

**Demoing unto Death:**

*Smart Cities, Environment, and “Apocalyptic Hope”*

“Computing isn’t about computing anymore. Its about living.”

-Nicholas Negroponte<sup>1</sup>

Today, growing concerns with climate change, energy scarcity, and economic collapse have turned the focus of urban planners, investors, and governments towards “infrastructure” as a site of value production and potential salvation from a seemingly ever more apocalyptic world. From discussions about “disaster capitalism” to the embrace of a world after humans, the idea that the world is over, and the environmental, economic, or security catastrophe has arrived is almost unquestioned. In response, there has emerged a new paradigm of high technology infrastructure development obsessed with “smart”, “ubiquitous”, or “resilient” infrastructures. Such “smartness” and “resilience” must be understood as quite specific as it directly refers to computationally and digitally managed systems—from electrical grids to building management systems--that can learn, and in theory adapt, through analyzing data about themselves. Whether threatened by terrorism, sub-prime mortgages, energy shortages, or hurricanes, the response is surprisingly similar.

The concept of such “responsive” or “smart” environment is often dated to the 1970’s, and attributed to Nicholas Negroponte’s efforts with the Architecture Machine Group (later to become the Media Lab at MIT), where he supposedly coined the term.<sup>2</sup> Emerging at the same time as a global energy crisis, rising environmental consciousness, and an increase in both urban violence and terrorism, the concept has long been married to catastrophe.<sup>3</sup> It is perhaps fitting then, that it is Negroponte’s famous adage summing the high-technology start-up mentality of the 1990’s—“demo or die”—that also most adequately describes this mode of futurity and

optimism being espoused in the name of impending disaster. Our argument is that what differentiates these contemporary “smart” infrastructures from earlier histories of utopia and urbanism is not the question of technology, but rather the particular form of spatial and temporal containment and speculation engendered by the logic of prototyping, versioning, and demoing. The demo is a particular mode of negotiating uncertain futures. In this essay we will explore this phenomena—what we will label “apocalyptic hope”—that ties together the logic of the demo or “test-bed”, speculation on disaster, sentiments of hope and optimism, and the production of high technology infrastructures. As this zeal for producing high technology infrastructure replaces any interest in other forms of political action, development, or engagement with the environment or each other, it becomes incumbent to begin asking about the forms of futurity and speculation these systems engender. To do so, we will do a quick fly through of two major developments—Songdo in South Korea and Masdar City in Abu Dhabi—to offer an image of this contemporary situation. These two urban developments are among the most visible and massive of the “smart” and “eco” city projects started over the last decade, and continue to preoccupy the imaginations and discourses of urban planning and design as the nightmares or fantasies for the future of urbanism.

## Inhabiting the Apocalypse



Fig.1 Songdo, September 1, 2013



Fig.2: Songdo Marketing 2012



Fig.3: Masdar March 2014

To move from the abstract to the substantive, one hour's drive southwest from Seoul, the new city of Songdo<sup>4</sup> is being built from scratch on land reclaimed from the ocean (Figure 1-2). It is a masterpiece of engineering, literally emerging from a previously non-existent territory. Beneath this newly grafted land, lies a massive infrastructure of conduits containing fiber optic cables. They are largely empty spaces waiting, in theory, to provide some of the highest bandwidth on earth. To the eye of a New Yorker this is a strange landscape of inhuman proportions. Nowhere in the United States are there construction sites even approximating this size. Songdo is thus both awe inspiring and beautiful (fig.1), and horridly banal. The sheer size, and scale, all grafted from the Yellow Sea, is literally an engineering project of geological scope. The project thus conveys ideas of infinitude in both monetary and technical terms. Its purpose is to sell size, growth, and undefined expansion in the supposed name of some ill-defined notion of "greenness" and economic development (fig.2).

