing” [2], and it most recognizably affects uses of open public spaces, from streets and plazas to the very air above.

After all this time, we can now also begin to recognize some relationships between material and scalar orders in the behavior of very large organizations (VLOs). VLOs are a phenomenon of our day and subject to further elaboration elsewhere, as the built environments of public assembly, work, agriculture, incarceration, trade, travel, education, even death join global financial and communication networks. The planning and infrastructure for these systems demand logistics, capital, and services for a new order of population magnitude that must accommodate volatile shifts in spatial and computational stability. Adaptability is at the crux of dealing with diverse users or publics and unprecedented technical, cultural, social, and ecological challenges. Thanks to urban computing, Garrett Hardin’s notion of the *commons* [3] – understood here as both public space and discourse – today calls for new modes of work to harness its potentials for architecture, and new models to name it. One such model is the *entr’acte*.

The *entr’acte*, a term from theater also translated as *Zwischenspiel* and as *intermezzo*, denotes the time and space between parts of a stage performance. Generally taking place before closed curtains as settings are changed, the *entr’acte* delivers a fleeting new purpose and event to the otherwise sometimes inert space between stage and pit. While the history of this term (the French being not only the earliest, but appropriately close to our current use of the word “interact”) reaches back at least to 1760 [4], its use in print clearly spiked twice in 1924, with the release of French Dadaist René Clair’s film *Entr’acte*, performed with the premiere of Erik Satie’s *Furniture Music* and shown in Paris as part of Jean Börlin and Francis Picabia’s ballet *Relâche*. This was the first known intervention of cinema in a live dance performance and

hence perhaps the first intermedial construction of space-time in performance. The music and film were intended to fall into the background unnoticed and mimic the chatter that audiences would ordinarily produce during an intermission, much as ubiquitous computing tends to do today. As legend has it, audiences ironically sat quietly listening, thus frustrating the performers. And so the theatrical entr'acte presents its mixture of mediated and physical space, its effort to create cultural and social relations within a space-time of distraction; its ephemeral protocols of spectator-actor disruptions are characteristics of the urban entr'acte's appearance in mediated public space today.

In today's public-space formations, roles of new technologies are both prominent and noticeably time-sensitive. Communication media and practices of urban space use and uses of technology change rapidly, yet physical construction of urban spaces changes slowly and with investments of capital from discreet sources (developers, governments) rather than the distributed, sometimes user-driven development of media networks that so abruptly change the lives of urban spaces. The entr'acte is an apt model for analyzing and synthesizing – *creating* – new forms and durations of public space. The entr'acte as model public space is one that can defy traditional limits of design and construction, allowing us to build publics without vast material intervention and deployment of capital to consider differences between “publics” and “commons,” to revisit old notions of “planned obsolescence,” and to recognize a diverse new set of players – both human and material elements – as *entr'acteurs*.



Figure 1. Still from the 1980 film *The Social Life of Small Urban Spaces*, by William H. Whyte, showing time-lapse camera and daylight washing across Seagram Plaza. © 1980 Municipal Art Society.

This paper examines a set of cases in different fields in order to identify different forms of entr'acte that emerge today, and to speculate on how they can reframe the spatial, temporal, and social terms of the commons now. It also self-consciously attempts to learn from the inherently interdisciplinary origin of the theatrical entr'acte, as something that was always medial, architectural, social, and performative. In this sense, the use of this term is intended to promote an ongoing invention where fields and discourses meet.

### Analysis

The entr'acte has already been identified through numerous important analyses of publics and public space, all found between the disciplinary boundaries of media theory, urban studies,

