

Sensing and Anticipating Ecological Vulnerabilities in Urban Environments

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Abstract

This paper makes three main points relative to anticipating vulnerabilities and climate change in urban contexts. First, climate change is an ecological issue as well as an environmental problem and its amelioration requires an ecological response where “ecology” includes social and aesthetic as well as environmental concerns. Second, that we might consider “anticipating” rather than “planning” for the future. And, lastly, the paper argues that the senses are a necessary complement to technology and design and that we need to think sensitively and sensually when anticipating future vulnerabilities. In doing so, anthropology offers a set of tools that are complementary to ecological urbanism.

Keywords: *Ecology; Anticipate; Sense; Design; Anthropology.*

Resumo

Este artigo ressalta três principais pontos relativos à antecipação de vulnerabilidades e mudanças climáticas em contextos urbanos. Primeiro, a mudança climática é uma questão ecológica bem como um problema ambiental, e sua melhoria requer uma resposta ecológica onde “ecologia” inclui, além de aspectos do meio físico preocupações sociais e estéticas. Segundo, que a abordagem de “antecipar acontecimentos” pode ser mais eficaz do que “planejar” em tempos futuros. E, por último, o documento defende que os sentidos são um complemento necessário à tecnologia e design, e que precisamos pensar de forma sensível e sensual ao antecipar futuras vulnerabilidades. Ao fazer isso, a antropologia oferece um conjunto de ferramentas que são complementares ao urbanismo ecológico.

Palavras-chave: *Ecologia; Senso de antecipação; Desenho urbano; Antropologia.*

Introduction

I teach in a graduate school of design and recently I went to work on a public holiday. As there were no classes on account of the holiday, the building did not have its usual activity. There were a few students, and a few professors, but the school was much quieter than usual. I met one of my colleagues in passing in the hallway, and he said to me:

“There’s a strange ecology in the building today.”

I thought this was an interesting phrase. What did he mean by ecology?

Did he mean:

Atmosphere?

Social life?

Environment?

Dynamic?

That there was a strange feeling in the building?

In reality-or at least as I interpret his statement-he implied all of the above. He used the word ecology to embrace wider environmental, phenomenological, and social conditions.

This notion of a wider understanding of ecology including environmental concerns, yet going beyond purely the environmental as well, is not new. Félix Guattari called for the three ecological registers of the environment, social relations, and human subjectivity.¹

“... Political groupings and executive authorities appear to be totally incapable of understanding the full implications of these issues. Despite having recently initiated a partial realization of the most obvious dangers that threaten the natural environment of our societies, they are generally content to simply tackle industrial pollution and then from a purely technocratic perspective, whereas only an ethico-political articulation – which I call ecosophy – between the three ecological registers (the environment, social relations, and human subjectivity) would be likely to clarify these questions.”

Guattari was writing thirty years ago, and one wonders if these three ecologies are still inclusive or if we need to consider more and more ecologies today. Many others have been writing about, designing with, and speaking about ecological issues relative to the city over the years. While these approaches have opened up new intellectual, theoretical, and practical concerns, there still seems to be a gap in terms of the aesthetic aspects of sustainability, especially sustainability

at the scale of the city. Why is it that to be sustainable often implies a certain way of looking?

To that end, a project called Ecological Urbanism at Harvard University Graduate School of Design addresses each of Guattari’s points and more. This collaboration has resulted in a book of the same title, which was published by Lars Müller Publishers in 2010.²

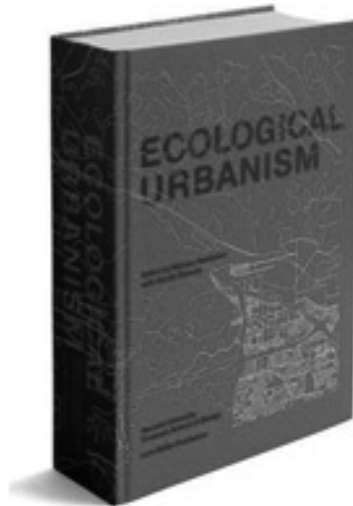


Figure 1: Ecological Urbanism, edited by Mohsen Mostafavi with Gareth Doherty (Lars Müller Publishers, 2010).