Part of the Incheon Free Economic Zone (IFEZ), Songdo is one of three planned developments to be rolled out as the latest testing grounds for the future of human habitation.<sup>5</sup> The master plan of the zone envisioned the unification of three functions, the first high technology research and development and a city expected to house approximately 300,000 people, to which Songdo is dedicated, the second a central hub for logistics which includes the massive Incheon Airport and port facility, and the third a planned development, Cheongna (whose current fate post-2008 is unclear) that was to service finance and leisure services. Together—intelligence, logistics, and finance—comprise a package that is, in the fantasies of its developers, replicable globally. The zone is being developed through a variety of public private partnerships. While the big players constantly change, currently they comprise of Cisco, a California based network infrastructure provider now interested in entering tele-presence and management consulting, and Posco a South Korean chaebol. In the course of the project Gale International, a Boston based Global real-estate development corporation and Kohn Pederson Fox Associates, a New York based global architecture and engineering group have also been involved in building and designing the urban space, and continue to be major stake holders, although at present through a debt restructuring deal in 2013, Incheon City and IFEZ have taken much of the responsibility for the debt and are also now the prime owners and beneficiaries of any profits to be made from Songdo. Much of the financing to date, approximately \$40 billion in Songdo alone<sup>6</sup>, was conducted through Morgan Stanley Real Estate and is heavily leveraged.<sup>7</sup> All these groups are global players in both development and technology, and Cisco has teamed up with Posco and the IFEZ authorities to create management consulting and planning services in the interest of assisting other governments and locales with building similar developments—mainly in Ecuador and Malaysia. China, of course, is another major target of Korean management consulting interest. Cisco is also a major global player in the frantic race to dominate the “smart” infrastructure and city market currently presumed to reach the size of 1,134.84 billion dollars by 2019 (current estimates put the number at 411.31 billion), through its “smart+connected” communities program.<sup>8</sup>

What makes this city so “smart” is that it is (or planned to be) embedded with sensors that transfer data about atmosphere, trash, electricity, and traffic flow into networked computer

systems that can algorithmically (in theory) figure out the most efficient way to respond to changes in behaviors of either the population or the environment. This agent oriented smartness, not one of consciousness but little actions collectively networked, is viewed as capable of handling and managing a series of future events from the very mundane—direct marketing to smart phones—to the catastrophic—damaged energy grids, crowd sourcing for disaster relief in the case of massive meteorological, geological, or terrorist events (particularly as related to North Korea), and large transportation accidents.<sup>9</sup>

Songdo, like any major technical product today, is not an object, it is a process. It is a beta version for urban life. The city is envisioned as a platform deploying this “smartness” in the interests of perfectly merging corporate demands and consumer lifestyles in a “safe” and “optimized” environment.<sup>10</sup> On first inspection, the city does appear to deliver these services. Songdo serves as a high-end suburb to Seoul, mostly for white-collar workers, although there are increases in the number working within the city. The development is concentrated around a very long and large multi-block open-air shopping mall/”street”, to serve both entertainment and shopping demands. It has extensive industrial research and office parks including the headquarters of Posco and the UN Economic and Social Commission for East Asia and Pacific, including the Global Climate Fund, the central research facilities for firms such as Samsung for biological research, and IBM and KYOBO house electronic book storage and cloud facilities on the site. Finally, it hosts a large university complex, the Songdo Global University Complex, that is home to both local and international schools such as SUNY, University of Utah, University of Ghent, and University of St. Petersburg. The city thus integrates in its plan hi-technology facilities for corporate administration, research and drug production, higher education and access to potential labor, and consumption. Foreign corporations receive tax breaks, but all corporations receive substantial benefit from the enormous investments that have been made (over \$30billion to date) by IFEZ and Incheon City to construct high bandwidth fiber optic infrastructure, smart electrical grids, public transport (including direct subway links to Seoul), and an advanced underground trash processing facility that generates energy as well. This is a demo for urbanism of the future; a prototype for the world. As its initial developer, Stanley Gale,

is quoted as saying, “We want to crack the code of urbanism, then replicate it. We want to build at least twenty Songdos ourselves: the G20 – Gale 20.”<sup>11</sup>

Incheon, in fact, is a leader in creating this new form of “codeable” territory and life. It was one of the first post-World War II free trade zones, initially started by the Americans to encourage capitalist development in South Korea after the Korean War. In its contemporary reincarnation it emerged as part of former President Lee Myung-bak’s efforts to promote green and low-carbon growth, as well as to sponsor high technology infrastructure and research as a solution to South Korea’s economic woes and security situation in the aftermath of 1996 currency crisis. In 2003, Incheon was officially legally reassigned as a “free trade zone” with the accompanying deregulation, tax exemptions for foreign capital and companies, and tax and infrastructure subsidies from the local and federal governments. Where one invasion occurred in the name of containment now airports, automated port facilities, high-tech office parks, and university satellites rise in the name of global integration...or more appropriately global replication.<sup>12</sup>

