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CRITICAL PLANNING

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CRITICAL PLANNING

THE FUTURE

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Raman and Denis

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ARCHITECTURE**
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EDITORIAL NOTE:

Critical Planning Volume 20

THE EDITORS

Milestone anniversaries represent opportunities both to reflect on the past and to look toward the future. In selecting our theme for the twentieth volume of *Critical Planning*, we emphasized the latter approach: we sought out perspectives on the future of urban planning. The articles, essays, and interviews selected for inclusion in this volume discuss a wide variety of forces that will shape not only the cities of the future, but the planners who seek to guide them.

Technology has changed and will continue to change the ways that planners and citizens alike may interact with the urban environment. Chirag Rabari, winner of this year's Edward W. Soja Prize for *Critical*

Thinking in Urban and Regional Research, discusses how the availability of vast quantities of detailed data on every aspect of urban life may influence the perspectives and the work of future planners, for better or for worse (page 27). Hee Sun Choi describes how networked technology and Internet connectivity have the potential to change the nature of public space (page 45), while Anna Ponting problematizes the smart city concept and its overdependence on technological solutions and the corporations that produce them (page 69). This warning to planners against placing too much faith in the promises of technology is echoed in Bhuvanewari Raman's and Eric Denis's essay on recent initiatives to digitize paper

maps in Chennai, India (page 91).

A second theme that must be considered with respect to the future of cities is the rapid urbanization and globalization that are changing the landscape of the developing world. Joshua Bolchover (page 97), Aparna Parikh (page 119), and Thomas Oomen and Radhika Singh (page 133) describe how urbanization and globalization have affected the lives of specific groups of people in China and India. Sonja Schillings and Boris Vormann (page 145) describe how, even in New York City, frontier discourse has served to create and reinforce social inequality.

Environmental degradation may prove to be the force that has the greatest impact on the future development of cities. Laura Benjamin (page 167) discusses specific policies in Los Angeles that could facilitate or discourage the adoption of technologies that would reduce dependence on non-renewable energy sources by institutions such as UCLA. Lukas Pauer (page 177) draws our attention to Singapore's unsustainable use of another limited resource: the sand used to create land on which the city itself is built. These articles argue for a greater emphasis on sustainability in urban planning. Nevertheless, as Alessandro Busà points out (page 193) efforts to create more sustainable cities must not come at the expense of other equally important goals such as social justice and equity.

As Christina Gray points out in her review of a recent exhibit at the Getty Research Institute (page 219), Los Angeles has a long history of interest in the future. This is a part of the history of Critical Planning as well.

We open this issue with an essay by Ute Lehrer, one of the founding editors of Critical Planning, in which she discusses the early vision she and her colleagues had for the future of the journal that they created (page 15). This is followed with an excerpt from an essay John Friedmann wrote for that first volume (page 23), in which he describes his hopes for the future of the planning discipline and the role that the UCLA planning program should play in training planners who are prepared to realize that future. We conclude this volume with interviews from four current faculty members of the architecture and urban planning departments at UCLA (pages 223-238), in which they discuss some of their own thoughts on how planning practice continues to evolve and how the urban planners and designers of the future must be prepared for work within this changing context.

Now, with the publication of Volume 20, we express our hope that we have made progress towards the vision of those who came before us and laid a foundation for those who will come after us. We would like to thank all of those who made this volume possible, including all the authors who submitted manuscripts, UCLA faculty

and staff who offered support and guidance; donors to the University, Luskin School of Public Affairs, and the Department of Urban Planning; and the students who donated their time and talents to make Volume 20 possible.

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TWENTY YEARS *of* CRITICAL PLANNING

UTE LEHRER
York University

Ute Lehrer is an Associate Professor at the Faculty of Environmental Studies at York University, Toronto, Canada. She is one of the founding editors of Critical Planning. Her PhD from UCLA was on “Image Production and Globalization: City-Building Processes at Potsdamer Platz.” Since then she has published widely on gentrification, the social construction of space, planning regulations and the condominium boom. Currently she is the Principal Investigator of a comparative research project on municipalities in the larger global regions of Frankfurt and Toronto, and she is a Co-Applicant for a multi year research project on Global Suburbanisms.

Twenty years ago, three PhD students—Moira Kenney, Rebecca Abers, and myself—initiated Critical Planning. Mirle Rabinowitz and Orit Stiglitz joined us in the production process. The time has come to reflect on where the journal/our journey has taken us.

When I arrived in Los Angeles in the fall of 1993, Rebecca and Moira were wait-

ing for me with a proposal to run a student journal on planning. They had heard that I worked as an architecture critic in my home country of Switzerland just before coming to UCLA to do my PhD in planning, and they wanted to build on my experience with print media. The idea morphed quickly from a simple student-run journal to a more ambitious double-blind, peer-reviewed journal that would

become a forum for “sharing the high quality of written work done by our peers” on a national and international level (Editorial, *Critical Planning*, 1993). We knew what we wanted, we just didn’t really know how to do it, given that both Rebecca and I had just started with our PhDs, while Moira was only in her second year. But the support of faculty and staff, in particular John Friedmann as well as Vanessa Dingley from the Lewis Center for Regional Policy Studies, helped us to think it through intellectually and financially.

And the journal needed a name! At first, it was supposed to be called something like *Planning Journal of GSAUP*,¹ but that sounded a bit bland to me and it didn’t really capture the kind of work that the Graduate School of Architecture and Urban Planning (GSAUP) had become known for in the 1970s, when critical thinkers of the time were defining the field in unique ways. “Critical” was more than ever the term that people associated with GSAUP at the beginning of the 1990s: faculty members representing the period when “the first key element of criticality”² were formed (John Friedmann, Ed Soja, Lee Burns, Marty Wachs, Allen Heskin, Don Shoup), together with the “second wave” from the early 1980s (Jackie Leavitt, Michael Storper, and Margaret Fitzsimmons) and some recent hires (Anastasia Loukaitou-Sideris and Leonie Sandercock), as well as adjunct and part-time faculty such as Mike Davis, Goetz Wolff, Bob Gottlieb, and Gilda Haas,

defined the intellectual life at GSAUP in various, sometimes aggressively distinct directions, but what connected all of them was cultivating a critical perspective within planning education.³ That is why most of us were there—we did not want to become mainstream planners; we came with an interest for critical theory, which meant we were interested in a systematic approach that made urban planning part of a wider discourse on urbanization, economic restructuring, and path-dependencies, a notion that critically investigated the world in which planning was taking place. What better name than *Critical Planning*!

The format of the journal was pretty much the same as it is still today, with a small difference. It was the time that postmodernist and poststructuralist thinking also had made their way into the planning discipline. We were taught about different ways of knowing, and that meant that we were particularly keen to find diverse ways of writing planning history and theory and engaging with planning practice. Therefore, we actively sought numerous forms of articulations: poetry, stories, essays, all were next to articles that followed the regular style of an academic publication. This might have been lost over the years but what remains is that the journal has become the springboard for many budding young minds: Rachel Weber, Neil Brenner, Julie-Anne Boudreau, Mustafa Dikeç, Sonia Hirt, all distinguished academics now who had early career publications in *Criti-*

cal Planning. For all of them, it was their very first urban academic article in a peer-reviewed journal!

Since launching the journal twenty years ago, a lot has happened. We all finished our PhDs and got jobs: Rebecca Abers is now a Professor at Instituto de Ciência Política at the University of Brasilia. Moira Kenney is the Executive Director of the state-wide First 5 Association in California. And as for myself, I have become an Associate Professor at the Faculty of Environmental Studies, York University, Toronto, where I teach mainly planning students. We all have busy lives with jobs, husbands, and kids and are far away from the journal we once launched.

What are our perspectives on things now? I contacted Rebecca, Moira, and Leonie Sandercock, to see what they had to say twenty years later.⁴ I asked them five specific questions and this is how they answered.

REBECCA ABERS

What have you done since 1993?

I finished my degree in 1997 and moved to Brazil with Alberto. We have two kids, Tom (14) and Nina (almost 11), and I teach political science at the University of Brasilia. I have been quite out of touch

with planning, though a couple of years ago I participated at John and Leonie's PhD jamboree and found the Canadian planning students to be simply lovely. My move to political science really occurred as I wrote my dissertation and found that planning couldn't help me answer the questions I had: I needed causal theories about mobilization, participation, and the state. Although I think the move has been good for me, I have found the possibility of political scientists to distance themselves from practice to be a bit frustrating. Academics can be very pretentious, and I remember that planning academics were less so...although maybe that's just selective memory.

How has the experience of launching a new journal enriched your way of thinking/doing?

I think that most of all it helped me appreciate the logic of academic submissions processes, and to think about what goes on inside the head of editors, to whom, many times since, I have submitted my work.

What role do you see for a peer-reviewed, student-initiated journal such as Critical Planning in the landscape of academic publications?

As it becomes increasingly important for

students to publish while still in school, it may be an important outlet for [their publishing]. On the other hand, I imagine that it is harder to make a student journal into a prestigious enough one that makes it count in a job search....How has Critical Planning done on that respect? (I know, I am not supposed to answer a question with a question).

How has planning changed over that period of time? And what do you consider pivotal moments in world history that had an impact on planning?

Well, I am no longer really a planner, but I think that all kinds of things have changed, especially since that post-Berlin wall period that we were in back then... I would generally say that the conditions in which action takes place are different, most importantly because of the Internet, which has profoundly changed organizing processes. On the other hand, some things seem a lot the same, such as the loss of a unified progressive utopia. I say all this, of course, under the influence of the current wave of protests that are sweeping Brazil, which have, among other things, made this country seem a lot like the countries that underwent the Occupy movements of two years ago. As you can see, I still think of planning as the terrain of progressive activists. Perhaps this is an outdated perception? Or something that only made sense at the

UCLA planning school—something that has been gone for most of the last twenty years? I don't know, those PhD students at the UCB Jamboree were pretty cool...

Where is planning heading?

I guess I don't know. I have entirely given up on making predictions of things anyway.

MOIRA KENNEY

Since I left UCLA, PhD in hand, in 1995, I have done everything but critically plan! I worked for five years at the Getty Research Institute, working with an amazing team of art critics, theater directors, librarians, and others developing programs that engaged communities across LA in the life of an art museum. We developed street art projects, led high school students in community mapping projects, and organized popular education symposia. I loved the work, but thought it was time to reengage in university life, so I took a job as the Research Director at the Institute for Urban and Regional Development at UC Berkeley. We led community research and evaluation efforts in inner-city communities across the East Bay, including Richmond and West Oakland, employing students as researchers in a variety of contexts. In 2002, I finally left academia for good, taking a job with the City and County of San Francisco.

California had recently embarked on a truly bold experiment, with the passage of Proposition 10, which raised tobacco taxes by 50 cents a pack to pay for new and innovative programs for children 0-5. The most experimental aspect of the initiative was that the funds, collected at the state level, would be primarily distributed at the county level, by new public agencies (now called the First 5 Commissions) governed by local appointed commissioners, including public officials, public agency directors, and community advocates. Each commission was required to develop a strategic plan which identified local needs and brought together both public and community-based partners to implement the plan. Now, as we near the fifteenth anniversary of Proposition 10, I am honored to serve as the Executive Director of the statewide First 5 Association, which seeks to leverage the local efforts of the county commissions for statewide policy change. I love the work and am excited by the possibilities ahead of us, as Federal policy begins to catch up with local needs and with the vision launched in California in 1998. My experience at UCLA, with such talented students and faculty, has indeed shaped my work, despite my non-academic path. I came to planning thinking that we were seeking ways to lead state and local agencies in new directions and to engage with communities as partners, rather than as clients. I could not have anticipated such a full realization of this approach within the fifty-eight county governments of California, but believe that we are on the

path. If I have any regrets about the work, it is that I see few planning students working in early childhood development efforts, and know that our work would benefit from their engagement. In other news, I have a ten-year old daughter, Sadie Aurora, who thinks Rebecca's daughter, Nina, is pretty awesome.

LEONIE SANDERCOCK

*What role do you see for a peer-reviewed, student-initiated journal such as **Critical Planning in the landscape of academic publications**?*

It's a great starting place for doctoral students to publish. I suggest it a lot as a destination for my better students. And it's also a great experience from the inside for those who get involved in running it, of what it takes to get published, because you are reading all the critical peer reviews and you can get used to the notion of receiving criticism that's maybe not as "sugar-coated" as your supervisors might be giving you.

How has planning changed over that period of time? And what do you consider pivotal moments in world history that had an impact on planning?

Since that time, there have been a number of important "turns" in planning:

Obviously the “communicative/collaborative turn” was imminent at that time but had not been named as such. The 90s [were] significant for the “design” turn, which on the one hand was an important antidote or complement to the social science approach and on the other, was a reflection of the efforts of urban regimes to re-make de-industrialized inner cities as attractive places for investments and gentrification. Then there was the “story turn”; and now I would say there is an emerging turn to complexity theory or complex adaptive systems thinking. That’s all at the interpretive level. Planning practice has started to address the challenges of sustainability, now morphing into an emphasis on resilience. So, I think this also answers the question [on the future of planning], albeit briefly.

CONCLUSION

I want to conclude with what I, who have followed *Critical Planning* relatively closely, have observed over the years. The journal that we launched has become a widely respected publication within the planning profession and the social sciences. Not only planners, but also architects, geographers, political scientists, sociologists, and ethnologists are publishing their research and thinking in this journal. And I must say that it is extremely rewarding to see that over all these years, *Critical Planning* has found

a format that is able to bring together contributions by both young scholars and well-established voices within the wider field of urban and regional scholarship. Granted, some issues are more profound than others. However, it is a phenomenon that a journal can thrive with a structure where every single year there is a new cohort of students producing the journal. The long-term support of the UCLA faculty here is of course important, as are new initiatives such as the Edward W. Soja Prize for Critical Thinking in Urban and Regional Research. In my mind, the success of *Critical Planning* is that “we now draw from an ever-growing international pool of submissions from researchers of cities and regions working in a variety of disciplines,” as the editors of Volume 15 proudly announced. To see that there are submissions from various parts of the world, to realize that more than a handful of scholars of international caliber had their very first publications in *Critical Planning* and to have established scholars still publishing in *Critical Planning* gives a strong answer to Rebecca’s question about the reputation of the journal.

It is enormously pleasing to see that the dream we had in fall 1993 has become reality. And for that I want to thank the numerous people who have put their time and heart into producing *Critical Planning* over the past twenty years.

¹ When I arrived at UCLA it was precisely the combination of architecture and urban planning that interested me, in spite of the difference between the two of them (see Sanyal, 2008; note 2 below). By the spring of 1994 it was clear that restructuring from the top meant that the two disciplines would be separated and would become part of new entities. Critical Planning was trying to overcome this forced divorce by having editors from both architecture and planning for a couple of years.

² Bish Sanyal, "Critical about Criticality," *Critical Planning* 15 (Summer 2008): 143-160.

³ At the time the journal was founded, some faculty that had contributed to the intellectual landscape of GSAUP in the 1980s had left, Peter Marris and Dolores Hayden among them, while others who define the current Planning Department hadn't yet been hired.

⁴ It is interesting to note that while we all got PhDs in urban and regional planning, it provided us with the opportunity to not only stay within the field but also to move successfully into other areas of interest.

WHAT WE HAVE LEARNED:

The Road Ahead

JOHN FRIEDMANN

University of British Columbia

John Friedmann is an Honorary Professor in the School of Community and Regional Planning at the University of British Columbia. He was founding professor of Program for Urban Planning at UCLA, and was the head of the program when the first issue of Critical Planning was published in 1994. This selection is from an article that was specially commissioned for the first issue of Critical Planning, and is reprinted in Volume 20 with Professor Friedmann's permission.

It's time now for a reflective look at our history and who we have become. I suppose the central question is, how, given the enormous diversity and range of the Urban Planning Program, we manage to stay together. Why don't we just fly apart into a hundred fragments? The question poses itself, because what we can observe is precisely the opposite: a tremendous effort, in this period of the Professional Schools Restructuring Initiative, to cling to our collective (if always provisional) identity. There must be something that is

holding us together despite the centrifugal tendencies inherent in our diversity and difference.

Part of the answer, of course, is our institutional history. To be ranked among the top three planning schools in the country, as countless letters from our academic peers have said, is no small achievement. We must be doing something right. But what is it?

In part, I think the answer is found in

Harvey Perloff's call for a radical openness and a willingness to engage in institutional learning. Our program today is not what it was in the early seventies. Our ideas about planning itself have undergone a sea change. In his exemplary study of planning education, Raul Bruno Garcia speaks about the current "crisis" of planning—a crisis of paradigms—which, at the intellectual level, he sees as a result of the infinite regress of postmodern deconstructivism. His answer to this crisis is borrowed from the philosopher Richard Rorty's pragmatic turn where "questions of language, epistemology and metaphysics are transformed into questions of practical judgment, politics, and institutional reconstruction. From an obsession with words and texts from which there seems to be no escape, we are redirected towards a concern with actions and their consequences in the real world, and with the details of the social institutions which mediate their consideration, selection, and implementation" (Garcia, 1993:33). Put in these terms, we have of course always been there with "a concern with actions and their consequences in the real world" and with "the details of social institutions." We have skirted the postmodern abyss by engaging in a progressive practice of planning.

Garcia's road map, citing Rorty's "practical judgment, politics, and institutional reconstruction," leaves us with the question of whether and what extent these can be taught as a common foundation for planning. In a recent article, I highlight five

principles of what I call "non-Euclidean" planning. They are really not very different from Rorty's and Garcia's three points. Planning, I say, should be normative, innovative, political, transactive, and based on social learning (Friedmann, 1993:482-85). Normative planning is politically engaged planning on behalf of positive, socially constructive values. Innovative planning has to do with ways that existing institutions can be reshaped to allow the social values for which we stand—such as social justice, such as affirmative action on behalf of disadvantaged groups in the society—to be realized in practice. Political planning concerns the questions of power and strategies of implementation that should become part of planners' everyday vocabulary. Transactive planning is a planning based on what John Forester calls (following Habermas) communicative action and which I call dialogue, and which is always a face-to-face process in which planners engage others processes that are ultimately grounded personal relations of trust. Finally, planning as social learning takes place in situations that are structured to minimize hierarchy, and encourage radical openness to other perspectives, other possibilities of being in the world.

I have come to believe that these five modes of planning are what we try seriously to practice at GSAUP. We are currently battling to save this way of being in the world as a program dedicated to the education of young planners and to research in our field.

Note, if you will, that I have not tried to provide yet another definition of “what is planning,” as though we could somehow succeed in bounding our field. The field described by the five terms of “non-Euclidean” planning is a dynamic, perpetually evolving field that is defined by its progressive practice. There can be no better guide to the future that lies ahead.

Garcia, Raul Bruno. 1993. *Changing Paradigms of Professional Practice, Education, and Research in Academe: A History of Planning Education in the United States*. Unpublished doctoral dissertation, University of Pennsylvania.

Friedmann, John. 1993. “Towards a Non-Euclidean Mode of Planning.” *Journal of the American Planning Association*, 59 (4).

BIG DATA:

The Promise of a “Computational” Social Science

CHIRAG RABARI

University of California, Los Angeles

INTRODUCTION

In a 2009 paper in *Science* magazine, a cross-section of prominent academics and researchers surveyed the rapidly evolving landscape of digital technologies and forecast a revolution. Network systems and sensors integrated into the physical urban fabric, ubiquitous mobile connectivity, and omnipresent social networking platforms had given rise to unprecedented “Big Data” about the complex, interdependent components and mechanisms of the modern world. The authors stated their belief that a new field was emerging that could compile the traces of our digital transactions into “comprehensive pictures of both individual

and group behavior, with the potential to transform our understanding of our lives, organizations, and societies” (Lazer et al. 2009, 721).

Such big data practices had already been occurring for several years at government agencies like the National Security Agency (NSA) and Internet companies such as Google and Facebook. Recent revelations about a vast global dragnet mining the social connections of U.S. citizens indicate these activities have only accelerated over time (Risen and Poitras 2013). But the researchers hoped these data sets and the skills to interpret them would not remain solely in the realm of governments and pri-

vate corporations. To serve the public good of advancing knowledge, they laid out an agenda for what they termed “Computational Social Science” (CSS).

In this seminal piece and in subsequent complementary articles by different contributors, the authors made the case that CSS will offer new perspectives on individual and collective human behavior, with attendant possibilities to increase human welfare through the enhanced prediction and control of our social systems. In particular, a big-data-driven CSS will enable the design of systems that are “more stable, fair, and efficient” than our current, classically influenced paradigms of human society (Pentland 2012). Some of the researchers claimed that big data is a new scientific tool on par with the introduction of the microscope in the sixteenth and seventeenth centuries, bringing previously obscure social processes into clear sight.

The city is emerging as both subject and object of this revolution. Big data and CSS are predicted to increasingly inform the future management and governance of cities as well as the interactions and experiences of people who live in them; the city is also the source of and platform for the data that will generate these novel uses (Rabari and Storper 2013).

Urban planning, as an applied, cross-disciplinary social science field, is likely to be particularly influenced by these new

practices and paradigms. The discourse is becoming crowded with hopes and predictions that we will be able to make our cities more efficient and livable, creating a rush to adopt and implement new technologies. New specialties informed by CSS, such as Urban Science and Informatics, are already growing quickly.¹

None of this is surprising—major technological innovations often lead to the capture of attention and resources. Such developments, however, call for the thoughtful engagement of urbanists and critical theorists. The emergence of new fields of inquiry is no small matter, and the development of new methodological paradigms should be treated with rigor and care. There are many implications for social science, in particular the problems that will be identified and addressed, and the questions that will be asked and answered. But these implications are as yet scarcely analyzed or understood.

The computational social scientists have thus far staked out a number of explicit and implicit claims about the nature of knowledge, the proper conduct and purpose of science, and human beings and their various forms of collective organization. Many of these arguments can be situated within long-standing debates in the philosophy of social sciences, including questions of how best to study society, what methodologies

¹ The most prominent of these efforts is the new Center for Urban Science + Progress at New York University, which opened in the fall of 2013.

are most appropriate for scientific inquiry, and the problems of social control.

This paper seeks to untangle some of these foundational issues by offering a critical analysis of CSS as a nascent field of inquiry within the wider social sciences literature. It is organized in the following manner:

- In Section 1 we will examine the anticipated benefits of this emerging field, and obstacles to its potential success.
- In Section 2 we will unpack the epistemological issues within the authors' claims, paying particular attention to the positive, normative, and methodological components of the CSS agenda.
- In Section 3 we will assess the viability of CSS as a scientific research programme based on the criteria of the noted mathematician and philosopher of science Imre Lakatos.

We will close with some thoughts on big data and CSS through the narrative of social-scientific “progress,” and assess where these narratives intersect with issues of particular concern to urban planners and policymakers. The key takeaway from this investigation is that, although CSS will enable impressive and important gains, these gains will necessarily be limited to particular types and areas of inquiry. Where CSS does in fact suggest “revolutionary” possi-

bilities, it will raise issues that are fundamentally political and moral in character, and therefore outside the domain of technologically driven scientific inquiry.

1. BENEFITS *and* OBSTACLES to a COMPUTATIONAL SOCIAL SCIENCE

Lazer et al. (2009) specify three primary benefits to a CSS, each with its own ancillary implications. (These core arguments have been expounded upon on by many of the individual scholars as well; see, for example, Barabasi 2012; Christakis 2012; Pentland 2012.)

- (i) “To date, research on human interactions has relied mainly on one-time, self-reported data on relationships. New technologies, such as video surveillance, email, and ‘smart’ name badges offer a moment-by-moment picture of interactions over extended periods of time, providing information about both the structure and content of relationships” (Lazer et al. 2009, 722).

A CSS could thus offer greater insight into the temporal dynamics of our communication, behavioral, and proximity patterns, leading to predictions about individuals or collectives in specific relational or interaction contexts.

- (ii) “We can also learn what a ‘macro’

social network of society looks like, and how it evolves over time” (Lazer et al. 2009, 722).

This macro view—either through the records of phone companies, the data of search and commerce sites like Google or Amazon, or the large-scale tracking of people’s movements or transactions—could offer a comprehensive view of societal-level patterns of communication, transportation, economic activity, or health and epidemiology.

(iii) “The Internet offers an entirely different channel for understanding what people are saying, and how they are connecting... Virtual worlds... by their nature capture a complete record of individual behavior” (Lazer et al. 2009, 722).

The power of this kind of data is that it offers information about people’s behaviors instead of their beliefs, on the assumption that what a person actually does is more important than what they think (Pentland 2012). Indeed, it is believed that individuals could have “much of their life, almost in minute resolution...reconstructed from the many data streams [they] leave around [them]” (Barabasi 2012).

In summary, the big data behind a computational social science involves not just aggregating all social patterns, but simultaneously disaggregating at the level of agents. This data would encompass millions of

people and entities and be high in spatial, temporal, and typological resolution. This would allow scientists first to describe, then to quantify, then to formulate, then to predict, and finally—possibly—to even control complex systems such as the economy or society (Barabasi 2012).

There are, however, substantial institutional barriers that could limit the development of a CSS, which are characterized and summarized as follows:

- (i) The possible inadequacy of current methodological and theoretical paradigms to study and analyze data of this breadth, depth, and scale.
- (ii) The challenges to observation inherent in studying human subjects as compared to the natural world.
- (iii) Underdeveloped infrastructure within the social sciences.
- (iv) Concerns about access, privacy, and ownership.
- (v) The need to train new, interdisciplinary scholars who are comfortable working across multiple fields (Lazer et al. 2009).

To illustrate, Lazer et al. (2009) note how existing sociological network theory was developed with “snap-shot” data built upon relatively limited samples; we now have

longitudinal data sets that could conceivably include every single location, financial transaction, and communication of millions of people. There may be significant limitations to what traditional theories can tell us and to the skills within social science departments to make sense of this data, as well as barriers of ownership and access to the relevant data sources, many of which are proprietary and balkanized.

Although such concerns are important, they have not been meaningfully explored. There are also a number of other important questions that CSS proponents do not engage with, as well as a significant body of knowledge that have not been addressed.

2. BIG DATA, COMPUTATIONAL SOCIAL SCIENCE, and the PHILOSOPHY of SOCIAL SCIENCE

What then are the primary epistemological issues at play here? Although it is difficult to precisely situate these computational social scientists within any particular school or tradition, they do, however, have certain key affinities that can be identified.

First, EMPIRICISM is privileged as the primary means of understanding the world and computational DATA is treated as the most accurate or best possible approximation of reality. In this case, social reality is simply what is recorded and quantified

by our technology.² We are now capturing more complete data than ever before, and this data is by definition useful in terms of the insights that can be gleaned from it.

This is what the authors Viktor Mayer-Schonberger and Kenneth Cukier refer to in their book *Big Data: A Revolution That Will Transform How We Live, Work, and Think* as the move from limited samples to something approaching “N=all” (2013).

Further, these huge data sets are reliably meaningful because we presuppose the existence of INTELLIGIBLE, RATIONAL BEHAVIOR which can be divined at the individual, group, organizational, or societal level (D’Agostino 2011).

Second, advanced STATISTICAL and PROBABALISTIC methods are heavily leaned upon as the primary analytic and methodological tools at the social scientists’ disposal. This yields a major focus on the discernment of patterns, or CORRELATIONS, which are deemed sufficient for action, explanation, or decision-making.

² For example: “What those [digital] breadcrumbs tell is the story of your life... Who you actually are is determined by where you spend time, and which things you buy” (Pentland 2012), or “This is the first time that we can know what people are doing in an objective manner, without biases, without lying, without kidding ourselves, of trying to present a different image than what we are” (Barabasi 2012).

The fact that the data might be “messy,” or that we may not be able to precisely determine causation, is not of major concern; the “what” will be more important than the “why” (Mayer-Schonberger and Cukier 2013).

Further, it is believed that if theoretical insights and frameworks are to emerge, they will arrive *inductively* from the richness of these new data sets (Barabasi 2012; Pentland 2012).

And finally, *prediction* and other *instrumental*³ goals are treated as the primary aim, or ends, of the scientific process. There is thus a great desire for the production of “technically utilizable” knowledge (Habermas 1976) that can serve as “calculating devices” (Lakatos 1999), often for the purposes of enabling specific interventions and exerting *control* over the environment.⁴

³ Here we mean means-ends or problem-solution oriented thinking

⁴ For example: “Do you want to stop different transmitted diseases? Do you want to design better cities? Do you want to stop traffic jams? The data to do so is there in private hands, and we need to identify some social consensus by which the data can be shared with the different stakeholders who can take advantage of that,” (Barabasi 2012), or “The fact that we can now begin to actually look at the dynamics of social interactions and how they play out, and are not just limited to reasoning about averages like market indices is for me simply astonishing. To be able to see the details of variations in the market and the beginnings of political revolutions, to predict them, and even control them, is definitely a case of Promethean fire. We’re going

There are many examples where big data has already been put to this kind of use in urban social science contexts: models that can help determine when bridges or other infrastructure are under dangerous levels of stress, when abandoned properties might represent fire hazards, how to best reroute city bus lines to yield efficiency gains, or where flu outbreaks might be occurring and how best to intervene, and so on (Mayer-Schonberger and Cukier 2013).

So: how can we better contextualize these affinities within the wider social sciences literature?

2.1

The first and most important question concerns how to study society. The basic premise of the computational social scientists is that we now have more data than ever before; this data represents something, and our task is to determine its instrumental usefulness. The social sciences, however, have historically been concerned not just with “data” but also with matters of meaning, interpretation, understanding, and reflexivity. This has been the subject of a long-standing debate between empiricists, who sought to move beyond the problems of subjectivity, and hermeneutists, who placed subjective experience at the core of social reality (Taylor 2001). In hewing so to reinvent what it means to have a human society” (Pentland 2012).

closely to the empiricist tradition with its emphasis on “brute data,” the practitioners of CSS open themselves to a number of well-worn critiques.

First, despite the fact that scholars may claim to “let the data speak for itself,” such an act is impossible. Data does not “speak”—construction, organization, and interpretation are all crucial components of quantitative modes of inquiry (Clarke and Primo 2012). We must choose what to measure and how to measure, and particularly in the case of new social technologies we are dealing with many self-constructed categories such as “likes,” “friends,” “shares,” “tweets,” and so on. How can we know for sure that we are choosing the correct empirical frame of reference in our investigations? How shall we address the fact that our data will be extremely rich for certain categories of activity, which will necessarily become the objects of our study, and nonexistent for others that we have not formally conceptualized or systematized?

In the past, critical theorists argued that exclusively empirical methodologies have a tendency to legitimate “facts” about society while circumscribing the language to talk about intractable or obscure social phenomena, such as justice, power, or exploitation (Adorno 1976), or the entire category of intersubjective and common meanings. This “brute data” may be fine in a natural sciences context, and indeed the philosopher Charles Taylor noted how the “the great

achievement of the seventeenth-century scientific revolution was to develop a language for nature that was purged of human meanings” (Taylor 2002). This explanatory language represented an advance of knowledge because it enabled some finality in terms of understanding the objects of our inquiry. Such a stance is problematic in the social sciences, however, because we can never assume a “final” understanding when engaged in communicative discourse with an interlocutor. Concepts, creativity, rules, conventions, beliefs—these are all essential to human behavior. Our understanding of meaning as applied to action is therefore partially constitutive of the reality that we study, as are the potential, irrational gaps between our self-understanding of our motives and values and our actual behavior, and the gaps between what is and what could be within the social order (Fay and Moon 2001). A big data methodology would not, for example, be able to say anything about an idea or innovation that hasn’t been thought of yet.

On this front the proponents of CSS seem very concerned with what people do—what is indicated by and recorded of their surface-level interactions—and not at all concerned with the interplay between computational data, a person’s interior life, and the wider, intricately complicated, constantly evolving social reality that informs both.

This raises another issue that is not explicitly addressed in the CSS agenda: the age-old

question of whether individuals are shaped by societies or societies are merely the aggregate results of individualistic, “bottom-up” processes. A CSS devoted to developing comprehensive pictures of individual and group behavior would necessarily require a perspective on the precise nature of our “social” minds; it would otherwise be impossible to establish a framework or starting scale to make sense of whatever correlative patterns emerge from the data we investigate.

Historically the social sciences have seen five general (not exhaustive) approaches that have tried to answer this question, each with their own advantages and limitations: individualist, social, extended, collective, and the “social brain”⁵ (Kaufmann 2011).

⁵ Kaufmann defines these as follows. Individualist approaches to the social “see the social as a matter of mental contents, either conscious or unconscious, which result from the translation of the social world around the mind into representations.” Social approaches to the mind emphasize “the social dimension of any perceptions, expectations, categorizations, emotions, and representations that furnish the human mind. Subjective minds are nothing but the holders of common meanings and impersonal rules that constitute the objective mind of a given community.” The extended mind approach “calls into question the demarcation of skin and skull, and the assumption that what is outside the body is also outside the mind”. Collective approaches “also advocate that minds are not ‘in the head,’” but rather operate through groups. Approaches to the “social brain” draw from “developmental, comparative, and evolutionary psychology the hypothesis according to which social species are endowed with pre-wired, well-adapted cognitive devices to process specific ontological

Based on their writings so far, the assumptions of CSS seem to sit somewhere within the individualist and collective approaches, where in the former there is no a priori “community” to assess; instead collective phenomena are just the aggregate results of rational actors intelligibly pursuing their wants and preferences.⁶ In the latter case, Kaufmann (2011) identifies an instrumentalist approach that he terms “non-distributive collective attribution.” Here we say that collective “groups” exist not in any metaphysical or causal sense, but that such attributions “fulfill explanatory, interpretative, and predictive needs.... This intentional stance does not necessarily involve any ontological commitment: it is above all a good tool for making a priori preferences and behaviors intelligible and predictable” (Kaufmann 2011, 169).

Although these approaches have their relevance and justifications, they each entail their own positive, normative, and methodological inclinations. They thus leave out

domains” (2011).

⁶ According to MIT’s Alex Pentland (2012), for example, Adam Smith and Karl Marx were wrong. Why? “Because they talked about markets and classes, but those are aggregates. They’re averages.... While it may be useful to reason about averages, social phenomena are really made up of millions of small transactions between individuals... You need to get down into these new patterns, these micro-patterns, because they don’t just average out to the classical way of understanding society. We’re entering a new era of social physics, where it’s the details of all the particles—the you and me—that actually determine the outcome”.

a lot of the richness of varying different accounts of individual and social behavior. A comprehensive effort would need to do more to incorporate and adjudicate between the many different approaches to “socialness,” with an eye towards establishing how different computing technologies enable, express, or condition social behavior.

2.2

A second major issue surrounds questions of method and how to “do” science. On this question Lazer et al. (2009) were fairly open about what they see as their primary methodological and scientific challenges, almost all of which surround coping with the “data deluge.” For example, Alex Pentland (2012) of MIT claims that the traditional scientific method is no longer usable because there will be so much data that it will be very difficult to unpack causality. Albert-Laszlo Barabasi (2012) of Northeastern University pushes along similar lines, noting that science is becoming a “byproduct” of all the data we have at our disposal, and that we need a “new science” to make sense of these challenges.

These are striking claims. If adherents of CSS are to move beyond simply identifying correlations for predictive purposes, these comments suggest something of an “inductive turn” away from the hypothetico-deductive (H-D) method upon which much of the modern scientific revolution was built.

Instead of the incremental process of falsification of previous hypotheses and deductive, structured approaches to information, we can now take advantage of abundant computing power to “see what the data says” in any direction. We thus could be on the verge of discovering relationships and patterns which were obscured by deductive epistemology, allowing us to reach a new level of understanding human social life. (Rabari and Storper 2013, 17)

The hope of being able to generalize theories after the accumulation of sufficient data has been a dream of science for a long time, and in fact brings us all the way back to Francis Bacon and the seventeenth century (Hollis, 1994). But it is important to note that over the history of science, induction never succeeded as an operative scientific paradigm, despite some noted adherents such as Newton (that Newton did not really arrive at his laws through induction has been well established, see, for example, Lakatos 1999). Inductive epistemology faced many hurdles that caused it to be abandoned as a “degenerative” research programme in favor of the now-standard H-D approach: infinitely many valid inferences, infinitely many axioms, its tendencies towards content preservation, the inability to adjudicate between varying explanations, and so on (Lakatos 1999).

The computational social scientists have acknowledged some of these underlying

challenges, but they have not yet articulated what the solutions might be. Do we need entirely new theoretical frameworks or can our existing ones be effectively repurposed? How will big data analysis actually help us resolve micro and macro levels of investigation and move systematically from agent-based activities to emergent macro-level social phenomena? Beyond the implicit exception of rational intelligibility as an assumed feature of technologically mediated interactions, there has thus far been much more discussion around the building and use of empirical models for the purposes of prediction, measurement, and characterization as opposed to theoretical models which can fulfill foundational, organizational, or exploratory roles (Clarke and Primo 2012).

Answers may arrive through technical innovation and new, yet-to-be-invented methodologies; or, as previously noted, scholars may instead choose to focus solely on probabilistic or instrumentalist goals. In this scenario scientists would not concern themselves with the truth or falsity of particular theories, or with the systematic judgment of how one theoretical framework is better than another, or with the entire matter of causation in social affairs, but mostly with calculation, prediction, and the unwinding of significant correlations. This type of project could address one of the social sciences' greatest historical limitations (their inability to make verifiable predictions) at the expense of several other sig-

nificant problematics.

2.3

A final major issue concerns the problems of predictive control. Some commentators remarked on the privacy issues raised by big data, or the “Promethean fire” that new legibility of social processes could represent, but these issues were not systematically addressed. Given the instrumental bent of the current CSS project, it seems likely that researchers (or governments, or corporations) could eventually achieve success within specific realms and contexts at predicting and thereby controlling complex human systems and individual human beings. These are very powerful tools that are being developed, but there is reason for caution in assuming they will automatically be used for the betterment of human society. The aforementioned NSA spying scandal is a perfect example of the dangers of big data methods and technology divorced from critical discourses about freedom, justice, and power.

What this illustrates is that the kinds of mechanisms at work in our society depend partly on what we decide to set up, or allow; “the question of the implementation of social science is thus partly the issue of how much control we want to impose of human behavior” (Guala 2011, 590). This issue—the centrality of politics and morality as reflexive components of the world that the social sciences seek to understand—is

again unaddressed within the CSS agenda.

Taylor, in his “Interpretation and the Sciences of Man,” gives perhaps the best treatment of the problems of prediction in a social science context that gives pride-of-place to meaning, interpretation, and subjective experience. First is the “open system” predicament, whereby human events, like meteorology or ecosystems, cannot be protected from external interference; second, Taylor points out that a science of interpretation can never achieve the exactitude of measurement seen in the natural sciences; and finally, he notes that man is a “self-defining” animal, prone to incommensurable “conceptual mutations” (Taylor 2001).

For our purposes, these objections help us see that big data could help us react to and “fix” imminent problems, but these actions would necessarily have to be targeted and narrow. By definition it will not be able to tell us about the wisdom or effects of significant societal interventions. This is because the “n-space” of variables is always changing, particularly after we act. Those actions in turn change what is measureable and possible.

The success of prediction in the natural sciences is bound up with the fact that all states of the system, past and future, can be described in the same range of concepts, as values, say, of the same variables....This conceptual unity is viti-

ated in the sciences of man by the fact of conceptual innovation, which in turn alters human reality....Really to be able to predict the future would be to have explicated so clearly the human condition that one would already have preempted all cultural innovation and transformation. (Taylor 2001, 209).

These issues have a well-known analogue in computer science, sometimes referred to as a “decision problem.” In pointing out the fatal flaws in the ideal of a security state, science historian George Dyson (2013) discussed how there is no way to determine what any particular line of code in a complex system will do without letting it run. Thus, “no firewall that admits anything new can ever keep anything dangerous out... Any formal system that is granted (or assumes) the absolute power to protect itself against dangerous ideas will of necessity also be defensive against original and creative thoughts”.

The efficacy of big-data-driven predictive control over large-scale, complex systems could thus depend on a “frozen” world where all variables and contingencies are known beforehand. The problems this presents for human flourishing and freedom are not difficult to imagine.

3. THE VIABILITY of CSS as a SCIENTIFIC RESEARCH PROGRAMME

Proponents of CSS see themselves as defining a new, interdisciplinary field. Their model is the emergence of cognitive science that bridged subjects such as philosophy, computer science, and neurobiology. Does this field, as it has been defined thus far, offer the promise of meaningful scientific progress?

The work of the noted mathematician and philosopher of science Imre Lakatos can offer some insights here. Lakatos was above all concerned with the issue of demarcation: how to distinguish good science versus bad science, theoretically progressive versus degenerating problem shifts, good verifications versus bad ones, good dogmatism versus bad dogmatism, and novel facts from useless ones. Lakatos built upon the works of Karl Popper and Thomas Kuhn to create a methodology of scientific research programmes to help us separate “the goodies from the baddies” (Lakatos 1999).

A research programme, in his view, “sets out the fundamental conceptual framework or conceptualization of the phenomena we wish to explain, and the rules in accordance to which theoretical innovations or developments will be made” (Fay and Moon 2001, 30). This methodology could help explain why the Newtonian paradigm of the universe, despite its many anomalies

and eventual supersession by Einstein, was still theoretically progressive, “good” science, because it led to unexpected findings and therefore better questions. Astrology and Freudianism, however, were hopelessly pseudo-scientific.

The social sciences have always presented several problems for this view, problems that may or may not be mitigated by the increasing quantification of social life.