The ecological urbanism project has several objectives, one of them being to challenge designers and planners to consider the various ecologies of the city including the environment but also wider social and cultural registers. In curating a particular set of texts and projects, we argue that to bring about effective response to the problems of climate change

in an urban context requires inducing a cultural shift. Such a shift involves what Marina Silva, the recent Brazilian presidential candidate, described in a personal meeting as “dislocating desires.” To dislocate desires is to take an everyday object, or practice, and transform it through a shift in perceptions of that practice.³ Thus, bringing about a more ecological city will necessitate inducing new ways of inhabiting, using, and seeing the city. The approach is technical, and it is simultaneously social, and aesthetic.

Ecological urbanism, with its bright red cover, claims to represent a “new ethics and aesthetics of the urban.”⁴ This is not a claim made lightly, because ethics and aesthetics are closely linked with the ability to affect cultural change. Writing in Ecological Urbanism, the architectural theorist, Sanford Kwinter, stresses the importance of aesthetics in relation to the environment. Kwinter reminds us that: “We especially must not make the mistake of believing that one can detach the “human” and the “natural” from the aesthetic.”⁵ Through the ecological urbanism project, we wanted to make questions of climate change and ecology seem not just relevant and urgent, but indeed exciting for students and practitioners of architecture who traditionally would avoid such topics on account of perceived (and perhaps unjustified) aesthetic concerns.

At the ecological urbanism conference held at Harvard University Graduate School of Design in 2009, there was an exchange between an environmentalist and an architect that strikes at the heart of this tension. Matthias Schüller, a sustainability engineer and environmentalist asked a question from Andrea Branzi, an architect. The question was a simple one, if apocalyptic. After listening to Branzi's lecture dealing largely with issues of aesthetics and beauty, Schüller essentially asked that in a situation in which we are fighting for survival-and he implied that we were living in such a moment-then is it acceptable to be ugly. In other words, is it acceptable to neglect the aesthetic aspects in order to survive? "Not so sure! Not so sure!" said Branzi through his wife who was acting as interpreter, "Maybe better to die." Branzi's reply spoke volumes, because he did not think that survival was enough of an excuse to neglect beauty. For Branzi, environmentalism does not work if the physical realizations are ugly and this issue over aesthetics is the defining question of our age.⁶

Ecologies represent a fluid concept of time. They are not just of the present but simultaneously of the past, and also of the future.⁷ As we all know, decisions we make are affected by previous conditions as well as future aspirations and anticipations. "It is always too early, or too late to talk of the "cities of the future,"" writes Homi Bhabha.⁸ The sociologist, Ulrich Beck, tells us that: "The catastrophe potential one population creates affects "others": people in other societies and future generations."⁹ Beck goes on to point out that those who have done the least to cause climate change are the first to be affected by it. He reminds us of the Sahel where the poorest of the poor live on the verge of an "abyss" caused by climate change. Beck is in agreement with Kwinter when Beck tell us that: "Climate change, which is held to be man-made and catastrophic, occurs in the shape of a new kind of synthesis of nature and society."¹⁰

A social and cultural take on ecology raises a whole set of issues in relation to designing for the future. If we are to design more ecologically-in the broad sense of the word-it is clear that we need more mechanisms for curating urban and climate change.¹¹ To connect the various urban ecologies means we need to generally understand the city better in a thicker and more nuanced way. To this end, anthropology offers a set of tools, such as thick description, that can be useful to designers and planners dealing with vulnerabilities caused by climate change. Such techniques can help city-builders understand the nuances of the city in anticipating future vulnerabilities.

One might say that ecology - the interaction of humans and the environment - is close to the

human condition and an essential component of our humanity. Designing in a more ecological way, necessitates a thicker and more nuanced approach to understanding the numerous ecologies. A research project at the Graduate School of Design is adapting anthropological methods to research and develop proposals for a chain of vulnerable islands in The Bahamas. There, risk comes from not just rising sea levels, or the threats posted by hurricanes and other natural disasters, but also from social inequalities and lack of basic social services on island communities. In addressing the multiple ecologies of the islands, we plan to arrive at a land use plan that is thicker, and more robust, than a typical plan. Such work, however, necessitates much more rigorous forms of analysis and methodologies that stand up to scrutiny.