crowd psychology, architecture, and performance theory. A family of such analyses can be found in works by by Elias Canetti [5], Howard Rheingold [6], and William H. Whyte [7]. In the books *Crowds and Power* and *Smart Mobs*, and in the film *The Social Life of Small Urban Spaces*, respectively, these authors test diverse positions on public-space formations viewed from the outside, observing the movements and props, shapes, and boundaries of crowds themselves. In Canetti's book, each section identifies and then analyzes a different type of crowd or pack by its boundary condition, its process of formation, its mentality, or other circumstantial catalysts. Topics like The Fear of Being Touched, Slowness, Kinds of Pack, and Epidemics typify a study that tries to understand often inherently violently relating publics through history. Canetti formulates a taxonomy of crowd types and psychological affects, correlating these to timeless protocols of public interaction. Public space and public behavior are always fleeting and intertwined for Canetti, yet their forms persist and reappear over time. Rheingold's 2003 work, on the other hand, is to be read in its moment and projecting forward, both declaring and calling for development of collective intelligence and new social practices in the use of mobile technologies in urban space. *Smart Mobs* is a celebratory work that finds nothing less than social revolution in distributed power provided by mobile telecommunications and anyone who is able to be an effective activist thanks to "technologies of cooperation" and swarm intelligence. Rheingold continues to advocate for wirelessly communicating publics as an emergent political-social-technological-urban form – an inherently contemporary entr'acte, in short – through the book's continuing web site and his blogging, tweeting, and public speaking. Whyte, by contrast, takes a fairly laconic stance in his use of film. Produced in 1980 for New York City's Municipal Art Society, Whyte's film trains its camera on Mies van der Rohe's Seagram Building (Figure 1) but pointedly chooses to say nothing of it *per se*. Rather, the building plaza and other nearby places like Paley Park appear as a proscenium for unscripted (or, perhaps, subconsciously scripted) actors, each with their own props: movable chairs, water, even sunlight itself. This could be seen as proto-technological in its relation to Canetti and Rheingold, as public space literally frays at the edges, and its activities are observed live, albeit from a distance, to be growing and improvisational by design and within controlled parameters tacitly determined by the administrations of these urban spaces. In other words, one might see all three authors as identifying and analyzing fleeting public-space formations, yet each associates particular temporal, technological, and spatial characteristics to their subject. For Canetti, power and hegemony determine *ur*-entr'acte formations. For Rheingold, mobile communications unleash unpredictable, anti-hierarchical, productive formations that transcend physical boundaries in



Figure 2. Video still from youtube, Michael Jackson Flash Mob, Embarcadero Plaza San Francisco, 2009. © 2008 The Hero.

public space (Figure 2). For Whyte, everyday public interactions are literally viewed as performances, loosely staged by elemental physical mediators like warmth, sound, and rest. These all analyze crowds as actors, individuals with collective behaviors, and temporal and spatial patterns subject to manipulation, optimization, suppression, and perhaps emancipation. Control comes to the fore in this mode, a measure of rupture in the life of public spaces relative to their programmed uses and regulation of things like movable chairs, fountains, network outages, and place-based sensors.



Figure 3. Boal workshop at Riverside Church in New York City, 13 May 2008. © 2009 equalityisforall.

By contrast, Brazilian theater director Augusto Boal [8] literally analyzes or dismantles actor-public relations with the “spectactor.” This creation, both literally theatrical and generative of a public, was conceived against the backdrops of complementary positions found in Brecht’s Epic theater and Artaud’s Theater of Cruelty [9]. Briefly, the three theatrical models seek audience engagement as publics by way of framing the experience of *immersion*, a byword familiar to media-interaction design today. Artaud sought literally to surround and envelop audiences viscerally, physically, and ultimately psychologically with stage and production, setting publics into sudden unity through their immersion in the spectacle. Brecht departed from this with his total distaste for illusion, constructing stagings that fostered an audience’s intellectual awareness of the production, purging all illusion or emotional manipulation. This strategy separated social and spatial constructions in order to draw distinctions between the theater event (as a space of discourse) and public space outside (as real spaces of negotiation, where lessons learned in the theater could be implemented). Today, Boal sets out to eliminate the difference between performer and public altogether by developing a workshop method of collaborative *spectactorship*. Here, strategies involving workshop scenarios, erasure of proscenium seating, and the attendant inundation of all present with the event of performance contribute to the systematic disturbance of distinctions between the audience and actors, resulting in a mass of *spectactors* (Figure 3). The spectactors’ double lives as full participants are essential to fostering collaboration that is resistant to any fixed power structure or spatial configuration. This process actively seeks to transform its audience as actor, to construct a scenario with like participants from the start, and to plan ahead strategically rather than tactically. It stages interventions proactively, with precise arenas of interest and known starting points.