The question immediately arises whether the intentional nature of social phenomena constrains what can count as an adequate research program... [I]t suggest that an adequate explanation of a social phenomenon would have to include, or be based upon, an account of the reasons or motivations which led to the behavior which brought about the phenomenon in question.... Research programs in the social sciences would have to include a conception of human needs, purposes, rationality, etc. in terms of which these motivational accounts could be constructed. (Fay and Moon 2001, 30)

On this reading the prognosis for CSS is unclear. Beyond a commitment to empirical data, limited rationalist conceptions of individual and collective intentions, a focus on specific analytic and methodological tools, and instrumentalist ends, it is unclear what makes up the actual core of this research agenda—what its basic theoretical assumptions are about social life, and

what it is trying to discover. These insights may emerge inductively from the massive amounts of data now available, but this will run counter to the modern history of scientific progress, where intuitions about where to look and what to look for led to a progressively expanding penumbra of knowledge. In fact, traditional theoretical models may prove more important than ever in the new environment, as the signal-to-noise ratio increases exponentially.

That being said, the combinations of raw empiricism, rationalism, and instrumentalism matched with powerful technology could be enough. With a bit of tenacity and dogmatism, CSS may indeed prove to be a progressive paradigm. The catch, however, is that there is no guarantee this progressivity would educate us about meaningful social imperatives. For example, an in-depth big-data investigation of a social networking platform like Facebook may illustrate more about Facebook than it does about the wants, needs, motivations, and values of the people using it.

The danger exists that this would be a reified progressivity; that these tools and systems of inquiry—which embody their own logics and intentionalities within the routinized structures of our socio-technological systems—could outrun or overrun the original functions they were designed to serve and support (Wolin 1969). In short, computational social science could say more about technology than it can say about us.

4. CONCLUSION

What we hope to have illustrated thus far is that big data and CSS present something of a mixed bag when we consider the topic of scientific progress. The absence of a theoretical core, the problems of induction, the limitations of purely data-driven approaches, the staggering complexity of social behavior and social systems, and the moral and political questions raised by the problems of predictive control should all serve to temper some of the current, mildly utopian hopes about what will be possible.

All of that said, big data and CSS still represent a clear advance when viewed as a technical phenomenon; there really is a vast process of “datafication” occurring in the world right now (Mayer-Schnoberger and Cukier 2013). On the social-scientific front we can expect the creation of many interesting and sophisticated empirical models that will allow us to identify significant correlations in the data we’ve gathered. Recognizing these patterns will in turn allow us to intervene in specific ways to help us solve specific problems, whether that means improving efficiency, identifying pandemics, or better managing our infrastructure.

However, while efficiency, improved management, and the discernment of patterns are important goals, for many urbanists and critical theorists they will not be enough, especially if they crowd out others areas of focus and discussion. Technological

revolutions, like any new, shiny thing, can sometimes distract us from the difficult, hard problems, such as poverty, development, or social justice, which were the reasons many of us were called to the social sciences in the first place.

To illustrate by way of example: using a big-data-driven CSS model to create a 10% efficiency improvement on a bus line is a real, serious utility gain. These kinds of small, meaningful improvements are the “bread and butter” of urban planning, where we, as practitioners, can make a difference in people’s everyday lives. But it is still a limited conception of public service and civic-mindedness, especially if these efficiency gains are happening while fares are being raised and services being cut. In these instances there are perhaps other conversations we should be having and other problems we should be focusing on.

Of course, as planners we will want to refine our skills and make sure that we are literate in all of the new tools and methodologies as CSS practices infiltrate the field. But there is a useful analogy here. While Geographic Information Systems (GIS) have been standardized and fully incorporated into social science departments across the country, and has had major effects on our “praxis” as planners, it can hardly be said to have created a revolutionary impact on the wider socio-economic system (Rabari and Storper 2013).

This relates to a very important point: the wider social, political, and economic context in which these new technologies will be applied matters a great deal, but proponents of data-driven social science almost never discuss these serious foundational problems. The United States has seen stagnating incomes, massively increased inequality, huge sorting along demographic and regional lines, and inexorable political gridlock. Big data could allow us to “see” these phenomena better, but it could also just codify them or even exacerbate them, depending on the kinds of decisions being made and by whom. For example, we may see new issues where patterns of social privilege are embedded but invisible within data sets themselves, perhaps due to the differing propensities of different social groups to participate in “datized” moments, or because of unequal abilities to interpret and make effective use of data (Johnson 2013). The fact is that we simply don’t know, and a purely instrumentalist project will by definition not help us understand, especially one that limits the objects of social scientific inquiry to outward, quantifiable expressions of social life.

There is a reason that the majority of real-world big data applications seen thus far have been in the realm of state spying and advertising (Mayer-Schonberger and Cukier 2013). These are easy, low-hanging fruit, and they fit neatly into existing power structures, whether bureaucratic or financial. The access, knowledge, and means to

exercise these sorts of sophisticated projects of technical control will always be closely guarded by those who have a lot to gain or a lot to lose.

All of which is to say: the struggle for justice, the never-ending drive for reform, and the vital role of cultural, legal, and social norms will have to remain front and center to any critical urban theory that seeks to deal with the world as it is, and as it might be. The dramatic failures of 50s and 60s era rational planning should loom large in our minds. Technocratic approaches have their limits.

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LOCAL IDENTITY *and* DIGITAL INFRASTRUCTURE *in the* BUILT ENVIRONMENT:

Learning from Seoul, South Korea

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ABSTRACT: *The continued growth of Internet usage and connectivity and the importance of networked technologies raise questions about the evolving relationship between public space and private communication in the contemporary city, and the relationship between the digital revolution and urbanism. This paper uses the advanced e-communication and digital infrastructure within Seoul, South Korea to explore how personal and community-based “e-networks” (as in web-based media) are utilizing and engaging with public space, and considers the long-term implications for the development of the built environment and its effect on the community’s cultural and social identity. Using *The Social Life of Small Urban Spaces* by William H. Whyte (1980) as a methodological model, updated with digital tools and modeling techniques for the assessment of occupation and usage, it provides an innovative, practice-oriented approach to analyzing public space. Ultimately, it seeks not only to identify the augmented usage of public space, but also to understand the wider social, economic, and environmental impacts that an advanced digital infrastructure have on public space.*

1. INTRODUCTION

The introduction and growth of the e-network is a key part of the development of contemporary cities. Mobile phones and other handheld PDAs have replaced televisions and desktop computers, transforming the cities of earlier eras. These technologies provide new means to digitally augment the experience of the city, giving rise to a transregional e-social and cultural infrastructure of synchronization and communication.

While the revolution in mobile and wireless communications networks has transformed economic, political, and social communications, it has been difficult to identify the impact this technology has had on public space. Graham (2003) argued that it is the fact that telecommunication systems and infrastructures within cities are largely concealed that results in issues surrounding these systems and their use in cities being left unconsidered. However with the advancement of wireless and mobile networks, Townsend (2001) and others have highlighted how the temporal quality of wireless and mobile networks can lead to a reconfiguring of the spatial and visual qualities of the city, thereby questioning the nature of city infrastructures and how public space is formed, both physically and socially. Twenty years ago, scholars argued that the quality of public space and the way in which it is utilized were in inexorable decline (Sorkin 1992). Yet how has the emer-

gence of mobile and wireless communications networks over the last twenty years impacted communication in public space?

1.1 Case Study: Multifunctional Administrative City Project

Since the Asian financial crisis of 1997, the government-led establishment of a comprehensive digital infrastructure, as in a wired and wireless network for personal and business communication and information transfer, together with the rise of urban cyberculture, has generated significant economic benefits for Seoul (Farivar 2011). Enormous amounts of retailing and business-to-business commerce have moved to the Internet, which has introduced new efficiencies into the urban economy. In an industry where products such as smartphones are updated on an annual or biannual basis, electronics conglomerates such as Samsung and LG have used rapid consumption and product evolution as a catalyst for innovation (Oh and Larson 2011).

As such, Seoul is an ideal case for understanding the impact of the digital revolution on the urban environment, and how the transformation in urban communications may be operationalized within public space, urban form, and social infrastructure. In this context, this paper explores the effects of recent advancements in digital infrastructure networks to arrive at a transferable model for future-oriented public space.

2. METHODOLOGY

The data collection process consisted of qualitative research methods, such as time-escapes and qualidata, together with video recoding, in-depth interviews, oral narratives, photographs, and site observations. Thirty interviews were conducted in total (ten users from the general public, ten members of the IT industry, and ten members of Seoul's planning department), all of which took place in Seoul's public spaces. Drawing from William H. Whyte's research methodology in *The Social Life of Small Urban Spaces* (1980), this paper uses two-dimensional thematic mapping studies and three-dimensional simulations to explore the impact that wireless communication, PDAs, and digital infrastructure have on the way public space is used. This research methodology actively engages with Web-based media such as Facebook, Twitter, and Korean actor-network websites. Therefore, the data gathered includes both the particular digital technologies used and the particular moments of usage. This process helps to provide an urban space toolkit for the digital age, in order to better understand how new cultures and social infrastructure can use e-communication and e-culture as a means to develop new and future-proofed strategies for urban design.

3. PUBLIC SPACE *and* ADVANCED HIGH TECHNOLOGY INFRASTRUCTURE: A METONYMY *in* DESIGN IDEOLOGY

3.1 *Tangible Public Space*

Historically, public spaces within cities have been defined either by trade, as in market places, or through association with religious or state buildings, as in grand central plazas and heroic monuments (Kostof 1992). "Pleasure gardens," privately or publicly funded ornamental gardens open to the public, have also existed since the Roman Empire. The development of high-rise office and residential buildings during the eighteenth and nineteenth centuries led to zoning laws and statutory rights to daylight in order to restrict the proximity of these buildings to each other. As a result, public spaces were left in between buildings, as pass-through areas, making public space primarily a place of movement (Sennet 1974).

The definition and operationalization of public space is determined both by physical location and also the patterns of behavior that occur in the location, two conditions that are in turn fundamentally interlinked and dependent on one another. These dynamic social formations create a physical urban "metonymy" —landscapes where people are prompted to have an active role and participate, providing them with a sense

of ownership, a site of social activity and an expression of society (Castells 2004). This is particularly true for urban public spaces that offer social interactions with legibility, permeability, variety, richness, liveability, and robustness (Bentley et al. 1985).

3.2 Intangible Public Space

Public space has always been shaped by the media landscape. Today, mobile technologies offer the possibility of “portable” privacy within public space, adding diversity to the way the city is used. From mobile phones to Wi-Fi to the pull of media-filled private spaces, communication technologies are redefining human-environment relationships. The physical space of the city is becoming augmented and supplemented by a virtual, online network and community—the new intangible public space.

Aurigi and Cindio (2008) have argued that this digital infrastructure has created a new “value” of augmented urban space, particularly in public open space, as a result of the mobile phone evolution into a highly local and potentially very meaningful geo-referenced database of spatial identification. Mitchell (2003) has also highlighted how digital infrastructure, as an urban design component, operates on a level of transmittance, whereas in traditional urban design the morphological layers of the city operate on a level of permanence. The extent to which these new forms of communication and human behavior have affected the city

is something we have yet to fully grasp. Nevertheless, two emergent trends in the relationship between digital infrastructure and public space make this a subject that deserves further research: 1) the impact that mobile communications have on our day-to-day lives as a vital personal appendage in the city and 2) the digital control of the city—from video surveillance to GPS—which has produced a fully wired urban environment. As these networks and devices integrate more and more, the users’ experience of the city is augmented by an increasingly ubiquitous informational and communication network.

Seoul is a particularly useful case study for considering this relationship because of its inhabitants’ enthusiastic adoption of mobile technology. In addition, the city’s government is a firm supporter of high-tech infrastructure; by 2007 Seoul already had one of the highest penetration rates of advanced broadband connectivity of any city in the world (Kim 2007).

4. CASE STUDY: SEOUL

4.1 Advanced High-Technology Infrastructure in Seoul’s Public Space, and Cultural and Historical Nodes

In 2010, new design strategies and urban development concepts were introduced that integrated digital and wireless networking within a designated area of Seoul. This government-led development concentrates

on four major characteristic axes in the city: the historic corridor, the digital media corridor, the creative corridor, and the green corridor.

This urban design strategy also included the creation of a new urban culture based on digital media technology within the central business district (CBD) area of Seoul. Through public-private partnerships, new and vibrant public spaces fueled by wireless communication and connectivity were created, and historic and cultural spaces were upgraded around historic heritage sites. This represents an attempt by Seoul's planning department to utilize a coherent and systematic approach to improve the built

environment. This comes in response to a period of growth in the city center that led to the production of "ambiguous" places of control and consumerism in the built environment. For instance, the new public space within the Historic Corridor (see Figures 1 and 2) is centred around Cheonggyecheon. The Cheonggyecheon Stream redevelopment, which includes new public spaces surrounded by office accommodation, was created from local resources and has built-in high-technology infrastructure. This redevelopment supports Cook's (2009) assertion that architectural innovation grows from dualities. The contemporary high-rise buildings at the entry of Seoul's CBD stand in contrast to the adjacent areas of small

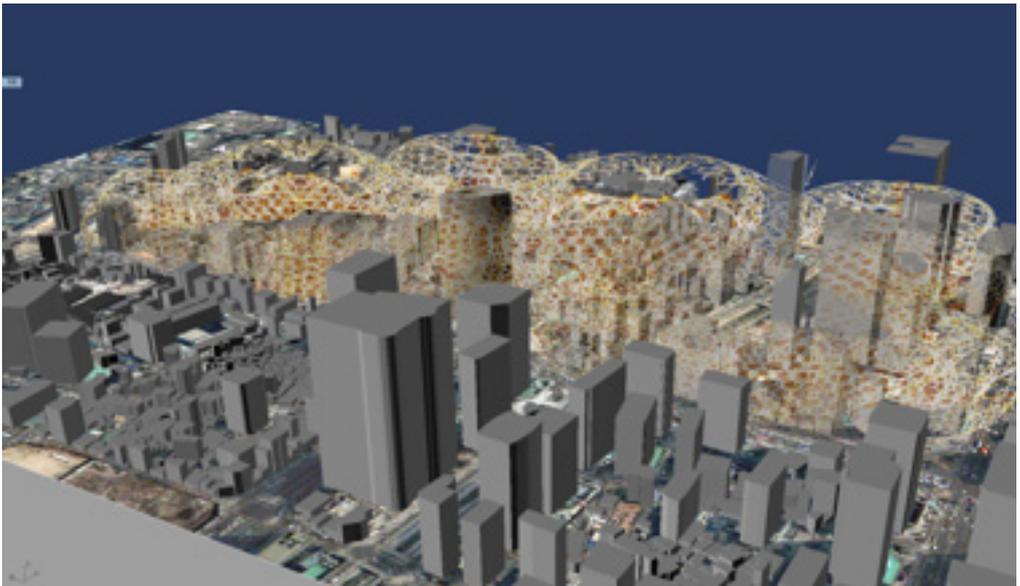


FIGURE 1. Design concepts for creating thematic redevelopment corridors within Seoul. (Source: Choi 2012.)

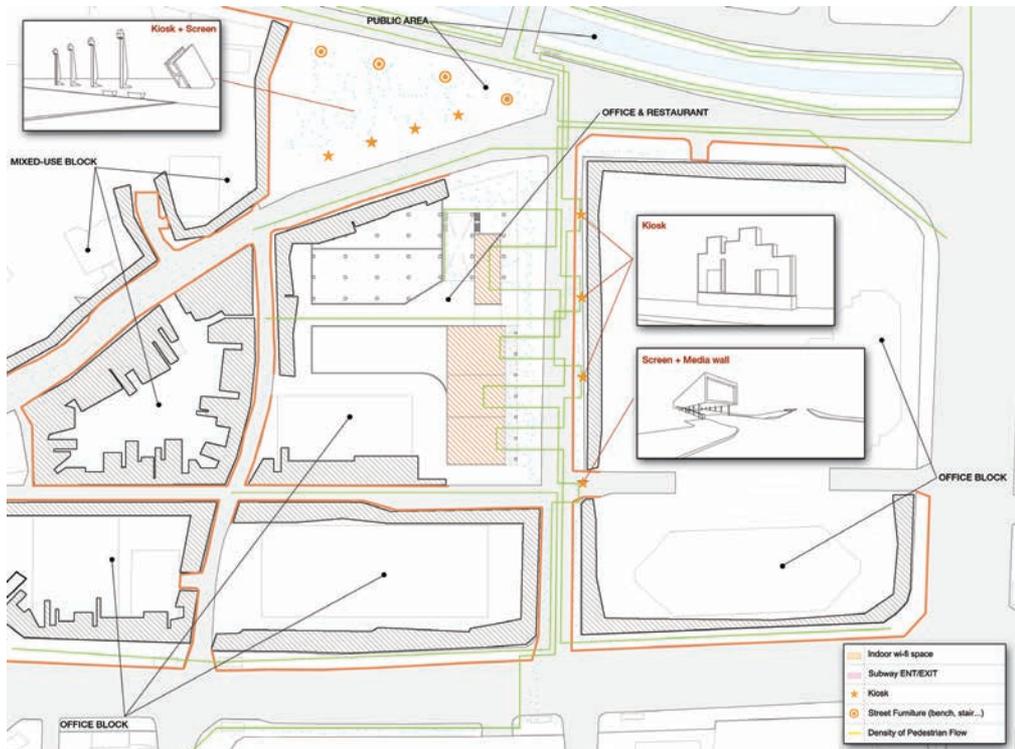


FIGURE 2A. Details of Digital Media Corridor including Uljiro (Source: Choi 2012.)

lanes and more vernacular architecture. Within this historical network of smaller-scale streets, a creative and cultural community is evolving.

Given the national significance of Seoul's historical center, there is a political interest in how digital media and commerce can be combined with the local cultural context to create a place that is at once globally and locally significant. In South Korea, the notion of a "U-city," which refers to ubiquitously available Internet connectivity, has become an aspiration for contemporary

urban development (Jang and Suh 2011). Taking into account these aspirations, new digital public spaces and streets may be situated not only in terms of the structural transformation of Korean society and its economy, but also in terms of the behavior of individuals in particular localities. King (2009, 616) argued that, in Korea, "new cultural production is overwhelmingly either pastiche or electronic; political activity slips from the Third Estate of popular democracy to an emerging Fifth Estate of the Internet and the weblog. Particularly, in Korea's case we may have the paradox

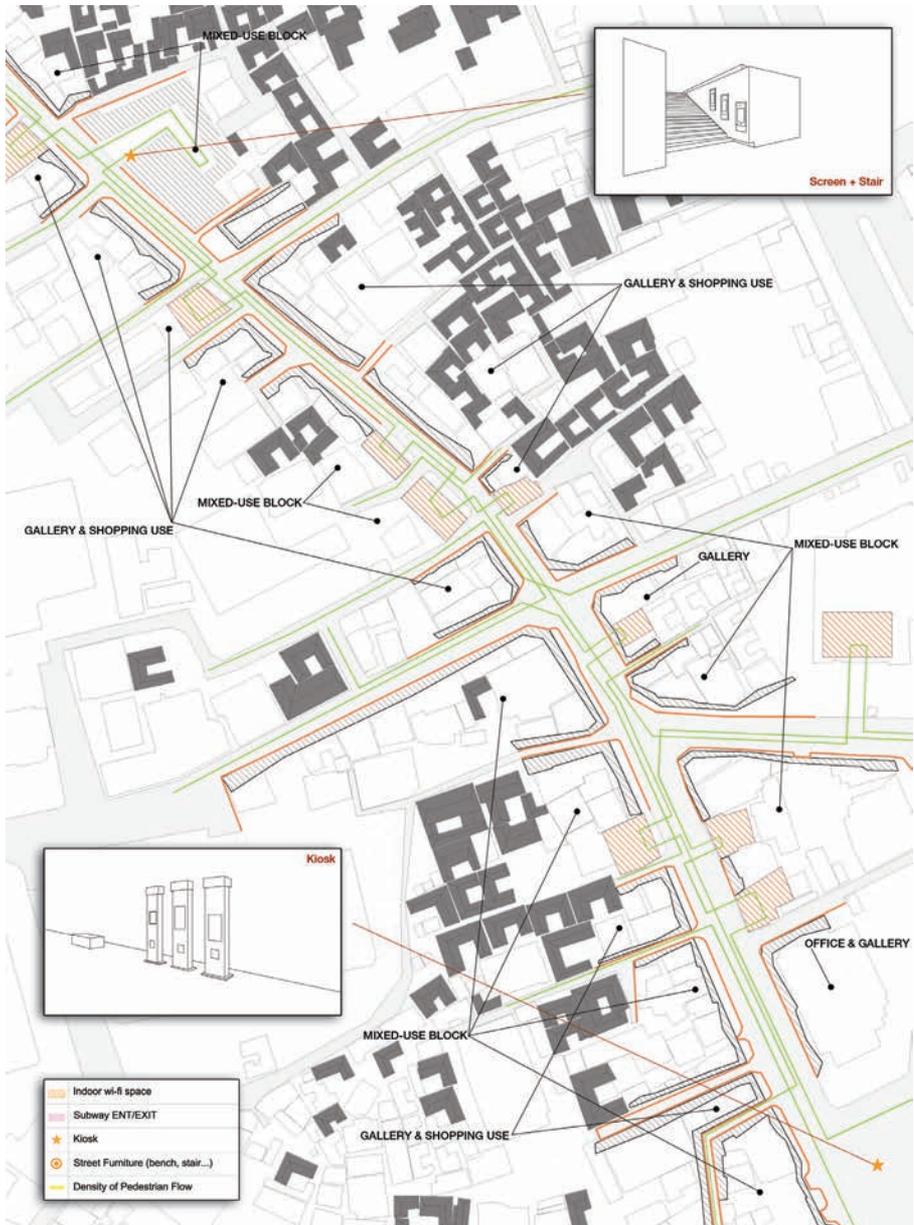


FIGURE 2B. Details of Digital Media Corridor including Insadong (Source: Choi 2012.)

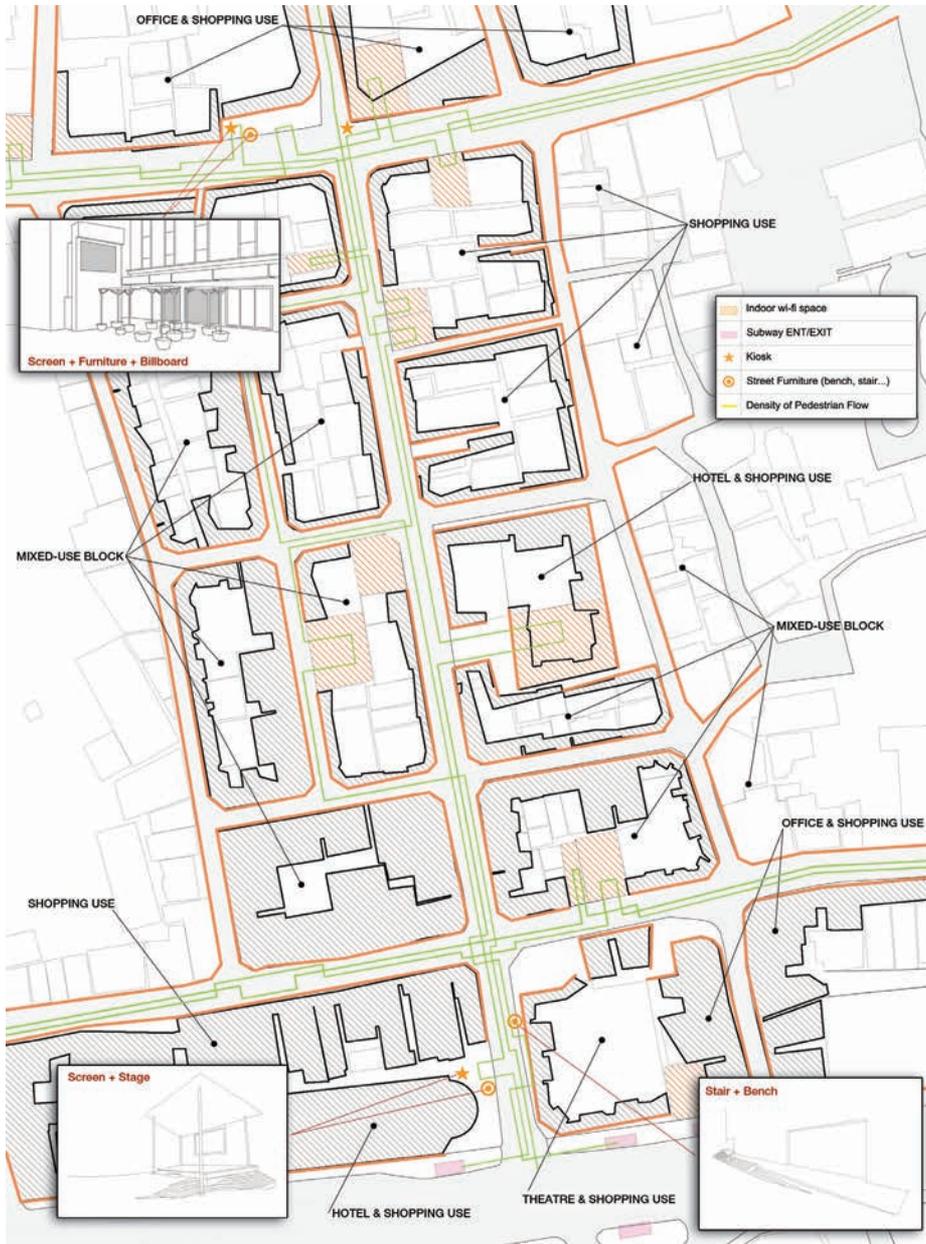


FIGURE 2C. Details of Digital Media Corridor including Myeongdong (Source: Choi 2012.)

of the weakly defined nation slipping away into a wider imagined community, even as the dream of Korean distinctiveness cuts ever deeper.”

Seoul’s Digital Media Corridor is a project that holds new implications for how urban design and public space interact with urban broadband connectivity. Covering an area of 570,000 square meters, this development project was designed to attract homegrown IT companies such as Samsung and LG. At the street level, the technological aspects of the Digital Media Corridor contain three important characteristics:

- Digital infrastructure: media-supported interactive street fixtures, digital management of flows of automobiles and people, transmission of public information, and processing queries.
- Permeable public space: a diversity of activities and uses, digital communities and links, and networked digital kiosks.
- Communicative building facades: LED interactive building facades that sense movement and transmit environmental and other information, e-shopping screens in public spaces (<http://dmc.seoul.go.kr>).

These characteristics transform the street into a laboratory for testing new products, events, infrastructure, and media, while also engaging with the public, to provide

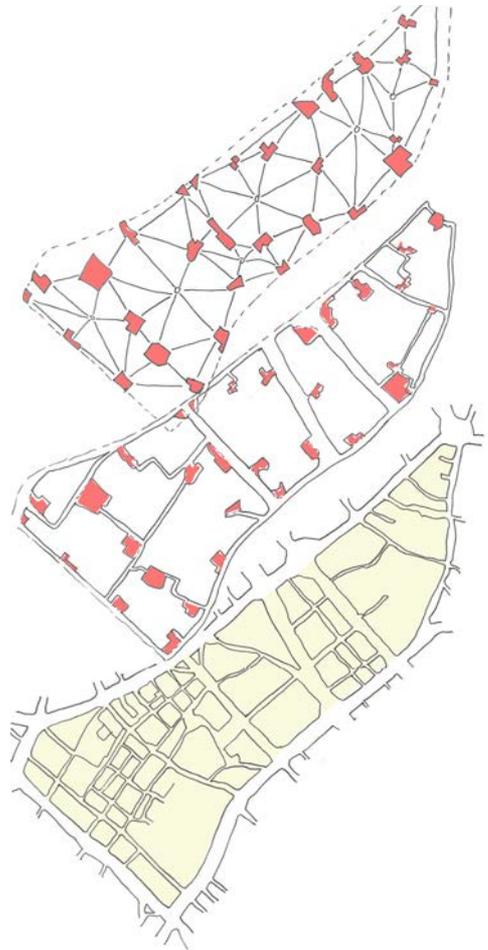


FIGURE 3. *The three technological characteristics of the Digital Media Corridor. (Source: Choi 2012)*

experiences of an ever-changing environment (Frenchman, 2003). From its conception, the project was intended to be a forward-looking experimental development that would reinforce Korea’s technology sectors. In addition to the government-led growth in wireless networking, the U-city

projects in South Korea are inspired by two socio-cultural developments that have occurred during this period: the growth of neighborhood cybercafés and, more broadly, an evolution in urban cyberculture (Townsend, 2008). As in many cities across Asia, Seoul's vast urban transportation system of trains and buses is completely outfitted with wireless Internet access, allowing the population of Seoul complete freedom to work, communicate, access media, shop, and administer their daily lives on the move. A recent survey of those traveling on public transport in Seoul found that more than 45% of people use smartphones and portable PCs during their journey, with the most popular media being Korea's version of Facebook (KakaoTalk) and online newspapers (Kim, 2012).

4.2 A New Technology Communication Industry

The increasing power of telecommunications and information processing has had a huge influence on the global economy. Krätke (2003) noted that media companies and industries are becoming more and more congregated and concentrated in cities around the world, which has had a profound effect on urban design and city life. They can now operate around the clock to provide flexible solutions to local and global consumers through robust intraregional and supraregional networks (Krätke, 2003). Ultimately this leads to significant restructuring of economic and social con-

ventions (Kavanagh, 2011). A survey from 2001 found that on average Koreans used the Internet three times as much as the British (Townsend, 2008). As of 2004, Korea's largest Internet provider, SK Telecom, had developed a network of over 23,000 Wi-Fi "hotspots," in comparison to the 5,600 hotspots offered by the largest Internet provider (T-Mobile) across the United States and Canada (Ok, 2011).

The growth of broadband access can be attributed to both public-sector and private-sector actions. The public sector's deregulation of the market, which used to be monopolized by the state telephone company Korea Telecom (KT), allowed for multiple service providers, such as Hanaro Telecom and Thrunet. Fierce competition ensued, whereby each company attempted to undercut each other and offer more powerful connectivity speeds. To spark demand for Internet use, the public sector introduced education programs to teach the elderly and stay-at-home mothers how to use the Internet. Moreover, they introduced Cyber Building Certificates in 1997, whereby domestic and business premises received an award based on the speed and capacity of their telecommunications network (Yun, Lee, and Lim 2002).

The private sector influenced demand via the massive growth in PC Bahngs (PC Rooms) and mobile communication devices. These Internet rooms became centers for people of all ages and income groups to

make use of powerful computers and fast connection speeds for 24-hour email, chat, online shopping, online business meeting, interviews, and stock market trading. With the increased accessibility of broadband at home, these PC rooms are becoming less popular. Nevertheless, they have been a key step in the growth of Internet and broadband usage and popularity, and have had a strong influence on urban life within South Korea (Townsend, 2008).

The introduction of the smart phone has also played a pivotal role in Seoul's urban cyberculture. The mobile service providers in Korea have built on the government-led fiber-optic cable network to introduce 4G mobile technology (termed LTE and WIMAX) capable of streaming video and

live TV to mobile devices while offering a wider and more continuous coverage than individual Wi-Fi hotspots (Kim and Lee, 2009). This has created ubiquitous, high-speed connectivity across the city. Together with the growth of cloud computing, which enables remote access to hard-drive storage, the urban population of Seoul is able to work, communicate, and access online media anywhere in the city.

With the development of 4G-type mobile technology comes a new wave of smart-phone products by Samsung and LG. The extent to which this advancement in connectivity and usage is influencing Korea's economic growth is currently being monitored by the Korea U-City Forum, a public-private group involved in supporting U-city

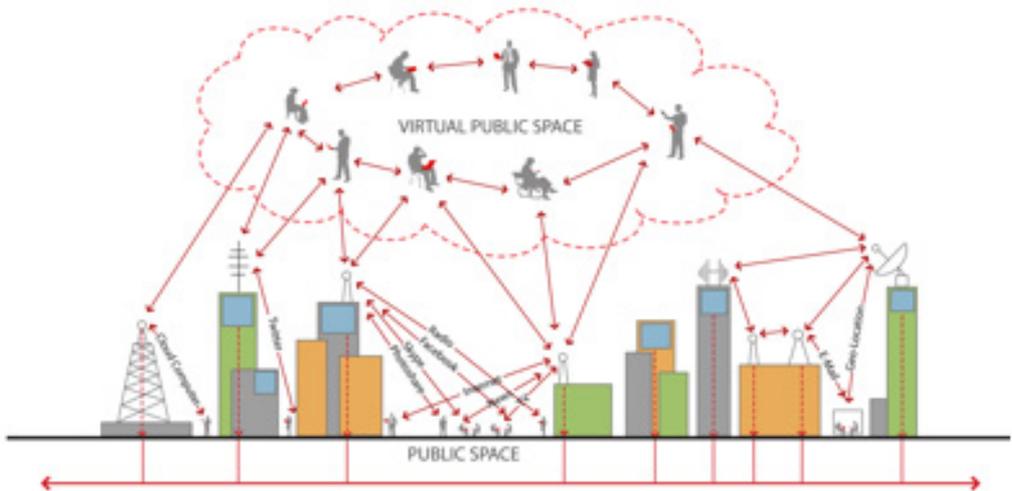


FIGURE 4. E-network patterns and social-behavioral patterns within public open space. (Source: Choi 2012)

projects not only in Seoul, but also across the country. It is an experiment that some argue is much easier to do in Asia than in the West. Anthony Townsend, who consulted on Seoul’s own U-city plan, known as Digital Media City, states, “Much of this technology was developed in U.S. research labs, but there are fewer social and regula-

tory obstacles to implementing them in Korea...There is an historical expectation of less privacy. Korea is willing to put off the hard questions to take the early lead and set standards” (Licalzi 2005).

As the relationship between production and economic power changes, flexibility is

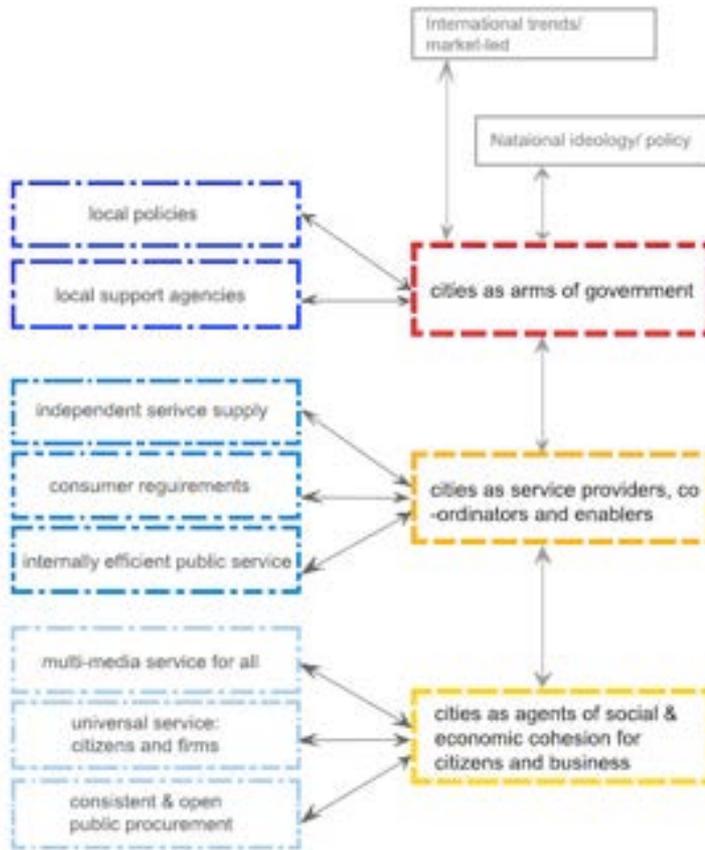


TABLE 1. *The relationship between production, economy, and governance (Source: based on Castells 2000)*

embraced as a key component of these systems (see Table 1), with the South Korean government acting as a venture capitalist to ensure stability. The production of mobile and wireless communications support, media displays, and other integrated technologies is an attempt to offer better and more varied activities in the built environment, without the limits of time or location (Oh and Larson, 2011).

4.3 Usage of Public Space

The introduction of Wi-Fi networks to public areas highlights the importance of generated “user demand profiles.” In essence, the current land uses generate demand for

network services. Urban spatial development is best understood, then, as a recursive process, unfolding over lengthy periods of time, in which network infrastructures and land-use patterns evolve by continually responding to one another. In his book *ME++* (2003), William Mitchell comments on how the networked city affects the relationship between users and the city. He argues that a user is no longer a form of Vitruvian Man, “enclosed within a single perfect circle”; rather, he or she is connected and linked into the surrounding city via handheld smartphone or PDA. Mitchell refers to this as being a spatially extended cyborg, so less a Vitruvian Man, more an Inspector Gadget (see Figure 5).

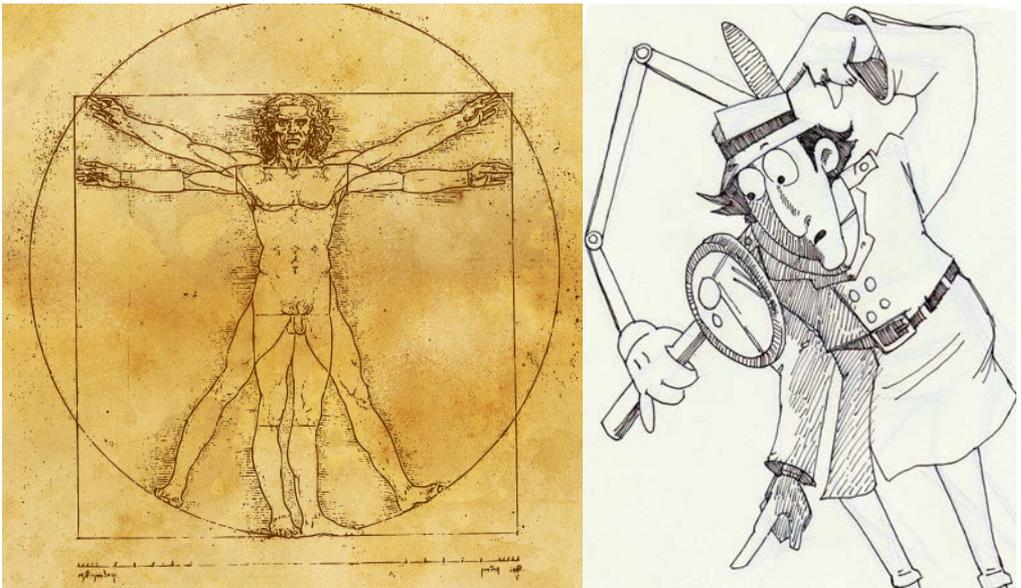


FIGURE 5. From Vitruvian Man to Inspector Gadget. (Source: www.123rf.com; www.elcalabacin.deviantart.com/art/Inspector-Gadget-182386085.)

Mitchell (2003) further argues that this on-line connectivity has changed the nature of society and community: “My sense of continuity and belonging derives from being electronically networked to the widely scattered people and places I care about” (17). Extending Mitchell’s argument, advancements in Wi-Fi technology and other communication networks are effectively allowing people to be collectively closer together while being further apart. Miss Jang (2012), a shopper on her way through Insa-dong, commented, “I still enjoy shopping and meeting people on the street, but at the same time I also enjoy spending time in my virtual world by using Cy-world with my friends in public space. Cy-world is a website that allows virtual profiles for me and

my world to share my extended private life. To create and maintain this virtual space, I need to buy some icons and clothes, furniture and so on, for which I pay real money.”

These changes in behavioral patterns reaffirm previous work on theories of social shaping and coproduction of technology (e.g., Jasanoff 2004; Mackenzie and Wajzman 1998), which state that technological and social development are two different networks that are influencing and informing each other (see Figure 7).

In describing how U-city developments can serve as an exchange value to strengthen local cultures, business, and communities, Shirvanee (2007) coined the term “social

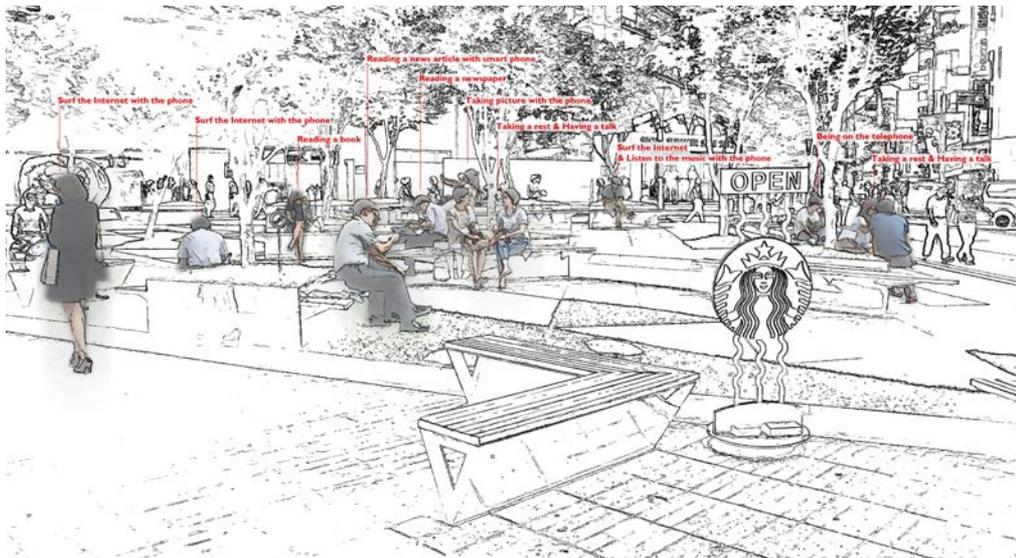


FIGURE 6. Geo-localized high-technology network with social interaction and interpersonal ties. (Source: Choi 2012)

viscosities” to describe digital social performances in public space. Kelly (1995) refers to this digital urban dynamic as a “swarm system,” which consists of the absence of imposed centralized control, along with autonomy and high connectivity among smaller groups and individuals. There is a growing connection between the physical swarm patterns of transitory crowd formations and the online social media network within urban public spaces, which provides a tool for connected groups of people to communicate and gather. Drawing from site observations in the public spaces of both Insadong and Myoungdong, two districts in Seoul, it is evident that the functionality of smartphones and locative media is changing the way in which people engage with

the city, by providing both dynamic connectivity and spontaneous collective action and movements.