Anthropologists are specialists in sensing social life, and having argued for a broader understanding of "ecology," that embraces social and aesthetic as well as environmental ecologies, I want now to talk about the second point I want to make: the idea that anticipating the city yet to come is an important aspect of planning for vulnerabilities.

Anticipate

If I throw a ball, you might move in anticipation of catching it. Likewise if one puts one's hand above a fire, not alone do you not put it in the fire in anticipation of getting burned, but one might move one's hand closer and closer to the fire to gauge how far one can go.¹² Anticipation exists somewhere between making firm plans and making none.

In July 1969, Margaret Mead wrote an impassioned defence of the idea of sending humans to space. The rationale behind the short text, "Man on the Moon," was simple, Mead wrote: "Voyages to the moon-and beyond the moon-are one assurance of our ability to live on earth."¹³ Indeed Mead acknowledged that many people argued at the time in favor of spending the money allocated to lunar explorations on the alleviation of poverty, or population control, yet, they were adamant: lunar exploration was for all of humanity and essential for the survival of not just humanity but also of the planet. In fact the image taken from the moon of the Earth-rising was very important in seeing the World as one unit. The "Blue Planet," is "The House That We Live In" (to quote McHarg). Earth is the home of the human race.

Mead discussed the notion of tempocentrism, the idea that we are locked in one time frame, usually that of the past or the present. She argued that we collectively suffer from "future shock," the fear



Figure 2: Earthrise Apollo 8. ©NASA.

of the future: a phenomenon as unsettling as the “culture shock” that many of us who travel long distances experience.¹⁴

Mead’s text is particularly interesting when contrasted with Bruno Latour’s essay in *Ecological Urbanism*. Entitled, “Forty-Year’s Later-Back to a Sub-lu-

nar Earth,” Latour discusses the lunar explorations and contrasts them in particular with the 2003 Space Shuttle Columbia disaster. Writing forty years after Mead, Latour tell us that: “It is not only that time has passed. It has changed thoroughly from the way it used to pass.”¹⁵ Latour shatters assumptions of modernity. He shocks us with the images of Columbia’s take-off and images of the debris of the wreckage:

“Those who have left the Cape Canaveral of modernism have to renew everything without the benefit of the modernist cosmos. They have to inhabit a wholly new place, a place as different from a holy cosmos as it is

from the cosmos of forty years ago. Where will they learn their new skills?”¹⁶

For Latour, the Columbia disaster represents the end of part of our dream of modernity.

This is a frightening and unsettling photographs, yet there is hope in the image too in terms of the



Figure 3: The Columbia Reconstruction Project Team is attempting to reconstruct the orbiter as part of the investigation into the accident that caused the destruction of Columbia and loss of its crew as it returned to Earth. ©NASA.

grid line holding the fragments together like a Midwest landscape, or the urban fabric of a modernist city, like Brasília.

To clarify, I am not suggesting we piece the space shuttle together again. The new skills that Latour calls for cross over between architecture, planning, urbanism, and landscape architecture, and allied disciplines: they represent an ecological approach to the city in its broadest sense. Designers and planners still have a real agency in the design of the city of the future, but it is a collaborative one. We need to look to new understandings of ecology in order to develop better methods of sensing with the aim of anticipating vulnerabilities created by climate change.

Sense

Many years ago, I visited a garden in the south of England called Shute House. Arguably, Shute is the masterpiece of Geoffrey Jellicoe, the pre-eminent English landscape architect of the twentieth century. Jellicoe worked on it over many years, working closely with the owners, constantly changing and improving the space.¹⁷ The house and garden had recently been acquired by its new owners on the basis of the garden, rather than the house. The new owners saw my obvious delight and enthusiasm for the garden and invited me to stay overnight, staying in the guesthouse. It was a dark moonless October night and the air was thick with autumnal smells, and I can still remember the pungent smell of decaying apples to this day. As I slowly made my way around the garden that autumn night, I began to increasingly rely on my senses other than sight, it was so dark. I felt myself guided by sound, by the smell, and by touch. The sensual aspect helped to attune all my senses to the experience and left me with a memory that is hard to beat. It was one of the highlights of my life.