Figure 4. Production photo: The Builders Association, *Super Vision*, 2005. © 2005 The Builders Association. Photo by dbox.

### Synthesis

What, then, does the entr'acte look like *in the city itself*, what situations does it model, and how is that model deployed? Beyond the immersion of media environments and their spectacular results in urban screens, the entr'acte's greatest potential exists in the social and material amalgams that rapidly organize and reconfigure the commons. These constructs can be recognized by their different *methods of synthesis*, which are determined in turn by limited temporal and spatial circumstances. The following examples illustrate four of these synthetic methods of creating the entr'acte, as Sampling, Retinal, Social, and Embodied. These are recognizable methods of deliberate creation of the entr'acte today, and a starting point for new ones.

### Sampling

In *Continuous City* [10] and *Super Vision* [11], two black-box theater performances conceived and performed by The Builders Association since 2005, onstage performers interact with one another, the seated audience, and a larger-than-life projected screen simultaneously. The many interwoven narratives that occur between the screen and the stage make reference to our habits of sampling ourselves and our databases in real time. Identity theft, border controls, business development all crisscross unstable regions of mediated space and time. Though these parafictional narratives take place in the theater, they are also networked in real time to family members of the cast (Figure 4). Through subtle variations in each iterative performance of the show, an evolving narrative structure is generated that combines on-site filming and a participatory web site that contributes new content for each location, resulting in a cinematic-staged hybrid not entirely unlike René Clair's 1924 *Entr'acte* on the Champs-Élysées. The productions are semi-scripted, quasi-contained spectacles with the audience, a sampling also of routines undertaken outside by all present and necessarily evolving by location and over time as each new city provokes presentation of different common ways of interacting with media technologies. At the outset of each performance of *Super Vision*, the audience itself is converted to a protagonist by a welcoming speaker, who riffs on actual demographic information gleaned from anonymized postal code and credit card information used to purchase that night's tickets. As the speaker tells the audience about itself and its consumer, age, and political tendencies, *sampling* of the public's information

– its “databody,” as Builders director Marianne Weems refers to it in the show’s script – introduces the night’s work and its space, straddling the proscenium and the spatial and computational spaces in which audience members live. Sampling is process and object here – the spatial condition in which a public comes together – and these are the terms of *Super Vision* as an entr’acte.

### **Retinal**

The *retinal* entr’acte brings live audience engagement with its own data out to the urban sphere by deploying provocations that match-cut scales of experience to one another, from the eye (the space of vision) to the sky itself (perhaps the most elusively public space to define) [12]. Here we can revisit Hardin’s notion of the commons and its shifting atmospheric construction. In Hardin’s argument, the commons is bound up with its tragedy in human selfishness: shepherds will always have individual incentive to bring another sheep to graze on a commons, but the inability for a common pasture to support limitless sheep leads to its destruction when the pasture is overexploited. This calls for a “fundamental extension of morality” rather than any technical solution, and an abandonment of key freedoms in the commons. In the context of population density, Hardin grimly concludes: “Freedom to breed will bring ruin to all.” This global conclusion is literally a result of the global problem that was his subject. For this discussion, we can scale down the commons from the global again. As an urban construct of both public space and public discourse, atmosphere serves as both space (the air, the sky, pollution) and discourse (urban policy, public events). This atmospheric commons opens participants to engage with the questions of morality that Hardin described.