One resident from Myoungdong I encountered in the Digital Media Corridor area commented that web-based communication was an important element needed to meet users’ demands. Developer/producer Mr. Cho (2012) felt this U-network and the digital advancements of the streetscape would allow for a “greater accessibility for all citizens to the high-tech network...a democratic system.”

The common user has now become the carrier of an efficient cluster of communication technologies, therefore enabling him

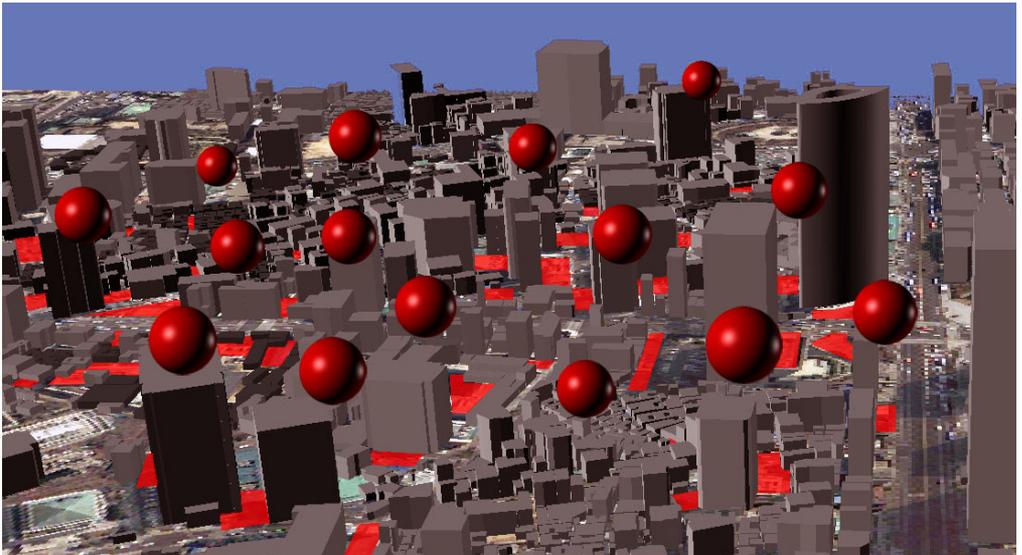


FIGURE 7. Network patterns and social behavioral patterns within the urban environment. (Source: Choi 2012.)



FIGURE 8. Network patterns and their usage in virtual public open space. (Source: Matsuda, Keiichi. *Augmented (hyper)Reality: Domestic Robocop* (2010): <https://www.youtube.com/watch?v=fSfKlCmYcLc>.)

or her to follow an ongoing stream of communication and exchange independent of location and time.

Through users' daily course of social interaction and display in the built environment, it is clear that this digital network can be recontextualized and geo-localized while integrating both the digital and physical, intangible and tangible layers of the city. More importantly, the urban "community" is being augmented by networks of interpersonal ties that provide sociability, support, information, a sense of belonging and social identity. One user I interviewed in the urban area of Myoungdong commented, "I treat my Twitter account as public

space, whereas my friends on Facebook are my private life." These preferences are consistent with Abel's (1997) vision for a new design ideology, in which "the local informs the global and vice versa" (201). The combination of advanced digital infrastructure and location-specific communication networks between individual users makes Seoul's public spaces, including the traditional streets of Insadong and the commercial shopping streets in Uljiro and Myoungdong, exemplars of evolving geo-contextualized and geo-referenced urban characteristics.

As government policy on U-city development continues to change and new mobile

technologies continue to be developed, the relationship between physical and virtual will remain constantly in flux. More powerful mobile technologies and ubiquitous Wi-Fi coverage are bringing people out of their homes, offices, and PC Bahngs and into the streets, public spaces, and public transportation networks of the city. Public messaging and signage systems integrate mobile technologies so that information can be easily transmitted to personal devices, transforming cafes and public space into places where one can work and communicate freely. This in turn transforms the nature of public interactions in the city, with the introduction of high-technology kiosks, communicative facades, and quasi-library-

style benches, and a rejuvenated café culture (see Figure 9).

5. DISCUSSION

Space is a material product, in relationship to other material products—including people who engage in historically determined social relationships that provide space with a form, a function, and a social meaning. (Castells 1972, 152)

Identifying the wider social, cultural, and political impacts that an advanced high-technology infrastructure have on public space can provide a transferable model for future-oriented public space.

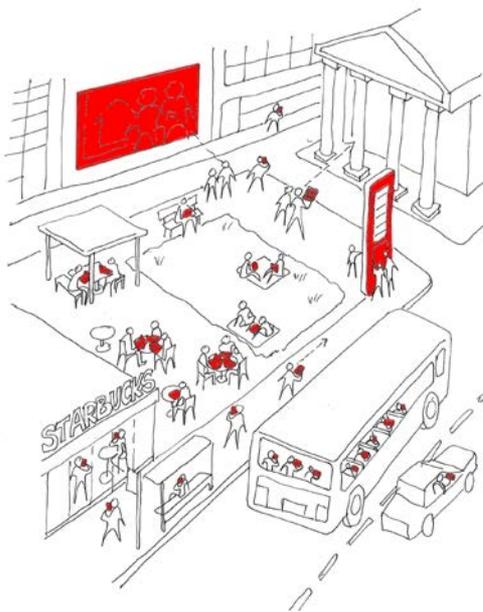


FIGURE 9. *Wi-Fi and digital usage in both virtual and physical public space.* (Source: Choi 2012.)

5.1 Social Impact

The provision of an enhanced digital infrastructure within the urban built environment can be understood as a significant central node in the social activity of the community, augmenting public space interactivity and participation. The faster and more easily accessible means of communication provided by Wi-Fi access and increased smartphone usage quickens the circulation of information among the city's residents. New digital installations within the city, such as site-specific info-walls that generate social media activity in real time, increase the social media conversation of a geo-referenced area. The network of public devices contributes to the urban design of



FIGURE 10. Usage of digital technology and social infrastructure in both virtual and physical public space. (Source: Choi 2012.)

the city and becomes a point of encounter for sharing information and social interactivity. By synchronizing this digital infrastructure with personal devices, the user's mobility and connectivity in public spaces improves.

5.2 Economic Impact

The Digital Media Corridor and other U-city-type developments have been led by Seoul's local government's zoning and development plans for the city. As such, the local government worked collaboratively with Samsung and LG to provide a publicly accessible installation in both physical built form and devices for work, communication, and social networking. From an urban design perspective, this raises the question of the extent to which commercial influence may be inspired more by corporate advancement as opposed to a genuine interest and appreciation for placemaking.



FIGURE 11. Smartphone usage and users' interaction within the U-city, Seoul (Source: Choi 2012.)

5.3 Environmental Impact

The development of an advanced digital infrastructure inspires new types of land use, public open space, spatial structures, transport, and resources. A new social and environmental interaction is being provided via this digital infrastructure as those who travel through the city utilize the online transmission of information, social media, and shared contents. The public open spaces equipped with digital network connectivity become an important interface between virtual and physical space networks. In this sense, digital infrastructure allows city inhabitants to become active “producers” equipped to display and share information in public space.

Seoul’s form of U-city planning implies a revised taxonomy for urban design in the age of e-culture:

- Bringing technology, culture, and commerce together
- The city as a technological environment that can improve productivity and stimulate urban development
- A retrofitting of the IT infrastructure of the city in a way that looks forward and makes efforts to future-proof the urban environment

In order to establish digitally networked urban environments, it is important to understand the historical and current forces



FIGURE 12. *Usage of digital technology within the built environment of Seoul. (Source: Choi 2012.)*

shaping the built environment, such as social and cultural traditions that give a community a unique identity. Seoul represents a new “metonymy,” which manifests both

the traditional role of public space and the new role of virtual public space. That said, it is important that the built environment maximizes the degree of “product” choice for consumers, in order to break up spatial patterns of behavior into a fluid network of exchanges. This will lead us to the emergence of a new kind of space, the space of flows (Castells 2000).

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ASSESSING “INTELLIGENT” INVESTMENT:

The Smart City’s Perpetuation of Neoliberal Urbanism

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While the smart city has recently emerged as a widely discussed urban planning model both in the policy and theoretical spheres, there is a remarkable lack of consensus on the term’s definition, and even less on the model’s implications. In general, the smart city is characterized by the extensive use of information and communications technology (ICT) infrastructure to manage urban systems through the improved delivery of city services, environmentally sustainable development, and gains in social capital. Beneath these wide-ranging benefits, however, are practical concerns

regarding the smart city’s unprecedented involvement of corporate actors, a worsening digital divide, business-centric urban growth, and other factors catering largely to a neoliberal agenda.

This paper is based on a comparative case analysis of three cities that have made significant efforts to integrate ICT-based initiatives into their city plans in order to become smart cities: Amsterdam, Barcelona, and New York City. This research design was motivated by a desire to examine contemporary real-life applications of the smart city framework within

focused areas in order to provide detailed accounts of the broad and complex urban planning model. This study is informed by interviews of key stakeholders, including city leaders and staff, urban planners, company executives, entrepreneurs, journalists, and academics, as well as document analysis of plans and reports produced by local government and the private sector.

Before addressing the practical implications of each city’s experience with smart city policy implementation, however, it is necessary to further explain what is meant by the smart city and the global setting in which it emerged.

THE SMART CITY CONCEPT

The literature on smart cities acknowledges the lack of consensus on a single meaning for the smart city, with works often starting with a redefinition of the term (Caragliu, Del Bo, and Nijkamp 2011; Hin and Subramaniam 2012; Hollands 2008; Nam and Pardo 2011). While there are numerous applications of the smart city—government, economy, environment, transportation, people, and energy, among others—my working definition of the smart city does not focus on the separate components of a city that can be enhanced with technology, but rather on how the model operates in practice. For the purposes of this paper, the smart city is a city that, through public- and private-sector collaboration, has invested

in ICT infrastructure and human capital to drive economic growth, facilitate the exchange of information between sectors, and produce resource-efficient operations that enable high-quality citizen services.

The smart city distinguishes itself from its theoretical cousins—the wired city, digital city, intelligent city, knowledge society, eco-city, etc.—in its emphasis on the specific instrumentation that will enable urban problem solving. It is defined specifically by embedded systems—sensor technology, mobile phones, smart meters, etc.—and big data—large and complex datasets used to analyze urban life (Schaffers et al. 2011). The most important ICTs that contribute to the physical smart city are widespread broadband connectivity, smart personal devices, open data infrastructures, public interfaces, and cloud computing (Institute for the Future 2010).

The smart city as a physical reality is a new phenomenon, which, in practice, has been implemented in two forms. The first is the retrofit of current cities to incorporate ICT into existing infrastructure. Referred to as “brownfield” or “urban retrofit” sites, these are the most common form of smart city emerging, especially in Europe. The second type is the “greenfield” smart city, which is built on uninhabited land and tends to be characterized by an unparalleled level of corporate involvement, which allows a unique way of funding the implementation of ICT—simply up-fronting the costs of

construction—that is not feasible in older cities. The most well-known of these developments are PlanIT Valley in Portugal, Masdar in Abu Dhabi, and Songdo in South Korea, where ICT is integrated into the fabric of everyday infrastructure. Brownfield sites are more applicable to the majority of the world’s population, and thus are the focus of this paper through my examination of the smart city projects in Amsterdam, Barcelona, and New York City.

ECONOMIC RATIONALE for SMART CITY SERVICE MANAGEMENT

An important rationale for smart cities is the potential to achieve urban economic growth. Pike Research (2011) forecasts that between 2010 and 2020, investment in smart city infrastructure will top \$108 billion; by 2020, annual expenditures in the smart city industry will reach \$16 billion. In particular, the smart city is expected to “sustain the innovation economy and wealth of cities, maintain employment and fight against poverty through employment generation” (Schaffers et al. 2011). Smart city policies in existing cities are driven by a combination of local government support and private-sector tools. Rather than provide their own municipal broadband or deploy other ICT-related policies, city governments often establish public-private partnerships or simply outsource services to private companies. The most notable pri-

vate corporations involved in the smart city are Cisco Systems, which provides network infrastructure, and IBM, which specializes in data management and analytics.

Many academics associate smart cities with resilient economies and Richard Florida’s creative class (2002). There is extensive literature on regional competitive advantage and what characteristics, beyond technological capacity, make localities like Silicon Valley more resistant to failure, including collective innovation and a culture of openness between firms and a region’s institutions (Saxenian 1994). A positive correlation exists between urban wealth and the “presence of a creative class, the quality of and dedicated attention to the urban environment, the level of education, multimodal accessibility, and the use of ICTs for public administration” (Caragliu et al. 2011). These elements are seen as the basis for a new strategic agenda for European cities and align with the six-characteristics conceptualization of the smart city—smart people, smart living (lifestyle), smart economy, smart mobility, smart environment, and smart governance.

There is much skepticism regarding these economic growth possibilities, however, both from a practical and ideological point of view. At a concrete level, Lee (2011) questions the economic feasibility of ICT-driven urban growth due to institutional resistance to ICT, referring to the difficulty and cost of integrating existing tech-

nologies into a single system as a barrier to implementing smart cities. The level of government that will drive the knowledge-based economy is also in question because local government often lacks the “policy tools and jurisdictional authority to effectively manage” their new role, and federal government is often too inflexible to adapt to the dynamic economic development patterns generated by ICT (Coe, Paquet, and Roy 2010).

The concentration of creative workers expected in the smart city could exacerbate existing class divides and cater increasingly to its “smart” workers (Hollands 2008). At its most basic level, the “elitist, biopolitical choice of smart city discourse” unfairly designates connected citizens as more informed, and thus more “useful” (McFarlane 2011). Hollands (2008) sees the smart city as a neoconservative scheme that rewards entrepreneurialism at the expense of progressive policies, identifying the emphasis on business-led development as a neoliberal characteristic inherent to the smart city. Similarly, through his series on smart cities for Fast Company, Lindsay (2010a; 2010b; 2010c; 2010d) deconstructs the rhetoric behind smart city implementation in PlanIT Valley, Songdo, and several other “instant cities,” revealing potential economic ambitions driving ICT companies that may not seek to achieve urban growth as much as corporate growth. Many scholars express distrust at the focus on economic development, instead favoring coherent visions

that identify how new information networks can promote engagement (Coe et al. 2001). These cautionary views, particularly Hollands’s (2008), are widely cited and disputed within smart city literature, but they have not been evaluated substantively through analysis of implemented policies, as I will do in this paper.

In the following section, I describe the ways in which the smart city perpetuates a neoliberal agenda from a conceptual point of view. I follow this with individual discussions of three case studies, highlighting the specific policies most demonstrative of neoliberalism. I conclude by tying together the lessons of the three cities and offer thoughts on the direction of future smart city development.

NEOLIBERALISM *and* THE SMART CITY

Smart city policies, defined as they are by sophisticated ICTs, inherently give an economic advantage to the corporate technology giants that produce them. Furthermore, the emphasis on economic growth reinforces the profit motive as the driving principle in municipal decision-making, catering to the neoliberal goal of an unrestricted, unregulated private sector. This ideological link between neoliberalism and the technology that enables the smart city is crucial and has emerged in the theoretical criticism of the model. Hollands (2008)

has made the most well-known indictment of what he sees as the neoliberal tendency of the smart city, but the literature has yet to test his claims against real cases.

Using the framework of neoliberalism, my paper builds on criticisms leveled against the smart city to reveal the capitalist tendencies of smart city development in a more tangible way, as demonstrated by three case studies. The economic and political implications of current smart city development in Amsterdam, Barcelona, and New York make this connection concrete, revealing the neoliberal ideology that is reinforced under specific policies for smart city development. In sum, the smart city, inadvertently or not, reinforces the fundamental components of neoliberalism: the privatization of public enterprise, deregulation, and profit accumulation.

Privatization

Smart city policy often involves the transfer of the operation of city services, including communications infrastructure, emergency response networks, and traffic management, to private companies. ICT corporations have responded to the demand—though it could be argued that they created the demand by essentially inventing the smart city services market—with a robust list of services that local governments can contract from them. IBM, perhaps the most significant player in the smart city market, launched its Smarter Planet initiative in 2008. In 2010, the program was expanded

into the Smarter Cities Challenge with the focus of operation specifically at the city level (IBM, 2012). The program aims to help city leaders leverage data to operate effectively and proactively by providing solutions in three areas: planning and management (government and agency administration, public safety, smarter buildings, and urban planning); human services (social programs, healthcare, and education); and infrastructure (transportation, energy, and water) (IBM, 2012). The keystone service package IBM offers is their Intelligent Operations Center, an “executive dashboard” that monitors city-wide data across agencies and departments that can be purchased by cities for a yearly subscription price (IBM 2012).

Similarly, Cisco Systems, the other leading smart city service provider, offers city leaders its Smart+Connected Communities platform. It is split into two programs: Communities+Connect, which delivers services to homes, businesses, hospitals, schools, and other constituencies, and Community+Exchange, which facilitates back-office daily operations and management (Cisco Systems 2010). Nic Villa, global director of Cisco’s Internet Business Solutions Group, explains that Cisco launched its Connected Urban Development Program—the precursor to Smart+Connected Communities—because it saw sustainability as a business opportunity (personal communication, April 27, 2012). In other words, Cisco capitalized

on the relationship between ICT efficiency and environmental sustainability by developing technological solutions to sell to local governments under the emerging smart city model. Villa explains the three components to Cisco's role: (1) helping customers develop their vision and policy objectives, which includes free consultations to determine strategies for regulations, business models, development, and management; (2) offering its professional services division for ICT master planning and strategy; (3) putting together bundled Cisco products customized to that city. Despite Cisco's history as a technology company, not an urban planning firm, one can surmise from the interview that it has entered the smart city consulting business, similarly to IBM. According to partnerships with Amsterdam and other cities, Siemens, General Electric, and Accenture are also entering the smart city services market and are offering less comprehensive smart-city services that tend to focus on energy efficiency and carbon neutrality.

While these government contracts with ICT companies conceivably fall under the public-private partnership (PPP) model, the lack of financial and operational risk on the side of the private company places a disproportionate financial responsibility and public accountability on the city. Unlike the traditional PPP, in which the private company shares both risks and rewards in the public service or project, smart city services require the city to pay the company

in exchange for the service, amounting to what appears to be little more than outsourcing. Miraftab (2004) argues that neoliberals “support PPPs as a market-enabling strategy by which the private sector's role is supported by the resources of the government, the community, and the NGOs” and that PPPs are therefore a “Trojan horse” for privatizing government responsibilities. Not only does corporate involvement in the smart city essentially privatize municipal services, but it also creates private markets in sectors that traditionally would be managed and analyzed by local government, like social programs and public safety. While complete privatization through the transfer of ownership is not achieved through IBM and Cisco's platforms, the practical effect is that of the privatization of government functions.

This pattern comes as no surprise to economist Ed Steinmueller of the University of Sussex, who argues that while the public can believe in austerity, “there is an ideological commitment to privatization in the United States and United Kingdom,” especially when it comes to initial investments (personal communication, June 29, 2012). ICT infrastructure falls within this capitalist predisposition towards privatization and market solutions because of its high initial expenditures and need for technical expertise. Steinmueller's reluctance to accept that technology and the free market are the best way to solve societal problems is reiterated by Robert Hollands, Professor

of Sociology at Newcastle University, who explains that the way technology is utilized has become “corporatized” (personal communication, June 27, 2012).

Open Data as a Form of Deregulation

Deregulation often occurs alongside open markets and privatization because, according to the tenets of neoliberalism, in order for companies to compete on an even footing, government regulation should not interfere with the efficiency of the market in setting prices or producing the optimal quantity of a good. While deregulation is closely tied to the smart city because of its market-reliant and efficient nature, it is rarely labeled as such; instead it is called open, interoperable, or seamless. The effect of deregulation, whether intentional or not, is often facilitated by smart city policy and masked by the discourse of openness. To explore this case, I examine the deregulation of information, popularly called the open data movement, which has the general aim of achieving transparency and efficiency.

Open data has its origins in the Freedom of Information Act (FOIA), which seeks to disclose (non-sensitive) government data to the public. The first FOIA was passed in the United States in 1966 and applies to executive-branch government agencies; since its passing, dozens of other nations have followed, most prominently the United Kingdom, which in 2000 passed a wider-

reaching version that applies to public authorities, publicly owned companies, and designated bodies performing public functions (National Archives 2000). Open data initiatives are largely synonymous with the more specific term open *government* data (OGD) because it has been almost exclusively a public sector effort. Though public sector information (PSI) has long been available, the marginal price included in its distribution is being eliminated through OGD initiatives. However, these initiatives can have a deregulating effect on data; when public information is freely released, the government is no longer able to control the reuse of its data.

Countries worldwide, from Norway to Uruguay to Australia, have launched open data initiatives, and following the recent smart city trend, there has been a surge of individual municipalities implementing these policies. Along with San Francisco, Vienna, London, and countless other cities, Amsterdam, Barcelona, and New York City have initiated aggressive open data policies that promise to engage and empower citizens. Taking stock of the winners and losers of these policies, as the rest of this section does, reveals the neoliberal impact that open data policies can have.

It should be noted that open government and open data, while often linked in smart city rhetoric, are not mutually exclusive. In fact, “a government can provide open data on politically neutral topics even as it re-

mains deeply opaque and unaccountable” (Yu and Robinson 2012). This disconnect between the apparent motivation behind the deregulation of data and the consequences has also been noted by Bates (2012), who argues that “powerful groups within the state are attempting to shape OGD and use it to force broader agendas wrought by an ideological faith in the primacy of the markets over social provision.” Though this view is somewhat alarmist, Bates (2012) identifies the group that may benefit the most from open data. She acknowledges that while independent, civic-minded programmers have taken advantage of new data, particularly in relation to transport, there is still potential for further corporate control over the infrastructural systems that urban services and utilities rely on (Bates, 2012). Thus, the great, unintended consequence of the open data initiatives may be “empowering the empowered” (Gurstein 2011).

One way to evaluate the validity of these criticisms is to determine who uses open data. Slee (2012) divides the user base into four categories that are notable for the absence of the average citizen, and still less the information-poor. First are citizen hackers, who seek pragmatic and useful data, like transit timetables, and are driven both by a desire to do good and an interest in programming (e.g., Code for America); second are civil liberties activists, who promote government transparency by releasing lobbying records, campaign funding,

government operations, and legal acts (e.g., Sunlight Foundation); third are data journalists, a group made up of organizations or individuals who use data as part of their job to hold government accountable (e.g., *The Guardian* when covering WikiLeaks); finally, there is the public sector information (PSI) reuse industry, which produces commercial products or platforms using government data (e.g., Google, ESRI; Slee 2012). All four play a role, but Slee (2012) argues that the fourth group has used claims of transparency and activism to disguise their profit-oriented, neoliberal tendencies.

A review of recent PSI reuse in Europe reveals the potential for the fourth group, the PSI reuse industry, to exploit the value of government data (Vickery 2011). By using PSI as “raw material,” the private sector acts as an intermediary between the public sector and the user by developing new products and services that add value to the data (Vickery 2011). Vickery gives the huge resulting profits in Europe: direct and indirect economic impacts from the PSI reuse market are estimated to be €140 billion per year. This number is likely low, given that it does not take into account more recent PSI initiatives or data distributed at no charge. It is important to note that PSI is not necessarily free data, but instead may be provided at a marginal cost by the government agency that produced it. FOIA policies and the open data movement are increasingly making this data OGD. This shift towards completely open data with no charge or

licensing restrictions, while being more democratic in nature, could be limiting the funds that governments collected from PSI reuse in the past. The Netherlands has had a particularly successful PSI reuse market, with government revenues from sales of PSI around €68 million in 2009-2010 (Vickery 2011), but open data policies may empower the private sector to capture the profits instead, through value-added products and services, especially in the areas of meteorological and geospatial data.

Undoubtedly, nonprofits make extensive use of open data, and government data portals undermine a profit-motivated structure that could be used to distribute data. However, it is crucial to recognize that the implications of open data are not inherently democratic or transparent. In theory, the transition from PSI to open data makes government data nonexcludable and nonrivalrous, but this discussion calls the nonexcludability into question; though anyone can access the information, only a select few benefiting from advanced knowledge and economies of scale can truly use it to generate profits.

Profit Accumulation

The smart city, like all economic development frameworks, supports the maximization of profits. However, given its supposed social and environmental underpinnings, the model particularly benefits multinational technology corporations, which have

profited hugely from the opening up of international markets. As an economic development platform, the smart city facilitates the flow of capital, and much of the smart city's added value comes from the production of data that can be exploited for further profits. This capital accumulation, where the capitalist appropriates surplus value, mirrors David Harvey's (2003) notion of accumulation by dispossession. Harvey (2003) argues that power and wealth are centralized by dispossessing the public of their land or wealth, often through privatization; analogously, but not to Harvey's extreme, in the smart city, the private sector captures the profits in ICT infrastructure built for the public. Data is gathered through crowdsourcing or sensors, and then used to create added value for the aggregator of the data—the company that collected it and has a contract to analyze it—not the producers—the public.

A report by Accenture, Cisco, and GSMA (2011) predicts that “the managed service provider of the Urban OS is likely to extract significant value from the urban services value chain, and so we expect this to be a highly-contested market” (12), with aggressive competition expected from software vendors, like IBM and Microsoft; system integrators, like Accenture; and infrastructure providers, like Cisco. In this way, not only is it possible for multinational corporations to become part of the smart city development process, but it is very likely to happen because of the

apprehension city leaders feel when trying something new, and often a lack of internal expertise needed to successfully implement ICT initiatives. According to executive director of the smart city technology company Urbiotica, Irene Compte, “cities don’t like to be the first to deploy a technology” and instead prefer that other cities be used as a testing bed (personal interview, June 18, 2012). Consequently, it is logical that they are attracted to the models of ICT giants who have had significant international experience.

Journalist Greg Lindsay explains the risk of corporate dominance even with a presence of grassroots participation in ICT development, acknowledging that though it is great for companies like Cisco to be building networks and broadband as the city’s ICT backbone, the trouble comes when this shifts to the so-called “app store model” (personal communication, July 6, 2012). The “app store,” pioneered by Apple as a business model, creates a revenue stream from the initial developer kit and continuous percentage of sales that Apple collects in exchange for the easy distribution and large audience provided by a centralized “store.” In this scenario, the network company takes a cut of all profits and added value produced from the bottom, accumulating capital for large technology companies.

THREE CASE STUDIES

Amsterdam, Barcelona, and New York are all recognized as world smart city leaders and are held up as models for other cities to emulate. All three are members of the City Protocol, a group of cities, partner companies, smart city organizations, and universities working to create “sustainable, efficient, cohesive, innovative and smart cities” through new leadership models and leveraging ICT (City Protocol 2012). Furthermore, the cities appear consistently in rankings of the world’s smartest cities (Cohen 2011; Cushman and Wakefield 2011; Kotkin 2009). Amsterdam and Barcelona openly identify themselves as smart cities, while New York, interestingly, is branded as a smart city externally by the media more than by local government officials.

Amsterdam

A forerunner in the environmental movement and innovation economy, Amsterdam is a logical location for the development of a smart city. Significantly, its development gives a label to the city’s current means of achieving regional economic dominance, which combines innovation, business-friendly policies, and a metrics-oriented sustainability plan. The Netherlands’ small population and concentrated geography has made its adoption of ICT comparatively quick, and nowhere is this attainment more visible than in Amsterdam. The city’s demographic characteristics are marked by

a highly mobile and educated population, making it an ideal starting point for a technologically motivated development plan. Amsterdam's smart city project is exemplary of the economic motivations underlying the implementation of a project marketed primarily as an environmental program.

Amsterdam's smart city motivations, from the point of view of municipal government, emerged from the potential of technology-related economic growth. Katalin Gallyas, Policy Advisor on Open Innovation for the Economic Affairs Department of Amsterdam, acknowledges that ICT has primarily been marketed as a way to attract investors (personal communication, March 23, 2012). Established in 2008, the city's ICT cluster was a way for the city to position itself as the regional international hub of innovation and growth (Amsterdam Innovation Motor 2012). While Amsterdam's motivations have since diversified, its foundation in attracting investment underscores the smart city's promise of growth. The current Dutch corporate tax rate is below the European Union, average and expatriate workers can receive a tax-free reimbursement of 30 percent of their salary, making it a favorable destination for international companies (Iamsterdam 2012). Perhaps this explains why the Netherlands was the top destination for United States foreign direct investment (FDI) from 2009 to 2011, with 14.3 percent of its outbound investment directed there; within the Amsterdam Metropolitan Area, more than 750

of the 2,300 international companies are American firms (I Amsterdam 2012).

This is not to say that city leaders necessarily have a preference for international parties when developing the smart city. Amsterdam Smart City, the partnership dedicated to transforming the municipality into a smart city, has established partnerships not only with Cisco and Vodafone, but also with Philips, Liander, and dozens of other Dutch companies (Amsterdam Smart City 2011). But smart city service provision is largely a global market open to any international competitor, as encouraged by neoliberal ideology. The 2011 report *Information Marketplaces: The New Economics of Cities*, prepared by the Climate Group et al., compares the role of government in regards to smart city services to its role in the development of a shopping center: after providing the basic physical infrastructure, the city cedes operational decision-making to the private sector. The report goes on to state that the municipality must "develop the market for digital assets to be reused and recombined in the most efficient manner possible and ensure the broadest possible participation from the private sector in as open a marketplace as possible" (Climate Group et al. 2011).

Large corporations play a significant role in Amsterdam Smart City (ASC). Within the private sector, ASC has close ties with Cisco Systems, which supports the city's Smart Work Centers by providing its Tele-

Presence videoconferencing service. IBM, too, has partnered with ASC to provide the data management system for Schiphol Airport. Both corporations have been technology partners in specific ASC projects, particularly those related to residential energy management systems and ICT workplace facilities like the Smart Work Centers. The two founding members of ASC that are private companies are KPN, the leading telecommunications and ICT service provider in the Netherlands, and Liander, the largest utility company in the country.

While ASC has formed partnerships with more moderately sized companies on individual projects, it is clear that established companies, not start-ups, are the beneficiaries of local government procurement contracts. Intentionally or not, this practice concentrates the generation of profit and privileges the corporate elite. For instance, Double U SmartWork Foundation, an organization managing Smart Work Centers in Amsterdam, was founded by Cisco, the Dutch banks ABN/AMRO and RABO Bank, and the firm Touchdown Center. The

¹ Touchdown Center is directed by Peter Kapteijn, one of my interview respondents (personal communication, March 21, 2012). Smart Work Centers lease work space to individuals or groups and are located near a residential center with the aim of reducing transportation demands and congestion. They provide flexibility to employees, who are able to use ICTs to enhance their work experience. In 2008, a network of Smart Work Centers was launched in Amsterdam in mainly as private enterprises in partnership with Cisco's Internet Business Solutions Group.

partnership also included the City of Amsterdam, whose employees were intended to be some of the principal users of the system. Nevertheless, that one of the highlights of the Smart Work Center is the deployment of Cisco's TelePresence virtual conferencing technology is suggestive of Ed Steinmueller's worry that "the dominant discourse on the smart city has to do with making cities safe for infrastructure to be built that corporations know how to build" (personal communication, June 29, 2012).

The bifurcated labor market resulting from economies like Amsterdam's, which is dominated by advanced service provision and the ICT industry, seems to be magnified by the smart city model. The sharp divide between high- and low-skilled workers has led to the diminishing importance of organized labor. While labor unions have traditionally been a strong force in Dutch politics, their influence is decreasing; high-skilled workers tend to negotiate individual contracts rather than rely on collective bargaining, and their absence within existing unions has further decreased the authority of organized labor. However, the decline of unionization has still damaged the manufacturing sector disproportionately. The Netherlands' largest union, the Dutch Labor Federation (FNV), shows that among its members, who represent a cross-section of the workforce, the service sector is growing, while the blue-collar manufacturing sector is declining (Woldendorp, 2005). While unionization is particularly low in

the ICT sector, in 2001, 23 percent of the Dutch ICT workforce was covered by collective agreements despite the fact that only 11 percent belonged to a union (Van Hoek, n.d.). The rule of the market is becoming paramount in setting the labor conditions of smart city workers; as laborers lose wage protections and worker's rights, there is increased flow of capital, goods, and services. While this trend does not only occur in smart cities, its effect is amplified because of Amsterdam's large high-skilled sector, which appears to have developed without a structure for unionization.

Barcelona

Barcelona seems, in a sense, the least likely of the three to become a smart city. While it is rapidly emerging as a site of international economic activity and is rising as the business capital of Southern Europe, it is only in the past two decades that it has reoriented its economy towards innovation and technology. This rapid growth has led to Barcelona's key position in the "sun-belt"—the increasingly high-tech region along the Mediterranean from Milan to Valencia—that is emerging alongside Europe's "blue banana," the banana-shaped metropolitan axis running from London to Milan that has traditionally been Europe's hotbed of growth and innovation (Hospers, 2003). Unlike Amsterdam, Barcelona is not characteristic of its nation as a whole. The city has historically had a tense relationship with the Spanish government, and sees its

project as separate from other efforts occurring in Spain. Consequently, Barcelona is significantly ahead of other Spanish autonomous communities and cities in terms of broadband penetration and ICT investment rates.

In regards to public- versus private-sector smart city planning, Barcelona represents a middle ground. In 2011, the Mayor's Office was internally restructured to dedicate one of its five deputy mayors to ICT and sustainability-related urban planning policy. Antoni Vives, the Deputy Mayor for the Urban Habitat, is responsible for fostering holistic and cross-sector city planning and managing Barcelona's smart city project; he was also co-president of the Smart City World Congress, an international summit of smart city leaders. The City participates extensively in initiatives to spur involvement from small and medium enterprises [SMEs], but also requires corporate sponsorship to raise its international status and legitimize its smart city claims. The Smart City Expo and World Congress, held in Barcelona in November 2011 and 2012, has become a global conference showcasing the transition to sustainable and innovative cities. As a result, Barcelona's smart city project is driven jointly by the municipality and the private sector, which have partnered as a way to garner international attention and further foreign investment.

Barcelona represents the most salient example of the smart city's alignment with

economic growth, and has, like Amsterdam, shifted its approach since the smart city project’s inception. Joan Batlle, Head of the International Cooperation Department for the City Council of Barcelona, explains that “instead of being focused solely on economic goals, sustainability and quality of life are [now] primary concerns as well” (personal communication, June 15, 2012). The city’s initial incentives, however, were grounded in the potential to transform the city and its economy. Central to Barcelona’s goals was changing the city’s economic identity from one of industry to one of technology “and to associate the city with high value and knowledge-led businesses” (Iberian Lawyer 2011). This rebranding process—changing Barcelona from an industrial manufacturing center to a new technology hub—has resulted in the city’s distinctive technology park and innovation district, 22@Barcelona, often referred to as a “smart city campus” or simply as 22@. This urban redevelopment project is managed by the 22@Barcelona municipal society, created by the Barcelona City Council in 2000, and has converted two hundred hectares of the historically industrial neighborhood Poble Nou into usable space for knowledge-intensive activities and business incubation (22 ARROBA S.A.U. 2006).

Likewise, the Barcelona City Council is a strategic partner with Barcelona Business Landing, an international consulting network that has the specific goal of inte-

grating international companies and institutions in the city (J. Batlle, personal communication, June 15, 2012); its motto, aptly, is “Barcelona is growth” (Barcelona Business Landing 2010). To facilitate foreign direct investment, Barcelona also offers tax deductions for research and development and technological innovation, as well as loans at low interest rates, microcredits, and support services for start-ups (Barcelona Activa 2010). In recent years, projects connected to ICT have represented more than 20 percent of FDI in Catalonia, which has over 3,100 foreign companies, mostly from the European Union, over 75 percent of them in the Barcelona metropolitan area (Adjuntament de Barcelona, 2009). Barcelona, like Amsterdam and New York, attributes its economic success and continued growth to its streamlined eGovernment services, widespread ICT infrastructure, and favorable regulatory and tax framework.

These economic developments demonstrate the potential for smart cities to concentrate profit accumulation by unintentionally favoring large companies over small ones. Regarding barriers to testing in Barcelona’s Urban Lab—an inclusive program that accepts applications without limitations on company size, especially encouraging start-ups—Urbiotica director Irene Compte notes that companies must have an established economic base because the Urban Lab does not provide funding for project implementation (personal communication, June 18, 2012). In short, companies must

be able to pay upfront for the costs of installation and must keep themselves running with the hope that the city will contract them for their services. Though larger companies tend to be less innovative than smaller ones, the latter types of companies are shut out of ventures like the Urban Lab for financial reasons. Without financial backing from the City, the practical effect of this initiative is that the Urban Labs model benefits established companies, which undermines the very bottom-up model that it aims to promote.

Furthermore, even more so than in Amsterdam, the role of the small and medium-sized company in the smart city is ambiguous, especially in Barcelona. Start-ups and entrepreneurship are encouraged as a part of the smart economy, but not particularly in terms of smart city service provision. For instance, while Irene Compte's company Urbiotica produces sensor technology that complements Cisco and IBM's products, there is no clear role or established role for newcomers in the market, which means players with less power are still finding their place (personal communication, June 28, 2012).

New York City

New York City's ICT projects are the result of Mayor Bloomberg's aggressive pursuit of growth in the technology industry to keep the city relevant and, more importantly, dominant in the world economy. He has

committed the city to bold investments such as Cornell NYC Tech, which, in addition to creating tangible facilities and bringing technology students to the city, is symbolic of New York City's commitment to fostering the tech industry. Like Amsterdam, New York City emerged from the manufacturing era decades before Barcelona, and thus has long had well-established services and financial sectors. Its growth towards ICT in the current age of telecommunications and information technology, consequently, is one of its many adaptations to the realities of the current postindustrial economy.

New York City in particular exhibits the application of the concept that open data represents the profit-oriented deregulation of information. Government-sponsored apps challenges, or competitions to develop applications for mobile devices by using open data to solve citizen problems, have been highly publicized and successful. The main participants in these types of competitions fall into the first camp of Slee's (2012) open data users: citizen "hacktivists" who are well-educated—and well-paid—professionals with a desire to give back. Despite genuine intentions for open data policies to increase civic participation, only those with the knowledge of how to interpret and build on digital data have truly been empowered by it, putting the city at risk of "empowering the empowered," as mentioned above. Correspondingly, this puts technology companies with a marketing capacity at an even greater advantage than individual pro-

grammers.

New York City has also made significant strides towards expanding ICT use among residents and especially businesses. The New York City Economic Development Corporation (NYCEDC) and Department of Information Technology and Telecommunications (DoITT) have partnered with the City to lead five main initiatives to expose and address gaps in broadband availability (City of New York, 2012). The first, ConnectNYC, is a competition among businesses to apply for free build-out of fiber connectivity, and targets industrial business zones across the five boroughs. The second is WiredNYC, a building certification program that evaluates broadband infrastructure in buildings, and the third, NYC Broadband Connect Map, is a crowdsourced, dynamic website that businesses can use to learn about connectivity availability in a specific building or neighborhood. The fourth, called Broadband Express, is an initiative to simplify operational issues and regulatory hurdles for Internet Service Providers to expedite broadband build-out. Finally, Citizen Connect is a competition to develop mobile applications that will help residents access workforce development opportunities, job listings, and worker support programs such as childcare, healthcare, and transportation. This last initiative is meant to provide access to job-related resources for low-income residents who, given the widespread use of smartphones, may have mobile Internet ac-

cess but no home broadband connection.

With the exception of Citizen Connect—which operates on the questionable assumption that a mobile phone app would be a particularly useful tool in the job search—these initiatives are clearly directed at businesses and blatant in their encouragement of commercial activity. However, they have the overall effect of geographically spreading broadband connectivity and specifically targeting users that are at a disadvantage as information technology continues to proliferate. New York City, regardless of its motivations, is making a substantial financial commitment to close the gap between access and adoption, and ConnectNYC may boost the city’s 97 percent access rate even higher by building out fiber connectivity to industrial zones that have been historically underserved by resident-focused services.

However, beneath the veneer of social equity, these initiatives targeting the digital divide are justified by their potential to drive economic growth. This is not to say that the social equity benefits of expanding access to underserved populations and geographic areas are negated, but that the dominant interests advocating for digital divide policies may not be primarily targeting the digitally underserved. New York City’s digital divide programs, for instance, appear to have been marketed to the private sector under a context of economic growth, not egalitarian ideals. Bill Ruden, Chairman of the Association for a Better

New York applauded the City's efforts to increase broadband connectivity, explaining that "the new WiredNYC program will enhance and market New York's tech accessibility, creating jobs, spurring capital investment, and making our city even more competitive in the global marketplace" (as cited in City of New York, 2012). Ruden's notion of competitiveness does not refer to the viability of bridging the digital divide, but explicitly to boosting the city's tech industry. This perspective falls in line with how Jean-Marie Bemtgen, Project Officer of the European Commission Directorate-General for Energy, identifies the United States: "The U.S. is business-driven, so solutions are seen as things that make money" (personal communication, March 26, 2012).