Kathryn Moore, Professor of Landscape Architecture at Birmingham City University in the United Kingdom, reminds us that our perceptions of intellectual validity all went wrong with the Enlightenment. She argues that in the Enlightenment people lost faith in the legitimacy of the human senses and gave more credibility to reason, and to the written word.¹⁸ Moore cautions, though, against singling out the senses to constitute another body of knowledge. She makes the reasonable point that the senses and reason are mutually defining. To this end, this section of the paper makes the argument that we need to consider the senses alongside other, more traditionally accepted, forms of knowledge.

There is a simple point. If we are to design the city in more ecological way, embracing multiple ecologies, then we need to understand the city better. The logic follows that it is in deeply understanding the ecologies of the urban, that we can then design with them in a more nuanced and effective ways.

There are two ways of thinking about the senses however. In addition to the human senses of touch, smell, as well as what we see, one might relate to how technologies might be utilized to understand the city in a more nuanced way. The work of the Senseable City Lab at Massachusetts Institute of Technology, for instance, shows how cell phone data can be utilized to better understand the discrepancies between pedestrian routes in the city and as a result to plan better for their convergence with public transport systems. Here we see the power of technology to augment the human senses.

The Norwegian-German artist, Sissel Tolaas, meanwhile, challenges urbanists to consider smell in the design of cities. Too often smells are left to chance, but isn't it the case that we associate certain cities with certain smells? And don't we all have opinions on which smells we like or not? This raises the question of why do we like certain smells and how they ultimately shape space. While smell and color are traditional tools of the landscape architect, the various fragments that make up the city have smells, and these smells need to be addressed in any truly ecological plan.

In a piece on "There's More to Green than Meets the Eye," I challenge designers to consider color in the shaping of the city, and specifically the association between green and environmentalism. Green in some climates is not an easy color to maintain, and can indeed be not at all green from an environmental point of view. In a better aware-



Figure 4: Toque-me, Sou Teu! © Luke Jerram

ness, understanding, and sensing of context, we can then more accurately intervene.

“Play Me, I’m Yours!” is a project designed by British artist, Luke Jerram. The project is ostensibly about the placement of pianos at strategic points in cities. The public are invited to play the pianos. However, the street pianos touch on numerous urban ecologies of the city, including issues relating to public and private space, but what for me is most appealing is the idea that to “Play Me” can lead to music, which in turn leads to new social groupings and configurations. So touching the instrument, can spark a series of new and anticipated ecologies.

The work of CHORA / Raoul Bunschoten is one of the best models I have seen of anthropogenic planning and design. Based on research methods, which are deeply anthropological although not necessarily deemed as such, the methodology begins with field work and ends in designs. They incorporate prototype projects bound together within one overall framework.

When we think of an incubator we might think of a bird sitting on a nest of eggs in order to hatch them, or to the care of newly hatched chicks. Incubating implies the idea of a nurturing care over a period of time, both before and after birth. Urban ecologies, too, need incubation. The Taiwan Strait Climate Change Incubator by Raoul Bunschoten and CHORA, charts some of the complex economic, cultural and environmental ecologies

across the Taiwan Strait. The CHORA team developed an organizational device for the prototypes, an incubator, that nurtures the various projects before and after they are ‘born’. These projects range from small-scale, low-cost interventions such as geothermal heating and solar panels to regional-scale and high-cost interventions such as green belts, eco cities and carbon trading. In this sense, projects are not seen as a one-off intervention, they are part of a complex web in relationship to one another and to the city around them. These contextual and deliberative relationships need to be nurtured, cared for, and fostered over time. Incubation is an essential component of an ecological urbanism.

Ecological Urbanisms

Some might find it surprising and even frustrating that in the 656-page Ecological Urbanism book, there is no attempt at a concise and effective definition of ecological urbanism. Others might consider the idea of a definition to be hopelessly reductive for a term that is intended to be projective, as futile as trying to define, say, a city-something that by its very nature is all over the place.