*Nuage Vert (Green Cloud)*, conceived and mounted since 2004 by the Paris-based partnership of HeHe (Heiko Hansen and Helen Evans), relies on the courageous collaboration of an enlightened local power utility (hence there has been only one full realization to date, hosted in Helsinki). This cloud looms over the city nominally as a nighttime urban light installation, relying technologically only on thermographic cameras and a high-power laser light. Projected on the plume of exhaust from a power plant chimney, the green laser draws and redraws the cloud’s contours perpetually (Figure 5) as an index of the city’s



Figure 5. HeHe, *Nuage Vert*, St. Ouen, France, 2008. © 2009 HeHe.

household waste incineration. The resultant spectacle might end as a classically detoured urban moment, a monumentalization of an environmental pathogen hiding in collective plain sight. But the project is supported by a city-run media campaign to get residents to produce less waste and collectively make the cloud vanish. This process uses the spectacle as a prop to mediate between the power plant itself, the mayor, non-profits, and citizens, all as *entr’acteurs*.

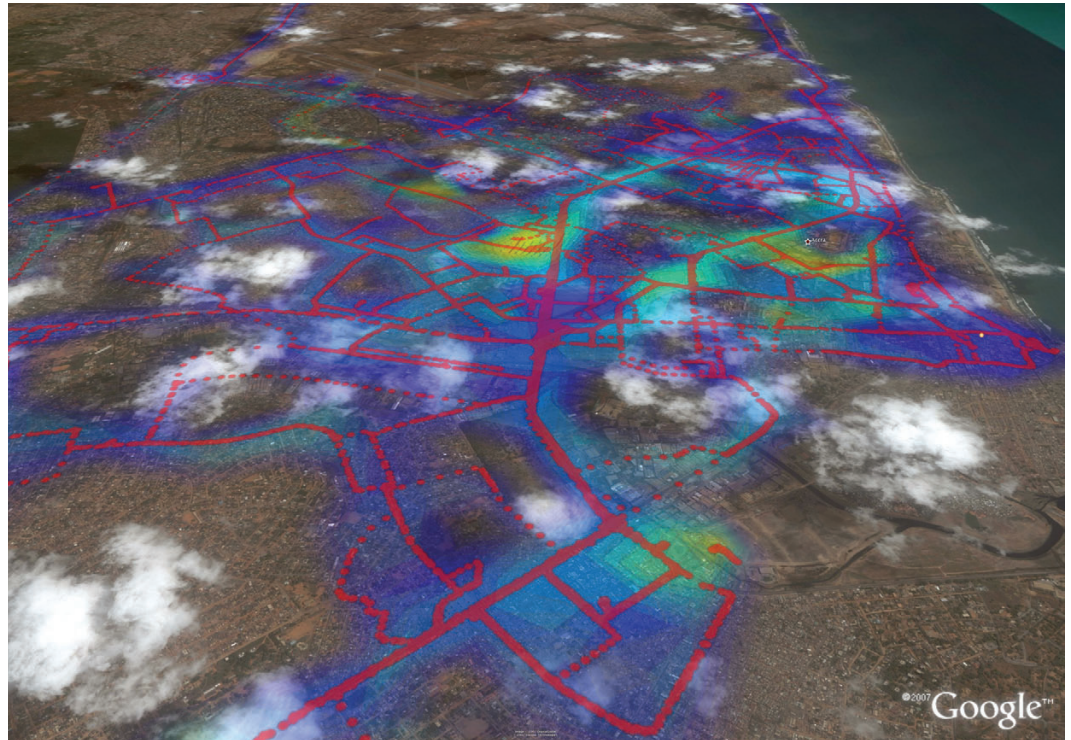


Figure 6. Eric Paulos, Participatory Urbanism: carbon monoxide readings across Accra, Ghana, 2006. © 2008 Eric Paulos.

*Nuage Vert's* particular constellation of media does not include the typical components of urban computing, but many of its protocols engage with remote sensing within the context of a contemporary atmospheric commons, one that fuses *the public as space*, *as participant*, and *as air quality*. As an entr'acte, the project is also fleeting in its month-long administration as an art project, but maybe even more so in its self-destructive formation, since it attempts to reduce waste until the project's own matter itself vanishes.