CONCLUSION

The smart city embodies the high degree of faith that many place in technology's ability to address social challenges. Appropriately, Morozov (2013) calls this "technological solutionism." There are two components to this phenomenon: cyber-utopianism, or the belief that online communication is in itself emancipatory and that the Internet favors the oppressed rather than the oppressor, and Internet-centrism, the belief that every important question about society can be framed in terms of the Internet (Morozov, 2011). The principles defining the smart city are heavily influenced by this per-

spective, and by seeking to attach sensors, screens, and Wi-Fi to all aspects of urban life, policymakers declare their adherence to the notion that technology is intrinsically a positive, solution-bearing tool.

While ICTs certainly are capable of these benefits, this paper seeks to convey that this reliance on a technological fix is problematic because of its tendency to favor the powerful over the powerless unless explicitly checked. In light of the rapid adoption of the smart city model by municipalities worldwide, it is crucial to understand the consequences, intended and not, of such dependence on technology. As the frenzy to seize opportunities to spur urban economic growth through technology projects increases, more power is given to nontransparent corporations through tax incentives, deregulation, and the offloading of risk onto cities and their citizens. Amsterdam, Barcelona, and New York's smart city projects reveal an element of corporate dependence and business-centrism that is not surprising given the smart city's foundation in a globalized, neoliberal model. However, while the propensity of smart city initiatives to reinforce the neoliberal agenda is troubling, rejecting the model altogether is unproductive.

In fact, the very networks and devices built by technology corporations have enabled a dispersed, yet potent bottom-up movement to emerge, bringing the interests of citizens to the forefront of the smart city discussion.

The empowerment and legitimation of non-traditional stakeholders like citizen activists who use data and technology to make an impact continues this governance trend at the individual and community levels. On the other hand, the economic liberalization underpinning most smart city initiatives goes unnoticed in publicity campaigns launched by technology corporations and city governments implementing the model. A cursory look at smart city projects shows their most vocal proponents not to be ordinary citizens, but stakeholders that have much to gain from the transition to a technology-driven economy. This identifies a crucial distinction between a smart city and a smart citizenry; the smart city should be designed in deference to the citizenry, not the other way around.

Both the benefits and risks of the smart city must be explored in order to identify the winners and losers of ICT-based policy and decision-making. While this paper aims to shed light on these issues by examining Amsterdam, Barcelona, and New York, further studies remain to be done on other cities. Research done in smart cities, both on greenfield and brownfield sites, and especially in the developing world, will contribute greatly to the identification of successful policies and unanticipated results. When well implemented and mindful of citizen needs and local context, smart city policies enable positive change, but the converse is also true: when policies are dominated by private interests or insensi-

tive to the city's particular circumstances, they run the risk of prioritizing business amenities at the expense of citizen needs. The smart city is proving to be anything but trivial, and if properly implemented, its dynamic nature and emphasis on results will allow the best elements of this urban intelligence to proliferate.

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THE PAPER PROMISES *of* DIGITIZATION:

Digitizing Spatial Information for Planning in the Chennai Metropolis

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Initiatives for implementing geospatial information databases are being implemented across Indian cities. This essay explores one such initiative implemented by a metropolitan planning agency, the Chennai Metropolitan Development Authority (CMDA) in a South Indian metropolis. It shows that, contrary to the promises of digital databases as a tool for improving information sharing to aid in decision-making and further citizen participation, the state agencies tend to use them primarily for surveillance and storage. Such initiatives have led to a spiraling web of information production by

different agencies and have reinforced the culture of secrecy rather than opening up information.

BACKGROUND: DIGITAL MASTER PLAN *for the* CHENNAI METROPOLIS

The Chennai metropolis is home to a population of 8.69 million (Census of India 2011) and is the capital of the South Indian state of Tamilnadu. It is the fourth largest metropolis in the country and is expected to have a population of 12 million by 2026. The economic base of the

city comprises diverse activities including trade, manufacturing, information technology (IT), and IT-enabled services. The city's peripheries and surrounding villages have grown rapidly over the last two decades (CMDA 2008).

The CMDA is the nodal planning agency that regulates the physical growth of the city. Previously known as the Madras Metropolitan Authority (MMA) and the Madras Metropolitan Development Authority, the CMDA was established in 1975 as a statutory institution, under the provisions of the Town and Country Planning Act of 1973 (CMDA 2008). It is headed by a civil servant of the Indian Administrative Services who reports to the Regional State Department of Housing and Urban Development. The functions of the CMDA include master plan preparation, site allocation, plan permit approval, and megaproject implementation. These are carried out by six departments.

The CMDA uses a geospatial database for two functions: (1) to prepare master plans and detailed development plans, and (2) to review applications for plan permits and land use changes. The CMDA is one of the first agencies in the city to develop a geospatial database. The agency's planners have incrementally introduced the development and use of this database through several small projects since the mid-eighties, drawing on funding assistance from several sources including the World Bank, Govern-

ment of India (GOI) grants, and private IT companies.

Unlike other state agencies in the city, the CMDA has in-house skills for creating its geospatial database, and many members of its staff were trained on the job. The introduction of the technology was largely due to initiatives of a few individual planners, who were able to enlist the support of civil servants heading the organization. Despite support from the top, the CMDA feared resistance from the lower- and mid-level bureaucracy,¹ and thus introduced digitization projects slowly and incrementally without attracting much attention.

PROMISE and REALITY of DIGITAL TOOLS

Our preliminary findings suggest that CMDA's chief planners perceive the geospatial database as a useful tool for surveillance of activities both within and outside the organization, for easy reproduction of maps, and for safe archiving. However, the influence of this tool in altering the organizational practices appears to have been limited.

A case in point is the circumstance under which CMDA introduced the geospatial database in its decision-making process. The agency first used satellite images in

¹ Interview with retired chief planner and ex-head of Plan Permit Division, CMDA

the mid-eighties during the Madras Urban Development Project (MUDP)² to develop a strategy for squatter upgradation in the city, for which the CMDA undertook a city-wide survey. The resistance faced by city planners to surveying specific territories, particularly squatter settlements, was a key reason that the agency opted for satellite images to locate squatter settlements in different parts of the city. The images were used to develop a base map, which was subsequently deployed during the preparation of the GIS-enabled second Master plan for the city in 1995.³

During our field research we observed that the CMDA's GIS department, which is in charge of developing the geospatial database, does not have a high status within the organization, and the positions within it are not sought after by senior planners. The architect of the GIS department, a chief planner who had a keen interest in technology, set up the department in the mid-nineties. He explained that officials like him often opted for a position involving technical work to circumvent political pressures.⁴ The unit remains isolated and guards its information fiercely. Planners at different positions in the official hierarchy repeatedly cited the ease of reproducing master plans from the geospatial database and the

difficulty of maintaining paper records as reasons for the adoption of AutoCAD technology between 1979 and 1980, and the Geographical Information System (GIS) in 2000. Despite automation, the CMDA maintains paper records for a stipulated period.

Another example of the use of digital tools for surveillance is the reason cited by an ex-chief planner⁵ for automating service provision. Automation was introduced for monitoring the progress of mid-level bureaucrats' work reviewing applications for plan permits. An application for a plan permit or land use change is reviewed within CMDA. There was a very limited flow of information between departments and sometimes within a department. The process created ample opportunities for rent-seeking. Moreover, citizens with connections to the agency often benefitted from multiple allocations of subsidized plots. Automation was viewed as a way to monitor the work of lower- and mid-level bureaucrats in the organization and to avoid multiple allocations to an applicant. Although these intentions promised to render CMDA's workings transparent both internally and for citizens, the reality is different. Interviews with officials from different departments of the agency show that the flow of information is still highly restricted. Further, according to a few of the developers interviewed,

² It was implemented between 1986 and 1995.

³ Interview with ex-chief planner and head of GIS Department, CMDA.

⁴ Interview with retired chief planner and ex-head of GIS Cell, CMDA.

⁵ Interview with ex-chief planner and head of plan permit and chief planner, Mahabalipuram Planning Authority.

although the plan permit process has been streamlined, personal connections matter to move the files quickly. The extent to which citizens' interaction and relationship with the CMDA has changed needs to be researched further.⁶

USE/NON-USE: INFORMATION SHARING *for* CITIZEN PARTICIPATION *and* INTERAGENCY COORDINATION

The CMDA is mandated to put into place mechanisms for citizens' participation in shaping master plan decisions, according to the provisions of the Town and Country Planning Act of 1976. Over the years, the act's provision has been reduced to inconspicuous advertisement in leading newspapers and at the CMDA's premises. To what extent has the spatial database maintained by the agency altered the spaces for citizen participation? To date, our findings suggest that the potential of digital tools remains unexploited, primarily due to the attitude of CMDA planners towards the idea of citizen participation.

The CMDA planners considered their approach to citizen participation in the second master plan a progressive step as compared to the earlier plan. They organized twenty

public consultations in the city, which predominantly served as information dissemination sessions rather than giving citizens any say in planning decisions. The planners' view was that digital plans were useful to educate the public and that citizens had little expertise in or concern about collective issues. The officials involved in this exercise felt the consultative process was time consuming without having any significant input to improve planning decisions or relevance to their everyday work in the office. Further, though plans are published on the web, the planners observed that they have not altered the way citizens engage with the CMDA or the manner in which CMDA considers public demands.

The introduction of the GIS tool has also not had much influence over intra-agency or interagency sharing of information. The GIS department within the CMDA functions as an isolated unit, and access to its information archive is guarded. Constrained resources limit the ability of different institutions to keep the information up to date. Moreover, even though CMDA is willing to share its geospatial database, other agencies are often not willing to build on existing sources. Two factors have contributed to this trend: (1) legal policies on map-sharing, and (2) easy availability of Central Government funding for geospatial database development. According to the CMDA planners and researchers interviewed, the latter has reinforced the culture of secrecy between state agencies. Further,

⁶ Interviews with a developer and architects in Chennai city suggests that securing plan permits take a long time and information about the progress of the file is secured through their contacts.

these agencies predominantly contract out the development of spatial databases to private consultancy agencies, which are equally unwilling to share databases, in the hope of securing further contracts. This is not a phenomenon specific to the CMDA, but was observed in other agencies covered for our research. Our preliminary findings suggest that the various interventions for information digitization have generated an ever-spiraling production of maps and databases, often supported by independent funding streams, while the use to which these maps and databases are put remains unclear.

CONCLUSION

This essay explored the experience of a metropolitan development agency in creating a geospatial database, with a specific focus on its motivation and the use/non-use of the digital database in decision-making and furthering citizen participation. Our preliminary findings show that the development of digital tools is often motivated by funding availability, surveillance, and ease of storing records. The case discussed in this paper is not an isolated one, but is a common scenario across different agencies in the city. It raises concern about the ways such projects can contribute to a political economy of incessant information production that is often not put to use. Further research is needed on the specific legal and institutional aspects of this issue to un-

derstand ways of streamlining information flow within the state and between the state and citizens.

This paper draws on ethnographic research that was funded by the Chance2Sustain Project funded by the EU.

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CONTESTED TERRITORY:

The Evolving Spatial Geographies of Jian Sha Zhou Village

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ABSTRACT: *China's urbanization of rural areas has allowed many people to be elevated out of rural poverty and to have alternatives to farming for their livelihood, yet political corruption, economic polarization, land fragmentation, and disputes over land rights are escalating. These themes are evident in Jian Sha Zhou, a village on the periphery of Dongguan in southern China. Jian Sha Zhou exemplifies both the robust adaptability of villages that have transformed from simple agricultural units into a variety of settlements, as well as the intrinsic problems that result from urbanization. This article explores the evolving spatial geographies of the village and the competing and contradictory forces acting upon it. It specifically addresses the way in which contestation of land rights has resulted in development stasis. Unlike the village uprising—and the government's reaction to it—in Wukan, in Guangdong Province, which became the focus of national and international media, most contested issues remain at a local level and go unreported. The land dispute in Jian Sha Zhou is archetypal of the increasing problems associated with the urbanization of rural land. As such, it provides insights about the future development of the sites that exist across China's rural–urban fringe.*

KEYWORDS: *Rural urbanization, spatial geographies, contested land, periphery, Dongguan, southern China*

In 2008, on an excursion from Shenzhen to Guangzhou to explore the effects of the economic global downturn in urban areas in the Pearl River Delta, we visited Jian Sha Zhou, a village of 1,800 people on the outskirts of Dongguan (Bolchover and Lin 2011). In a 2009 article in *South China Morning Post*, Fiona Tam reported that up to 20 million migrant workers across the Pearl River Delta had vacated their factory dormitories and returned to their village homes. We expected to find peripheral urban areas dormant and development ceased. A plot of land in Jian Sha Zhou seemed to reflect our expectations: a scattering of three- to four-story unfinished brick houses with no windows or any of the

external cladding (tiles, render) common to the area. In addition, the buildings had no clothing drying outside windows, suggesting that the houses were unoccupied. The buildings appeared as isolated blocks situated in an agricultural landscape of vegetable patches and banana trees (Figure 1).

This built fabric was different from the village typology found in southern China, comprised of dense clusters of village houses surrounded by fields and planting areas. The visual evidence seemed to support that construction had been curtailed by the financial crisis and that migrant workers had returned home.



FIGURE 1: *Jian Sha Zhou in 2008, half-completed buildings on the Danwei site. Image credit: Joshua Bolchover*

Three years later, in 2011, we revisited the site. Given the resumed vigor of the Chinese economy, we expected to find the land fully developed, without any traces of its rural origins. Remarkably, the plot remained unchanged, yet at its edge two new residential towers of over thirty stories had been constructed (Figure 2), and the village hummed with industrial activity.

How could such rapid development coexist with such vacancy? Why did one plot of land remain undeveloped, while the village itself was rampant with new construction and economic fervor? This article investigates the evolving spatial geographies of Jian Sha Zhou as a microcosm of the im-

pact of rural urbanization and its associated political context. Rather than analyze land market policy (Ho and Lin 2003), property rights, or the precise legal frameworks of Chinese land development (Ho 2001), we focus on the spatial implications of the urban transformation. As a mini-scenario (Bunschoten, Binet, and Hoshino 2001), this case study highlights the forces (and their possible effects) that may have an impact on future urban development. Because of changes in land policy over the last thirty years, China is witnessing increased contestation over land ownership, compensation, and use. In the majority of cases, the contestation is a result of the difference in status between rural and urban land. This



FIGURE 2: *Jian Sha Zhou in 2008 (left) and in 2011 (right). Image credit: Joshua Bolchover*

case study of Jian Sha Zhou illustrates reasons behind such disputes and explains why they will shape the future of urban development, particularly in peripheral urban sites in China.

PART I: **THE CONTEXT of INDUSTRIAL** **TRANSFORMATION in the** **PEARL RIVER DELTA**

Patchwork Urbanization in China

The volatile conditions of land transformation from rural to urban has created territories of sprawling urban substance reminiscent of Cedric Price's description of the modern city as a "scrambled egg," whereby the center and periphery have become interlaced and indistinguishable from each other (Shane 2006). Closer inspection of this scrambled substance reveals a patchwork of distinct territories in different stages of transformation: golf courses, suburban housing, villages, agricultural land, factories, construction sites, and abandoned projects all coexist within this urban carpet. Figure 3 maps out these distinct types within the urban agglomeration of the Pearl River Delta.

Uneven development occurs on a regional scale (Fan 1995), on a provincial scale (Ho and Lin 2004), and on the scale of land plots, depending on the power, financial status, and political clout of individuals and agencies acting on this terrain. In some

instances, the complex issues surrounding land ownership rights and those staking a claim to these rights result in conflict (Guo 2001). The resulting impasse leaves land fallow—buildings half completed or in ruinous condition. The stalemate is the outcome of conflicts played out among the different agents in the urbanization process. The land becomes an island of uncertain status—neither fully rural nor urbanized—that is surrounded by pervasive territorial transformation.

Policy Change and Industrialization

Territorial transformation is reflected in Guangdong Province in the Pearl River Delta. In 1978, Deng Xiao Ping selected Guangdong to be a pioneer province of China's opening up, instigating a series of policy reforms that commenced with the formation of the Shenzhen Special Economic Zone (Spence 1999). In effect, the zone operated as an economic enclave, encouraging foreign direct investment through tax incentives and the provision of cheap and available land. Because of its strategic location adjacent to the financial powerhouse of Hong Kong, with close family networks that extended across the border, economic development in Guangdong occurred rapidly and smoothly. This was also true for companies and individuals investing from Taiwan, and for other overseas Chinese who utilized Hong Kong as a mediator and conduit to the mainland. To facilitate development, stimulate market

forces, and allow land to be urbanized, new laws were introduced regarding land ownership and use, triggering development in rural areas. In 1981, villagers became able to lease their land for industrial or commercial activities as long as the original ownership remained the same (Central Committee of Communist Party of China 1981). The reforms allowed development to take place via bottom-up processes at the scale

of individual actors in rural villages and via large-scale projects organized by bureaus within the state apparatus. This dual strategy promoted the urbanization process from what was essentially a rural condition: in 1978 the Shenzhen Special Economic Zone was a part of Bao'An County, which was renowned for lychees, fishing, and oyster farms. These development policies were reflected in the constitution, which desig-

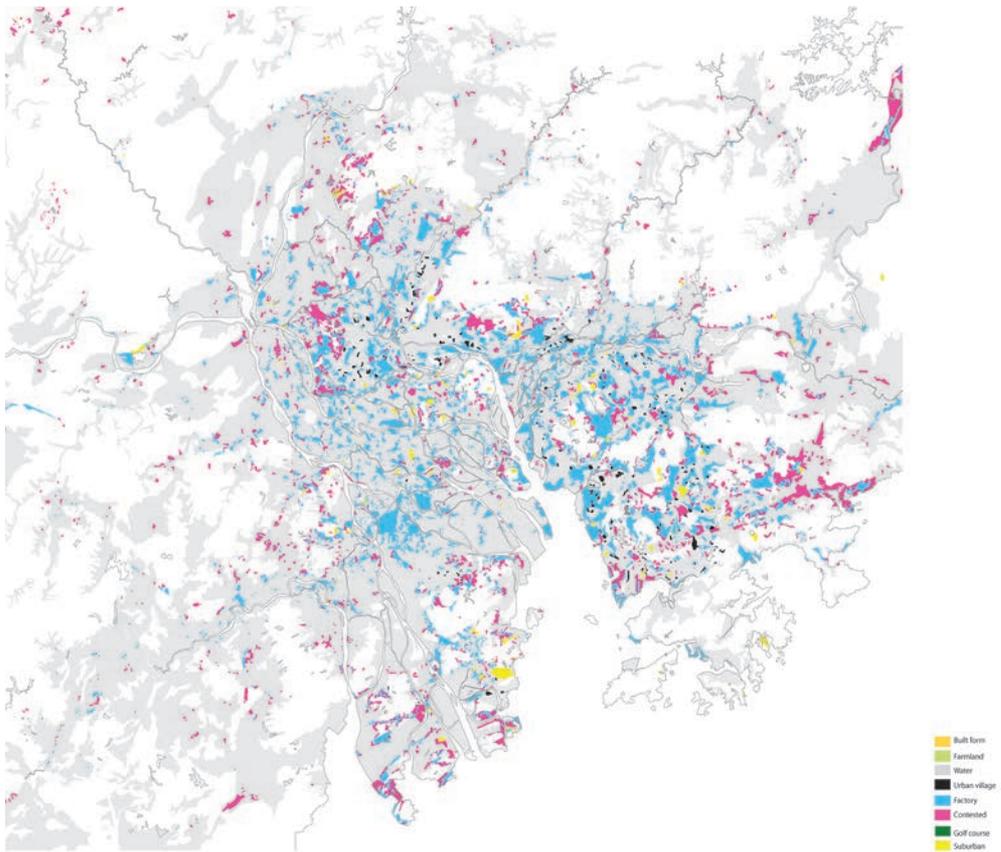


FIGURE 3: The “scrambled egg” of urban substance in the Pearl River Delta. Image credit: Joshua Bolchover

nated urban land as state owned and rural land as owned by village collectives.

In 1982, to expedite government-led development, a legal structure was instituted that allowed rural land to be changed to state land via expropriation (National People's Congress of People's Republic of China 1982). Expropriation changed the status of land from rural to urban if the change was deemed to be in the "greater public interest" (for example, if a highway or industrial park were to be developed), and villagers were compensated both for their land and their loss of income (Friedmann 2005).

In 1988, the law changed further to allow land use rights to be sold or leased at market value (National People's Congress of People's Republic of China 1988). The shift toward land as an increasingly profitable commodity extended the set of potential stakeholders to include real estate developers, foreign companies, and business entrepreneurs, and altered how rural villagers engaged with these stakeholders and undertook development projects themselves.

Village Organization and Its Adaptation and Evolution

For many rural villages within Shenzhen and the fast-growing hinterland of the Pearl River Delta, the new policies provided incentives to shift from a purely agrarian community to one engaged with real es-

tate development and management, factory construction, and industrial production. The diverse range of economic activities is overseen by the village cooperative: in essence, the village management company. Operating as an executive board of a large corporation, the village cooperative manages the economic decisions of its shareholders (the villagers), as well as social welfare and municipal services. A twin organization, the village committee (often with the same members) mediates between the higher-level local government and the village and is responsible for administering policies at a local level. The villagers democratically elect their leaders, although more often than not, the appointed Communist Party cadre is the most successful candidate.

The evolution and flexibility of the village cooperative are exemplified by Yu Min Cun, a simple fishing village prior to 1978, which is situated directly on the border between Hong Kong and Shenzhen. As the first wave of development left some villages increasingly wealthy, village cooperatives diversified their portfolios to include investment in villages in other parts of the Pearl River Delta. In the 1980s, Yu Min Cun had profited from expropriating its land to the local government and to Hong Kong investors wishing to set up factories. During the next phase, in the 1990s, the village corporation (as a result of the 1988 legislation) bought the land use rights to a 3000-m² plot of land over 60 km away in Dong-

guan. As Dongguan was emerging as the next industrialized landscape, with attractive economic incentives set in place by the city government, this was a shrewd move and highlights the interconnected capacity for growth that is embedded within the social and familial networks found in the Pearl River Delta (Smart and Smart 1991). The example of Yu Min Cun highlights the way in which the evolving economic policy of the 1980s triggered multiple ways for villages to make money. However, the escalation and speed of development that these policies catalyzed brought with it unforeseen situations and land disputes. As a result, the legal system has had to adapt to try to keep pace.

Legality in the Development Process

Even though the language of Chinese land law is often straightforward, the way in which it is interpreted, executed, or monitored varies vastly between provinces, local city governance, and village collectives (Ho 2001). This wide margin between law and its practice has created the potential for black-market loopholes or gray areas to emerge. In particular, as the process of expropriation became more profitable, further incentives to cut corners, reduce administration fees, and increase margins were realized through loopholes or through corruption (Lin 2009). Examples include villagers selling or leasing their homes for commercial uses, state-owned enterprises selling land use rights at market value

without paying money to the local government, village collectives exchanging land rights for developer shareholdings, and local governments expropriating land from villages without due compensation. These mechanisms set the stage for potential conflicts between the different stakeholders, including villagers, local governments, developers, and factory owners, which have surfaced through the ambiguity of development rights, land compensation, and the specific designation of rural or urban land (Cai 2003).

Disputes, Corruption, and Villager Protests

In some cases, the relationship between the village chief and the villagers can become fractious, particularly if the chief is perceived to favor the priorities of the local government over the needs of the village, or if the chief is undertaking corrupt practices (Cai 2003). The fractiousness is most acute when it comes to land sales. The example of Wukan in the Pearl River Delta demonstrates the escalation from discontent about land sales into a full-blown protest in December 2011. In that case, the village chief was accused by villagers of expropriating land without due compensation. Given that local governments acquire almost one third of their revenue from land sales, there are clear incentives to sell village land, as Michael Bristow reported for BBC News in December 2011 (Bristow 2011). The protest was amplified after one

village protester, Xue Jinbo, died in police custody apparently from a “sudden illness.” In an unusual move, because of local and international mass media coverage, the local government met the villagers’ demands. The village head was replaced with the leader of the demonstrations (BBC News 2012), two local government officials were fired, and an investigation into the death of Xue Jinbo was promised. Yet this example is only one of potentially hundreds of thousands of protests that occur each year (Li and O’Brien 1996). Exact data are impossible to find because of their sensitive nature; any official government figures are presumed to be massively underestimated (Bristow 2011).

Rural Development at the Fringe

Since 1978, the Chinese government has promoted Shenzhen and Guangdong Province as a laboratory site for testing new directives that are often later implemented in other areas in China. As a result, the conditions found in the Pearl River Delta attest to the potential issues and successes that could influence the future development of other locations. Although the economic reforms have clearly unleashed widespread urbanization by industrialization, with rural villagers playing an important role in this transformation, the mechanisms of expropriation and claims of land ownership have led to increased altercations between different stakeholders. As China enters its next phase of development, albeit a slower one,

a key issue will be how to resolve residual conflict at sites and still maintain a diversity of actors in the urbanization process. Part I explained the backdrop to the increasing level of contested sites and its origins in the fundamental difference between rural and urban land. Part II will investigate Jian Sha Zhou—a village on the fringe of Dongguan. This article posits that it is the fringe areas that will become critical in the resolution of future development in China, as that is where the tension between rural and urban processes is most heated.

PART II: JIAN SHA ZHOU CASE STUDY

The context and macro-policies described in Part I serve as a basis for understanding the mechanisms of transformation occurring in Jian Sha Zhou. Between June and August 2011, we interviewed local residents, factory owners, and the local village committee to ascertain the impact of these large-scale policies and resultant local standoffs. This case study documents the process of rural to urban transformation in Jian Sha Zhou.

Industrialization of Jian Sha Zhou

During collectivization in the Mao era, Jian Sha Zhou consisted of three small agricultural villages producing rice and fish under three production teams. After 1978, the three were joined under one village com-

mittee. In the 1980s, the local government encouraged the village committee to develop the industrial production of fireworks and bricks. This effort failed, and the committee switched from direct investment to management. To raise capital, some land use rights were sold to outside investors, and the money was used to build factories. The factories were leased to foreign companies attracted both to the rent and labor costs, which were lower than in the more established factory areas of Shenzhen, and to the area's natural resources, such as the river. The first was a print-works factory operated by a Hong Kong investor; it was soon followed by a garment factory operated by a Taiwanese company. These examples stimulated local entrepreneurs to engage in industrialization, such as the Dongguan Baojian Paper Company, a paper factory that gained a preferential land lease from the village collective in 1989.

The Network of Industrial Production Within the Village

The development of the Baojian Paper Company was paralleled by changes in Chinese consumer habits. According to data from one paper factory, toilet paper consumption increased 11 percent each year between 1990 and 2003, providing a quickly accelerating, profitable sector (Zhongshan City ...Paper Products Factory 2008). The growth quickly spawned an industrial network of different-sized companies: Baojian processed raw pulp from

Guangxi into paper and cardboard tubes; other companies produced plastic wrapping; and small-scale family businesses processed the large rolls into small sections and packaged them for distribution. The industry attracted businesses from Sichuan, Zhejiang, and Shanghai. The village collective also invested and is currently responsible for 30% of all factories. As the demand for factories increased, so did the rent: in the three years between 2008 and 2011, rents increased by up to 60% (Ms. Lu, a paper workshop owner, and Ms. Ye, a manager of a paper factory, in discussion with the author, August 2011). As a result, many villagers shifted from production to land management, building factories for rent or leasing their land to newcomer operations via the 1988 legislation that allowed them to lease or sell their rights to land use as long as they had permission from the village committee.

Viewed from a tall building, Jian Sha Zhou appears like many other industrialized towns in China (Figure 4). However, a walk around Jian Sha Zhou reveals the specific transformation of this village into a dispersed factory network for toilet paper production. Large two-meter rolls of paper are hauled from factories to domestic production houses, which are adaptations of the typical village shop-house. Figure 5 shows this typology, consisting of a ground-floor commercial shop front with overhanging second and third stories for living space.



FIGURE 4: *Jian Sha Zhou's emerging urban fabric. Image credit: Timo Heinonen and Tian Xuezhong*



FIGURE 5: *The adaptation of the shop-house. Image credit: Joshua Bolchover*

In the adaptation, the shop is replaced by a small assembly room, typically a large table full of toilet rolls being placed into wrappers by four to six people sitting on plastic chairs with a band-saw in the back to cut the large rolls into smaller units. The floor above is used for storage, with the windows

extended into a large floor-to-ceiling opening to winch materials out of the room and into a waiting truck. Living space is on the uppermost floors. Figures 6A, 6B, and 6C depict the production sequence, from large paper rolls to packaging to distribution.

This network of small- to medium- to large-scale producers, each with a differentiated role, can collectively earn yearly returns of several billion renmenbi, with current trade extending as far afield as Africa (Ms. Ye, in discussion with the author, August 2011).

The transformation of the village into an industrial production network has accumulated capital for the village collective and made some of the more entrepreneurial villagers wealthy. The most successful, such as the founder of the Baojian Paper Factory, identified a niche market opportunity. Although some villagers are directly involved in the production process, the majority of workers and business operators are outsiders. The local villagers, for the most part, are indirectly involved as land agents or are responsible for constructing and leasing factory buildings.

The Controversy of the Danwei Site

In contrast to this rapid industrialization, one plot amidst the frenzied construction is devoid of activity, containing a series of empty and incomplete three-story brick houses, interspersed with patches of vegetable crops and wasteland. Its current sta-



FIGURE 6A, 6B, 6C: *The distributed factory of toilet roll production. Image credit: Joshua Bolchover*

tus is disputed by villagers and occupants alike, with the ambiguity of ownership rights tracing back to the period of consecutive policy changes affecting land ownership and use in the 1980s. In the mid-1980s, when the village undertook the shift from agriculture to management and industrial production, a plot of land was acquired by a former Danwei, an industrial production unit under collectivization. The Danwei, Dongguan Electrochemical Group, decided to use the land to build houses for its workers. The shift away from the Danwei system to state-owned enterprises after 1978 left many of these entities in financial disarray. As a result, the company decided to divide and sublet the land use rights to its employees or other nonlocals for housing construction. This was illegal—the state company had no legal authority to approve the occupation of the land (Ho and Lin 2003). Shortly after housing construction began in the early 1990s, the local government prevented further construction on the site, much to the chagrin of the occupants. When we asked why construction had been suspended, a local resident responded:

I don't know. Go ask the village officials....It is absolutely absurd! We acquired the land through due process and have all the certificates, how can they do that? It's no use talking about law with the party. They just do what they want. (Discussion with author, June 2011)

In 1993, the Dongguan government built a new highway directly adjacent to the plot, subsuming the land within a new planning regulation (“urban greenery”), and thus rendering any new construction illegal. As a result, the houses have remained in a half-finished state for almost twenty years. This is astonishing, given that the region has, according to the United Nations “World Urbanization Prospects: The 2011 Revision,” one of the fastest rates of urbanization in the world. Since our first visit in 2008, the majority of blocks remain empty, although a small number are occupied by migrant workers who moved to the town to work in the local factories and lease the buildings from the resident owners. The land surrounding the blocks is planted with vegetable patches of corn, beans, and choy sum (a Chinese green vegetable) that are tended by the inhabitants. An overview of the site and the new highway is seen in Figure 7.

The consequential urban fabric manifests the stalemate between the owners of the blocks and the village officials. Both are playing a waiting game to see who will succumb first. The critical and contentious point regards the actual nature of the acquisition of the land. The owners believe that the land was expropriated by the Danwei, and thereby converted from rural to urban status, and that they were given permission to build their houses. If that were the case, the village collective would have no rights to the land. The Deputy Secretary of Jian Sha Zhou Village Committee argues the



FIGURE 7: *The contested Danwei site and new highway. Image credit: Timo Heinonen and Tian Xuezhu*

opposite: “Say whatever they want! At the end of the day, it is rural land and it belongs to the collective” (Liu Zufa, in discussion with the author, June 2011).

However, according to Mr. Liu Zufa, none of the original contractual agreements can be found. Even if they were to be recovered, it is unclear whether their validity would be overruled by the new planning policies that zone the area as urban greenway, prohibiting any form of construction. The officials at the time have also long been replaced, and so the stalemate continues. The stagnation contrasts with the construction of two new residential towers of around thirty

stories that overlook the contested Danwei site. These were not there when we visited in 2009. The residential development is typologically more attributable to areas closer to urban districts rather than industrial peripheral areas as seen in the case of Jian Sha Zhou. What was the motivation for this construction, who were the stakeholders, and why had it taken place so quickly?

The “Villagers-to-Residents” Policy and Its Effect

In 2004, the Dongguan city government launched its “villagers-to-residents” policy. This mechanism was introduced to fa-

cilitate expropriation of land—to free up land that was owned by the villagers, particularly land that was occupied by village houses—for industrial or higher-density residential use. The policy was implemented based on a set of criteria that effectively judged whether the village was still rural or had become urban in character. Although Jian Sha Zhou was designated rural prior to 2004, the physical fabric is now much more urban in character (Figure 8).

The Dongguan government issued the following guidelines in 2004. If a village met just one of these conditions, it was deemed eligible to become a “shequ,” or urban neighborhood:

- more than 50% of the population had an urban-hukou;
- there was less than 80 m² of farmland per capita; or
- more than two thirds of villagers were no longer involved in agricultural production.

Clearly, for any of the rural villages that had undergone industrialization, any of these conditions were typical rather than exceptional. The effect of becoming a shequ meant that all villagers received an urban-hukou and so became eligible for social services such as health care and education. However, their collective land became state land, albeit with compensation, effectively transforming rural land into urban land and placing the control of the land within the state apparatus. In terms of organization, the village committee effectively remained the same. It was renamed as a resident committee, with the villagers becoming residents holding shares in all village enterprises. Fundamentally, this shifts the balance away from villagers as entrepreneurs toward the village cooperative as the predominant agent of change. Furthermore, land itself has become more of an abstract financial tool held by numerous shareholders rather than an asset that can be directly occupied, farmed, or developed.

The new residential towers were built as a collaborative venture between the vil-



FIGURE 8: *Jian Sha Zhou, a new shequ. Image credit: Joshua Bolchover*

lage resident committee and a developer. A showroom in the village allows villagers and outsiders to see a model of the development (Figure 9) and enquire about costs of purchasing a flat.

Through leasing the rights of land use to the developer, the villagers became shareholders; those who previously lived on the land received a preferential price on a flat. The excess flats are sold to outsiders or other urban residents from inner Dongguan, with profits split between the developer and the village cooperative. Currently, the model is expedient and highly profitable, as evidenced by the construction of three

residential towers in just two years. This wave of residential development synchronizes with China's inflated housing-market bubble, which the government has since been trying to stabilize (Branigan 2011). Throughout these edge-regions of Dongguan, residential housing towers are being constructed, such as the Spanish-themed development shown in Figure 10, that are replacing factories, agricultural land, and village houses.

The creation of the shequ enables such development to occur more easily, as it facilitates the acquisition of larger land plots. As a result, in just thirty years, farmland has



FIGURE 9: Model of new residential development: a business venture between the village cooperative and a private developer. Image credit: Joshua Bolchover



FIGURE 10: *The rampant construction of residential towers in Dongguan as part of China's overheated housing bubble. Image credit: Joshua Bolchover*

succumbed to the city both in name and in character. However, this shift has its disadvantages and may lead to further disagreements.

Governmental Control Versus Informal Development

The shequ policy is illustrative of the government's capacity to invent new regulations to regain control of land transformation. The policies of the early period of reform, in the 1980s, released powerful global economic forces that were channeled through the mechanisms of land ownership

and use that were accorded to rural villages. These opportunities were facilitated by the differences between urban and rural citizens and the ability of villagers, and particularly village cooperatives, to use land rights as a commodity. As a mechanism to counter this unchecked and indeterminate development, the shequ policy wrests control away from individuals and their own rights of land use and places it within the control of the village cooperative. For rural villagers this means that they now have to forego almost all of their past livelihood to become shareholders within the collective enterprise. Although it could be argued that

villagers have always been part of the collective entity of the village, the evolution of the collective itself has been profound. The village cooperative, as in the example of Jian Sha Zhou, is no longer charged with decisions regarding agricultural quotas, as was the case prior to reform; instead, it is a highly organized business involved in numerous investments and dealings with outside stakeholders, such as property developers and foreign investors. As the Deputy Secretary of the Jian Sha Zhou Village Committee states, “We’re performing duties as a government while doing business as a company....It will change but now that’s the situation” (Liu Zufa, personal communication, August 2011).

Recently, the entrepreneurial opportunities open to villagers about their land use rights have been stifled. If the earlier period, with its rapidly changing policies, demonstrated the potential for conflicts to result from disagreements about legal land contracts, the future will probably see more disputes emerge between villagers and the cooperative leadership itself (Guo 2001). As the shequ policy takes force in areas such as Dongguan, and as the cooperative takes on more of the villagers’ assets, more grievances are likely. There is a potential contradiction between what is necessarily good for the villagers and what is best for the business of the cooperative. When money flows freely through the hierarchical strata, all is fine. Yet, as in other economic situations, particularly those as unpredict-

able as China’s, the businesses will have their ups and downs. The down periods are likely to spur disenchantment between villagers and local officials, or mistrust over dealings between local officials and private developers. There are probably many cases where this is already happening. There are also numerous opportunities for corrupt practices, and gray areas of land policy and methods of expropriation. What links all of these issues is the designation and transformative process, both in character and in legality, of rural to urban land.

Peripheral Urbanization and Its Future

The Jian Sha Zhou case study reveals how one formerly rural village has transformed, via numerous policy changes and legal constructs, into what is now deemed an urban neighborhood. Currently, the historical transformation is revealed through the distinct spatial conditions from different periods of development within close proximity to each other. The entrepreneurial actions of the mid-1980s, when industrial development was the priority, contrast with the current emphasis of the resident committee on developing housing blocks. The leftover site in Jian Sha Zhou attests to the contestation over land rights and brings to light the possible illegal loopholes associated with expropriation. The site is at an impasse, especially as compared with the speed of construction on the adjacent plot. The specific conditions of transformation

within Jian Sha Zhou can be seen as characteristic of similar development phenomena throughout the Pearl River Delta, as well as in other industrializing areas of China, particularly in peripheral urban areas. As the city boundary extends, subsuming village land, the discrepancies between policies associated with either rural or urban designations come into conflict with each other. The outcome is that peripheral areas are particularly vulnerable to contestation. The creation of the shequ (urban neighborhood) is an attempt by the government to bring rural land development under tighter control by limiting the number of developers and discouraging individuals from entrepreneurial action. The residents become shareholders in much-larger-scaled developments, rather than undertaking the projects themselves. This future will inevitably produce more homogeneous forms of housing and commercial development similar to those in Jian Sha Zhou. The future challenge for the peripheral sites is how to harness the potential of their rural status to initiate new models of urban development. If a village like Jian Sha Zhou can transform itself into a complex network of paper production involving numerous stakeholders and different scales of operation, the same scenario could be put to work for biotechnology, energy innovation, or intensive hydroponic (soil-less and greenhouse-based) agriculture. Jian Sha Zhou demonstrates that the instability of the urban edge in China will shape the future characteristics of urban development. The next five years

will no doubt witness increased levels of spatial disputes as discrepancies over land ownership come to the fore. In this respect, the future transformation of cities in China will depend on the successful and productive negotiation between the rural and the urban.

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Note: a series of interviews was conducted between June and August 2011 by the author, Liang Zhiyong, Timo Heinonen, and Tian Xuezhong. All interviews were conducted either in Putonghua or Guandonghua and translated into English by Liang Zhiyong. Where names are not shown, anonymity was preferred by the interviewee.

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JANE *in the* CALL CENTER:

(In)securities from and Adaptations to Neoliberalization

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ABSTRACT: *In this paper, I study a call center in Mumbai to explore how cities transform and adapt to neoliberal policies. Due to growing global demand, as well as a variety of additional favorable factors, call centers have proliferated in cities throughout India, though particularly in Mumbai and New Delhi. The gendered impact of this proliferation is observable through movement and adaptation in urban space. I focus on Mumbai in order to examine how these social effects appeared alongside the emergence of its first call center.*

The research methodology for this study consisted of interviews, on-site observations, and informal conversations in and around the call center in Mumbai. I look at spaces where female call center workers work, rest, and visit for leisure or consumption, in order to shed light on their perception of the call center and its immediacies. The paper demonstrates how space can initiate displacement, how hierarchies in societal structures are reformulated and stabilized despite claims of liberation from tradition, and how attempts at adaptation through compliance, negotiation, and resistance occur in space.