One strategy to try to satisfy the understandable desire for a definition while keeping a degree of open-endedness, is to oppose that which we want to define against that what it is not. Charles Waldheim uses this approach with landscape urbanism when he stated that it is not the new

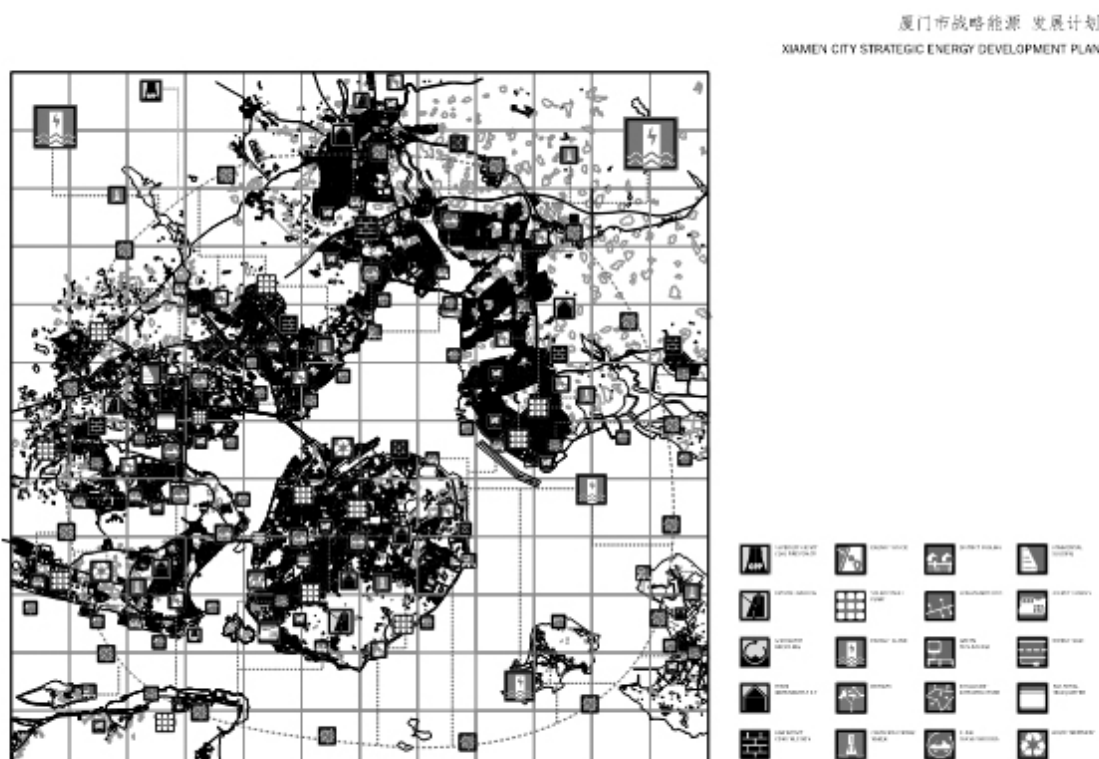


Figure 5: ©CHORA

urbanism, thereby aiming to keep open landscape urbanism's projective potential.¹⁹ Recent exchanges between landscape urbanism and the new urbanism are not entirely unrelated to ecological urbanism, which in including new urbanists and landscape urbanists seeks to overcome the binary.

Open-endedness, though, offers possibilities for misinterpretation as well as for new interpretations. To this end, I want to clarify four terms that repeatedly come up in Ecological Urbanism, and in discussions of it, that are sometimes used interchangeably with ecological urbanism. I intend to do this not as a way of offering or attempting a definition but inspired by Waldheim by clarifying what ecological urbanism is not, or not quite.

The first may seem perfectly obvious, but ecological urbanism is not equivalent with urban ecology. Ecological urbanism and urban ecology are both adjective-noun compounds and, as such, offer few possible misinterpretations: ecological urbanism is unequivocally an ecological approach to urbanism, while urban ecology is clearly an urban approach to ecology. Commonly perceived as opposites, usually in moral terms of "ecology = good" and "urbanism = bad," the compound urban ecology refers to a specific branch of ecology which relates to urban areas, what Richard T.T. Forman defines as the "study of the interactions of organisms, built structures, and the natural environment, where people are aggregated around city or town."²⁰ Ecological urbanism is concerned with a thicker approach to urbanism, aspiring toward a more nuanced socially, culturally and scientifically interconnected end result than urbanism would achieve on its own. The concepts are similar but there is a fundamental difference of focus.