### Social

This type of participation gestures toward a form of the social entr'acte, a construct independent of visual spectacle. The social entr'acte might have its progenitor in *social sculpture* as it was coined by Josef Beuys. In his *7000Eichen (7000Oaks)* (1982-1987) [13], Beuys dutifully if heroically replanted a barren Kassel at the behest of the Documenta art festival – its visual artifacts not so much spectacular as hiding in plain sight, literally about as interesting to watch as grass grow, and measurable for their progress alongside the one-meter basalt steles placed next to each tree. Anyone could plant one of these trees and contribute to the “healing” that Beuys hoped to bring about for the city. Participation is at the heart of social sculpture, an invitation organized by the artist that constructs a visible commons but by social protocols.

The *social* entr'acte is visible but sometimes only incidentally so. Its deployment of crowds, space, and mediation creates new forms of agency for largely familiar objects. Participatory Urbanism, for example, is a set of objects – mostly cell phone attachments – created by Eric Paulos and his collaborators and generated out of his expertise as an electrical engineer, his practice as an artist, and his personal love of citizen science. Participatory Urbanism consists of various simple custom electronic devices that ride opportunistically on mobile hosts, each with environmental sensors – on taxis in Accra, Ghana (Figure 6), on street sweepers in San Francisco, or attached to cellular phones anywhere. These devices append existing urban technologies, in each case gradually turning pedestrian and automotive participants alike into *expert amateurs*. The expert amateur is a key term for Paulos, as it is born of the practice known as citizen science that



empowers anyone to be a generator of data rather than only a recipient or reader. Here we see *entr'acteurs* come into focus and assume names. Akin to the spectator in the realms of research, the *citizen scientist* began with the annual Christmas Bird Count inaugurated a century ago by the Audubon Society, for which anyone is invited to collect and help build a collaborative sense of bird migrations. Similarly in Paulos' works, any participant enabled with his team's devices can feel empowered as an expert amateur, contributing to and benefiting from a live feed of data on urban NO<sub>x</sub> conditions – mono-nitrogen oxides, an indicator of greenhouse gases – by receiving live maps and messages on their phones that help make decisions about their movements in the city. Paulos conducts workshops in which he discusses the many sensors that most cell phones already contain, from light meters to accelerometers, and how urban computing can engage citizens by asking questions about their cities. Paulos' objects resemble and even attach to the technologies situated in public space already, yet they suggest a potential to spark next objects, next spaces, as their own usefulness fades into obsolescence.

### Embodied

Finally, the *embodied* *entr'acte* synthesizes movement and sensation, allowing dynamically shifting relations between individuals and crowds in motion. Motion is an essential freedom in urban space and in urban computing environments created by the embodied *entr'acte*. Ultimately, freedom of motion may emerge as the most salient – if classical – characteristic of the *entr'acte* in general. It enables rapidly shifting formations of publics, of public discourses and public spaces. It also fuses the roles of haptic and sensed, material qualities of public space as they have been defined, from sound and warmth (Whyte) to touch and fear (Canetti), with the rapidly evolving forms of urban computing that are changing participation in the commons by mediating air (Paulos) and privacy (Builders Association).

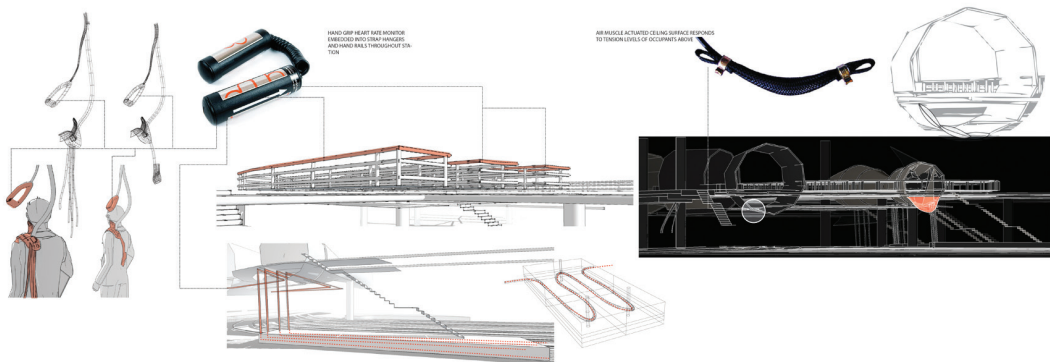


Figure 7. Michael Kirschner, *Feeling*, systems diagram at trolley turnaround, 2010. © 2010 Buffalo Architecture / Michael Kirschner.