INTRODUCTION

Since the 1970s, globalization has dominated the discourse on the relationship between culture, people, and knowledge. With the liberalization of India's economy in the 1990s, the nation shifted to an increasingly free-market economy, bringing about significant changes in Mumbai, the commercial center of the country. Global entities encouraging production and consumption emerged alongside local economies that struggled to adapt to increasing competition. As with numerous other cities around the world, Mumbai was rapidly transforming from a regional center for administration, small-scale manufacturing, and commerce to a strategic global center and a hub for the flow of activity, economy, and people. At the same time, the state was

strategically flexing its policies to make the local environment conducive to the flow of capital. Illustrative of this move is the cre-

ation of spaces in India designated as Special Economic Zones, which are advertised by the state as "hassle-free environments" promising various types of incentives for foreign investments. (Hegde 2011, 181)

As multinational companies began to occupy new buildings, the state amended national policies to allow women to work at night, overriding former state policies forbidding it. This was mainly to accommodate call centers, which can only operate at night in India in order to serve customers in time zones in the United States and Australia. Furthermore, India is an ideal location for call centers, as a significant portion of the population speaks English, has technical know-how, and is willing to work for low wages. Call centers serve a variety of multinational companies, including "British Airways, TechneCall, Dell Computers, Citibank, GE, HSBC, CapGemini, SwissAir, America On-Line, and American Express" (Hegde 2011, 107). The location is



FIGURE 1. Area around call center, Malad, Mumbai. Source: Kunal B., 2009.

also geographically convenient, well situated between the Americas and Australia to serve clients in Australia, Great Britain, and the United States (though most call centers serve customers in the United States). All these factors combined led to the proliferation of call centers in various cities in the early 2000s, particularly Mumbai and New Delhi.

The Indian youth—who supposedly were looking West to break free from the shackles of age-old conventions they perceived as restricting—popularized working in call centers through their notion of liberation

from tradition (Hegde 2011). Advertising for call centers was based on the idea that Business Process Outsourcings (BPOs) would bring Indian youth closer to imagined forms of Western thinking. In this sense, “Western thinking” is closely linked to processes of modernization, ranging from the consumption of junk food and alcohol, and altered notions of family to the extensive use of glass in office buildings in order to construct a Western aesthetic (Mishra 2008). As a result, working in a call center has often been compared to living on an American college campus. Given that the starting salary is significantly higher than



FIGURE 2. Image of the call center from the adjoining street. Author, 2012.

other jobs requiring similar qualifications, there are financial motivations as well.

Through an analysis of Ashim Ahluwalia's 2005 documentary film titled *John and Jane*, as well as my own conversations with people in the area around the call center, I have positioned the workers into three loose categories. The first are young students, who are tempted to quit college in order to pursue a job that can give them immediate monetary benefits, despite the limited upward mobility in these jobs. The second are those who are the primary breadwinners for their family. This job is central to the income of the family, and they earn far more from this job than they would have in another job with their same qualifications. The third consists of individuals, usually women, who do not require work to meet financial ends, but aspire to an image of modernity through their job.

METHODS *and* FRAMEWORK

I conducted a study in and around Mindspace, the complex of buildings where the first call center in the city of Mumbai is located. The fieldwork for this project was conducted mainly during the months of May and June in 2012. I had great difficulty in gaining access to the call center, so the bulk of the data comes from conversations with employees while they moved in and out of the call center. I also had extensive conversations with entrepreneurs who had set up mobile food stalls on the edge of the call center. They were available and willing to talk to me while I waited for people to move in and out of the call center. Through observations at the edge of the call center, my research indicates that this space is an important boundary of transformation where one can understand the social changes and adaptations that have occurred due to the emergence of the call center.



FIGURE 3. Auto rikshaws outside the call center; vendors outside the call center (left to right). Author, 2012.

In these conversations with vendors and employees of the call center I found assumptions and choices influenced by gender, ethnicity, and class. I began to consider the idea of a gendered perception of space, presented in feminist theory through the concept of intersectional identity (Crenshaw 2003), where various facets of one's identity can provide insight into structural causes of choices and opinions. This feminist analysis goes beyond the provision of gender inclusivity to bring out struggles of power and the dismantling of binaries through intersectional identities, while also demonstrating my positionality as the researcher.

Time is also an important aspect of the call center, which is based on a program that functions at Eastern Standard Time instead of Indian Standard Time. This creates alternative landscapes of the night and ideas of safety, as well as understandings of the space around the call center during the day. Networks of adaptation are formed through the occurrence of a small number of associated entrepreneurs, allowing one to examine the unanticipated edge conditions that occur between the call center and the surrounding spaces of the city.

EMULATION *and* ADAPTATION

*“How much English do you speak?
Learn English fast! Call today!”*

The above quote comes from a flyer I saw frequently while traveling on the Western railway in Mumbai throughout the 2000s. These flyers provide information about the type of English language training available: British, American, or Australian (though, as mentioned, the majority of training focuses on American English. It is important to note that companies seek those who can already read English (as these notices were mostly in English). Therefore, the training is meant for those hoping to work in a call centers where, by honing their language skills so they speak without the vernacular accent, they can answer customer service calls from countries other than their own using prepared scripts.

The emulation of a foreign accent creates a tension between newly acquired values and existing ways of self-recognition. A duality in routine, consisting of a split between the physical spaces one inhabits and the virtual geography where one interacts, affects one's thought processes as well, leading to a uniquely temporal identity crisis. This is evident in Shome's (2006) paper, “Thinking Through the Diaspora: Call Centers, India, and a New Politics of Hybridity.” In speaking about a call center employee, Shome writes:

He kept finding fault with everything we did and then fumed, “that’s so typical of you Indians,” stated his family members. Arnold/Anand defended himself in the interview stating: “How can I switch identities? I am Arnold for eight hours and then Anand for the rest. I’ve learned to speak like a foreigner now and I’m beginning to feel like one too. What’s wrong with that?” (115)

As this example demonstrates, a physical and psychic denaturalization of the self takes place through the change in name, the adoption of an American accent, and the nature of the work itself. Unlike identity crises that emerge out of migration, there are not the benefits of exposure to another culture, aside from television shows and training sessions, which are geared to project a desirable construct of the West, worthy of emulation.

The interaction with people in different geographies also has a cultural impact, as employees are exposed to another society through their telephone conversations and training: “The post-recruitment training normally includes four to eight weeks of in-house orientation in voice/accent, soft skills and grooming English-speaking in accents. Exposure to TV shows and Hollywood blockbusters; reading fiction and so on are resorted to train the agents and familiarise them with western culture and etiquette” (Ramesh 2004, 494). Embedded in this training is the intent to integrate con-

sumerism into the psychological make-up of the call center employee. For example, by instructing call center employees with the cultural concept of “the mall,” these trainings elaborate the needs of a consumer, constructed through a superficial exposure (Krishnamurthy 2004).

The construction of offices in Mumbai has occurred alongside the development of new housing. New apartment buildings are often hastily built, and builders make promises far beyond what they are able to provide. While they assume the occupants come from a homogenous group, these spaces are used in multiple ways by a diverse range



FIGURE 4. Apartment building near the call center. Author, 2012.

of users. Some apartments house families, while some are converted into offices; others are occupied by paying guests, while many employees of call centers often live together in a single apartment.

In apartment buildings around the call center, a two-bedroom apartment may become a home for six to eight people, most of whom are employed at the call center and are of the same gender. In some cases, partitions have been added to ensure privacy for occupants. Sometimes the living room becomes an additional bedroom, so that each room in the house (apart from the kitchen) is a private space for different individuals. There are apartments in which the kitchen is not used, and residents only order their meals from either inexpensive restaurants or women who run small businesses where they deliver home-cooked food. A few of my interviewees said that they shared a bed with an occupant who worked at a differ-

ent time of the day. In this case, the shared sleeping routine continues on weekends as well.

Malls, theaters, and restaurants have emerged in this area, for both the entertainment of the people who live or work here as well as to attract crowds from different parts of the city. Malls, the first of which was constructed in 1999 in Mumbai, introduced the idea of recreation in enclosed spaces of consumption. The architecture of these spaces follows a similar language in its making. Conversations with store managers in malls revealed that, unlike other malls in the city, these are open for longer hours in order to accommodate call center workers, an important consumer demographic. This is especially true for the food court within the mall, which receives a large crowd from the call center. However, the food in the mall, typically much more expensive than street food, is an occasional

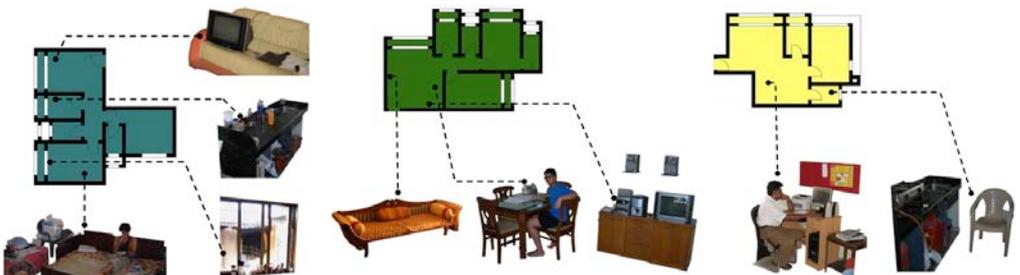


FIGURE 5. From left to right) Configurations within apartments within the same apartment block: rented by call center employees, conventional household, and transformation into office. Micha Baumgartner, Lukas Nacht, Kunal Bhatia, Aparna Parikh, 2009.

treat for a call center employee, not everyday fare.

GENDERED WORK?

The media has portrayed the entry of call centers as a catalyst for a transformation in identity: “A popular thread of reportage claims that call-center jobs have liberated Indian youth and turned them into avid consumers, thereby providing a necessary nudge to the traditionalism of Indian society, especially with regard to women” (Hegde 2011, p. 178). In expressing it as such, the media has both reflected and reinforced the impression that the youth in India, particularly women, were gaining freedom from their employment at call centers. Unlike call centers in other locations, those in India have nearly an equal number of male and female employees, and these businesses like to promote an image of gender equality. However, while men usually rise to higher positions within the call centers, women do not (Mukherjee 2004). This is due to the fact that, as women, they are expected to start a family at a certain age, and thus they do not work sufficient hours for a promotion. There is even an expectation that a “decent” married woman would not work at a call center. Nevertheless, this is not always the case, for example when the woman is the primary breadwinner in the family.

The landlords of apartment buildings around the call center that I interviewed often considered call center employees to be unfavorable tenants, mainly due to their odd work hours. This was especially true for women. While there is an aura of independence around the image of the modern woman who works at a call center, single women who work at night find it particularly hard to find an apartment because of a stigma directed towards women who work at night. This echoes the analysis of Melissa Wright, who argues that there are spatial paradoxes inherent in attempts to open up avenues for women’s political agency. For the women she studied in Northern Mexico those who protested against femicide were “dismiss[ed] and devalue[d] for ‘prostituting’ themselves by venturing beyond the domestic sphere, that traditional domain of female purity and obligation” (Wright 2005, p. 279). Such discourse is absent amongst women in India, however, because of the existing binary between the decency of the call center worker and the more questionable prostitute who works at night (Hegde 2011). In an attempt to dismantle these binaries, feminist scholars have argued that a discourse of moralities around women’s occupation and attire helps stabilize the patriarchy in society (Sanders, O’Neill, and Pitcher 2009).

SECURITY and the ALTERED NIGHT

The social life of call center employees is severely inhibited due to the highly demanding work schedule and long hours. Employees are not given Indian national holidays and festivals off because the call center's work schedule is designed to be in sync with the country of its customers, who likely do not share the same holidays. K, a 36-year-old call center employee addresses this in her interview:

“Not too many people end up coming because everyone know that my timings are very odd. So I'm generally sleeping during that day. If at all anybody wants to come, I prefer if they come when I have a holiday or an off. But it's really hard. My friends are accommodating and all, but it's difficult.”

Because call centers operate to suit daytime hours in North America, the nightscape of this neighborhood has undergone a radical shift. Movie times are adjusted to fit em-



FIGURE 6. Time usage of space, where light indicates areas active at different times in the same geography. Micha Baumgartner, Lukas Nacht, Kunal Bhatia, Aparna Parikh, 2009.

ployee schedules, street vendors come in at specific times depending on when call center employees arrive or leave, breakfast places provide dinner meals for call center workers, and networks of taxi cabs proliferate, especially for those who do not have a pick-up or drop-off service from the their companies.

Cab drivers hired by call center companies may provide door-to-door service, or drop off employees at the railway station, where they can take a train to where they live. The cab drivers are usually immigrants belonging to a lower class, and are perceived somewhat suspiciously. There is a perceived element of danger associated with a lower-class migrant, who is assumed to be a perpetrator of crime. In an incidence of homicide in Bangalore, where a cab driver raped and killed a female employee, the media immediately questioned the promiscuity of the woman in question, and criticized the behavior of lower-class male migrants in general (Hegde 2011). The assumption is that lower-class migrants are more likely to commit crime because they know no better. However, despite these dominant discourses, there are often positive relations between call center employees and the cab drivers, regardless of their different ethnic and socio-economic backgrounds. Cab drivers often become confidantes of call center employees, and privy to interpersonal relations between employees. During an interview, a cab driver told me that he would never allow his daugh-

ter to come to the city, as he was afraid she would be tempted to work in a call center. He believed that it was not the type of job a decent young girl should want. It would lead her to become a "night girl" (likely referring to a prostitute), and he feared that she might begin to desire products that contained traces of Western influences.

FUTURE of CALL CENTERS

In Indian call centers there is the impression that one's job is "here today, gone tomorrow," which contributes to job anxiety and competition, while also affecting the mental health of the worker (Hegde 2011). The ease of mobility, commonly associated with globalization, while true in the way capital flows from one place to another is not necessarily an option for those who work in globalized industries, who may lose their jobs if the industry relocates to a part of the world where the work can be done cheaper. This impression is slowly becoming a reality. According to a 2011 New York Times article, the Philippines has begun to replace India as the dominant player in the call center industry. People from the Philippines "learn American English in the first grade, eat hamburgers, follow the NBA and watch the TV show 'Friends' long before they enter a call center" (Bajaj 2011); such aspects of American culture help them better empathize with their customers, and leave a lesser number dissatisfied.

CONCLUSION

This paper has observed how neoliberalization affects the trajectories and spatial interactions of female call center workers in the city of Mumbai. The conflict between tradition and modernization is embodied in the establishment of call centers and their subsequent social impacts. The positive effects of modernization are marketed to potential employees of call centers: by watching American TV shows, adopting American accents and having conversations with people in the United States, one can become “Westernized.” Nevertheless, I believe that the rapid influx of Western influence has led to a revalorization of tradition. In other words, tradition transforms itself, or gets reinforced to help cope with insecurities emerging from neoliberalization.

As has been discussed, older traditions remain exemplified by the inability of women to rise to higher positions in the call centers, oftentimes because they are expected to marry at a “suitable” age. In addition, the stigma against women who work at night causes difficulties in finding a place to live. In this paper, I have attempted to problematize the rhetoric that women who work at night are seen as prostitutes.

The break from tradition can be seen in the built form of the call center, which, despite its mundane appearance, epitomizes globalization in that it isolates itself from lo-

cal conditions in order to respond to global needs. This is executed through its architecture, its function, and the way it projects itself. Isolation is also present in the job of the call center worker, who is barely able to communicate with others while on the job. These modes of isolation valorize privatization and consumerism, two important tenets of neoliberalism. For example, the range of products available in malls introduces a new kind of consumerism that shapes the aspirations and desires of the users of that space.

The adaptations to space, as well as the deviation from expected behavior around space, is brought out through conversations with female call center employees who migrate to the city. They make adjustments within singularly imagined apartment blocks in order to lay claim to space. Vendors who situate themselves at the edges around call centers and malls exemplify the unanticipated formation of informal economies. A sense of informality can also be observed in the interactions with cab drivers, who are unexpected sources of information. The informal knowledge they distribute outside official circuits has been a key methodological tool for this paper, in highlighting the nuanced interactions between everyday life and globalization.

The anxieties that arise due to this work are palpable, actualized through the loss of jobs occurring as the industry shifts to the Philippines. This shift poses the question

of whether the Indian workers' emulation of Western culture was insufficient for the industry to survive in their country. If not, this decline can only be explained by shifts in the global economy, which are beyond the control of call center employees.

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FROM *the* GROUND UP:

Reappropriation of Urban Infrastructure

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ABSTRACT: *Most economic literature on the “Indian Growth Story” concludes with recommendations to increase the pace and quality of infrastructure construction, claiming that this is necessary to maintain the growth rate and keep up with other countries like China. With the added pressure of India’s increasingly vocal and car-owning middle class, the government has tried to respond through programs like the Jawaharlal Nehru National Urban Renewal Mission (JNNURM). However, the resulting transportation infrastructure projects, such as flyovers, bridges, pedestrian overpasses, and railway tracks, are commonly appropriated by communities that have been largely passed over or even victimized by India’s rapid economic development: the urban homeless. The creative uses of transportation infrastructure by India’s urban homeless might offer lessons for future urban planners or designers seeking to build communities rather than dividing them, while meeting the needs of the diverse users of urban space.*

New Delhi, the capital city and the National Capital Region (NCR), is paradigmatic of economic development policies with an outlook towards urban transportation infrastructure. Since India began economic liberalization policies in the 1990s, Delhi has seen a massive growth in the number of privately owned motor vehicles,

substantially increasing demand for transportation capacity. The city is home to 1.4% of the nation’s population and 7% of its motor vehicles, making it the most populous city in terms of both people and vehicles, and the area occupied by roads and related infrastructure is an unusually large percentage of the total area of the city (Padam and

Singh 2009).

A large portion of public funds in India is spent on these infrastructural developments, but this spending is “too often influenced by a notion of political prestige than by rational calculations of economic growth” (Padam and Singh 2009, 4). This is especially true for Delhi, where too much money is misallocated to politically appealing but expensive facilities such as elevated roadways (it costs anywhere between INR 50 and 100 crores (approximately \$10-20 million) to construct a flyover). The total approved financial outlays for the Tenth Five-Year Plan (2002–2007) for transportation infrastructure in Delhi was INR 544 crore (approximately \$100.6 million).

Most studies on the subject advocate for an increase in urban transportation infrastructure to meet the increasing demand of motor vehicles in the city, equating this type of development to economic growth. They blame encroachment by parked vehicles, roadside hawkers, and pavement dwellers on the lack of infrastructural ability to meet growing demands.

This sudden growth and the resulting social inequity highlight the contrast between small, affluent populations and large communities living in informal settlements. However, while new transportation infrastructure caters to a small, privileged fraction of the society, it creates spaces that are appropriated for everyday use by social

groups at the other end of the economic spectrum. An extremely large number of people use these spaces to live or work, residing on pavements, under flyovers, on underpasses, under over-bridges, etc. In fact, their lengths of stay in these spaces exhibit interesting and unique patterns.

A space like the pedestrian path of the Nizamuddin foot over-bridge opposite the New Delhi railway station (a major point of entry for rural migrants into the city) tends to be appropriated by “day-old migrants,” en masse at night, roughly for the period it takes them to find a job in the city and start earning. Spaces under flyovers tend to be more permanently appropriated by older migrants who have found some sort of employment or business, however temporary. Interestingly, the latter comprise full-fledged communities, with definite notions of community and individual space and worship/sacred space (or niche). Due to the activism of NGOs and the decriminalization of the homeless, the children of these communities go to the municipal schools. These communities continue to lack important infrastructure, such as water, sanitation, and electricity. However, the municipal corporation does attempt to provide water to many of these communities by way of trucks that supply potable water once a day (although this supply is often erratic). Communities that have permanently appropriated these spaces tend to be constituted of members from the same community and even the same village in their

native state.

THE SAFDARJUNG FLYOVER

One typical such appropriated space is the Safdarjung Airport Flyover, which lies on one of the busiest arterial roads of Delhi, Sri Aurobindo Marg. A variety of public, semi-public, and private spaces is located immediately in the vicinity of this flyover: the defunct Safdarjung Airport (now a “flying club”), a heritage structure (Tomb of Mirza Najaf Khan), the Safdarjung Bus Terminal, C-Block of INA Colony (a gated housing enclave), Sanjay Park, and the Northern Railway Nursery. A Northern Railway track passes under the flyover.

It is under this flyover that a community of approximately 50 families, all immigrants from the Sitapur District of Uttar Pradesh, has chosen to establish its homes. According to the dwellers interviewed at the site, the settlement was established nearly two decades ago, in the early 1990s. Although the land technically belongs to the Northern Railway authorities, who have attempted eviction in the past, NGO support has allowed these dwellers to continue living in this space.

Physical characteristics and access

The site is defined on one side by a relatively low-traffic road, and on the other by a railway track serving mostly freight trains,



FIGURE 1. Railway line passing under the Safdarjung flyover.



FIGURE 2: View of flyover and settlement wall from Flying Club Road.

both passing under the Safdarjung flyover. These two channels of thoroughfare constrain the appropriated site, although spill-out zones exist to one side of the flyover and between the road and the railway line.

The site is separated physically from the road by a brick wall; the settlement is accessed through two gaps that have been made in the barrier. These makeshift “entrances” to the space create a sense of enclosure that seems apt for the kind of appropriation taking place in it. The other connection between the settlement and the outside world is to one side of the flyover, along the railway track, where an informal path can be followed to the Safdarjung Bus Terminal (this involves crossing the tracks). There is no access from other sides, where

the space is bounded by the Nursery and Public Park.

The physical isolation of the space is evident; most traffic simply passes over the flyover unaware of the settlement below, and the wall along the road under the flyover shields the settlement from view of the occasionally passing cars. All three entrances are located and exist in such a way that it is clear no one would accidentally walk through this space. A sense of territory, therefore, is clearly established.

Users—socio-economic standing

The inhabitants of this space are migrants who travelled to New Delhi because of the



FIGURE 3: *Access to the settlement*



FIGURE 4: *Semi-private and public spaces: earthen demarcations separating individual dwelling units.*

poor state of the rural economy and lack of employment opportunities in their native village. Most of the inhabitants (including some of the women) now make a living working at a variety of jobs, predominantly selling wares at the nearby Sarojini Nagar Market. The average monthly income of most “households” is under INR 5,000 (less than \$100). Many of the residents have had some schooling, but few, if any, adults have attained any higher education. However, about 30 children who live in this settlement have been enrolled in the nearby New Delhi Municipal Council School at Ali Ganj, with the help of an NGO. The organization also provides informal tutoring outside school hours.

The men and employed women are absent



FIGURE 5: Internal ‘streets’: dwelling enclosures under the flyover.

from the settlement for most of the day, when they are working. During this time, the space is dominated by women and children.

Spatial organization

Although home to almost 100 inhabitants, the settlement under the Safdarjung Flyover does not have any formally defined houses with the typical “four walls and a roof” arrangement. Instead, the flyover itself functions as a collective roof of sorts, and each family is spatially segregated solely by means of a makeshift enclosure, formed by simply tying ropes across the columns of the flyover and hanging a variety of materials (cloth, sheet, plastic) to create screens that give a limited measure of privacy. Perhaps because there is some degree of tenure security, and because of the amount of time the families have been living here, they have made some investment in terms of material and capital. Because of their limited economic means, however, most of these materials are flimsy scrap materials that require some amount of upkeep and barely function as protection against unfavorable weather conditions. Individual enclosures are approximately five square meters. Because of their tiny size and the number of people that inhabit them, no space is left unused. The functions of the same space change throughout the day depending on the needs of the users.

On a slightly broader scale, the spaces out-



FIGURE 6: Dwelling units made of found/miscellaneous items and with ample storage for more.

side of, around, and in between these enclosures become delimited open spaces for community use and resemble street-like spaces. These spaces are extensively used for a variety of activities, including laundry, cooking, bathing, resting, and playing—becoming a shared space where socializing occurs throughout the day. The amount of “open” space is small, but is used extremely efficiently as a social and active space, and is heavily in use at almost all times of the day.

There is ambiguity between public and private space in this settlement, as the same space may take on multiple functions, and, because the whole community itself is isolated, it may be considered private in its entirety. Within the settlement, areas have

varying degrees of privacy (which may also depend on the time of day)—private, semi-private, and open.

The settlement as an appropriate urban space.

As an example of urban space appropriation, the Safdarjung Airport flyover settlement clearly demonstrates how “real” lived space is a product of the social (and spatial) practices of the inhabitants of that space. For instance, social characteristics carried over from migrants’ previous lives in villages, such as a distinctive communitarian life style and centrality of religious beliefs, are evident in the spatial configuration. Moreover, the nature of their livelihoods



FIGURE 7: A few of the younger inhabitants of the settlement.



FIGURE 8: Daily activities carried out in the open.

and day-to-day existence necessitates very close cooperation and a certain kind of “living together” that the settlement reflects.

The nature of the appropriation taking place therefore, is both material and social—it is not just the occupation or seizure of the physical place, but also the “sense of place” that has been established. The surrounding urban infrastructure forms the physical basis for the appropriation, together with the various materials and possessions that the appropriating user group have introduced, which give the space its characteristics and qualities.

The “claim” that has been laid on this site by its inhabitants is of a somewhat permanent nature, in spite of some instances of

contestation for the space. In addition, the cascading effects of increasing recognition of illegal settlements by the Delhi government, admission of children to municipal schools, and attempts to provide basic amenities give this settlement a further degree of permanence and inevitability. Although from the point of view of the government and the affluent class, this space may be seen as a marginal, less frequented, and unvalued site (as compared to the much more upmarket residential surroundings), the marginalization of the site only makes the permanence of appropriation easier.



FIGURE 9: *Community temple*

RE-IMAGINING URBAN INFRASTRUCTURE

The study of seemingly minor and unimportant occurrences in a city described here does not provide grand explanations or the basis for large urban housing schemes. But it certainly provides multiple possibilities for reimagining specific urban typologies. Can we not harness the power of these massive investments to give this transportation infrastructure a new social purpose? Rather than waiting for such spaces to be appropriated by users for social purposes, could we not conceive public infrastructure with intentional, positive socio-cultural dedications nested into design criteria, rather than considering only their transportation functionality? Doing so, can we not as ur-

ban designers and planners find a way to use urban infrastructure as something that knits the city together as continuous neighborhoods, rather than physical structures that divide existing settlements? There is a strong case to be made that with small changes and tweaks, inspired by modest acts of re-imagining that are based on an understanding of the existing nature of use, however informal, a major impact can be made. The Highline in New York offers a parallel. It has shown us that the reimagining of a defunct infrastructural system, as a social function, inspired by its real state (abandoned, wild imagery), cannot just be successful, but can also reshape the mental and cultural meanings/images associated with old typologies.



FIGURE 10: *Material investments and personalization: A (power-less) refrigerator and Bollywood posters.*

This need not necessarily result in the political aspect of appropriation getting defused by “design.” Instead, Indian cities could have a “Right of Action” plan that ensures the primacy of lived space by enabling the (silent) majority of the city dwellers to play a significant role as planners, designers, and builders. Such a plan would deem that certain users have the right to transform specific urban spaces and typologies in the city. The static, mono-functional program of urban infrastructure could then be envisaged as a dynamic spectrum. In the case of flyovers, this could mean that passive users (like motorists) might act along more clearly defined design conditions, while active social groups (such as the urban homeless) could have the possibility to creatively use and transform them, thereby decisively and visibly staking their claim on the city.

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THE VANISHING POOR:

Frontier Narratives in New York City's Gentrification and Security Debates

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ABSTRACT: *This article uses the frontier narrative as an analytical category to examine socio-spatial changes on New York City's postindustrial waterfront, where discourses of new and superior land uses have legitimated the appropriation of land by new urban actors. We argue that this conceptualization of neoliberal spatial change helps to critically assess gentrification and post-9/11 securitization processes. We conclude that the frontier discourse has been used to harmonize the systematic creation and, after 9/11, the substantial reinforcement of social inequality. Due to the security regime and its reinforcement of neoliberal divisions of American society, the working poor of the waterfront have been turned into deterritorialized fragments of the wilderness, into un-American non-parts of the city.*

“They seem to have been placed by Providence amid the riches of the New World only to enjoy them for a season; they were there merely to wait till others came.”

Alexis de Tocqueville, Democracy in America

In the United States, the American frontier looms large as one of the most popular discursive reference points for urban development. Myriad city planners, ar-

chitects, branding coalitions, and urban researchers have used it as a metaphor for at least the last half-century. The frontier has been evoked to suggest the dawn of a new and better era in the history of the city, an era that is more modern, civilized, and peaceful than the past. This notion of the frontier, and the vocabulary employed in this discourse, allude to “unique opportunities” (Marshall 2007, 7) for the “pioneers” who settle in “new territories,” to the “taming” of neighborhoods (Smith 2005, 13) and the pacification of “savage” sites (English 2011). Earlier analyses have examined the active use of the frontier in discourses of urban redevelopment (e.g., Smith 2005, Desfor, Goldrick, and Merrens 1989), but do not consider the security implications that have become central after the attacks of September 11, 2001 (9/11). In this paper, we therefore propose a critical analysis of frontier narratives in order to examine the specific forms of post-9/11 neoliberal securitization of urban spaces. In our discussion, we will focus particularly on the reconceptualization of New York City’s waterfronts.

Over the decades since the mid-1970s, after the relocation of port functions to sites outside the inner city, urban planners and branding coalitions have reinvented postindustrial waterfronts as harbingers of a more sustainable, leisurely, and secure city, a prospect that was widely accepted and celebrated in New York City. For instance, in *Beyond the Edge: New York’s New Water-*

front, Raymond W. Gastil, (2002) insists that the twenty-first-century inner-city waterfront is “the paradigmatic site for the future of public life” (19). This perception is embedded in a more general hope for the city to solve the problems of its industrial past. In a similar vein, Edward Glaeser (2011) proclaims the triumph of the twenty-first-century city. In his opinion, they are the “engines of innovation” which, according to the bold subtitle of his book, will “make us richer, smarter, greener, healthier, and happier” (1). The developed postindustrial waterfront, in short, has epitomized the promise of a bright future for the city, while a frontier-logic has frequently been used to argue this point.

Since the 9/11 attacks on the World Trade Center and the Pentagon, and the ensuing securitization of city spaces (Cowen and Bunce 2006; Graham 2006, 2011; Sorkin 2008), the use of the frontier discourse has taken an epistemological turn whose implications are at the heart of this paper. Rather than emphasizing the hopeful future of a hardboiled city, as the neoliberal restructuring discourse has it, the state of those urban areas that were being “replaced” in the inner city has now been demonized to legitimate harsher security measures. The frontier discourse in post-9/11 security debates has actively created a much more radical “wilderness” in urban spaces, one that does not require a policing of crime, but the waging of a War on Terror. These othered spaces, this discourse implies, must

be ordered, disciplined, securitized by any means possible, in order to create the utopian, peaceful civilization that will inevitably follow the frontier.

As is already indicated in this presentation of what we call the neoliberal discourse and the securitization discourse, these discourses by no means contradict each other in their uses of the frontier. Rather, they complement each other. While the neoliberal discourse envisions a future for spaces that tends to exclude those who are presently found in these spaces (in the case of the waterfront, industrial workers and their families), the securitization discourse targets precisely those excluded populations as a fundamental threat to the nation, and as a collective social breeding ground for terrorism. The securitization discourse thus stabilizes and reinforces precisely those aspects of the neoliberal discourse that are criticized as problematic about this economic regime. In our case, we focus on social segregation, manifested in the division of waterfronts into gentrified² leisure spaces and “deterritorialized” working spaces (Desfor and Laidley 2011).

It is the frontier narrative that ties these two discourses together. The first part of this paper will thus problematize this narrative and carve out those elements most significant for our discussion of the city. We will then discuss, first, the transition between the industrial and the neoliberal waterfront, explaining the impact of the economic re-

gime change for urban populations and the representation of this regime change as a kind of frontier. We will then discuss these populations more closely within the securitization discourse after 9/11, and show the implication of a united neoliberal and securitized discourse as they take up the frontier narrative and revise it in order to substantiate threat scenarios within the city space. It will become apparent that the spaces of homeland and spaces of threat duplicate and reinforce the boundaries of social segregation previously inscribed by the neoliberal restructuring of the city. The waterfront space, with its central as well as extremely tangible functions within economic regimes, is a perfect space to demonstrate these dynamics.

We have chosen New York City as an example because the core elements of our discussion —neoliberal gentrification and work relocation in waterfront spaces, a long and contested history of innovations in urban planning, and the urbanized War on Terror—are more closely linked here than in any other American city. New York City is situated at the intersection of a multitude of flows: flows of investor and tourist capital that are lured to waterfront sites, flows of cargo containers and cruise ship passengers, but also of drug traffickers and counterfeit smugglers. Insisting on New York City’s function as an important logistics node and point of transition only points out the port city’s particular role as a site for negotiating global forces and local condi-

tions, including the potential vulnerabilities that come with this position in “world city networks” (Taylor 2004; Derudder and Witlox 2010). Also, of course, New York City was one site of the 9/11 attacks that have spurred the very security debate whose impacts on urban space we discuss.

THE FRONTIER NARRATIVE

The American frontier as a specific narrative was first proposed by Frederick Jackson Turner in order to describe the westward expansion of European settlers into the American continent. From this settler colonialist perspective, the westward movement has been conceptualized as a spatial example of progress itself; it produces a narrative based on successive stages, the more civilized inevitably replacing the primitive (Pearce 1967). Amerindians, who initially occupied the land seized in this movement, are presented as neglectful of the land’s potential, and as culturally alien and doomed to “vanish” (Slotkin 1973). It is this moment of active and fundamental replacement of one kind of space and spatial use with another that creates the frontier. Turner (1964) has notoriously connected this progressive construction with the birth of “the American” as a unique and novel actor.

In *Nomos of the Earth*, Carl Schmitt (1988) differentiates between two forms of land appropriation (*Landnahme*), which are help-

ful for us to conceptualize the frontier and the more specific role of Turner’s American. Schmitt differentiates between a land appropriation of the inside, i.e., an appropriation of land that previously belonged to someone else, and a land appropriation of the outside, i.e., an appropriation of “free” land which does not have an owner, or at least none whose ownership is acknowledged. The American settler’s westward movement is a paradoxical mixture of these two forms of appropriation (Dörr 1993; Washburn 1995). Indicative of an appropriation of the outside, Emer de Vattel argued in 1844 that Amerindians could not claim territorial possession. Put differently, the land was regarded as free and ownerless. On the other hand, the history of the frontier has primarily been one of contracts and treaties, which reflect an acknowledgement of Amerindians’ land ownership by settler Americans.³ Washburn concludes that the acknowledgement of land ownership existed only as long as Europeans were not strong enough to break the according agreements; only in a context of superior European strength did Amerindian land become *terra nullius* (1995). While this is an astute summary of the political situation, and was probably an insight shared by decision-makers in the nineteenth century, such a conclusion would not suffice as a theorization of the westward expansion. America needed more than a mere understanding of what it did; it needed a legitimation for it, all the more urgently in a matter which involved fundamental conceptualizations of

sovereignty and ownership.

In this situation, the creation of an American-breeding “frontier” has been an interesting solution to the basic paradox of different forms of land appropriation on the American continent. The American who is created by the frontier is *neither* European nor Amerindian; she is a third actor who is not an original party to these paradox-inflicting conflicts. The American is therefore the only one who legitimately occupies the contested space, as she is *both* a civilized actor and a native to the wild space. The American, created by the frontier, legitimately replaces both initial opponents. Any further “removal” can be considered a post-script to the basic replacement of both Amerindians and Europeans with Americans by which the frontier is defined.

This aspect of the frontier narrative is central to the creation of segregated spaces in the port city because it allows each urban actor to fill a slot in this narrative constellation. The conflict between Europeans and Amerindians becomes the classic Marxist struggle between industrial captains and industrial workers, the captains being the legitimate but hopelessly outdated European imperialists who were best advised to take their business elsewhere, and the workers the Amerindians. As Slotkin (1994) reminds us, workers in New York City have regularly been associated with Amerindians since the nineteenth century in order to marginalize their claims in the face of de-

pression and unemployment.

Industrial captains’ and workers’ collective replacement and their relocation from the inner city waterfront can thus be constructed as a move that signifies the triumph of the legitimate American. In our case, the legitimate American would be the neoliberal “new public”—tourists and white-collar workers in the finance, insurance, and real estate (FIRE) industries—which begins to occupy the waterfront space and which by definition cannot be expected to share it with representatives from the older order. In this way, exclusionist segregation can be narratively harmonized as a legitimate form of progress.

While these statements are obviously rough generalizations to make a point about the logic of the frontier narrative *as a narrative*, we will demonstrate below that, especially in the wake of post-9/11 securitization, the segregating logic implied in the frontier narrative came rather close to “real life” in New York City.

THE PORT CITY FRONTIER— MAPPING *the* TERRITORY

In order to examine the impact of the frontier narrative in spatial terms, it is obviously necessary to discuss the actual space in question more extensively. We focus on the New York inner-city waterfront that has been gentrified and that stands in opposition

to the container port that has been relocated to Newark and Elizabeth, NJ, beginning in the 1970s. We will treat the container port and the adjunct quarters inhabited by workers and their families as parts of New York City, as they are intrinsically linked both economically and narratively.

The story of the neoliberal port city begins with a vexing dilemma that New York City planners and politicians had been facing for a long time (roughly from the late 1800s to the 1970s), and that the neoliberal turn offered to solve. The inner-city industrial ports on the shorelines of West Manhattan that epitomized industrial capitalism in the city had never been popular or unproblematic sites. A long-standing critical discourse of the waterfront as such rendered it an especially representative example of the pathologies of (Keynesian-)industrial capitalism; the inner-city industrial waterfront was tolerated as a necessity, but it was deeply unloved. Instead, the waterfront served as a symbol of industrial capitalism as a capitalism that tended to cross the line to criminality. According to Rutherford H. Platt (2009), “gentlefolk” of the nineteenth century “avoided the waterfront, which they characterized as dangerous, foul-smelling, and polluted by urban wastes and the occasional corpse” (52). This perception of a perilous and soiled shoreline persisted well into the twentieth century. Industrial capitalism, critics continuously argued, required taming; its unchecked, corrupt, and chaotic growth needed to be disciplined

into a more transparent and orderly structure (e.g., Silzer 1928, 668).

The outlines of the gentrified waterfront were foreshadowed in early critiques of the industrial waterfront, and it is worthwhile to inspect these visions a little more closely. The model role that New York City could play for other maritime cities was being defined and articulated, in these early visions of a nonindustrial waterfront, as a stark antithesis of the industrial waterfront. A critique of industrial land use was combined with what was perceived as the detrimental repercussions of modern “progress”: “Many a pleasant walk and water-side garden has disappeared under the heavy tread of what passes for progress in the metropolitan region,” *New York Times* journalist R. L. Duffus argued in 1930, and asked: “Will the greater city undo some of the harm caused by its mighty growing pains?” (1930, 11f.)

Duffus’s lament illustrates the whole dilemma faced by New York City when it came to the industrial waterfront. Everyone agreed it was a raw, polluted, and violent space—yet it was precisely this space that represented progress, and the beauty of gardens represented, at best, a vanishing nature. Despite his reservations, it was clearly unthinkable for Duffus not to side with progress whenever the best interest of the city was at stake. Even more tellingly, a similar *New York Times* article from the same year argues for a “combination of

the ornamental and the commercial,” urging that “one likes to look forward to a day when all our shores that are not needed for economic [i.e., industrial] uses will be open to pleasure seekers” (*New York Times* 1930, 58). The use of the term “ornament” and the reference to “shores that are not needed” underline the dilemma faced by these authors: they clearly saw urban problems being created by the industrial waterfront, yet they also firmly believed that the city as well as the nation desperately depended on it. Their suggestions for a betterment of the waterfront space could thus only remain “ornamental,” additional, cosmetic. As long as the industrial use of the waterfront was a centerpiece of the Fordist-Keynesian mode of accumulation, its land use was, albeit defiantly, accepted. At the same time, the general impulse to push the more tangible signs of capitalist accumulation, along with their working populations, out of the city center and thus out of what was deemed to be “the public sphere” is already very visible here.

The situation changed with the gradual disappearance of manufacturing jobs and the concentration of high-end service jobs in Manhattan during the 1960s and 1970s. Like many cities located on the Rust Belt, New York City, with approximately one million manufacturing jobs in 1950, witnessed a steep job decline in the industrial sector. In 1995, only roughly 216,000 workers were employed in this sector (Crahan & Vourvoulias-Bush 1997). From 1956

to 1980, growth in manufacturing occurred in the outer ring and suburban areas (Harris 1991)—one further reason for the flight of industries from inner cities. Yet, while the metropolitan region’s share of manufacturing jobs remained equivalent to the national average (31 percent) in 1960, the region dropped well below the national share when it lost 800,000 manufacturing jobs by 1990 (Abu-Lughod 1999). Concurring with the flight of manufacturing jobs from the inner city, longshoremen and stevedores disappeared from Manhattan’s shorelines. In 1950, 48,000 persons worked on the docks of Manhattan and Brooklyn (DiFazio 1985), living in tight-knit communities along the working waterfronts (Levinson 2008). As William DiFazio observed in 1985, “All this has changed since then.” Instead, “work has now completely disappeared from the west side (Manhattan) piers, and there are 9,000 fewer workers on the Brooklyn docks. Business still uses the Brooklyn piers heavily, but with the increasing automation of the industry, the work is moving to the modern container facilities on Staten Island and New Jersey” (1985, 31).

What DiFazio describes are the dynamics of neoliberalism being introduced as the economic paradigm of the time. The industrial waterfront, once the dirty engine of progress, was increasingly considered an outdated model. Port functions were relocated and henceforward fulfilled by vast container terminals in Brooklyn and

especially in Elizabeth and Newark, New Jersey. The transition from the industrial to the neoliberal regime stripped inner-city entrepôts, piers, and docks of their intended economic and functional purpose. For the tightly knit waterfront worker communities, the increasing lack of work on their doorsteps meant a substantial disintegration of their communities, a disintegration that would be reinforced and eventually finalized with the extreme upgrading of waterfront real estate pushed by entrepreneurial waterfront restructuring. Now that their workforce was no longer needed or desired in Manhattan, waterfront worker communities seemed destined to vanish.