By the same token, ecological urbanism is not just green urbanism. The linking of green with the environment has long history and in recent publications on green urbanism the color and environment are clearly interrelated.²¹ In my own essay, "There is More to Green than Meets the Eye," I implicitly question the correlation between the color green and environmentalism in an arid context, and point out that green, rather than being a counterpoint to urbanism generates and requires an urbanism of its own too. Elizabeth Cohen, offers one of the most memorable quotes in Ecological Urbanism when she says "... sustainable urbanism cannot mean green cities for the white wealthy."²² While Rem Koolhaas with his critique of contemporary architectural discourse warns us against greenwashing. However, in order to have a color such as green, we need not just blue and yellow, but other colors, too. It is not insignificant that the book's cover is bright red and not bright

green, a color more often associated with ecology and sustainability. As Donald K. Swearer, however, declares in his "Contribution from Religious Studies," ecological urbanism should not just be green but should encompass all the colors of the rainbow too.²⁴

Ecological urbanism it is not really eco-urbanism either: the word "eco" implies an environmental and technological focus such as eco-cities, eco-houses and eco-regions. Indeed the misnomer, "eco-urbanism," by which we are sometimes tempted to abbreviate ecological urbanism is just that. As I wrote in the introduction to the ecological urbanism exhibition, which I curated at Harvard Graduate School of Design in 2009 with a group of students under the guidance of Dean Mohsen Mostafavi, we need to put less emphasis on the "eco" and embrace the "logical" and the simultaneously "illogical" too which is often not just technological but cultural and social and artistic.²⁵ How can we respond to a city, which is never entirely rational, with pure rationality? To this end, ecological urbanism is about a particular sensibility we can bring to working on the city.

And ecological urbanism is not just sustainable urbanism: which again has more of a loaded environmental focus. Indeed many would argue that "Resilience" is a more meaningful term than sustainable urbanism.²⁶ In any case, one of the main aims of the book is to challenge the aesthetics of sustainability. Modestly, the book claims to "promise nothing short of a new ethics and aesthetics of the urban."²⁷

So, while these are four terms that often come up in the Ecological Urbanism volume they are not not ecological urbanism but not quite ecological urbanism either.

One might suggest that ecological urbanism encompasses all the above terms. Clearly, the open-endedness of ecological urbanism creates potential for innovative possibilities and room not just for alternative understandings, but for misunderstandings too. It is between the misunderstandings, though, that we often find the greatest value and richness and diversity of the city. Mohsen Mostafavi argues in his introduction to Ecological Urbanism for "the role of the urban as the provider of spaces of difference and disagreement."²⁸ If urbanism were a clear, balanced and entirely rational entity then a rational definition would be in order, but it is not. And the same could be said of ecological urbanism too. It is responding to many urbanisms, many cities, built and unbuilt, and therefore its structure, and definition, needs to embrace diverse and disagreeing ecologies.

Conclusion

In an interview with Ian McHarg, one of the founders of the environmental design movement in landscape architecture, and author of *Design With Nature*, Margaret Mead made some astute observations about responses to environmental problems. The nature of the response is often related to the level of control that is felt over the environment. Posing a question about possible responses to an impending hurricane, Mead asked:

“...Do you, when a hurricane, comes up run around with sticks in your hand and beat something loud enough to make more noise than the storm and scare it away? Do you carefully take your women and children up a hill to a safe place where people have always gone when there was a hurricane? Do you develop a kind of intuitive sense so that you know when a hurricane is coming and can climb the trees to take all the coconuts off before the hurricane hits? I have seen this done and it is done so that no one is hurt by falling coconuts when the hurricane comes. Or do you climb a tree with a knife between your teeth to cut the fingers of the wind.”²⁹

Clearly, as Bruno Latour so rightly points out, we live in an age where the certainties of modernism are no longer valid and where master plans and overarching responses are eclipsed by fragments. There is no longer any central control system, or emergency number we can ring. We are living on the metaphorical flotsam of previous conditions that are floating on the sea, to paraphrase analogies drawn by Rem Koolhaas and Raoul Bunschoten.³⁰

I am not suggesting in any way we try to scare hurricanes away by making loud noises or that we try to alleviate the impact of hurricanes by cutting its fingers. I am suggesting, however, than any long-term response to the problems of climate change involves a cultural solution as well as a technical one. In order to anticipate future vulnerabilities in terms of climate change in urban contexts, we need to work with social and aesthetic ecologies, as well as the environmental, in order to anticipate wider ecological response.

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¹Félix Guattari, *The Three Ecologies*, translated by Ian Pindar and Paul Sutton (London: The Athlone Press, 2000), 27–28.