Songdo cannot therefore be treated in isolation. These spatial products are part of what Keller Easterling has labeled “extra-statecraft”; new “zones” of governing human activity. Such zonal logics do not denote the demise of the state, but rather the production of new forms of territory whose very ideal is exception to national and often international laws. Free trade zones are thus a growing phenomena, stretching from Pudong District in Shanghai to the Cayman Islands, and even the business districts and port facilities of New York State, that serve as conduits for the smooth transfer of capital, labor, and technology globally. A new networked infrastructure that is linked through the algorithms of GIS and GPS systems and computerized supply chain management systems, the standardization of container and shipping architecture, and regulatory legal exceptions, to mention but a few of the many protocols that produce these spaces.<sup>13</sup>

What makes the “smart” zones unique, however, in a world of zonal territories is that they predicate themselves on a dual imaginary of dis-utopia managed through self-organizing and constantly self-modulating and updating systems. Incheon, in particular, has a long relationship to assorted crisis—military, security and economic. In the present, the justification for bandwidth more generally, and for Songdo in particular, is laden with apocalyptic overtones implying energy and environmental calamity. South Koreans Halpern spoke with at the site regularly repeated a discourse about the nation as resource poor (particularly in energy), population heavy (although population growth is among the lowest in the world), and surrounded by hostile countries including North Korea, China, and Japan. To these many threats, engineers, but also artists and architects, uniformly responded that it was only Korea’s remarkable engineering capacities that had saved it from demise. In fact, South Koreans regularly identified with Halpern’s Israeli origins, viewing both nations as closely related in struggling with security concerns, and both related in their engineering and entrepreneurial spirit.<sup>14</sup> Such reasoning is not solely the province of South Koreans. It is one of the implicit and automatic assumptions legitimating “ubiquitous” or “smart” systems that increasing computation and data flow in the environment (irrespective of how much energy servers use) will somehow overcome the problems and limits of human decision making and control. Bandwidth and life are thus inextricably correlated for both profit and survival (fig.2).

But, if the imagination is apocalyptic and steeped within discourses of security and environmental fear, what is surprising is that these disasters are presumed to never arrive. When Halpern interviewed engineers at Cisco and government officials from IFEZ, in July 2012, and September 2013, repeatedly the language of Songdo as an “experiment” a “test”, in short a demo continually reasserted itself.<sup>15</sup> In fact, few places on Earth share so close an intimacy and so great a love for the “demoing” ethos and techno-fetishization of MIT as South Korea; particularly as related to ubiquitous computing projects. The main leaders of the government commissions to build smart cities were all trained at MIT, as were many in the Cisco team. MIT was originally supposed to be a partner in Songdo, and then withdrew for arguably unspecified ideological or conceptual reasons, but most likely, according to other sources, fiscal reasons. MIT’s Senseable City Lab was, however, a partner and collaborator on other major projects,

primarily the Digital Media City development near Seoul, a somewhat smaller and more targeted development specifically constructed to encourage entrepreneurship in the media production industries.<sup>16</sup>

South Korea has even made it a business and matter of national identity to be the land of the consumer product “test-bed”. Korea markets itself globally as a “test” zone, “opinion leader” and “early adopter” population; highly urbanized and concentrated, ready to more rapidly consume new technology, offer discriminating feedback, and act generically. By extension, the nation, and particularly the youth zones of Seoul, are regularly billed as the most desirable location to test new products before entering more “mature” North American, European, and other Asian markets.<sup>17</sup>

Songdo, therefore, must be understood not as a city but, as Halpern and her colleagues have written, as a “test-bed”. It is a platform for testing these parametrically designed and generated cities; and it is part of a global “demo” ethos that brings us endless versions, updates, and trials—comprised of constant feedback loops between market research, personalization, and product development. Songdo might fail, but this is only a temporary problem, to encourage the next version, a better “smart” city in Rio or New York or Shenzhen, another prototype.<sup>18</sup> Just as car accidents are regularly re-performed on auto-manufacturer test-beds, so in the case of these massive infrastructures any failure can be contained and managed. Such failures are even the platforms that allow developers to prepare the next version; that enable engineers and planners to unearth that “code”, recalling Stanley Gale, of urbanism facilitating the rapid construction of new cities globally.

In fact, Songdo’s occupancy rates are low and its financial future unclear. The entire complex despite being widely touted in financial news as super planned and green is actually beneath sea level and vulnerable to global warming. Thus one must read all this optimism, not to mention the continuous South Korean government’s support, the spinning off of management consulting groups to conduct similar such “tests” globally, and the ongoing preparedness of



major investment banks to leverage such developments (Cisco and IFEZ are currently consulting on developments in Ecuador) as articulating a perspective where the world, and life, is just always a test without an end. The function of these territories is to serve as bounded studios within which to integrate finance, computation and digital media with discourses of sustainability, resilience, and survival. Like a modernist piece of montage, these seemingly dialectical oppositions become a single media product, combined into a package that is currently colonizing our ability to imagine the future of human life.