The replacement of waterfront worker communities with the neoliberal new public did not happen overnight. Although work and industries disappeared from New York's shorelines from the 1960s through the 1970s, the waterfront did not figure in the collective representation of the city, so that the revaluation of the waterfront did not follow suit upon its devaluation. As David Gordon (1997) has argued, "it was several years before planners and politicians noticed the eerie calm which had settled over the formerly busy waterscapes or the decline of the adjacent communities and port industrial areas" after "the new container and bulk cargo facilities were built at suburban or ex-urban locations during the 1960s and early 1970s" (91).

This "eerie calm" on the waterfront prob-

ably triggered frontier analogies more than anything else, as it allowed the waterfront to be conceptualized as an unclaimed *terra nullius*. Furthermore, the waterfront was an especially suitable way to demonstrate the benevolent implications of the new paradigm in spatial terms because it could draw on long-existing social utopias of a postindustrial era in the city. Just like the lamented gardens industrial capitalism had consumed, the spatial and communal histories of industrial capitalism itself were now officially considered illegitimate and wasteful occupations of space, symbolically charged obstacles standing in the way of the city's economic and social future.

Indeed, at the same time that work on the inner-city waterfront declined, the rise of high-end service industries and the waterfront's proximity to the financial district put pressures on the real estate market and brought a wave of new and different residents. What had only sporadically been questioned during the industrial era—the right use of the waterfront—now became a political issue for local decision-makers who became aware of the increasingly "derelict" spaces on the shorelines (Gastil 2002) and existing "barriers" between residential and commercial spaces in Manhattan's core. In 1971, the New York City Planning Commission bluntly concluded that "riverview apartments, plazas, restaurants, quais [sic], office buildings, schools, and promenades belong to the waterfront too" (New York City Planning Commission

1971, 77).

Recall that de Vattel had determined that a superior, more effective use of the land was what rendered the American superior to the Amerindian, and made the appropriation of Amerindian land legitimate (de Vattel 1844, 35-36). The Planning Commission, with its emphasis of the “derelict,” the “inefficient,” and the “blighted” prevalent throughout the report, followed this argumentation almost to the letter. In New York City, new markets rather than new nations began to expand on the waterfront, which had, by then, assumed a central characteristic of frontier space: that of a radical as well as profitable reordering of space.

In the course of the 1970s, two specific narratives of legitimacy for the appropriation of waterfront spaces developed. One reconnected neoliberal innovation with older criticisms of the exclusion of the public from the “recreational” potential of the waterfront. As early as 1962, Robert L. Zion took up the lament that, “except for a narrow linear park along Riverside Drive and a grand bland bore at the Battery, we enjoy no social use of our waterfront; we have handed it over to commerce without a whimper” (1962, 11). The other discourse mapped the waterfront more explicitly and purposefully as a newly discovered virgin land. “Exclusion from the paper map of the city,” Gordon (1997) stated in his book on Battery Park City, “was an indication of a larger problem—the waterfront was not on

the mental map of most residents,” and proceeded to argue that “there was little history or tradition of access and an all-too-visible legacy of exclusion by walls and fences” (265). Gordon argued that the waterfront was a place that lacked a common public legacy, thus directly associating the urban waterfront with images of the ahistorical wilderness of the frontier.

It is in this frontier-like sense of “carrying history to these spaces” that these spaces had to be discovered. Manhattan turned its back on industrial workers—deemed ahistorical—and became “water-bound” in the spirit of neoliberal city planners and the creative classes (Buttenwieser 1987). In this process of neoliberal reconceptualization of the economy and the connected frontier-like conceptualization of the urban waterfront, the claims of a new public acquired the aura of universality while those pushed into invisibility started to become elements of the extrasocial.

WHO *is the* NEW PUBLIC?

As the neoliberal new public moved to assume an exclusivist perspective on the city’s future, a clearer and more specific idea of what this new public constituted was developed along with a corresponding idea of the notion of “public space.” This latter notion is particularly important for the later insertion of the post-9/11 securitization discourse into the neoliberal

construction of urban space, as the “public sphere” protected in the securitization discourse is fairly consistent with the spaces inhabited by the neoliberal new public.

The alleged “identity” of the neoliberal new public of New York City is, to a considerable extent, a product of marketing. After 1975 and New York City’s fiscal crisis, when officials sought more market-led approaches to urban development in public-private partnerships, new branding coalitions formed to create a new image of New York City that left the city’s labor and union history behind and turned toward postindustrial white-collar work and business-friendly growth strategies (Greenberg 2008).⁴ Pro-business restructuring as well as the growing importance of tourism and high-end service industries in Manhattan were as much reflected in recreational sites of (cultural) consumption as in the creation of upper-income residential housing and office buildings (Boyer 1996, 1997). The industrial waterfront, previously characterized by pollution, danger, and hard work, was now reimagined as a sustainable and secure place for the recreation and leisure of employees of the creative industries in the new knowledge-based service society.

In the midst of New York City’s fiscal crisis, image-sensitive campaigns such as the 1976 hosting of the Democratic National Convention and New York City’s celebration of the U.S. Bicentennial brought new attention to the waterfront. Operation

Sail—the “big photo-op...in which regattas of colonial-era tall-ships and modern luxury liners cruised New York Harbor past the Statue of Liberty and a downtown skyline crowned by the newly completed World Trade Center”—created a “visual montage” that conveyed the impression of a postindustrial New York City that had overcome problems attributed to the Fordist regime of accumulation and to its institutions (Greenberg 2008, 162). As Ann Buttenwieser (1987) states, events such as Operation Sail “provided the extra impetus needed to translate dozens of new waterfront visions into reality” because the “stench that still pervaded rivers and harbors was forgotten in 1976 as millions of people crowded at the Battery in New York” (204).

Both Battery Park City and South Street Seaport, development projects that were reinvigorated through this new public and political attention, catered to a new clientele that was recruited, as we have mentioned, both from the rising tourism industry and from the rising new middle and upper classes that worked in white-collar occupations. While Battery Park City was aimed quite specifically at residential and office development, South Street Seaport was more explicitly targeted at tourist industries.

The redevelopment of the South Street Historic District began in 1979 and was carried out by the Rouse Company, which had also developed the Quincy Market District in Boston (Brouwer 2010). This may serve

as an indication of the extremely conscious and strategic nature of neoliberal waterfront redevelopment. Since the district was seen as having “enormous tourist potential” it was redeveloped “as a leisure-time spectacle and sightseeing promenade” (Boyer 1992, 189, in Church 1996, 182). South Street Seaport, like Battery Park City, depended on public-private partnerships and on “major investment by the firm, support from the city and the state...and federal funding in the form of an Urban Development Action Grant” (Brouwer 2010, 1215). Like similar projects overseen by the Rouse Company, the South Street development turned the site into “culinary and ornamental landscapes through which the tourists—the new public of the late twentieth century—graze, celebrating the consumption of place and architecture, and the taste of history and food” (Boyer, 1992, 189, in Church 1996, 182). The section on Manhattan’s mainland that opened in 1983 included revitalized old buildings that were turned into shopping centers. Opened two years later, Pier 17 was another redeveloped pier in the East River that was turned into a shopping mall (Brouwer 2010; see also Pries 2008, 171f.).

In this process of the waterfront’s “rebirth” as a part of the city’s landscape (Gordon 1997), a new type of citizen came to occupy the waterfront’s virgin land: the white-collar worker, the tourist, the consumer of culture and commodities. Battery Park City, which consists “primarily of office

space and luxury housing” today (Wise, Woods, and Bone 1997, 205) may serve as further example. The 4,800 middle- to upper-income apartment units as well as the 1.2-mile riverfront esplanade are inhabited by residents who often work in one of the four office towers of the World Financial Center (Wise et al. 1997), of whom 75 % are white and 17.9 % are Asian, and whose education is significantly above average (42 % have a graduate or professional degree), and who earn an income that is twice as high as Manhattan’s already high average (Pries 2008). Local data from the Census Bureau’s American Community Survey, based on samples from 2005 to 2009, shows that residents in Battery Park City (Census tract 31701) earned a median income of \$134,464, while 36% of all households in this tract earned over \$200,000 in these years (Bloch, Carter, and McLean 2010).

This new public, it seems, has overcome the ills of the waterfront’s past; “the armies of ill-paid, ill-treated workers who once made their living loading and unloading ships in every port are no more” (Levinson 2008, 2). Indeed, Raymond W. Gastil (2002) insists that, because of these developments, the twenty-first-century inner-city waterfront—serving as “front yard and service alley, cultural stage and civic space, playground and profit center”—has become the “paradigmatic site for the future of public life” (19).

Such altogether positive interpretations of waterfront developments only hold, of course, if they remain spatially limited to the old Manhattan waterfront. The armies of exploited workers whose rough-and-ready legacy is romanticized in the South Street Seaport or in Battery Park City, are not actually gone. The workers, as well as their deplorable living and working conditions, have simply been relocated to Newark and Elizabeth—and, beyond the United States, to the Export Processing Zones (EPZ) of South Asia and other “distant elsewheres” (Graham 2001). If anything, the enthusiastic evocation of the vanishing poor on the Manhattan waterfront forcefully demonstrates the frontier as a structuring narrative of neoliberal gentrification.

Indeed, the way the past is memorialized in spaces like South Street Seaport detaches the new public from the industrial past and its representatives, just as the American is detached from the conflict between Europeans and Amerindians. The original conflict is replaced with the harmony of a new homogeneity. Consistent with the ethnic and economic homogeneity considered integral to American community life ever since de Tocqueville (2003), the gentrified New York waterfront is “pacified” by the exclusionary homogeneity of white-collar wealth.⁵

Within this narrative logic, the working poor are delegitimized as the un-American domestic outsiders to America (or pre-

American, as their romanticized image in Manhattan waterfront spaces suggests). Importantly, it is their poverty that makes them outsiders. While the cleavage between top income earners and poorer strata of society widens, the living conditions of the upper classes are being redefined as a universal reflection of what is normal and real. Tragically, this coincides with the historical moment in which 9/11 has triggered a security debate that fundamentally relies on the protection of that which is normal and real from that which is not.

SECURING *the* NEW PUBLIC SPHERE

It is the securitization discourse that is most influential in deriving a new understanding of the public sphere from the normalized new public. In the wake of protecting the (new) public, old prejudices against the worker as a deviant element became constitutive of national security, as well as the central reference point for defining entire urban spaces as threatened or threatening. Constructions of particularly chaotic, obscure, and inaccessible spaces became key to their assumed role as “terrorist havens.” In other words, the spaces created by a neoliberal division of uses—in our case the postindustrial and the container port waterfront —have been driven further apart by their conceptualization as either worthy of protection from terror or vulnerable to terrorist infiltration.

After identifying the domestic sphere as a target as well as a potential source of terrorism, the United States set out to determine those domestic spaces most vulnerable to the establishment or undisturbed maintenance of terrorist networks. The prevailing reasoning was that the more inaccessible and untransparent a space was, the more likely it was to provide a haven for terrorist cells.⁶ In the international sphere, spatial assessments of (even potential) terrorist havens helped to redefine vast regions of a state as a radical outside space to sovereignty-based international law (Schillings 2011). In the domestic sphere, the construction of potential terrorist havens was oriented along the lines of existing neoliberal frontier discourses.

The container port, successor to the industrial waterfront and refuge of its population, was one obvious choice. Stephen Flynn, advisor on maritime and homeland security issues to the Bush Administration, bluntly admitted that the “ambitious approach” he deemed necessary “to securing the trade and transportation system would have been a nonstarter before 9/11” (2004, 104). Port security expert Kenneth Christopher called 9/11 a “paradigm-shifting event for transportation systems’ security [that] prompted dramatic shifts in the focused perspectives on security now required by anyone even remotely affiliated with the management of port security” (2009, 3). Potential security loopholes that occurred in the aftermath of 9/11 had to serve as a “wake-up

call,” argued Rep. Peter King, R-N.Y., who “strongly believe[d] that, from any number of levels, the ports are our greatest vulnerability” (cited in Thomas 2006).

The characterization of the port as a vulnerable space did not come out of nowhere. The ship is the classic vehicle to explore and to import the unknown and potentially dangerous (Denning 2001). The 9/11 attacks themselves suggested a maritime focus because of the conceptual proximity of ship and airplane (Cassese 1989) and because Al-Qaeda had bombed the United States Navy destroyer USS Cole only one year before 9/11. Moreover, government reports and security experts pointed to a long list of sources of maritime threat and port vulnerability (e.g., Sakhujia 2010).

In the spring of 2002, the specific vulnerability of New York City’s ports gained public attention. New Jersey Democrat Robert Menendez “whose district includes the huge container ports and fuel tank farms of Port Newark and the Elizabeth Marine Terminal” (Smothers 2002, A12) warned that “the port represents a huge opportunity for those who would wish us harm...The superport of the East Coast has to be moved up on the list of security priorities because there is not a more vulnerable port in the nation” (Menendez, in Smothers 2002, A12). At a hearing of the subcommittee on Coast Guard and Maritime Transportation of the House Transportation Committee, experts underpinned this claim when they

argued that the Port of New York and New Jersey, being “the biggest container port on the East Coast,” constituted “an appealing target for terrorists who might consider packing biological weapons or explosives into sealed shipping containers....It is also the largest fuel depot in the nation, so any explosion would cause widespread destruction” (Smothers 2002, A12).

Most importantly for the conceptualization of spaces and their populations, a central fear after 9/11 was that organized crime might assist the cause of terrorism, for instance by smuggling dangerous persons or goods into the country (Vormann 2011). The United States sought to increase port security by intensified security inspections of containers worldwide, and by increasing domestic surveillance of port personnel (Flynn 2004; Christopher 2009). While the United States pressured other states to help securitize international trade flows on the high seas and at foreign ports, the domestic realm was inflicted with a whole gamut of U.S. initiatives and programs for ports and transportation industries, such as the TWIC-card (Transportation Worker Identification Credential) and the Customs-Trade Partnership Against Terrorism (C-TPAT). The fact that most workers in home ports were immigrants allowed forms of domestic surveillance and disciplining that exceeded possible treatments of “actual” citizens (Smith, Bensman, and Marvy 2011; Bonacich and Wilson 2008).

Socio-demographic statistics of those who live and work in the spaces adjacent to the container port waterfront offer us a relatively clear picture of those who became subject to the securitization of these waterfront spaces. Based on data from the Census Bureau’s American Community Survey, inhabitants of Newark and Elizabeth, NJ, who lived in census tracts directly next to the port, earned an average median household income of \$26,771 per year in the period from 2005 to 2009. Most of these communities have had a high percentage of non-white populations. In overall average, directly port-adjacent census tracts were constituted by 42.9% Hispanics and 26.2% African Americans (Bloch et al. 2010). Given the “sweatshop” conditions (Belzer 2000) in the port-trucking industry—a crucial sector of port logistics—it is hardly surprising that the main share “of the drivers (83.3%) live in New Jersey, most in northern Jersey not far from the ports” (Bensman & Bromberg 2009, 7).

The conceptualization of the waterfront as an unchecked wilderness legitimated the subsequent securitization of port spaces and the disciplining of workers in the port, and completed the disconnection of the port-city interface, hence completing the spatial division and functionalization of neoliberal port city spaces in the spirit of the frontier narrative. Port employees, as inhabitants and workers of these spaces, officially became a potential security risk. Port truckers, to remain with this example,

had to obtain a TWIC-card in order to be granted access to port facilities. “Interim” offenses (such as drug dealing and weapons possession) that dated back up to seven years from the date of the application for the TWIC-card disqualified port truckers from obtaining a security clearance (Moskowitz 2008).

Transportation workers became potential terrorists by definition, and legal offenses unrelated to terrorist activity turned into general grounds for suspicion. A 2006 report by the Department of Homeland Security found that “of the 9,000 truckers checked, nearly half had evidence of criminal records. More than 500 held bogus driver’s licenses, leaving officials unsure of their real identities” (cited in Bensman and Bromberg 2009, 4). The report found that drayage drivers had been “convicted of homicide, assault, weapons charges, sex offenses, arson, drug dealing, identity theft and cargo theft” (Thomas 2006) As Stephen Flynn argued, “We have no idea who’s in the ports. And many of the folks who come in to service the ports, that drive the trucks back and forth, are people who don’t have very distinguished backgrounds” (Flynn quoted in Thomas 2006). The waterfront criminals who had produced the stereotypical “occasional corpse” and the contagious “pollution” of the rest of the city have thus been replaced by the terrorist “sleeper cell” that threatens to produce thousands of corpses, even though the actual crime seems to remain the less-than-distinguished

background. The waterfront space is, again, conceptualized as dangerous, subversive, chaotic, and in need of civilizing intervention.

The terrorist-inspired attention paid to the externalized space of the container port waterfront and the subsequent securitization “closed the frontier,” so to speak. Just as the industrial waterfront was both visible as a polluted and criminal underside of industrial capitalism, yet invisible as a part of the city, the container port waterfront is visible as a breeding ground for terrorism and international crime, yet invisible as a part of the nation. Port space and population merged to represent a featureless site for the terrorist to originate from, a site which could, at the same time, be associated with the abstract idea of an economy that represented progress in America. The terrorist in the space of the port became the hypervisible marker of the underside of neoliberal globalization and interconnectedness. Because this threat was not associated with a specific group on the waterfront, but with the entire space of the waterfront, regular police work could not lessen the danger. Surveillance, mass screenings, mandatory background checks and related measures offered themselves as the more suitable way to tackle this symbol cast in space. The problem is, of course, that this strategy may be “ornamental” for the actual defense against terrorism, but a far-reaching intervention for those subjected to such measures.

CONCLUSION

Using the concept of the frontier as an analytical tool helps to grasp societal dynamics that, sometimes unwittingly but nonetheless systematically, delegitimize some of the least-advantaged American voices as un-American by adding political to spatial segregation. These segregated spaces are primarily determined by economic status. This article has shown that under neoliberalism, the working waterfront has been spatially relocated from central spaces of the city; after 9/11, it was additionally stigmatized as a national security threat that culturally and politically removed it from the sphere of the domestic, and later stabilized the port as an outside space symbolizing the securitized economic regime as an engine of ugly but necessary progress. The frontier narrative was the cultural framework that made this development as well as its legitimization seem, on the whole, rational and consistent. It has been used to harmonize the systematic creation and, after 9/11, the political intensification of social inequality. Due to the post-9/11 security regime and its reinforcement of neoliberal divisions of American society, the working poor of the waterfront have been even more fully rendered deterritorialized fragments of the wilderness, un-American non-parts of the city that need to be disciplined and controlled. The security discourse, which had put the waterfront back on the map, has externalized its inhabitants even more strongly than neoliberal urban development alone had.

The “new public’s” homogeneous privilege to be acknowledged as Americans is based on its wealth; this is consistent with concepts of the “market state,” whose central claim to legitimacy is “to facilitate prosperity for its citizens” (Gray 2003, 95; see also Harvey 2005). This is, arguably, what the neoliberal regime is about; it is also arguable that the citizen, identified in such neoliberal terms, cannot by definition be poor, uneducated, or a non-participant in the market. It is in this sense that the reworking of urban spaces has also renegotiated questions of citizenship and of participation in U.S. American society in quite antidemocratic ways.

It is worth noting that the anticipation of the terrorist is not the only anticipation the container waterfront excites now that it has returned to its old, problematic visibility. The criminal industrial waterfront had symbolized the dark side of industrial capitalism; the container waterfront has begun to stand for the chaotic, violent effects of opening America to trade flows that may bring cheap goods as well as anti-American terrorists. The neoliberal frontier is now closed; the regime is in place and has stabilized itself.

At the same time, a growing number of U.S. Americans attempt to reclaim their citizenship as a constitutional right rather than a mere market privilege, and thus signal a potentially fundamental challenge to the neoliberal regime. Their rejection of

neoliberalism is, however, often substantiated by the frontier-based understanding that it should be “overcome,” like industrialism before it. This renewed interrogation may very well fundamentally challenge the exuberant inequalities that neoliberalism has produced—but it must be careful not to push the exclusionist frontier even further.

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² The concept of gentrification, which describes the process in which a given neighborhood’s population of poorer inhabitants is replaced by wealthier strata of society, has been examined extensively by a long list of urban researchers (e.g., Smith 2008; Lees, Slater, and Wyly 2008). Ruth Glass, the first author to define gentrification, has described this

process as follows: “One by one, many of the working-class quarters of London have been invaded by the middle classes—upper and lower. Shabby, modest mews and cottages—two rooms up and two down—have been taken over, when their leases have expired, and have become elegant, expensive residences....Once this process of ‘gentrification’ starts in a district it goes on rapidly until all or most of the original working-class occupiers are displaced and the whole social character of the district is changed” (Glass 1964 in Smith 2008, 91).

³ For example, the contractual history between settler Americans and Amerindians was the U.S. Supreme Court’s main reason to deny legitimacy to the Cherokee removal from Georgia in 1851 (PBS 2011).

⁴ These entrepreneurial strategies were employed in earlier developments such as Battery Park City and the South Street Seaport in the 1970s and 1980s as much as in more recent developments on the New Jersey (Weehawken, Jersey City, Hoboken) and Brooklyn waterfront (most notably DUMBO and Brooklyn Bridge Park). Importantly, Schaller and Novy (2011) have pointed to differences in the ‘Bloomberg Way’ of developing waterfronts in New York City: “Whereas previous administrations primarily sought to provide incentives for private-sector development through opportunistic modes of planning, tax breaks, and direct financial incentives, the Bloomberg administration has been differentiated by a far more comprehensive urban planning and economic development agenda, aimed at providing the spatial requirements for capital accumulation through property-led regeneration and place-making” (Schaller and Novy 2011, 170).t

⁵ Because of the anti-democratic practices that are apparent in this strictly wealth-based homogeneity, the “new public” has often been constructed as a mere replacement of industrial elites in gentrifi-

cation narratives, a new “rich” to the old “poor.” However, it is difficult to draw direct causal connections between the “new public” and “the waterfront working poor” beyond one group’s simple ability to pay more rent than the other. The discourse of urban gentrification has therefore always lacked the persuasive political force of class struggle discourses that had been evoked with the industrial elites.

⁶ This reasoning is well established in U.S. foreign policy. In particular, failed states are still conceptualized as ideal terrorist havens even though this has long been criticized as a dysfunctional approach (Menkhaus 2006, 7–13, Murphy 2009). In other words, there exists a very influential, continuously reinforced discourse in U.S. foreign policy that is prepared to conceptualize a space as a wilderness if a terrorist threat exists there, even potentially.

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INCENTIVE DESERTS:

The Opportunities and Barriers to Solar PV Financing at UCLA

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Los Angeles presents itself as an ideal location for solar power. It offers abundant sunlight, solar-friendly local utility policies, and leadership committed to the advancement of alternative energy sources. Yet there is limited solar photovoltaic (PV) generation in Los Angeles, specifically at the University of California, Los Angeles (UCLA), because of funding limitations. Nonprofits (including private universities) and government institutions (including public universities such as UCLA) are unable to take advantage of the investment tax credit (ITC) when installing solar PV. The ITC allows for-profit institutions and individuals to get a single tax credit equal to 30 per-

cent of the initial solar installation costs (U.S. Dept. of Energy, 2012). Because UCLA does not pay taxes, it cannot take advantage of this incentive. Thus, on-site solar PV is significantly more costly for UCLA than for private for-profit institutions. For solar power to become a more dominant force in the energy market in higher education, universities need to explore various alternative-financing scenarios to allow installations to be revenue neutral—to pay for themselves over a set time period.

Aside from its funding limitations, UCLA is in a unique position when it comes to on-campus renewable energy. The uni-

versity is able to fulfill the University of California (UC)-mandated on-site renewable energy generation requirement with its cogeneration plant, an on-site power plant that uses natural gas and the resulting steam waste to generate electricity, and now is in the process of determining what, if any, other renewable energy installations should be pursued. This paper provides background on current solar policy in Los Angeles and energy management at UCLA, and provides recommendations for UCLA to go forward with revenue-neutral solar PV installations.

SOLAR PV in the CONTEXT of UCLA

Established in 1919 in the Westwood neighborhood of Los Angeles, UCLA spans a geographic region of 419 acres and provides energy infrastructure and services to approximately 60,000 students, staff, faculty, and community members every day. UCLA uses power for heating and cooling needs, and to provide electricity to residential buildings and non-residential buildings including medical buildings and large sports complexes (UCLA Facilities Management, 2013). To meet growing and changing energy demands, UCLA utilizes a variety of generation methods from on- and off-site sources. Currently, UCLA meets the majority of its energy demands through an on-site cogeneration plant and power from the Los Angeles Department of Water

and Power (LADWP).

As part of the UC system, UCLA has a commitment to provide students, faculty, and staff with reliable energy at the lowest price possible. The university must use its resources as efficiently as possible, while also promoting sustainable resource use (UC Sustainability, 2012). The UC Sustainability Practices Policy mandates that each campus, including UCLA, must reduce its overall greenhouse gas emissions to 1990 levels through energy efficiency and renewable generation efforts (UC Sustainability, 2012). Additionally, each campus must generate at least 10 MW of on-site renewable energy by 2014. UCLA fulfills this requirement by using biogas from a local landfill to produce 5 percent of the power generated in its on-site cogeneration plant (UC Sustainability, 2012).

Cogeneration Power Plant

UCLA owns and runs a 43 MW cogeneration plant to provide 75 percent of the campus's nonresidential heating, cooling, and electricity demands (Masunaga, 2009). The plant, built in 1994, burns gas to power a turbine, and the steam exhaust is then used to run a second turbine. This technique of cogeneration produces more power than a traditional plant; an average gas power plant runs at approximately 42 percent efficiency while UCLA's cogeneration plant runs at 80 percent efficiency

(Masunaga, 2009). Natural gas, a nonrenewable energy source, powers 95 percent of the plant. Biogas, a renewable energy source from the local Mountaingate landfill, supplies the remaining 5 percent (UC Sustainability, 2012).

Solar PV on Ackerman Student Union

In 2012, UCLA Facilities Management installed 132 solar PV panels on the roof of the student-owned Ackerman Union. The panels have a generation capacity of 38 kW and supply 2.5 percent of the building's energy (Hewitt, 2012). Students led the project and paid for it with funds from The Green Initiative Fund (TGIF), a grant program started in 2006 and supported by student fees to promote new sustainability projects on campus (Hewitt, 2012). The Ackerman solar installation uses the LADWP's Net Metering program to receive financial compensation for the energy it generates. The solar panels are predicted to save \$12,000 annually on energy costs (Hewitt, 2012).

THE SOLAR PV MARKET and REGULATIONS in LOS ANGELES

California is the largest solar market in the nation, representing more than 60 percent of all national solar PV installed since 2006 (American Council on Renewable Energy, 2012). Los Angeles has been an ac-

tive player in the expansion of solar PV in California. The urban environment of Los Angeles offers model areas for solar PV installations. Rooftops and parking lots are cost-effective hosting areas, and the ample sunlight they receive allows the majority of solar PV installations to pay for themselves faster than in other parts of the country (Callahan, DeShazo, and Chomitz, 2013). State and local policy and incentives, UC regulations, and campus-specific conditions also affect current and potential solar PV installations at UCLA.

While there are several state policies and financial incentives promoting the growth of solar PV, the actions of the LADWP heavily influence installations in the City of Los Angeles, and at UCLA. A critical part of the LADWP's governance is that it does not allow third-party power purchase agreements (PPA). Under a PPA, a third party buys a certain percentage of the power generated from a solar PV system. The third-party buyer receives the benefits associated with renewable energy—obtaining Renewable Energy Certificates¹ and meet-

¹ Renewable Energy Certificates (REC) represent the environmental attributes of the power produced from renewable energy projects and are sold separately from commodity electricity. One REC is issued for every 1 MWh produced from a renewable source. (EPA, 2013).

ing policy mandates²—without having the installation on site. Any and all renewable energy generated in the LADWP’s territory must be interconnected with its utility distribution system or go directly to the consumer (LADWP, 2012). Power purchase agreements are often utilized to subsidize the cost of installing a solar PV system (Second Nature, 2012). However, for utility customers in the City of Los Angeles, a PPA is not a funding option.

The State and Federal legislation and the LADWP programs do allow other capital financing and funding options and utility pricing programs for solar PV deployments within the LADWP service area. Financing and funding mechanisms are related but distinct needs for investment in solar power. Financing refers to a way in which UCLA can raise money for the initial capital investment, and it is often a one-time source of capital. Funding refers to an ongoing source of money to pay back the initial capital investment and to cover continuing costs. For a solar PV system to be revenue neutral, the university must utilize both financing and funding mechanisms for the project.

² A renewable portfolio standard (RPS) is a regulation mandating that a certain percentage of total energy produced in state be generated from renewable sources such as solar, wind, biomass, and geothermal. Under Senate Bill 1078, California has set its RPS for 33 percent of its total energy production to come from renewable sources by 2020 (California Energy Commission, 2012).

FINANCING OPTIONS

Capital Financing with a Municipal Bond

State and local governments issue municipal bonds to finance capital expenses. Municipal bonds are a very low-cost means of raising capital because the interest investors earn on the bonds is tax exempt, so investors are willing to accept lower interest rates than they would from private-sector bonds.

There are different types of bonding mechanisms, including revolving loan funds and bundled loans backed by statewide public financing institutions. For a tax-exempt institution like UCLA, the borrowing rate ranges from 2.5 to 3.5%. A new or bundled bond can usually be issued within six to twelve months, as it must go through public financing channels (UCLA Capital Programs, 2013).

Currently, UCLA is unable to use bonds to finance a solar PV installation. Bonds, however, are included in the analysis in this paper to further explore alternative financing mechanisms.

Capital Financing with a Tax-Exempt Lease

UCLA has the ability to utilize a Tax-Exempt Lease (TELP) as an alternative financing mechanism. TELPs are available

to government and nonprofit institutions and provide a low-interest financing option for obtaining equipment. At the end of a TELP, ownership of the equipment is transferred from the lessor to the lessee. At the moment, a twenty-year TELP is available with interest payments ranging from 3.75 to 4%. Interest payments may increase in the future. The LADWP allows a TELP within its territory because the power generated from the system still goes to the utility even though the system equipment is owned by a third party. The twenty-year financing period of a TELP is ideal because it is the same time period as the LADWP FiT policy, a utility pricing program.

LADWP FUNDING PROGRAMS

The LADWP FiT Pricing Program

In January 2013, the Board of Water and Power Commissioners implemented the Feed-in-Tariff (FiT) Set Pricing Program for 150 megawatts (MW) of solar PV. A FiT establishes a long-term contract between the energy producer and the LADWP that sets a price paid per kilowatt-hour (kWh). The FiT price paid per kWh is often higher than the market price per kWh in an effort to incentivize solar energy generation. The program was created to encourage renewable energy development within the Los Angeles Basin and to help meet California's 33 percent Renewable Portfolio Standard (RPS) mandate by 2020.

The FiT program will pay for projects ranging from 30 kW to 3 MW in capacity. The price for energy generated is grouped into five tiers and ranges from \$0.17/kWh to \$0.13/kWh. The first 20 MW of capacity receives the highest price, \$0.17, and each additional 20 MW receives a reduced price. This competitive pricing structure encourages solar PV projects to apply early for the FiT to receive the highest price per kWh. One downfall of the FiT program is that the energy producer loses the Renewable Energy Certificates (RECs) associated with the power it produces. When the producer sells its power to the utility, the LADWP assumes ownership of the RECs, and the energy producer cannot claim the carbon neutrality of the solar energy.

The LADWP Net Metering Policy

Net Metering is another utility pricing program that “enables customers to use their own generation from on-site renewable energy systems to offset their electricity consumption over a billing period by allowing their electric meters to turn backwards when they generate electricity in excess of their demand” (LADWP, 2012). While in many instances Net Metering can be a viable source of revenue for energy generated on site, it is not a cost-effective option for UCLA. The LADWP has set a rate structure with high fixed costs for UCLA, in part because the university produces the majority of its own power at an on-site cogeneration power plant. These high fixed

costs result in an approximate loss of \$0.04 per kWh produced. The Luskin Center for Innovation estimates that under the LADWP's Net Metering program, the university would earn an average of \$0.10 per kWh, less than any of the five tier prices paid under the FiT program (Callahan, DeShazo, and Chomitz, 2013). The primary benefits of Net Metering are that it is not a competitive pricing program and it would allow UCLA to own the RECs associated with its solar installation. These benefits may not be outweighed by the lower price paid per kWh.

Funding Through State Legislation: Proposition 39

State legislation also offers UCLA a potential funding option through Proposition 39—the Multi-State Business Tax and Clean Energy Initiative—which California voters passed in November 2012. The new legislation requires all California businesses operating in California and other states or countries to calculate their tax liability using a single sales factor method rather than the cheaper, more commonly used three-factor method (California Secretary of State, 2012). Half of the increase in tax revenue, or a maximum of \$550 million per year, will be used to create the Clean Energy Job Creation Fund. For the next five years, the fund will go toward projects to support energy efficiency and expand the use of alternative energy in California, including “alternative energy projects in pub-

lic schools, colleges, universities, and other public facilities” (California Secretary of State, 2012). UCLA has the opportunity to apply for funding from the Clean Energy Job Creation Fund. At the time of this report, there was limited information on the amount of potential funding UCLA could receive from Proposition 39.

THE FUTURE of SOLAR PV at UCLA

Given the policy and regulations governing solar PV at UCLA and the financing limitations placed on the university, UCLA needs to start with a smaller deployment and work to ensure that the system costs are kept as low as possible. The university must also secure a high price paid per kWh generated to increase revenue to develop a revenue-neutral installation. The university needs to look at both the current market conditions for solar PV and plan for future changes to cost and available funding. In addition, UCLA must include solar PV in long-range planning and construction efforts to create a more established protocol for on-campus generation.

Increase Revenue

To receive the highest price possible for solar energy generated from the PV system, UCLA needs to utilize the LADWP's FiT pricing program. If UCLA decides to pursue FiT pricing, the price it receives for

solar energy generated on campus will be dependent on the timing of the application. At the time of this paper, the first round of FiT applications had closed, meaning that the Tier 1 \$0.17/kWh price is no longer available. However, Tiers 2-5 are still available, and the lowest price paid under FiT (\$0.13/kWh) is still more than the price paid under Net Metering (\$0.10/kWh).

Leave Environmental Attributes for the Future

Given the current local utility policies for price paid per kWh, now is not the time to focus on collecting the Renewable Energy Certificates of the PV system (see footnote 1). FiT pricing policy, and the subsequent loss of the environmental attributes of the system, is currently the most effective way to offset the costs and to make the system revenue neutral. Under FiT policy, UCLA can still utilize some of the environmental benefits of the system, specifically the public relations and green branding opportunities that come with the installation. Environmental attributes may be best to pursue in the future when system costs decrease and more funding options are made available.

Keep It Small

UCLA should initiate its on-site solar generation efforts with a small PV system under 300 kW. A smaller system will reduce the amount of capital needed for installation

and maintenance costs. It also has less risk attached to it overall. A successful smaller installation has the ability to set precedent for the university and act as a catalyst for future installations. Past capital financing illustrates that institutions of higher education, including UCLA, are much more inclined to pursue a project when there is already a successful project in place (AASHE, 2011).

A smaller PV system also provides the opportunity for the university to learn from the negotiation, installation, and maintenance processes that it can then apply if it decides to go forward with a larger installation. The lessons learned from a smaller system may be especially valuable if and when Proposition 39 Clean Energy Fund money becomes available to UCLA. The university is more likely to receive capital from the fund if it can demonstrate a commitment to successful on-site generation projects (Callahan, DeShazo, and Chomitz, 2013).

Reduce System Costs

The university can reduce overall system costs in two critical ways: utilizing low-interest capital and receiving a competitive rate for the cost per watt installed. The tax-exempt leases available to UCLA are an ideal way to self-finance the project at a low interest rate of about 4 percent. The interest of the TELP, however, is somewhat

time sensitive as the current interest rate is historically low and will most likely increase in the near future.

Reducing the cost paid per watt installed depends on the size of the installation and UCLA's involvement in the negotiation process. UCLA has the opportunity to partner with other installations to utilize an economy of scale when negotiating with a solar contractor. For example, the Smart Grid Energy Research Center (SMERC) is in the process of acquiring funding for a solar PV installation that will provide research and development for the center. If UCLA Energy Services were to work in collaboration with SMERC, they might be able to negotiate a lower cost per watt than if they negotiate on their own. Maintenance costs are more fixed than installation costs, as the system will require regular maintenance given current PV technology.

UCLA Policy

UCLA has the power to shift its campus policies at the micro level to encourage the growth of solar PV. Ultimately, UCLA needs to integrate solar PV into its planning and construction policies and protocols if it wants to promote on-campus solar PV energy generation. Even though UCLA exists in perpetuity, it tends to plan for the short-term. University master plans rarely account for more than ten years. In any ten-year window, an investment in solar is a huge expenditure, and this short-term

view does not take into account the benefit of reduced energy bills over the longer term. Expanding the time frame of the university's plan would allow solar to better fit into its plans.

The university can also implement a "build-in" policy requiring all new construction to include a rooftop solar deployment. A build-in policy makes rooftop solar the standard, not the exception. This policy could stem from the existing UC Sustainability policy mandating all new construction to meet LEED (Leadership in Energy and Environmental Design) Silver certification (UC Sustainability, 2012). For a build-in policy to become a reality, UCLA needs to secure a reliable, long-term source of funding.

CONCLUSION

The financing and funding limitations for institutions of higher education can make on-site solar PV seem unrealistic, but it's not all bad news. There are several potential opportunities to help institutions, including UCLA, drive down the cost of solar PV and expand solar power on campus. Whether or not UCLA ultimately decides to go with increased solar power, a better understanding of alternative financing mechanisms will make it easier for all colleges and universities to access solar PV in the future.

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PEAK SAND:

On the Limits of Resource Extraction Urbanisms in the Straits of Singapore

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Singapore's vulnerability as a nation without a hinterland to supply it with vital natural resources becomes evident in the case of land reclamation. This precarious relationship is exacerbated by the following conditions: (a) sand is a limited natural resource; (b) this resource is without substitutes; (c) the nation's population is increasing exponentially; (d) sand dredging, the process of resource-extraction itself, is a self-accelerating cycle; and (e) overuse of sand is increasingly hitting its technological, environmental, and geopolitical limits. Yet, having appropriated strategies for urban expansion that come with natural limitations, this island nation suffers from a la-

tent need to reclaim land from the foreshore for various types of development projects along its coastline.

Due to the spatial complexity of the issue and the range of spatial disciplines involved, gaining an overview of land reclamation in Singapore against the backdrop of impending peak sand is essential to ensuring Singapore's global competitiveness and regional scope for urban expansion. "Peak sand" is being hypothetically discussed in this essay as the point in time when the maximum rate of regional sand extraction is reached, after which the rate of reclamation is expected to enter terminal

decline. While the human population has been increasing exponentially, the unlimited availability of sand as a resource is an illusion. At the same time, dredging—the process of resource extraction itself—is a self-accelerating process that could be understood as a “dredge cycle”; every year, billions of tons of earth are moved both by erosion caused by humans as well as by humans in response to erosion. Thus, the rate at which earth is being moved is increasing exponentially (Hooke 2000).

Singapore has reclaimed land from the sea since the mid-1960s and was able to expand its sovereign territory by nearly a quarter in half a century as a result. When reclamation works began, the depth of Singapore’s shore was about five meters. That has sunk to about twenty meters, requiring four times

as much sand and therefore four times more money to fill every square meter. The more sand is being dredged, the more the landscape is being destabilized. The quicker the area gets refilled, the more one needs to dredge. Without regularly scheduled maintenance dredging, the development and operation of ports, harbors, and offshore facilities situated in Singapore’s waterways would shoal to critical depths, resulting in a significant loss of ship and barge payload capabilities and consequently a substantial reduction in territorial economic benefits at a series of scales in extreme conditions. Counteractively, as dredging companies on the lookout for quality sand are pushed further from the shore due to the limited and nonrenewable nature of the resource, their radius of action is spatially limited in turn by technical, environmental, economic, as

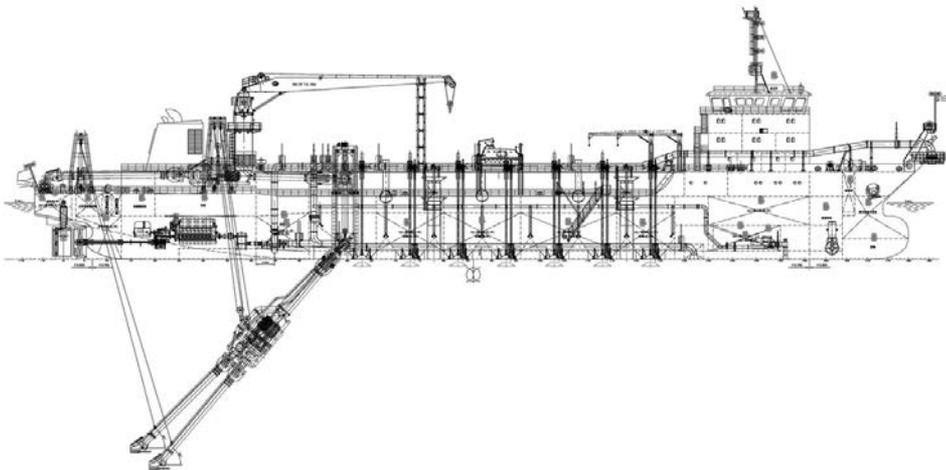


FIGURE 1. *Trailing Suction Hopper Dredger Model 2012 (8000 m³), Wazaf Trading and Shipbuilding Services*

well as legal concerns. As for how much more land the nation island can reclaim, we must ask, which technical, environmental, and geopolitical constraints and implications have to be considered? In regards to the spatial disciplines involved or excluded from the discourse, how can we possibly speculate on the architect's role in shedding light on possible solutions, leveraging extreme conditions as architectural opportunities for invention?