²An ebook version of *Ecological Urbanism* is under development as this text is being written. The book will shortly be translated into Chinese and, hopefully, Spanish and Portuguese. Recently an *Ecological Urbanism App* was released on iTunes, and an exhibition of the book printed in large scale was held in Kuwait.

³Pers comm. 2012. Ms Silva referred to the subversive works of the artist Marcel Duchamp.

⁴See back cover of *Ecological Urbanism*.

⁵Kwinter, *Ecological Urbanism*, 103

⁶This exchange is documented in “GSD:ecologicalurbanism,” extracts from a student-run blog, *Ecological Urbanism*, 632.

⁷This claim was made in the original *Ecological Urbanism* exhibition curated by Gareth Doherty and students from his 2008 seminar, *Curating Ecological Urbanism*.

⁸Homi Bhabha, *Ecological Urbanism*, 78.

⁹Ulrich Beck, *Ecological Urbanism*, 108

¹⁰Ulrich Beck, *Ecological Urbanism*, 106

¹¹Thick description is a term coined by the philosopher Gilbert Ryle and made famous by Clifford Geertz in his essay, “Thick Description: Toward an Interpretive Theory of Culture,” *The Interpretation of Cultures* (New York: Basic Books, 1973), 3–30.

¹²See Mihai Nadin, *Anticipation*, (Baden: Lars Müller Publishers, 2003).

¹³Margaret Mead, “Man on the Moon,” *The World Ahead* (New York: Berghen Books, 2005), 247–252.

¹⁴*Ibid.*

¹⁵Bruno Latour, *Ecological Urbanism*, 124–127.

¹⁶*Ibid.*

¹⁷See Michael Spens, *Jellicoe at Shute* (London: AD Academy Editions, 1993).

¹⁸Kathryn Moore, *Overlooking the Visual: Demystifying the Art of Design* (Abingdon, Oxon: Routledge, 2010), 17–34.

¹⁹Charles Waldheim, “The Other ’56,” *Urban Design* Alex Krieger and William S. Saunders (eds) (Minneapolis: University of Minnesota Press, 2009), 227.

²⁰Richard T.T. Forman, *Ecological Urbanism*, 312–321.

²¹See: Timothy Beatley, *Green Urbanism: Learning from European Cities* (Washington DC: Island Press, 2000) and Steffen Lehmann, *The Principles of Green Urbanism* (London and Washington DC: Earthscan, 2010).

²²Lizabeth Cohen, "Black and White in Green Cities," *Ecological Urbanism*, 134–135.

²³Rem Koolhaas, "Advancement versus Apocalypse," *Ecological Urbanism*, 56–71.

²⁴Donald K. Swearer, "Religious Studies and Ecological Urbanism," *Ecological Urbanism*, 528–529.

²⁵The exhibition was curated by Gareth Doherty and the participants in the Harvard GSD Fall 2008 cross-departmental seminar "Curating Ecological Urbanism," under the guidance of Dean Mohsen Mostafavi: Abdulatif Almishari, Adi Assif, Peter Christensen, Elizabeth Christoforetti, Suzanne Ernst, Anna Font, Melissa Guerrero, Caitlin Swaim, Aylin Brigitte Yildirim.

²⁶See, for example, Peter Newman, Timothy Beatley, and Heather Boyer, *Resilient Cities: Responding to Peak Oil and Climate Change* (Washington DC: Island Press, 2009).

²⁷See the back cover of *Ecological Urbanism*.

²⁸Mohsen Mostafavi, "Why Ecological Urbanism? Why Now?" *Ecological Urbanism*, 12–53.

²⁹Margaret Mead, 1960. A transcript of an interview with Ian McHarg on *The House We Live In*, a program broadcast on WCAU-TV, Channel 10, Philadelphia, Sunday, November 10, 1960, 1 to 1:30pm.

³⁰See Rem Koolhaas: "We were making sand castles. Now we swim in the sea that swept them away." In "Whatever Happened to Urbansim?" S,M,L,XL (New York: Monacelli Press, 1998) 958–971. Also, *Urban Flotsam* by CHORA/Raoul Bunschoten (Rotterdam: 010, 2001) where flotsam refers to the remnants of the city floating on top of floodwater.