These are some of the ideas present in Michael Kirschner's *Feeling*, a set of speculative studies for the "moving crowds" that Elias Canetti identified in his book and that can be found in Toronto's citizens in their daily commute [14]. *Feeling* is located in three sites (underground, above water, and above ground) (Figure 7) along a major commuter artery that leads to Nathan Philips Square, the plaza in front of city hall downtown. In each, invented new prototypes augment everyday interactions in public spaces and occupy the place of distraction between strangers, sometimes literally reaching their hearts. The *Feeling* wearable heart monitor (Figure 8), for example, is based on the same technology found in common running gear today for sensing biometrics, but it also taps pressure points on its wearer in response to received pulses from nearby wearers. This interaction is based on proximity and on feeling a common urban object, such as a straphanger on a streetcar. It opens the opportunity for a public formation based on purely felt communication and in which the sort of pack mentalities analyzed in Canetti's



*Crowds and Power* can be made palpable, negotiable individually, and built collectively, and fused with the physical matter of public-space infrastructures of the city. The proposal has an unabashed creepiness to it, since it pushes corporeal, informatic, and urban boundaries to a logical convergence in a way that might already be occurring and that could well turn completely dystopic. But it also hands agency back to the “extension of morality” that Garrett Hardin found necessary in preserving any commons, since pulse itself becomes everyone’s concern once they opt in.

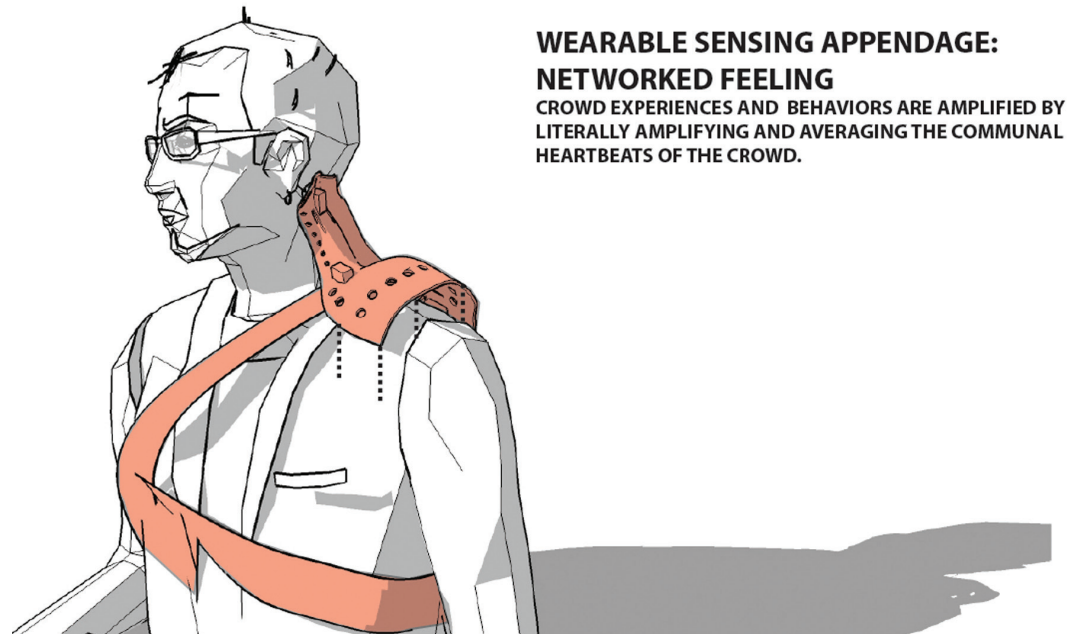


Figure 8. Michael Kirschner, *Feeling*, heart monitor, 2010. © 2010 Buffalo Architecture / Michael Kirschner.