In *Risk Society's Cosmopolitan Moment*, Beck suggests that being at risk is the human condition at the beginning of the twenty-first century. He argues that, while risk produces inequality and destabilization, it can be the catalyst for the construction of new institutions. In the case of natural disasters, urgent architectural interventions and inventive modes of construction are often required. But can we think about a different kind of architecture that is not only a direct consequence of crisis—a humanitarian response, a basic shelter—but a more stable, flexible, and long-term “project” that could anticipate, even incorporate, such extreme conditions (Beck 2009)?

Too little attention is paid to the architect in relation to large-scale and long-term natural events. The architect is an active member of an actor-network. His diverse dependency on other parties in this network of actors, knowledge, and processes is presently of interest in academic research and professional discourse. Miessen's (2010)

The Nightmare of Participation encourages the role of what he calls the “cross-bench practitioner,” an “uninterested outsider” and “uncalled participator” who is not limited by existing protocols, similar to the notion of an independent politician dissociated from a specific party. New urban practices are emerging at the intersection of ecology, geography, and politics, and it is presently common practice for architects and engineers to collaborate on diverse technical challenges. But while the discipline of engineering is based on the logic of calculated risk by definition, architecture seems to have no means of understanding and anticipating the broader and long-term impact of its actions. The impact of architecture, and more generally the human impact on the environment and landscape, is already so large that its consequences and byproducts have to be considered as a precondition for any new design project. However, a retroactive examination is usually not part of the design.

A STRATEGY for URBAN EXPANSION

Singapore's geography in relation to the sea has changed tremendously over the past century. Due to its strategic location, Singapore has been a center for trade and commerce, transportation, and other activities in the region since the establishment of a British colonial trading post in 1819. The result was a rapid growth of popula-

tion in a country with a relatively small land area. Due to the resulting high population density and a rising demand for land as the population increases, the policy of urban planning in Singapore has historically been based on reclamation and maximized use of land. Thus large-scale land reclamation has been undertaken in different areas of the island state since the late nineteenth century. Nowadays, Singapore is virtually flat. But this has not always been the case, as Singapore's territorial expansion came at the expense of its own hills. While initially soil obtained from leveling the inland hills was used, sea sand obtained from dredging the surrounding seabed has become the main source of fill material for reclamation in recent years.

Earlier reclamation projects in Singapore were mostly confined to the southern tip of the main island. Fill materials were excavated from the hills in Bedok, Siglap, Tampines, and Jurong and used for filling swamp areas. Works included reclamation for the construction of commercial and residential projects. With the establishment of self-rule in 1959 and Singapore's independence in 1965, massive reclamation was initiated in order to cater to rapid development across various industries and businesses. Necessary amendments were made to the Land Acquisition and Foreshore Ordinances in 1964 in order to ensure that reclamation works could be executed without much hindrance. Initial works included reclamation for the construction of

basic hard infrastructure such as airports, seaports, and roads.

Recent foreshore reclamation works were mainly carried out by three statutory boards of the government of Singapore. Other than the reclamation of the off-shore islands of Pulau Bukum, Pulau Bukum Kechil, Pulau Ular, and Pulau Ayer Chawan by two private oil companies, seashore reclamation was undertaken by the Housing and Development Board (HDB), the Jurong Town Corporation (JTC), as well as the Port of Singapore Authority (PSA). Reclamation works executed by the HDB were mainly for housing, commercial, and recreational purposes. Since the 1960s, the HDB had reclaimed the entire southeastern coastline of the main island, from Changi Airport at the east to the city center at the south. Being executed in major phases, these works were in tune with public housing development schemes, during which inland hills were leveled for the building of new towns. Further, reclamation works executed by the JTC were mainly for industrial development at numerous off-shore islands, while PSA carried out works for various purposes, including catering to recreational needs. Unlike JTC and HDB, fill for the reclamation works executed by the PSA was mostly dredged from the seabed (Kao, Wong, and Chin 1998).

A LIMITED RESOURCE

Besides being used as primary land reclamation fill material, sand is also used for making glass and concrete, filling roads as well as renourishing beaches. The demand for sand is ubiquitous throughout industries and businesses on a global scale. Essentially a nonrenewable resource, sand is a rare commodity on land (vs. off shore), and is without substitutes. It has become a crucial mineral for the expansion of society—literally being the foundation of the building and real estate industries. Due to its physicality and main constituent, quartz, sand has a number of desirable properties for use as foundation for surface construction and civil engineering. It does not expand or contract with changing moisture content and, unlike soil or clay, it resists high loads without sliding or compacting. Each application has its own requirements with respect to the quality of sand; glass is made chiefly from high-quality, clean, sharp sand. Formed at high temperatures, glass as a clear and inert substance is extremely resistant to wear, tear, and aging. About a third of concrete consists of sand. During the production of concrete, sand must also be strong and clean, like the aggregate rock, for the cement crystals to attach to. Inclusions of mud, silt, clay, and organic matter affect concrete strength considerably.

Sea sand, having been washed over and over again by every wave pounding on the beach, consists mainly of extremely

hard quartz. Containing over ten percent of moisture by weight, sea sand needs to be washed to remove its salt. In popular places, where the cost can be justified economically by tourism, it has become common practice worldwide to perpetually renourish ailing beaches with new sea sand. On the one hand, by being less prone to being moved by wind than fine sand, coarse sea sand will not blow into built-up areas. Also, by being larger, coarse sand stays on top of the original sand.

THE LIMITS of GROWTH

There is a constant need to maintain the sea lines and provide new and larger ports for the bigger ships to anchor in the Straits of Singapore's limited sea space, to assure the region's competitiveness on a global scale. Journals in engineering research and practice concerned with dredging, sediment transport, and tidal wave action that affect the stabilization of shorelines, waterways, and harbors increasingly speculate on the future of dredging with respect to possible technological improvements or changes (Jordaan, Malan, and Bell 2009). Technology presently only allows reclamation of land from waters up to fifteen meters in depth. In the past, works used to be carried out from depths of five to ten meters. Today, however, reclamation works have to venture into deeper waters, incurring much higher costs. When dredging, sand is pumped up from the sea floor with suction

pipes and then discharged into a storage compartment known as the “hopper.” After filling up its storage compartment, the dredger sails to the disposal site where it unloads its cargo. It does so either by opening the doors or valves in the hopper bottom, using a pipeline running from the ship to the site, or using a bow jet in a technique known as “rainbowing.” What follows is the reclamation process itself. When filling land, piles are first forced into the seabed to ensure the land will not collapse when put to use later on. After sand walls are built to keep sea water out, sand stored at the sea is sucked up, filling the enclosed area before it is compressed. Then granite walls are built to prevent soil erosion by waves. It takes one to five years until the land is ready for use.

Unlike sand taken from the bottom of the ocean, desert sand is not materially and structurally suitable for making artificial islands. Thus, dredging companies primarily operate near shore where known quantities of quality sand are to be found. However, as noted earlier, such sand only exists in very limited supply. It also belongs to the beach and dune system, with which it relates dynamically through forces that create and pull down beaches and dunes: tides, waves, wind, and sun on the one hand, and gravity and rain on the other. Wind, weather, and gravity have a decisive influence on the shape of beaches and dunes, causing their profiles to change on a daily basis and from season to season. Taking sand out of this

equation can have a profound effect on the balance of this system and its entire profile. Changes are perceived sooner where sand moves more quickly (near shore, beaches), but changes may not manifest themselves for decades where sand moves more slowly (off shore, in deep waters).

An environmental priority is to prevent damage caused to the balance of the beach and dune system. In order to prevent beach erosion, dredging companies are advised to focus on areas with the least slope (off shore). Unfortunately, the cleanest and therefore most valuable sand is found in areas where the slope is steepest (near shore). Off-shore deep sand is being polluted by mud from unnaturally high soil erosion while off-shore rear dunes have been planted in the course of a century or polluted by humans and trapped sediments. In the context of these considerations, staying seaward of the 25- to 60-meter-deep contour of the coastline can be a potential compromise in establishing a safety zone around the coast in order to avoid interference with the natural beach and dune system.

The question remains whether sand removed from near shore would eventually be naturally replaced by off-shore sand and how soon. As the slope there is the steepest, sand removed from near-shore depth will most likely be replaced by beach sand to restore the balance. It may, however, take decades for deep storm waves to move sand from deeper near-shore depth towards

the beach. The falling sea levels in previous ice ages made the shoreline move back out to sea, leaving Holocene sand behind. Thus, the question arises: what would happen once the Holocene sand on the sea bottom has been used up? Would the underlying Pleistocene sand change its properties once it is stirred around? To date, scientific knowledge about this process of sand being moved massively and over large territories is almost entirely lacking.

ENVIRONMENTAL CONSEQUENCES

Under climatic change, determinants of human health are forecast to worsen. Cities concentrate populations that are particularly vulnerable to the effects of climate change. Severe weather events like intense precipitation, cyclonic storms, or storm surge associated with climatic change in both developed and developing countries, combined with the many stresses on urban areas, can jeopardize infrastructure, resulting in economic damage and extreme health hazard to city residents. The increasing relevance of large-scale critical natural events to planning and design necessitates a redefinition of the architect's role as the co-creator of our environment.

Dredging companies are unable to reclaim too far out into the eastern side of Singapore because the reclaimed land would be constructed too far out into the open sea. It

would be subjected to the destructive forces of waves and natural disasters. In fact, the main island is so sheltered from natural disasters that there is a common misconception that such events will not affect the island. But once sand is secured, it has to be protected from impending external influences such as tsunamis, typhoons, earthquakes, and a rising sea level. During periods of elevated sea levels, the variations between high and low tide are accentuated, putting Singapore's strategic reserves of sand at risk, as many of them lie adjacent to the coast.

In 1974 Singapore received a preview of just what devastation sea level rise could cause, when a rare astronomical event caused the tides to rise to more than double the usual level. Areas along the Singapore River were inundated, as were parts of the airport and a coastal public park built on reclaimed land. Documentation of tsunamis, typhoons, and earthquakes, which may have occurred centuries ago, is lacking, as Singapore's history does not go back long enough. Due to liquefaction, sand in reclaimed land slides like liquid when saturated with water, and buildings on reclaimed land may shake two to three times more than those on nonreclaimed land during earthquakes. The island nation stands on extensive soft marine clays and sands. In light of the experience in Mexico City, which was devastated by an earthquake in 1985 because it was built on the bed of an old lake, should not studies be put in place

to realistically assess the plausible size of natural disasters and the detailed response of structures in Singapore?

GEOPOLITICAL CONSEQUENCES

Thus far, research conducted on sand dredging and land reclamation has mostly remained in the realms of logistics, planning, and engineering. Singapore's experimental policies in urban expansion, however, are perhaps a kind of extreme case study in how nations not only utilize natural resources but literally build themselves from the ground up (and down) as political acts of landscape architecture. When one departs from Singapore by boat, a series of environmentally disturbing sceneries of geopolitical significance can be witnessed—from artificial islands and booming construction sites to strategic sand reserve depots, dying beaches, and erased islands throughout the Straits of Singapore.

Land reclamation requires a large amount of sand that is not available from within Singapore. As a consequence, reclamation contractors import sea sand from neighboring countries. But in response to excessive digging into the ground of neighboring offshore seabeds, which strongly damage the environment, several adjacent regions have banned the export of sand to Singapore. This has in turn resulted in a continuous geopolitical friction throughout the region.

Over the last couple of years, Vietnam and Malaysia have followed Indonesia's historical lead in banning sand exports. These bans, however, have not stopped the flow of sand from these countries. An illegal trade has flourished. Supply lines are not public information, as the Singaporean government does not disclose them. According to a recent study on sand trafficking throughout the region, the Construction and Building Authority says it is not public information where its sand comes from, while the National Development Ministry says the nation's infrastructure development company buys it from a diverse range of approved sources. By today, Singapore's insatiable demand for sand has been blamed not only for the disappearance of large tracts of mangrove forests and beaches along coastlines, but for the disappearance of whole islands in the Malaysian and Indonesian archipelagos (Global Witness 2010).

A mismatch between Singapore's reliance on questionably sourced sand and its position as a leader for sustainable development and environmentally sound urban planning is evident. But differences between Singapore and its neighbors are nothing new. Singapore—part of the region, but apart from it—has a history of disputes with its neighbors over land reclamation, water, satellite concessions, corporate takeovers, and military flight patterns, just to name a few. In fact, such disputes are as old as the nation itself. Its founding prime minister, Lee Kuan Yew, stated in his memoirs that

his goal was to leapfrog the region as the Israel had done. After the island nation's independence from Malaysia in 1965, its leaders took advantage of Singapore's historic role as a trading post to lure investment and manufacturing, catapulting it to the ranks of the world's most affluent nations within two decades. According to officials in the region, Singapore is presently seen in two ways: On the one hand, it is a role model for development. On the other hand, it is seen as an arrogant economic giant prepared to use its financial muscle to undermine neighboring countries. If Singapore and its neighbors cannot agree to share basic resources like sand and water, then the stated goal of the ten member countries of the Association of South East Asian Nations—the establishment of a single market by 2015—remains in the realm of the illusory.

POLICY PRECEDENTS

Without attracting much attention from its neighbors for centuries, Singapore has been reclaiming land since its early colonial days. However, if Singapore keeps employing land reclamation to increase its land size in relation to its neighboring countries, the political boundaries of Malaysia and Indonesia could be threatened. Singapore is one of the few nations in the world where the land mass of the country is constantly growing. And with this, its exclusive economic zone also increases. Thus, ironically,

Singapore's resource-extraction-based urbanism leads to further securing of natural resources. In the long run, beyond environmental implications, this creates a problem on a geopolitical scale.

In 2002, the government of Malaysia claimed that reclamation works impinged on its territorial waters and caused environmental harm to the marine environment of the Straits of Johor. In regards to the land reclamation works in Pulau Tekong and Tuas View Extension, Singapore's neighbor applied to the International Tribunal for the Law of the Sea for provisional measures. Malaysia invoked the provisions of the 1982 UN Convention on the Law of the Sea and referred the dispute to arbitration, under Annex VII of the Convention. In 2003, Indonesia began to voice its displeasure with Singapore's land reclamation works. Marine ecosystems and habitats have been damaged irreparably by the uncontrolled sand extraction, which has also led to the disappearance of a number of small islets in the Riau Archipelago. Nipah Island is presently almost fully submerged. If the island sinks completely, the international boundary between Indonesia and Singapore will change, to Singapore's advantage. The two nations have an existing agreement on marine territory. But they have not yet settled their coastal baselines and exclusive economic zones (Koh and Lin 2006).

As a boundary line that determines where a nation's maritime sovereignty and jurisdiction begins and ends, a baseline is a legal construct. In fact, baselines determine all areas of maritime jurisdiction. They create a demarcation between areas where a nation has no rights and those where a nation does enjoy rights. The Anglo-Norwegian Fisheries Case in international law provided the first guidelines for drawing "straight" coastal baselines: In 1951, the United Kingdom and Norway contested access to fisheries off the Norwegian coast. Norway had attempted to claim ocean areas through some creative cartography. By drawing coastal baselines from points along its rugged coastline, Norway asserted that the enclosed areas between the deep fjords were exclusive Norwegian fisheries. Tracing a parallel or tangent line to a curve as a method of drawing political boundaries, the United Kingdom argued that coastal baselines should follow the outline of a coast. Eventually, the International Court of Justice ruled in favor of Norway's method of drawing straight baselines. According to Article 5 of the 1982 UN Convention on the Law of the Sea, a "normal" baseline is drawn at the low-water line, as stated in official charts. Essentially, it is an "outline" of a nation's coast. However, in some situations, it is either impractical or uneconomical to draw a normal baseline. In such cases, straight baselines are used in lieu of normal baselines.

In 2004, the Okinotorishima Atoll in the Philippine Sea was designated as a "series of rocks" by China. As China is worried that the U.S. Navy might use the surrounding ocean to ferry warships and supplies to Taiwan, there is no dispute over the ownership of the atoll between the governments of China and Japan. Instead, in this case the dispute is about the designation of the atoll—whether it is a "series of rocks" or a series of islands: If they are islands, the Okinotorishima Atoll grants Japan exclusive economic zone rights over an area of ocean about the size of California. According to the UN Convention on the Law of the Sea, an island is a "naturally formed area of land, surrounded by water, which is above water at high tide." Rocks which cannot sustain "human habitation or economic life" of their own shall have no exclusive economic zone. In an ongoing project to preserve the rocks and encourage new coral growth, Japan has erected concrete walls around the atoll. Slits in the walls ensure that the "naturally formed" land remains "surrounded by water," while a solar-powered unmanned lighthouse, installed in 2007, provides "economic life." Ironically, a concrete barrier is not natural, while a reef grown from transplanted coral in the shelter of artificial structures is.

Again, as we live in an era when the natural island nations are at risk of becoming ghost states and artificial islands tend to be inhabited as briefly as possible, such case studies stress the importance of a retroactive ex-

amination of large-scale design processes. What will become of your island when the legal and cultural environment that sustains it inevitably changes? The extremely formalized system of specific maritime zones provides a potential framework for planners who are creating programs involving off-shore resources. Knowledge of these zones, and how these zones are created, would ensure that today's regional and international planners are well informed and able to use this legal framework to their advantage.

CALLING for an ATLAS

During the present circumstances under which land is reclaimed in Singapore, peak sand seems inevitable. For the purpose of providing economic and national security during a crisis, some countries have strategic reserves of oil, rice, wheat, or other resources. Rising and diminishing in response to economic demands and international geopolitics, the island nation of Singapore stockpiles emergency inventories of imported sand. Singapore is aware of its challenges. However, adequate documentation and visualization of when and at what scale a crisis is going to happen are presently lacking. The limiting constraints as to how much more land the country can reclaim are bound to numerous factors in the realm of practices invisible to the public domain. In order to visualize and fully understand the complex spatial constraints

and implications of land reclamation as a strategy for urban expansion across disciplines, it is essential to trace the invisible cartography of sand dredging. Thus, experts, who presently do not have a common language to sufficiently understand each other, could be brought to the table. By calling for an atlas of resource-extraction urbanisms in the Straits of Singapore, which would potentially compensate for the present information asymmetry among the parties involved, the architect can play a key role in this process.

In *Architecture's Geographic Turns* David Gissen (2008) describes an emerging group of geographically inclined architects who are adapting theories and concepts from geography, together with the discipline's representational tools. He describes a fascination with mapping that has been triggered by easily accessible phenomena like Google Earth and various forms of geographic information systems. Instead of plans and volumetric representations of spaces, architectural intent is communicated in the form of cartographical representations mapping transformations and flows in time and space. Rather than being strictly engaged with the architectural object emphasizing the specific experience of individuals within a building, "geo-architects" emphasize environmental flows of atmospheric material through a territory or at the scale of a person in order to develop proposals in the form of adaptable systems and flexible or hybrid infrastructures.

These systemic approaches to territorial situations point to architecture's capacity for arranging and structuring knowledge, to its power of deliberately turning information on and off. The architect's scope goes beyond the traditional notion of building. If the impacts of environmental disasters were addressed from a more entrepreneurial perspective, an advantage could be created out of an obvious disadvantage: An architect is, even though he knows about building, in reality in almost every domain a layman. In the case of a private house, he is to some extent a specialist, but when an architect gets commissioned to design an airport or a hospital, there is far more that he does not know than what he does know. The architect brings together disciplines and curates knowledge and information, speculating on the possibility of compromise in a sustainable and operative way, and to possibly softening the impact of environmental crises. This allows a kind of synthesis that specialists can no longer create.

The product of the map as a mental construct is an abstraction, a reduction of information. The architect as an expert generalist is a curator of information, turning information on and off. By reducing information, the architect is only telling part of the story as he is holding things back. Thus, when drawing a map, in order to be able to understand the bigger picture, we have to mess with history, hold information back to the extent of almost constructing a lie, an alternate reality. But when rethinking

and applying the agency of the architect to mapping, the architect cannot be reduced to a negotiator between disciplines. While a negotiator arranges things among entities but doesn't gain anything from it, the architect brings multiple disciplines to synthesis. What, then, is the role of the architect in this contemporary panorama (Pauer 2012)?

FROM ANTICIPATION to SITUATIONS of CHANGE

Being a spatial issue at heart, it has been shown that land reclamation's radius of action is spatially limited in turn by technical, environmental, economic, as well as legal concerns. The increasing relevance of large-scale critical natural events to planning and design necessitates a redefinition of the architect's role as the co-creator of our environment. Beyond his ability to solve site and project-specific challenges, the skill and mind-set of the geo-architect, reinterpreted as an expert generalist bringing multiple disciplines to synthesis, could be of particular use in the production of a resource-extraction atlas at the particular site of Singapore.

At the core of this call for an atlas of an invisible cartography of sand dredging lies the understanding of subsurface urbanization in all its facets as a growing part of overall urbanization. This investigation of the limits of resource-extraction urbanisms in the Straits of Singapore is framed by the

need to develop a methodological toolbox of the architect on an atmospheric and territorial scale. This toolbox would help the urban discourse identify new landscapes, networks, and urban models in the wake of destabilized economic, social, and environmental conditions. Thus, the field of urban studies could potentially understand the convergence of scales and timeline of events in nature, politics, and economics, and the performance of the discipline of architecture in this context.

Historically tracing earth moving per capita at a global scale, our ability and motivation to intentionally modify the landscape by moving earth in construction and mining activities have increased dramatically. Around 7000 B.C., the hunter-gatherer way of life gave way to farming and village life. Around 3000 B.C., the desire for minerals led to expanded mining, and metal tools facilitated earth-moving activities. After digging sticks and antlers had given way to wooden plows, iron spades and steam shovels around 1800, steam power and the Industrial Revolution led to a need for coal and at the same time provided machinery for mining coal and other earth-moving endeavors. The early 1900s' internal combustion engine eventually led to the enormous excavators of today. Erosion from agricultural fields also increased steadily as hunter-gatherer cultures were replaced by agrarian societies. This constitutes an unintended additional human impact on the landscape (Hooke 2000).

The twenty-first century has been characterized by unparalleled urban transformations, but the extent to which urbanization is happening underground is much larger than is generally assumed. Decentralizing urban growth is limiting the spatial capacity to accommodate the simultaneous demand for the construction and management of large-scale infrastructural projects. Current shifts in energy policies will continue to foster the exploration and development of subsurface territories for years to come. And the need for ecologically and economically sustainable resource management in the context of a growing awareness for conservation and protection of our natural and man-made environment often leaves no alternative but to construct new mobility and energy infrastructures below surface. On the input side, the production of both concrete and metals requires huge amounts of soil, gravel, and sand to be excavated, moved, and refined. On the output side, extractions from construction sites as well as mineral wastes from demolitions of buildings entail billions of tons of mineral waste (Dittrich et al. 2012).

Never before in history has humankind extracted, transported, shifted, processed, and reproduced more soil and minerals. Paradoxically, while minerals presently represent the largest material stream on earth, urban discourse has tended to focus its attention on visible urbanization processes, whereas invisible subsurface infrastructure is often ignored or taken for granted.

To the extent of being treated as two different and separate disciplinary entities in the field, the visible realm belongs to the architect, landscape architect, and urban planner while the invisible realm belongs to the civil engineer. However, this distinction does not correspond to the reality of urbanization processes. Simultaneously engaging the surface and subsurface, visible urbanization both requires and entails subsurface urbanization, and vice versa.

It is fascinating to think of the architect as a geomorphic agent and to consider his ambition on a territorial level, and even more so, the limits of this approach. In the case of land reclamation as a strategy for urban expansion, how has failure historically influenced representation and design methodology? Is “geo-architecture” a way to structure knowledge we have about what will happen, speculating on the possibility of compromise in a sustainable and operative way and possibly softening the impact of environmental crises? Thus, we would be moving from anticipation of situations to change, from theoretical speculation to an actual design approach. Can we think of infrastructure that would anticipate the technical, environmental, and geopolitical constraints we have to face? Can we design peak sand?

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THE UNSUSTAINABLE COST *of* SUSTAINABILITY:

PlaNYC 2030 and the Future of New York City

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ABSTRACT: *In this paper I provide a contextual analysis of actually existing politics of sustainability by focusing on Michael Bloomberg’s sustainability plan for New York City, called “PlaNYC 2030.” Based on an expected population growth of one million residents by 2030, the plan outlines a growth-oriented, environmentally friendly agenda for the future development of the city. As the framework within which policies of sustainable development are being advanced in New York City is that of entrepreneurial urban governance, PlaNYC has managed to expand opportunities for growth, while providing the city with a competitive edge in the global struggle for business and capital. However, the social costs and benefits of “green” policies in New York City are unequally shared. The exclusionary nature of the decision-making process that led to the formulation of the plan has produced an agenda that, while striving to find market solutions to balance economic growth and concerns for environmental preservation, lacks any tangible concern for the social implications of the proposed growth.*

In the introduction (section 1), I draw on existing studies on politics of sustainable development to contextualize urban sustainability initiatives against the backdrop of growth- and competition-oriented urban agendas in advanced capitalist cities. In sections 2 and 3, I introduce Bloomberg’s “green” plan for New York City: I briefly chronicle the decision-making process that led to its formulation and clarify its growth-centered approach to sustainability. I discuss

PlaNYC's inadequacy to address the negative social externalities of development in section 4, and I elaborate this further in sections 5 and 6, where I focus in detail on the housing component of the plan to clarify that while PlaNYC focuses mainly on the development of attractive residential opportunities catering to specific groups of affluent city consumers, it does little to alleviate the severe dearth of affordable housing options for low- and middle-income New Yorkers. In the conclusion, I focus on the Mayor's "business as usual" response to the tragic events of Hurricane Sandy in 2012 to discuss whether the City's environmental vision only goes as far as its quest for economic growth allows.

1. THE GREEN CITY as a CATALYST for NEW CITY CONSUMERS

In their account of the relationship between politics of sustainability and global economic competitiveness, Rob Krueger and David Gibbs (2007a, 2007b) have shown that politics of sustainability all too often incorporate environmental concerns into "business as usual" growth- and competition-oriented strategies of governance. Since the structural framework within which policies and practices of sustainable development are pursued in advanced capitalist cities is that of urban entrepreneurialism, "green" policies are expected to expand opportunities for growth while providing cities with a competitive edge in

the global struggle for business and capital. More specifically, sustainable development initiatives can be mobilized as a "quality-of-life" strategy to catalyze and retain specific groups of city consumers (Ibid, 2007). In the last decade, New York City under Mayor Michael R. Bloomberg has not only taken up the environmental challenge, but has also sought to cast itself as a model for "green cities" worldwide. With the launch of "PlaNYC 2030: A Greener, Greater New York" in 2007, the Mayor has put sustainability at the core of a growth-oriented urban agenda aimed at transforming New York into a post-industrial, business- and environmentally friendly city.

Recent studies have stressed the significance of the living preferences of a highly mobile class of affluent professionals as an important determinant of economic development (Lloyd and Clark 2001; Florida 2002, 2005; Glaeser and Saitz 2004). This includes highly educated individuals—flexible workers in the F.I.R.E. industries (finance, insurance, and real estate) and in other sectors of the service economy, and more generally, geographically mobile urban residents with higher-than-average incomes and with a strong discretionary purchasing power. Research involving the preferences and values of this socioeconomic group shows that they tend to base their location patterns on the qualitative assets or "amenities" of a place, rather than on more traditional factors such as the headquarters location of established em-

ploying firms (Florida 2002, 2005). This educated and mobile workforce is attracted to places that host diversified labor markets and allow for qualified employment opportunities, and that offer a range of quality-of-life advantages such as adequate housing, a vibrant cultural life, and a wealth of leisure and entertainment opportunities. They also tend to value the presence of parks and open spaces, and they favor urban density over sprawling suburbs, and public transportation over private automobile use (Florida 2002).

In advanced capitalist cities, the presence of these new urban classes is almost universally encouraged by entrepreneurial policy makers, much of whose agenda revolves around their demands and consumption patterns (Peck 2005). The entrepreneurial “clichéd repertoire of favored policy interventions” (Ibid, 767) aimed at attracting this class of city consumers includes, most notably, the upgrading of inner-city neighborhoods with a particular charm, the provision of attractive housing options, upgrades in public transportation, and “green” developments (strengthening of transit-oriented development; redevelopment along the waterfronts; energy-efficient retrofits; provision of parks, open space, public plazas, bike lanes, and so forth).

Right as he took office, Michael Bloomberg made clear that, in order to maintain a competitive edge in the global marketplace and to keep luring and retaining the new urban

class of well-educated professionals, New York had to be physically transformed into a post-industrial, business- and environmentally friendly city. The production of a brand new urban space would provide the appropriate environment for the favored class of city consumers—the “high-value-added postindustrial sectors that comprised the city’s target market” (Brash 2011, 124): “We’ll continue to transform New York physically—giving it room to grow for the next century—to make it even more attractive to the world’s most talented people.... New York is the city where the world’s best and brightest want to live and work. That gives us an unmatched competitive edge—one we’ll sharpen with investments in neighborhoods, parks and housing” (Bloomberg 2003). To Bloomberg and his advisors, a successful development strategy would be based on providing qualified companies with appropriate space and infrastructure, and their employees with attractive living environments. This would involve comprehensive planning for high-end residential and office space first-class amenities; and improved parks, open spaces, and waterfront areas.

2. THE PROCESS BEHIND PLANYC 2030

PlaNYC 2030 was not the result of a participatory decision-making process, but the product of a vertically integrated management model centered around the leadership

of the Mayor.

During Bloomberg's first term in office, the city embarked on a meticulous process of amendments to the city's obsolete zoning resolution, which dated back to 1961, to make land more responsive to the demands of new markets, industries, and consumers. Each development site was handled as a separate enclave—with little, if any, regard for a comprehensive land-use strategic vision for the city as a whole. However, an overarching, long-term plan to guide development was necessary if the City Planning Commission was to respect its Charter mandate, as New York State's zoning-enabling statute requires that land use changes be undertaken "in accordance with a comprehensive plan" (Nicas 2010, 3). The formulation of a comprehensive plan to articulate and guide a broad range of development efforts was thus seen by city officials as crucial in order to win citizen support for their and the business community's growth agenda.

In 2006, Alex Garvin, former City Planning Commissioner (1995–2004) and Managing Director of Planning for NYC2012 (1996–2005) — New York City's committee for the 2012 Olympic bid (which the city eventually lost to London) — prepared a report for the New York City Economic Development Corporation (EDC), a quasi-governmental organization that operates as the city's economic development vehicle (Garvin 2006). Based on an expected population growth of

one million residents by 2030,¹ the Garvin report used the strict timetable of the Olympic bid as a "forcing mechanism" (Kriegel 2002) to push forward development in blighted areas that had long been targeted by the city as potential locations for growth (Brash 2011, 52). It suggested opportunities for high-density property development in many of the city's underutilized areas (i.e., along the industrial waterfronts, on brownfield sites, and on top of dismissed rail yards) and for improving the public realm by creating new green spaces and plazas, greening boulevards, and extending bike lanes.

The visions of the Garvin Plan became the rationale of Bloomberg's sustainability plan, which was released one year later. The 127-point agenda, called "PlaNYC 2030: A Greener, Greater New York," was crafted by a city department deliberately created by the Mayor, named the Office of Long-Term Planning and Sustainability, and was presented as a comprehensive plan that would make New York "the first environmentally sustainable 21st-century city" (Lueck 2007).

The proposal was applauded by different stakeholders for the broad range of innovative initiatives it outlined to reduce pollution, increase energy efficiency, and improve the quality of streets and parks. Among the supporters were environmentalists, business leaders, and private-sector firms involved in green practices (Finn,

2008). A report by the International Council for Local Environmental Initiatives applauded PlaNYC “as the gold standard for big-city sustainability plans” (ICLEI 2010, 8). According to the ICLEI report, among the factors contributing to PlaNYC’s success were “a strong central management and coordination provided by the Mayor’s Office of Long-Term Planning and Sustainability” and the strong mayoral leadership that allowed a “swift transition from planning to action” (Ibid, 6). The ICLEI report also came to praise the plan for its “methodical, transparent, and inclusive planning process” (Ibid, 6). But the bases for such claims are disputable: although PlaNYC 2030 is in fact a land-use plan, it was crafted with no formal participation by the City Planning Department or the City Planning Commission. Remarkably, it never went through a proper public review process, and it was never presented to the city’s fifty-nine Community Boards, nor to the Borough Presidents and the City Council; there was no formal, legally binding approval (Angotti 2008; Finn 2008; Paul 2011a). Noting that the plan was already being developed when the public outreach process began in the fall of 2006, Paul (2011a) argues that “public participation in PlaNYC 2030 was an afterthought that was initiated only when the Mayor’s office realized it was a necessary component of selling the plan to the public....And the outreach efforts fell well short of best practices in public participation, involving only meetings with hand-picked non-profit organiza-

tions and policy experts and eleven public town hall presentations where the Mayor’s slideshow was presented, followed by limited questions from the audience” (np). The lack of an effective participatory involvement of citizens and local groups in making the plan has also been vocally criticized by the Diversity Committee of the New York Metro Chapter of the APA, which stated that “the forms of participation offered can be categorized as ‘manipulation, therapy, informing, consultation, and placation,’ all of which are at the bottom of Sherry Arnstein’s ‘Ladder of Citizen Participation,’ a classic in the literature of city planning theory” (APA Diversity Committee 2007, 1). Angotti (2008) has quite succinctly summarized the plan’s exclusionary decision-making process as follows: “In scores of public forums and focus groups, people from the mayor’s office offered presentations showcasing the plan and asked people who attended to submit their comments. It was a one-way, top-down process. There was no conversation, and the decisions about what to put in the plan remained in City Hall” (np).

While the preliminary process that led to the formulation of PlaNYC engaged a variety of energy and planning experts, business leaders, and environmentalists, it did not effectively involve the many advocacy groups and community organizations that are active in the city—not only groups advocating for environmental justice, but also tenants’ rights associations, housing advo-

ates, and community-based neighborhood coalitions fighting for a socially sustainable development in their communities.

3. PLANYC 2030: BETWEEN GROWTH *and* SUSTAINABILITY

PlaNYC has been the result of concerns over environmental sustainability as much as a policy response to overcome a recessive economic environment in the aftermath of the global recession, by spurring a new wave of property development and creating new markets and services in a rising local and global green economy. Its growth-centered approach to sustainability has expanded opportunities for economic expansion, while providing the city administration with an alibi for development that is hardly open to contention, as new waves of profit-driven development efforts can be mobilized in the name of a new “green” rationale that is supposedly beneficial to all.

Because of the lack of official approval, PlaNYC 2030 doesn’t have the formal prerequisites to constitute a legally binding plan for the City. This notwithstanding, within one year of its release, over 97% of the Plan’s 127 initiatives were launched, initiating a wealth of legislation in a range of different sectors, from land use to water and energy supply, from transportation to housing, from health to waste management. The smooth implementation of PlaNYC was ensured by the activities of the Office

of Long-Term Planning and Sustainability (OLTPS), the supervisory entity created ad hoc in 2006 as part of the Mayor’s Office. The OLTPS was put in charge of coordinating the operations of all major City agencies and departments, including departments whose focus is on land use, like the Department of Parks & Recreation, the Department of City Planning, the Department of Transportation, the Department of Buildings, and the Department of Housing Preservation and Development.

To improve air quality, the plan promotes hydrogen and hybrid vehicles, supports the introduction of biodiesel into the city’s truck fleet, enforces anti-idling laws, and lowers the maximum sulfur content in heating fuels. The plan also lays out a wide array of strategies for “smart” urban growth—including, among others, the retrofitting of city buildings to improve their energy efficiency; the remediation of brownfield sites; the development of new land by building platforms over transportation infrastructure, such as rail yards, rail lines, and highways; the development of underused or vacant waterfront land; and the conversion of unused schools, hospitals, and other municipal sites for new housing, parks, and public space.

The following paragraphs list some of the most noteworthy strategies outlined in PlaNYC.

As the purpose of this study is to discuss

the social consequences of the growth initiatives outlined in PlaNYC, this list will focus on the land-use components of the plan.

Housing

One of PlaNYC's stated aims is to "create homes for almost a million more New Yorkers, while making housing more affordable and more sustainable" (NYC 2007, 12). Based on the assumption that New York City will become home to over 9 million people by 2030, the plan includes a wealth of provisions to create new residential opportunities across the five Boroughs. Most of the housing initiatives contemplated in PlaNYC are based on the use of contextual zoning changes (rezoning) to loosen the strict segregation of uses across the metropolitan area, to convert manufacturing districts into "mixed-use" communities, to increase residential capacity along transit-oriented corridors, and to reclaim underdeveloped brownfield sites and waterfront land as residential neighborhoods.

Creation of new developable land

In order to open up land for new development, the plan proposes to build over exposed rail yards and highways across the city. Similar initiatives have already been implemented in the past in New York City—most notably along Park Avenue in Midtown Manhattan in the late nineteenth century. The plan foresees the building of

platforms over the Hudson Yards in Manhattan and the Atlantic Yards in Brooklyn. Other areas earmarked for this kind of development are the Sunnyside Yards in Long Island City in Queens, the railroad facilities connected to the Staten Island Ferry, and exposed highways such as the Brooklyn-Queens Expressway (BQE) between Carroll Gardens and Cobble Hill and the Gowanus Expressway, also in Brooklyn.

Strengthening transit-oriented development across the city

The plan aims to accommodate new residential units "within a half-mile of mass transit" (NYC 2007, 19). Most new housing units ought to be located in areas that already have strong transit access, and that can accommodate increased density without straining the existing transportation infrastructure. Plans for transit-oriented developments of this kind are at major transit hubs like Downtown Jamaica in Queens, and at Coney Island, where the Coney Island Strategic Plan envisions growth around the newly rebuilt Stillwell Avenue subway station—the terminal of several train lines in Brooklyn including the D, Q, N, and F trains.

Rezoning of underdeveloped waterfront areas

Another guidepost of PlaNYC 2030 is the development of residential districts along the city's waterfront. In the years before

Bloomberg, large-scale waterfront redevelopments had been undertaken in Battery Park City, on Roosevelt Island, and at the South Street Seaport. During the first Bloomberg term, the City rezoned the Greenpoint-Williamsburg waterfront in Brooklyn and the Long Island City waterfront in Queens. In 2009, the Coney Island waterfront was rezoned to increase residential capacity in the areas where the legendary amusement park once stood.

In 2011, the Department of City Planning released “Vision 2020: New York City Comprehensive Waterfront Plan,” a ten-year blueprint for the future development of the city’s 520 miles of shoreline.

Redevelopment of brownfields

In 2010, the city introduced the city’s first own brownfield Cleanup Program to speed the cleanup and redevelopment of brownfield sites—areas whose soil has been contaminated by industrial discharge—and dedicated a \$15 million fund to facilitate their rehabilitation. The city also established an Office of Environmental Remediation, which is supervising the remediation of 7,600 acres of contaminated land across the metropolitan area. Brownfield Incentive Grants (BIG) have been introduced to incentivize developers to clean up and develop brownfields: by enrolling in the program, landlords can earn grants for cleanup costs and receive government liability protection.

Green buildings

The Green Buildings Act, which became effective in January 2007, requires new municipal buildings, as well as additions and renovations to existing city-owned buildings, to achieve Leadership in Energy and Environmental Design (LEED) standards of sustainability. The same year, the Mayor signed Executive Order 109, which mandates a goal of 30% reduction in greenhouse gas emissions (through lighting retrofits and heating, ventilation, and air conditioning upgrades) from 4,000 municipal buildings by 2017. Another package of legislation approved in April 2009 (called “the Greener Greater Buildings Plan”) extended mandatory energy-saving improvements to large commercial and residential buildings, and included \$16 million in stimulus funding to help landlords afford the upgrades. In 2011, the City established the New York City Energy Efficiency Corporation (NYCEEC), an independent, non-profit financial corporation with \$37 million in initial capital from federal stimulus funds to provide financing for efficiency retrofit of private buildings throughout the five Boroughs. In April 2012, City Council adopted the “Zone Green” Text Amendment to remove zoning impediments to the retrofitting of existing structures and the construction of new green buildings. This amendment enables private property owners to more easily install renewable energy systems on their buildings, including sun control devices on the facades, solar panels on flat roofs, green roofs, storm water

detention systems and skylights, and even wind turbines on taller buildings near the waterfronts.

Parks and open spaces

One of the goals of PlaNYC 2030 is to “ensure that all New Yorkers live within a 10-minute walk of a park” (NYC 2007, 12). The plan calls for major investments to create open spaces across every Borough, reclaiming underperforming sites for parks and opening underutilized schoolyards as community gardens or playgrounds. In November 2011, the City opened the 200th schoolyard as a local playground in Jackson Heights, Queens. The plan also aims to create a more inviting public realm by opening public plazas in heavily congested areas. Through the launch of the Plaza Program in 2007, dozens of pedestrian plazas have been incorporated in busy crossroads, contributing to transforming overloaded streets and intersections into more welcoming public spaces: plazas have been developed at iconic crossroads like Times Square and Madison Square in Manhattan, Fordham/Kingsbridge Plaza in the Bronx, and Putnam Triangle Plaza and Willoughby Plaza in Brooklyn. In October 2007, the City launched the One Million Trees Initiative with the goal of massively expanding the city’s urban forest. The city Department of Parks and Recreation was granted \$400 million to plant 600,000 new trees along streets, in public parks, and on private properties. Residents, private businesses, and

other organizations are to plant the remaining 400,000 trees. On October 18, 2011 the City marked the planting of 500,000 trees since 2007.

4. THE MISSING PILLAR of SOCIAL SUSTAINABILITY

Concerns for social justice first entered the institutional debate about sustainable development during the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992 (also known as the Rio Summit), and became the subject of the 2005 World Summit on Social Development, in which the three components of economic, environmental, and social sustainability were recognized as the interdependent and mutually reinforcing “pillars” of sustainable development (UN 2005). What “social sustainability” may entail, however, has been the subject of various official interpretations, and the ambiguity of the term has allowed it to be easily appropriated into “business as usual” political practices. A convincing definition has been proposed by Campbell (1996), who argues that initiatives aimed at balancing growth and environmental preservation are not sustainable unless they address the “third pillar” of social justice, which he defines as “the striving towards a more equal distribution of resources among social groups across the space of cities and of nations” (302), and which has been elsewhere defined as “an equitable distribution

of the costs and benefits (material and non-material) of any development ” (Scottish National Heritage Society, quoted in Hoff 1998). Campbell (1996) thus argues that sustainable planning efforts must strive to reconcile the three conflicting and mutually interlinked priorities of protecting the environment, promoting growth, and advocating social justice. Certainly, this is not an easy task to achieve in concrete terms. While sustainable planning policies in the advanced capitalist world typically advocate for economic development or environmental awareness, evidence suggests that propositions to advance social equity are often much leaner in vigor (Agyeman, Bullard, and Evans 2003). This points to another dilemma, one that Krueger and Gibbs (2007a) have summarized quite appropriately with the slogan “the sustainable development paradox,” contending that “the fluid meanings of sustainability have enabled different groups of actors to redefine and manipulate the term in ways that suit their own political ends” (Krueger and Gibbs, 8). While narratives of sustainable development are often uncritically incorporated into neoliberal, pro-growth-oriented governmental agendas, “actually existing sustainabilities”² (Krueger and Agyeman 2005) show how difficult it is to integrate the social, economic, and political dimensions of sustainable development on the ground when notions of sustainability are imbued with market-centered notions of competitiveness, uneven development, and perpetual growth: environmental sustain-

ability and social justice are not always compatible objectives (Dobson 2003), and neo-liberal, free market solutions to environmental challenges run the risk of exacerbating, rather than resolving, social inequalities (Tokar 1996).

PlaNYC is no exception: unsurprisingly, left out from Bloomberg’s sustainability agenda is a tangible concern for the social impacts of growth. Critics of PlaNYC 2030 have repeatedly pointed out the problems with PlaNYC’s narrow focus on land use and economic growth (APA NY Chapter 2007; Marcuse 2007; Cowett 2008; Angotti 2008; Finn 2008). The APA’s New York Metro Chapter (2007) has criticized the plan for being based on a single assumption about the city’s future population growth and energy needs, without presenting any alternative scenarios. According to Marcuse (2007) and Angotti (2008), PlaNYC lacks any assessment of the costs and benefits of the proposed initiatives for different social groups. Finn (2008) points to the “disconnect between Bloomberg’s PlaNYC and the many pressing equity issues that face New Yorkers, from gentrification and affordable housing to environmental injustice” (13). Finally, Cowett (2008) claims that “there is no discussion of race and economic disadvantage in a city that is one of the most segregated in the U.S., has over a million people requiring some form of food assistance, and is losing affordable housing at an unprecedented rate” (2). This is a serious omission in an agenda developed for

a city that suffers from one of the highest levels of social inequality on the planet.

It is not an accidental omission, however. The exclusionary, technocratic nature of the decision-making process behind PlaNYC 2030 has led to the formulation of policies whose social costs and benefits are unequally shared. One of the explicit goals of PlaNYC 2030 is to make New York City competitive in the global market on the basis of “livability” (NYC 2007, 10), a concept that the plan measures mostly in terms of “quality-of-life” assets. PlaNYC’s vision of the city is a consumer-oriented one, in which urban planning, technology, and design can be mobilized to enhance “quality of life” for a favored class of city consumers. It is a vision guided by a faith that a well-designed urban landscape of amenable public spaces, waterfront promenades, and green streetscapes can attract affluent city consumers and become a catalyst of economic growth. Unsurprisingly, Finn (2008) notes that one of the common lines of critique of the plan is that “even the most environmentally sensitive aspects of the plan, from park rehabilitation to bike lanes to tree planting, are in fact merely de facto pro-gentrification tactics that are increasingly remaking the city as a more active site of increasingly affluent consumption” (15).

PlaNYC’s underlying assumption that green is good, as long as it doesn’t prevent growth, brings about lots of contradictions, so that discussions of the negative exter-

nalities of the growth policies embedded in Bloomberg’s sustainability agenda (uneven spatial development, overdevelopment, housing price inflation, gentrification) are missing in the official debate around sustainability: the words “inequality,” “gentrification,” and “displacement” are notably nowhere to be found in PlaNYC 2030.

The lack of adequate commitment to these matters also explains why the plan is not only proving unable to properly address the dramatic issue of affordable housing shortage in America’s least affordable city (CUF, 2009), but may actually be contributing to its exacerbation, as will be clarified in the following two sections.

5. PLANYC 2030 and the AFFORDABLE HOUSING CRISIS

The severe dearth of affordable housing is one of the most dramatic issues impacting the lives of middle- and low-income New Yorkers, one that deserves particular attention in an analysis that focuses on the “third pillar” of sustainability politics. In this section, I discuss PlaNYC’s housing initiatives and their impact on housing affordability in New York City.

In 2003, before embarking upon his aggressive development agenda, Mayor Bloomberg launched a five-year plan to develop and preserve apartments for low- to middle-

income residents, called the “New Housing Marketplace plan” (NHMP). Initially, the plan forecasted the building or preservation of 65,000 units affordable to low- and medium-income families by 2008. In 2006, at the peak of the national housing bubble, the plan’s goal grew to create or preserve 165,000 affordable homes by 2013, with the city aiming to build 92,000 units and preserve another 73,000. With the city’s slide into a recession and the weakening of the local housing market in 2008, however, the plan was again modified: the deadline was extended to 2014, and a greater emphasis was put on preserving the affordability of 105,600 existing subsidized units, while the plan’s building program was reduced to 54,500 units. The NHMP, the city’s largest investment in housing production since the Koch Administration in the mid-1980s, has been a powerful internal marketing tool to energize low-income New Yorkers and to persuade them that their Mayor cared about their daily struggles. As for providing affordable housing for middle- and low-income households, however, many analysts agree that the plan hasn’t even come close to solving the issue (Angotti 2009; NYC IBO 2012; New York City Comptroller 2012).

Between 2000 and 2007, New York City lost 569,700 units of affordable housing due to rent destabilization and rent increases (Arden, 2011). A 2009 study by the Center for an Urban Future showed that in the third quarter of 2008 only 10.6 per-

cent of housing in the metropolitan region had remained affordable to people earning the median area income—the lowest share of any US city. According to the report, the lack of affordable housing had forced thousands of New Yorkers to flee the city in search of less expensive areas during the booming years from 2002 to 2006 (CUF, 2009).

The release of PlaNYC in 2007 gave housing advocates some ground for hope, as the plan promised to give a decisive boost to Bloomberg’s NHMP by “making housing more affordable and more sustainable” (NYC 2007, 12) and by massively expanding opportunities for residential construction across the five Boroughs. This would be achieved mostly by rezoning underperforming urban land to increase its profitability and residential capacity. Rezoning plans have been adopted to create additional housing along transit-oriented corridors, to convert manufacturing waterfronts into residential communities, and to reclaim underdeveloped brownfield land and unused rail yards and highways as mixed-use neighborhoods. The backbone of PlaNYC’s efforts to create additional affordable housing lies in the application of two key devices: rezoning (to allow for taller and denser buildings along transit corridors and new housing opportunities in areas once reserved for commercial or industrial uses), and inclusionary zoning (subsidies to incentivize private development of affordable units in new market-rate residential

developments in exchange for floor area bonuses).

In the following paragraphs, I list some of the major rezoning plans for housing development that have been adopted since the launch of PlaNYC.

- Starting in July 2007, the City adopted the largest rezoning project of the Bloomberg Administration. The Jamaica Plan in Queens is expected to host 5,200 housing units, including 700 affordable units, along with 3 million square feet of commercial space.
- In 2008, the City approved transit-oriented rezonings for the Upper West Side in Manhattan, Bedford-Stuyvesant South, and Fort Greene/Clinton Hill in Brooklyn. All of the plans incorporated inclusionary zoning bonuses to foster the private production of affordable housing.
- In November 2008, the city adopted an ambitious waterfront rezoning plan for Hunter's Point South in Queens: the 30-acre site, sitting on one-half mile of East River shoreline directly connected to Manhattan, was rezoned to become a dense mixed-use community with 5,000 new residential units, ten acres of waterfront parkland, new commercial developments, community facilities, and the potential for affordable units on adjacent sites.
- In 2009, transit-oriented rezonings were approved for the 125th Street corridor in Harlem, the East Village/Lower East Side in Manhattan, Dutch Kills in Queens, St. George in Staten Island, Hunts Point and the Lower Concourse in the Bronx, and Coney Island in Brooklyn. All of these rezonings contained inclusionary zoning provisions. In 2009, development was also approved for the western half of the Hudson Yards, where eight towers are expected to house hotels, office buildings and approximately 5,000 apartments, 431 of which should rent at below-market rates.
- In 2010, the City moved forward on the West Side Yard, a project that will transform a 26-acre MTA/Long Island Rail Road train storage yard on the far west side of Manhattan into a high-density residential and commercial neighborhood, which is expected to transform the Hudson Yards into a proper extension of the Midtown business district with over 13,000 units of housing and 24 million square feet of commercial use. In 2011, the City Planning Commission approved rezonings for West Clinton in Manhattan, Boerum Hill in Brooklyn, Sunnyside-Woodside in Queens, and Williamsbridge/Baychester in the Bronx. In West Clinton and Sunnyside-Woodside, inclusionary zoning provisions were included to produce affordable housing. In the same year, the City also broke ground on Studio City, a mixed-use develop-

ment within the Hudson Yards rezoning area that should include 1,200 residential units, 600 of which are affordable.

- In 2011, the Via Verde project in the South Bronx, a green mixed-use complex with 202 residential units, as well as retail and community spaces, was completed. In 2011 alone, 4,055 new housing units were produced across the metropolitan area.
- In 2012, the West Harlem and the Bedford Stuyvesant North rezonings were adopted. Both plans incorporate inclusionary zoning bonuses.
- In March 2013, construction began on two residential towers and on the waterfront park at Hunter's Point South, which is expected to become the largest housing complex to be built in New York City since the 1970s. The 925 apartments in the two buildings should permanently house low-, moderate- and middle-income families.

Looking back at five years since the launch of PlaNYC, even critical voices can't deny the monumental proportions of the efforts made by the Bloomberg administration in terms of land-use changes to maximize residential development. Since 2007, the City has created over 92,000

housing units and adopted 55 neighborhood rezonings. Overall, since Bloomberg's first

term in office (2002), the City has completed 119 rezonings, covering over 11,000 blocks and 36 percent of the city's total built area (NYC 2013).

However, these endeavors haven't even come close to alleviating the dramatic shortage of affordable housing in New York City (Furman Center 2009; NYC IBO 2012). According to some commentators, these policies may have instead exacerbated the dearth of housing options for low- and middle-income New Yorkers, contributing to reinforcing segregation along racial and social lines (Paul, 2011b).

From Bedford Stuyvesant to Coney Island, from 125th Street in Harlem to the Lower East Side, the city's rezoning plans have increased residential density, fostered mixed-use and transit-oriented developments, created new parks and open spaces, and led to an overall upgrading of the city's physical environment. But the reengineering of the city as a post-industrial "green" destination, and the resultant influx of a new population of affluent consumers, elite businesses, and spending visitors has triggered a process of generalized increase in land values and rental prices, sparking a speculative market that has resulted in a net loss of affordable housing options for the city's middle- and low-income households. Yet City officials never showed concerns that their very housing agenda may have been contributing to exacerbating an already prohibitive housing market, making the shortage of

affordable housing more severe, and intensifying, rather than alleviating, patterns of gentrification and displacement in the city (Angotti 2011; Paul 2011b).

In fact, the Bloomberg administration has shown a rather cynical and politically savvy (in terms of electoral politics) approach to the question of affordable housing: while the rezoning agenda incorporated in PlaNYC 2030 mobilized waves of luxury construction across the metropolitan area for a new urban class of affluent city consumers, the NHMP was the administration's half-hearted attempt to alleviate the plight of middle-class New Yorkers struggling with the consequences of the city's very growth policies.

6. UNSUSTAINABLE HOUSING

Unaffordable housing means unsustainable housing, as there are far-reaching human and social costs associated with housing insecurity or poor housing conditions (Hartman 1984, 1998; Fullilove 2004; Newman and Wyly 2006; Turffrey 2010). The lack of affordable, decent housing options and the resulting instability of tenure can affect family relationships, personal safety, access to employment and economic opportunities, and mental and physical health (Hartman 1984, 1998; Turffrey 2010; Fullilove 2004). The hardships associated with housing insecurity also translate into tangible costs that are born by society as a whole

(Hartman 1984, 1998).

Even though PlaNYC includes specific provisions to increase targeted affordability programs for middle- and low-income residents, the plan's solution to the city's housing crisis was mostly based on the doctrine that increasing the numerical supply of residential units would automatically drive down housing prices (Cowett 2008, Angotti 2011). The plan states: "Without action our city's housing stock won't be as affordable or sustainable as it should be. That's why we will expand our supply potential by 300,000 to 500,000 units to drive down the price of land, while directing growth toward areas served by public transportation" (NYC 2007, 12).

However, simply increasing the numerical supply of housing does not make a difference when the majority of the new housing produced remains unaffordable to local residents. In 2010, in the midst of a recessive economy, the PlaNYC 2010 Progress Report acknowledged the "mismatch between the housing that many New Yorkers, particularly low, moderate, and middle-income New Yorkers, need and can afford and the housing being constructed by the private market" (NYC 2010, 11). One year later, the PlaNYC 2011 Progress Report candidly admitted: "Making housing more accessible and affordable to New Yorkers requires more than increasing the overall housing supply. New market-rate housing generally serves higher income levels.

While new inventory generally relieves pressures on costs in the long run, housing currently is too expensive for many New Yorkers” (NYC 2011, 21). Although thousands of housing units have been built, just a small portion of them has resulted to be really affordable to low- and middle-class New Yorkers.

As opposed to cities like Boston or San Francisco, New York’s inclusionary zoning legislation, which was supposed to stimulate the production of housing units affordable to low- and middle-income New Yorkers, is not mandatory. Hence, in a booming luxury market in the years before 2008 and right after 2009, very few developers profited from this and other public subsidies, while most focused on the development of market-rate housing. As a result, by the end of 2011, only about 3,100 units of inclusionary housing units were started as part of the NHMP (New York City IBO 2012, 11). Furthermore, the prices of income-targeted housing in new developments are measured from the average median income (AMI) of New York City as a whole. In many working-class neighborhoods where rezoning plans were implemented, however, the AMI was significantly lower, so that a large portion of the newly produced “affordable” units remained far out of the financial reach of local residents.

In addition, in many instances the rezoning plans spearheaded by PlaNYC are acting as a displacement tool in low-income

neighborhoods where residential rehabilitations, conversions, and new constructions are threatening the livelihood of longtime residents, businesses, and industries (Paul 2011b). In many cases, the adoption of rezoning plans has brought about overnight surges in property values, pushing landlords to increase rents, evict their tenants, or demolish buildings to make room for more profitable development (see Busà 2012). Substantial changes in housing values are harmful particularly to renters, as soaring rents push housing in the neighborhood out of their reach (Newman and Wyly 2006). In many rezoned areas, phenomena of “predatory equity” are occurring in which building owners and investors illegally evict tenants in order to extract higher profits (Pratt Center 2008).

The New York City Comptroller report (2012) showed that that the percentage of New York City households that pay more than 30 percent of their income on rent has increased significantly in the last three decades: from 39 percent in 1980 to 41 percent in 2000, with the steepest increase occurring during the ten years of the Bloomberg administration (2002-2012), when the number of households living in nonaffordable housing reached 49% of the population in 2010. According to the New York State Comptroller report (2011), in 2010 almost 30 percent of all New York City households spent over 50 percent of their income on rent, a level that is considered by HUD to reflect a severe housing burden.³ In ad-

dition, nearly 20 percent of all households in the City spent more than 75 percent—almost all of their income—on rent (New York City Comptroller 2012). This decrease in affordability reflects a steady increase in rental prices during the Bloomberg years (CUF, 2009). From 1980 to 2000, the percentage of apartments that were unaffordable to households earning the median income was at around 20 percent. But by 2010, almost 40 percent of all rental units had become unaffordable to households earning the median income (New York City Comptroller 2012).

Bloomberg’s “luxury city”⁴ has been expanding unrelentingly out of Manhattan into the outer Boroughs, despite the financial crisis of 2007/08 and the following recession. (After a brief halt in 2008, high-end real estate development was back on its feet in 2009-2010, and focused mostly in the outer Boroughs, especially Long Island City in Queens, and Brooklyn.) The boom in the luxury housing market has been paralleled by the loss of thousands of units of housing affordable to middle- and lower-income New Yorkers due to conversion of low-income housing units into priced condos, expiring rent stabilization programs, and inadequate tenant protection laws. Since Bloomberg took office in 2002, any effort at bringing new affordable units has been far outweighed by the loss of 200,000 affordable apartments due to gentrification and rent deregulation. The largest portion (137,000) of affordable units was

lost due to the deregulation of apartments that were part of the rent regulation system. Thousands of other units that received some form of federal assistance were taken out of subsidy programs and converted into market-rate apartments in expectation of higher returns (Fernandez 2009). Between 2002 and 2008, the number of units affordable to low-income households — those earning less than 80 percent of the city’s AMI, or less than \$37,000 — fell by almost 17 percent, while the share of rental units affordable to this group dropped by 11 percent (Furman Center 2009).

Low-income residents who are unable to afford escalating housing costs are left with no other choice than ending up in the city’s homeless shelter system. Under Bloomberg, homelessness in New York City has constantly risen, reaching the highest levels ever registered since the Great Depression of the 1930s, with an all-time record of over 50,000 homeless people sleeping each night in the New York City municipal shelter system by March 2013 (Coalition for the Homeless 2013); between 2002 and 2013, under the mayoralty of Bloomberg, the number of homeless New Yorkers in the municipal shelter system has increased by 61 percent and the number of homeless families has increased 73 percent.

The continuing upward trend in rents (in a city where 68 percent of the population rents homes, compared to 33 percent nationwide), and the difficulty of finding

available housing options is a dilemma that the Mayor's plan seems structurally unable to solve. Instead, during the Bloomberg years, the city has been steadily losing more affordable units than it gained under the NHMP and PlaNYC combined: as of 2012, the Mayor's plans haven't even come near to closing the gap between demand and supply for affordable housing in the city (NYC IBO, 2012).

7. "GOLD STANDARD of SUSTAINABILITY" or "BUSINESS as USUAL" in GREEN CLOTHING?

On October 29, 2012, hurricane Sandy wreaked havoc across the East Coast, devastating homes and infrastructures along the New York and New Jersey shores, and flooding large sections of Lower Manhattan, including Battery Park and the Ground Zero construction site; Queens and Brooklyn; and with particularly severe disruption at Coney Island and the Rockaways. The East River overflowed its banks, flooding seven subway tunnels and causing the worst damage in the history of the New York City subway system (Flegenheimer 2012). On November 26, Governor Cuomo estimated costs to New York State at \$42 billion, claiming that Sandy had an even greater economic impact than Hurricane Katrina because of the denser population in the New York City area (Kaplan 2012). Many of the areas devastated by the hur-

ricane (such as Staten Island's North Shore, Hunter's Point South, and the Rockaways in Queens), were flood-prone areas (Turetsky 2012) that had been earmarked for development through PlaNYC's "Vision 2020: New York City Comprehensive Waterfront Plan" in 2011. Despite repeated warning reports of rising sea levels and potential storm surges on the city's coastline dating back at least a decade,⁵ the City had never questioned the validity of further development along the waterfronts, one of the main cornerstones of PlaNYC.

In the aftermath of these tragic events, criticism was voiced as Mayor Bloomberg promptly announced that the disaster would not deter the City from pushing for further development along the city's shoreline: "People like to live in low-lying areas on the beach, it's attractive. People pay more, generally, to be closer to the water even though you could argue they should pay less because it's more dangerous. But people are willing to run the risk" (Bloomberg, quoted in Chaban 2012).

Although he acknowledged the necessity to limit future damage by strengthening building-code standards for flood protection in these areas,⁶ the Mayor played down the necessity of undertaking major infrastructural investments to mitigate storm surges, in order not to inhibit future investments in the city's exclusive waterfront properties: "Let me be clear: we are not going to abandon the waterfront. We are not going

to leave the Rockaways or Coney Island or Staten Island's South Shore. But we cannot just rebuild what was there and hope for the best. We have to build smarter and stronger and more sustainable....No matter what we do, the tides will continue to come in. And so we have to make our city more resilient in other ways, especially when it comes to infrastructure" (Bloomberg, quoted in Pinto 2012).

In the aftermath of Sandy, critics questioned once more whether further development along the city's waterfront was still a desirable choice for the city (Angotti 2012; Rayman 2012). But the Mayor's "business as usual" response to the tragic events raised the issue of whether the City's sustainability vision only goes as far as its quest for growth allows. The Mayor's sustainability plan is, after all, an agenda for growth (Cowett 2008). Sustainability, according to Bloomberg's agenda, can thrive in a competitive, growth-oriented framework of governance where design, technological innovation, and "smart" planning, coupled with incentives to "green" businesses, will do the job of preserving the environment, under the assumption that "the basic instruments for responding to ecological crisis are technology and the market" (Wallis 2010).

New York City's "green" agenda has been a response to the demands of new markets and consumers, as much as it has been an active producer of such consumer demands.

By physically transforming the city, it has acknowledged as much as it has facilitated the decline of the local manufacturing industry and the rise of a post-industrial, F.I.R.E.-dependent, consumer-oriented, and environmentally friendly city. Because of its very unthreatening stance towards growth, PlaNYC has been well received among the business community, and has proven able to be bolted quite easily onto entrepreneurial, market-centered strategies of urban governance. Unsurprisingly, the Mayor's sustainability approach has been criticized for being "merely another wolf in green clothing, or what Owens (1994) calls 'rhetoric plus business as usual'" (Finn 2008, 2).

Although its many environmental efforts are commendable, PlaNYC does not explicitly address the goals of social and economic equity, and it does not ensure that new growth will generate equal opportunities for all New Yorkers. The exclusionary nature of the decision-making process that led to the formulation of the plan has produced an agenda that, while striving to find market solutions to balance economic growth and concerns for environmental preservation, fails to address issues that are of major concern among the city's most vulnerable residents, like the need for decent and affordable housing. The costly upzonings on flood-prone land, and the rise of luxury residential projects in once thriving manufacturing and working-class districts raise the issue of whether a "green" New

York can be at all sustainable and affordable to most New Yorkers.

¹ These calculations were announced in a report released by the Department of City Planning in December 2006, “New York City Population Projections by Age/Sex & Borough.”

² Krueger and Agyeman (2005) call for a greater focus sustainability as it is actually practiced in local contexts. With “actually existing sustainabilities” they refer to “actual practices rather than broad initiatives or agendas, or even guiding principles” about sustainability (411).

³ According to the U.S. Department of Housing and Urban Development (HUD), a generally accepted definition of “affordability” is for a household to pay no more than 30 percent of its annual income on housing; households that are forced to pay more than 30 percent of their income for housing are considered cost burdened and may have difficulty affording necessities such as food, clothing, transportation, and medical care.

⁴ In January 2003, at an economic development summit cosponsored by the Partnership for New York City and NYCEDC, Michael Bloomberg claimed, “If New York City is a business, it isn’t Wal-Mart. It isn’t trying to be the lowest-priced product in the market....It’s a high-end product, maybe even a luxury product. New York offers tremendous value, but only for those companies able to capitalize on it.”

⁵ Rayman (2012) cites a 2000 Federal Emergency Management Agency (FEMA) forecast that predicted that a quarter of the structures 500 feet from the coast will be eventually destroyed by the rising sea level. He adds that “in January 2011, a report from the state’s Sea Level Rise Task Force project-

ed that the water level in New York Harbor will rise two to five inches by 2025. The group proposed additional rules limiting building in flood zones, protecting wetlands and other natural storm barriers, and moving infrastructure to safer areas. But Bloomberg’s deputy mayor for long-term planning at the time, Adam Freed, objected to the proposal because it would stifle development and add another layer of state regulation.”

⁶ In May 2013, the Department of City Planning started a public review process for a zoning text amendment that should enable new and existing buildings in designated flood zones to meet the latest federal flood-protection standards.

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REVIEW:

OVERDRIVE: L.A. Constructs the Future, 1940-1990

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Sprawling, uncontained, and driven by blind ambition—these entrenched stereotypes surrounding Los Angeles are exploded by the recent exhibition organized by the Getty, *OVERDRIVE: L.A. Constructs the Future, 1940-1990*. Provocatively suggesting that during the postwar years of expansion the engine of growth was perhaps accelerating too hysterically towards the future, curators Wim de Wit, Christopher Alexander, and Rani Singh ambitiously manage to present a fifty-year history that still reads as more coherent and continuous than the images of a frantic and disordered sprawl might have one at first believe. This exhibition at the Getty Center stands as the

centerpiece of the 2013 Pacific Standard Time festival sponsored by the Getty and focused on examining postwar Los Angeles architecture and urbanism. Conceived of as a partner to last year's 2012 Pacific Standard Time festival devoted to Los Angeles art, this year's installment focuses on architecture. This year's broader festival, featuring a range of eleven diverse exhibitions at various institutions, is anchored by the Getty's wide-ranging survey exhibition. As such, the three curators set themselves the task of establishing an overarching narrative outline of the postwar history of Los Angeles's built environment. The *OVERDRIVE* exhibition narrative drives assuredly from the

overwrought postwar moments of excess through to the efficient pragmatism of the 1980s, when events such as the 1984 Olympics reflected the expediency required of a spent engine. The oft-repeated claims to radical break-aways by various Los Angeles schools are here calmly presented within a broader sense of continuity.

This expansive survey exhibition, filled with a sweeping range of artifacts, is divided into five thematic sections. The Car Culture section features an examination of the ways in which Los Angeles's identity has been closely linked to the automobile and the ways in which the built environment responded to such a dominance by the car. From Jet Age Googie coffee shops designed to entice those passing by in cars to later approaches to strip mall designs, the car-centric design ethos is well illustrated with a range of examples. The Urban Networks section features an overview of the aggressive expansion of infrastructure—showcasing the development of transportation, water, and power systems. For example, various early renderings and models of LAX feature the airport as an early pioneer of global satellite systems. The Engines of Innovation section features a wide range of economic drivers from the oil, aerospace, and entertainment industries and their involvement in propagating their interests through design. For example, the development of Century City as a hub for the entertainment industry is featured through various renderings. The wide-

ranging Community Magnates section features various efforts at forming local identity through culture, sports, consumption, and faith. Disneyland, churches such as Lloyd Wright's Wayfarers Chapel, and commercial centers designed by the likes of Victor Gruen are all presented as equally vital community centers. The exhibition concludes with a Residential section featuring a selection ranging from Los Angeles's history of tract housing and the Case Study program to the more customized homes of John Lautner, Frank Gehry, and Morphosis.

Within such a broadly sweeping narrative, details inevitably become underplayed. But curiously, one such detail that might have aided in this effort towards communicating a response of fatigue in the face of such over-determined excess—the emerging role of the user—is left largely undeveloped within the exhibition. In reaction to the over-determination of the postwar engines of growth, the 1960s and 1970s was a period in which the concept of the user was increasingly becoming activated in response; participation, feedback, grassroots, and DIY were all becoming part of the design lexicon. And yet the role of the user in the face of such over-heated instruments of growth is only lightly hinted at in the exhibition. For example, the history of the evictions and the homeowners' active resistance that preceded the construction of Dodger Stadium was lightly treated and breezily juxtaposed with playful renderings of Disneyland's Anaheim park. A second

instance of underplaying the role of the user within the exhibition is the repeated use of establishing fly-through videos, shown on small screens at various points in the exhibition. These computer-rendered fly-throughs of various urban areas had been digitally created specifically for the exhibition as orientation devices. And yet their sterile computer renderings of unarticulated urban massing, devoid of people, and abstract zooming between buildings at the vantage point of a low-flying plane, rather than at any typical user's lower vantage point, seemed to again circumscribe the role of the user within the exhibition. Even a slight focus on the historical role of the user within the urban environment might have served to further reinforce the given exhibition theme of the overwhelming drivers of urban growth and the subsequent reactions to them.

Ambitious in its scope, the exhibition was organized around Los Angeles's equally ambitious obsession with a relentless drive towards the future. Often presenting itself as resistant to historicizing, given such a blinding drive towards the glamour of the future, Los Angeles's divergent sprawl here appeared somewhat contained within the historical narrative set forth by the exhibition. Perhaps more attention paid to the reactions against such an extreme *overdrive* of postwar growth, particularly from the perspective of the urban user, might have helped to reinforce the sense of excess of Los Angeles's own self-narrative. But

certainly the perhaps blind ambition of presenting a full fifty-year exhibition retrospective on one of the largest metropolitan areas in the country seems a fitting starting point for a city that loves to celebrate itself.

THE FUTURE *of* URBAN PLANNING *and* DESIGN:

UCLA Faculty Interviews

For Volume 20 of *Critical Planning*, the Editors interviewed several faculty members at the forefront of their fields to see what they think about the future of cities. We asked them not only to identify how their work addresses the current trends and challenges in their field, but also to speculate on how the changing physical and social landscape of cities will affect the way urban planning and design is practiced.

Looking at all four conversations, it is clear that globalization and technology will play a key role in shaping the urban environment. However, issues of social justice and environmental sustainability remain more important than ever before, as global flows of goods and people create increasingly diverse communities with growing informal economies and insufficient affordable housing.

As these scholars tell us, future planners and designers must be more open-minded, and allow for an inter-disciplinary approach to problem solving. Top-down planning must become a thing of the past, as urban planners and designers—in academia as well as in the professional sphere—allow for activism and community engagement to become more important tools in their kit.

ANASTASIA LOUKAITOU-SIDERIS

Professor of Urban Planning

CP: *What are current trends in your area of specialization?*

AL-S: My area of specialization is urban design, and I define urban design in a much broader way than it is typically defined. Not simply as large-scale architectural design but also as a consideration of the social, cultural, political, economic forces that affect the built environment, and how to take them into account and respond to them. That said, I've witnessed two recent trends in urban design: one is to include more landscaping and ecology considerations in design, and the second is more emphasis towards what some have called "tactical urbanism," which is a grassroots and bottom-up instead of top-down approach to design. For example, how can communities identify residual spaces of everyday life and convert them into small parks? Or how do you take more streets from the cars and give

them to bikers? Things like that.

What are the challenges or issues in your area of specialization?

Urban design is always more challenging than architecture, because it is dealing with the public domain. So urban designers really need to act as mediators among different stakeholders, who may need different things from the spaces of everyday life. Urban design is really about the public spaces of the city, the sidewalks, the parks, the streets, etc., which are huge resources for cities, and can be very successful spaces for everyday life.

How do your work and research address these issues?

First of all, I am someone who is very

much interested in contexts, and not simply designing top-down for the average users. I am also very much interested in how different cultures define spaces, and how we should respond to specific socio-cultural needs. A lot of my work focuses on the users' perspectives and how different users require different things from different types of environments.

What are your predictions of what cities will experience in the future?

I think technology will be a huge factor. Already it is affecting cities in big ways in terms of how we navigate spaces, or even shop online from the privacy of our homes, for example. I am hoping that technology will not only be a limiting factor that creates more privatization or more inward orientation, but could also be used to help people. For example, I recently brainstormed with someone who wants to create an app for women that will help them to feel safer in the city and avoid areas that are dangerous. I think we'll see more applications like that in the next several years.

How do these predictions affect the way planning is practiced?

We are trying to educate planners to be much more open and sensitive to questions of social justice and equity. I think that by creating a more humane type of planning

and design—again coming back to the idea of bottom-up instead of top-down. How can planners help communities have the type of everyday space that they need, while also acknowledging and addressing the fact that these may not be the same for everyone? This is an important issue for future planners.

What advice do you have for future planners?

To be very open. To be very observant and to see how people want to live instead of assuming they are experts. Planners could also learn a lot from other fields, such as the humanities and other social sciences. There are a lot of other disciplines that relate to planning and urban design, and future planners need to be open to that.

DANA CUFF

*Professor of Architecture,
Director of UCLA's cityLab*

CP: *What are current trends in your field of specialization?*

DC: Two trends that interest me, but which on the surface seem far apart, concern architecture's relationship to the humanities and to sustainable technologies. With regard to the former, UCLA is one of a number of institutions that are building new intellectual and practical bridges between the humanities and design. We are working across disciplines on issues of concern in megacities like Los Angeles and Tokyo that no single discipline can address alone. On the other hand, experimentation with intelligent and sustainable technologies is particularly promising. For example, solar fabrics, responsive materials, and ambient informatics could not only change the shape of the built environment but produce new environmental benefits. In my view, these

two trends are not so distant from one another because advances in technology are rather empty without the perspectives brought to bear by the humanities, and my own studies depend upon environmental, technological, and humanist approaches to urban and architectural design.

What are the challenges or issues in your field of specialization?

The post-2008 restructuring of the market for professional services is a significant challenge that architects are facing. There is a class of commissions that is swamped by risk aversion, particularly those in the public sector, where fiscal conservatism is the watchword. Large firms and firms with established track records in a particular building type are taking these commissions because they represent a no-risk

approach to buildings. Where cities used to advance social agendas and formal experiments, from schools to concert halls and sports stadiums, the very commissions that were the proving grounds for new forms of architecture have become victims of what the sociologist Ulrich Beck calls the risk society. To compete in the marketplace, young architects now find that they must be skilled in materials and fabrication, in a high-level understanding of sustainability questions, and in business economics. From an educational point of view, architecture and planning students would do well to adapt to this new and emerging market.

How do your work and research address these issues?

The research center I direct, cityLAB, is intended to not only respond to current trends but to lead through its experimental and innovative projects that bring architecture and urbanism together. We have four initiatives, and each represents a cutting edge: first, postsuburban studies, which takes Los Angeles as our laboratory to look at the transformation of suburbs and what it might mean to transform them for the better; second, urban-sensing, which explores smart technologies and their spatial and cultural implications; third, rethinking green, which deals with related questions about sustainability and environmental effects; and lastly, new infrastructures, and

innovations for the tremendously depleted state of American infrastructure.

What are your predictions for how architecture will evolve in the future?

I believe architecture will evolve as a more particular, site-specific creation as we grow denser, living in greater proximity to one another, with fewer resources, and as we confront more unusual left-over, infill, and constrained sites, which are far more interesting sites. New forms of architecture will reflect new materials in terms of performativity as well as visual effects, and higher responsibility to the particular could mean that we will see new narratives of occupation, new customizations, and richer, more articulated forms of representation. With our colleagues from the humanities and graduate students from all across campus, we've been experimenting along these lines on urbanism and thick mapping, film, and speculative narratives. If you want to see what I mean, check out the cityLAB website (citylab.aud.ucla.edu) and the Urban Humanities Initiatives website (urbanhumanities.ucla.edu).

What advice do you have for future architects and urban designers?

Given that the speed of change for future generations of architects and urban designers will be more rapid than ever before, the

importance of education is heightened. The real challenge for young designers is how to stay on top of their evolving discipline, its new materials, publics, technologies, opportunities, critiques, and economies. Stay connected to your graduate school; go to lectures; build strong bonds with your classmates, and revel in risky thinking.

LEOBARDO ESTRADA

Professor of Urban Planning

CP: *What are current trends in your area of specialization?*

LE: My specialty has been ethnic and racial demographics trends, particularly in the Latino population of the southwestern United States. Like with many others, I view these topics globally rather than just regionally. This is a very positive trend because global trends impact urban areas in many ways: economics, its people, and urban culture. More importantly, the levels of analysis have become deeper as we move from being less concerned with trends that tell us what, and instead move to understanding why.

What are the challenges or issues in your area of specialization?

The greatest challenge is in understanding how technology may or can change

the future of the city. One can imagine technology being used to make energy use more efficient. It is also possible to imagine the panoptic/surveillance possibilities that reduce the privacy of public space, or over-dependence on technology with wide ranging impacts, should it fail.

How do your work and research address these issues?

Some of my more recent interests has focused on the role of governance and collaboration. I see this as one of the least understood and used solutions as everyone tries to protect their “space” rather than coming together to work collectively on regional issues. A second area deserving more attention is capturing grassroots and grasstops concerns in a manner that is translatable to urban management practices. Everyone is in favor of participatory

planning for example, but I see few efforts that have effectively captured the information needed.

What are your predictions of what cities will experience in the future?

Cities will continue to experience transitions. Old processes and methods are changing to meet new demands and requirements and this will continue for some time ahead. There is a saying, “change is the only constant” and it is particularly true for urban areas. It is at the local urban area that implementation of policies occurs—such as climate change, safety, transportation, access to services, etc. Planning will continue to play a significant role but its role is changing. Who would have guessed three years ago that planners would be involved in food security issues or urban agriculture? Regionalization—a few issues, such as transportation and air quality, are larger than any one municipality and need to be approached on a regional level. Regionalization might also be necessary to effectively undertake issues related to water access and quality, affordable housing, and infrastructure upgrading. Cities will have to overcome local sovereignty concerns in the future to make inroads on these large concerns. Cities have generally been viewed as places with problems. I expect that in the future, cities will be seen as places with solutions.

How do these predictions affect the way planning is practiced?

Long ago planners realized that the field had to move beyond physical planning. Community planning is more complex and requires overlap between disciplines, sectors and stakeholders. Planners should become interdisciplinary problem solvers working with ease on issues traditionally addressed by public health workers, lawyers, policy makers, social workers, researchers, police, geographers, and business people. Planners need to have sufficient knowledge in all these fields to deal with the city issues now and into the future.

What advice do you have for future planners?

Planners are trained to be problem solvers. Problem solving skills will be in high demand and planners are positioned to coordinate solutions for complex issues. But planners need to move beyond their specialty and comfort zone to get out of their offices and listen to their local community representatives and work with other professionals. Silos have been the bane of planning and limited innovation. My advice is “don’t get locked in” and keep growing in terms of skills, knowledge and be daring.

JACQUELINE LEAVITT

Professor of Urban Planning

CP: *What are current trends in your area of specialization?*

JL: I'll talk about this in terms of two issues: 1) housing and community development, and 2) gender. In housing and community development the issues are whether there are people in the planning field who are going to promote a housing agenda that meets the needs of low-income people. And in the area of gender, unless my forthcoming book, titled "Framing Women: Women and Rights to the City," or someone else's inspires a larger reaction, I expect planning to continue to marginalize women as a research area. This may change as a result of issues concerning violence. I don't think that the attention to public spaces and public-private partnerships fully attacks the issue of violence, and I really think there's room for that to be integrated more with an expansion of what the term

violence means, extending this to larger issues of economic, social, and political security.

What are the challenges or issues in your area of specialization?

A big challenge is getting paid for any form of advocacy, for working outside the traditional planning field. It is difficult to find funding for social justice, for organizers, for planners who are going to take the issues to the next stage of implementation and ongoing watchdogging. Instead, many have to take on what amounts to a double job of work for pay and unpaid work for politics, which is extremely difficult and time-consuming.

How do your work and research address these issues?

I think that in my work one of the consistent themes is how planning can both make opportunities for people with low incomes and people of different races and classes to intervene, and be action-oriented in order to prevent environmentally unsound developments from moving forward, whether it's around high-income housing or toxic waste dumps. I'm hopeful my work is able to inform future planners about others who work in social justice planning, and will contribute to building a social movement both outside of planning as well as among planning students.

What are your predictions of what cities will experience in the future?

Predictions of what cities will experience in the future grows out of an international perspective, and I think that people who are specializing in domestic issues are too narrow in how they're looking at the issues. It is increasingly important to understand what's going on globally. This means issues of housing and slums in urban areas, land grabbing and corruption in both urban and rural areas, and a burden that falls disproportionately on poor women.

How do these predictions affect the way planning is practiced?

I think there continues to be a disconnect between the way planning is taught and the way planning is practiced. I think that in terms of practice we don't have enough examples for people that want alternatives, which goes back to the problem about how do you earn a living. I think that we tend in planning to take the easy way out, and I think that tension between what people expect when they go into planning, and what they experience in their lives—family, children, etc.—is a real problem, and each person has to resolve that the way that they can.

What advice do you have for future planners?

I think that the issues that come to the forefront in planning have a lot to do with the values that planners are taught as well as what they come in with, and that the relevancy of the field as it relates to social justice depends on the recruitment of people who take an activist position. For example, amongst our students we have many who are activists, and when they come in they are looking for skills from urban planning that they can give back to the people that they're working with. There is a need for a new generation of planners that have a commitment to social justice and equality, for women, for people of color, for all of the groups that are vulnerable to crises.