### Conclusion

The entr’acte is a fact – not a cause but a model and a method; it has long been with us in our performances and in our formation as publics onstage and in the streets, online, and in motion. Today the stakes and the opportunities for us all as entr’acteurs are different: to live within the fleeting changes in technologies and motion, in physically and digitally mediated spaces, as citizens and scientists, artists, architects, and so on. The entr’acte might ask us to stop thinking of public space altogether and replace it with the *commons* in all its appearances as both space and discourse, material and immaterial. This entr’acte serves us, in short, not only for analyzing and understanding the hybrid and evanescent natures of the commons in transition today; it also charges us with engaging, synthesizing, and, importantly, disciplining how we form it (through the retina, through embodiment, etc.). The entr’acte now requires qualification and cultivation at each instance, so we can all continually learn to best participate as individuals within a world of very large organizations.

## References and Notes

1. The field of urban computing is already being vigorously studied, and its history and theory are being written as they evolve. Refer for example to the annual UbiComp, Pervasive, and MediaCity conferences around the world and to recent books such as M. Shepard, ed., *Sentient City: Ubiquitous Computing, Architecture, and the Future of Urban Space* (Cambridge: MIT Press, 2011) for more.
2. M. Weiser, "The Computer for the 21st Century," *Scientific American*, Vol. 3, Issue 3, 94–104 (September 1991).
3. G. Hardin, "The Tragedy of the Commons," *Science*, Vol. 162, 1243–1248 (December 1968).
4. A. Bouchard, *La Langue Théâtrale, Vocabulaire* (Paris: Arnaud et Labat, Libraires-Editeurs, 1878).
5. E. Canetti, *Masse und Macht* (Hamburg: Claassen Verlag, 1960). [www.google.com/url?q=http%3A%2F%2Fopenlibrary.org%2Fsearch%3Fpublisher\\_facet%3DClaassen&sa=D&sntz=1&usg=AFQjCNFavVRy62zoHaouVOCjSST7c3SPeQ](http://www.google.com/url?q=http%3A%2F%2Fopenlibrary.org%2Fsearch%3Fpublisher_facet%3DClaassen&sa=D&sntz=1&usg=AFQjCNFavVRy62zoHaouVOCjSST7c3SPeQ)
6. H. Rheingold, *Smart Mobs: The Next Social Revolution* (New York: Basic Books, 2003).
7. W.H. Whyte, *The Social Life of Small Urban Spaces* (New York: Municipal Art Society of New York, 1979).
8. A. Boal, *Theatre of the Oppressed* (New York: Theatre Communications Group, 1993).
9. This dialogue of sorts plays out in text, first proposed in A. Artaud, "Le Théâtre et son Double," *Collection Métamorphoses No. IV* (Paris: Gallimard, 1938), and continued in B. Brecht, 1948–1956: *Antigonemodell 1948: Couragemodell 1949. Über die Benutzung von Modellen* (Berlin: Aufbau-Verlag, 1964).
10. The show is presented online at [www.continuouscity.org](http://www.continuouscity.org).
11. Super Vision, a collaboration with the design firm dbox, is documented online at [www.google.com/url?q=http%3A%2F%2Fwww.superv.org&sa=D&sntz=1&usg=AFQjCNFzwr4qSQ8wmJsG-CPSpGrTRHc7xQ.org/](http://www.google.com/url?q=http%3A%2F%2Fwww.superv.org&sa=D&sntz=1&usg=AFQjCNFzwr4qSQ8wmJsG-CPSpGrTRHc7xQ.org/).
12. A precursor to this sort of event construct that has received a fair bit of interpretation of late is Ant Farm's 1975 *Media Burn*, in which the group created an elaborate Independence Day faux-reportage at the launch and crash of a souped-up Cadillac into a pyramid of flaming televisions at San Francisco's Cow Palace parking lot.
13. This work and its history are recounted thoughtfully and with quotes from the artist on the web site of the Dia Center for the Arts, at [www.diaart.org/sites/page/51/1295](http://www.diaart.org/sites/page/51/1295).
14. The project was produced in my 2010 graduate level "Entr'acte" studio, taught for the Situated Technologies Research Group at the University at Buffalo.