### **“Energetic” Demos**

As part of this emerging narrative of salvation through technology, design, and “smartness”, the United Arab Emirates also started the construction of a zero-carbon city, titled Masdar City (Fig.3). Masdar City was to link contemporary finance (also not incidentally reliant on computation and algorithms) to speculation for profit from the introduction of computational and other high technology interventions and research into the environment. From the start, the project was envisioned as speculatively and profitably responding to a series of disasters—both the end of oil and the coming ecological disaster resulting from global warming. Both these “disasters” were responded too through demands to increase the training and availability of engineers in the country.

The project began in 2006, when the Abu Dhabi government publicized its intentions to invest in renewable energy and clean technology infrastructures, in the form of a multi-faceted state-owned company called Masdar, in the hope that the Emirate remains a significant player in the energy industry well after its oil reserves run dry.<sup>19</sup> In the following years, Masdar (meaning “source” in Arabic) became widely known for Masdar City, a ‘futuristic’ smart eco-city that was designed by the London-based architecture office Foster + Partners to rely entirely on renewable energies all managed through computerized and automated systems. Masdar City would house 50,000 residents and 40,000 commuters on a 600-hectare area, and cost 22 billion dollars. “To look at computer-generated images of it, you might think it was a fantasy from a sci-fi comic. The sort I read as a boy,” Norman Foster of Foster+ Partners said in 2011, “But Masdar City, a

university city and environmental technology park outside Abu Dhabi, is already being built.” While the eco-city was central to Masdar’s vision, Masdar also invested in renewable energy via its other operations—Masdar Power, Masdar Carbon and Masdar Capital. Masdar Institute, the energy-focused research center that was set up and supervised by the Technology and Development Program (TDP) at MIT was founded in a campus amidst the fledgling eco-city.

In a global context afflicted with climate change and energy deficiency, the proposed Masdar City serves to produce a new mode of apocalyptic speculation and hope that would be universally applicable to any location. Like all “test-beds” in engineering, the function of the prototype is to test extreme conditions; the absolute limits of imaginable situations that a technology must undergo and still be operable within. The producers of Masdar, therefore, imagined the future in the dialectical extremes of both heaven and hell. Conceptions of the approaching end of the world were complemented with imaginaries of a utopian future, driven by a coming together of critical regionalist architecture and high technology. The designers suggested that they borrowed from old Arab cities in thinking about Masdar City, and pointed to Shibam of Yemen as a prominent example. At the same time, the city was going to be “smart,” or in the words of the architecture critic Rowan Moore,<sup>20</sup> it would have “a hidden brain,” which “knows when you enter your building, so that your flat can be cooled before you arrive, while in public places flat screens broadcast uplifting news on the environmental performance of the complex.” Framed as a utopia or science fiction project, which might be achieved, Masdar City needed the backdrop of a world struck by climate change and energy deficiency. The marketing and communications campaigns put together by Masdar aimed at proving that the opposite was also true – that the world needed Masdar City. The world needed a demonstration of how high-technology engineering and better architecture could provide both luxury and zero carbon footprint.

Like Songdo, Masdar City would one day become a self-contained item for export to other countries that demanded similar experiments. Replicating the famous media lab from MIT adage of “demo or die”, Masdar is a demonstration or a process for environmental, financial, and population management. Indeed, Masdar has become an icon for a global imaginary of

survival in the face of environmental catastrophe. The developers purposefully suggest as much. In interviews and marketing they openly argue that they were building the city in the harshest climatic conditions possible; such extreme conditions made Masdar arguably the ultimate example, the blueprint, or rather “the greenprint,” from which any region on earth could adopt Masdar City’s principles without many revisions to meet any catastrophe imaginable. “We are creating a city where residents and commuters will live the highest quality of life with the lowest environmental footprint,” announced Sultan Al Jaber, then the CEO of the renewable energy and clean technology company Masdar, during the groundbreaking ceremony in 2006. “Masdar City”, he continued, “will become the world’s hub for future energy. By taking sustainable development and living to a new level, it will lead the world in understanding how all future cities should be built.”<sup>21</sup> Masdar City was conceptualized as a role model for the world, whose proponents argued: one day all cities will be built like this. Smart cities offer a vision of high technology, ecologically friendly modes of living, and engines for new modes of economic growth under conditions of impending disaster.<sup>22</sup>

To stress the self-contained and “test-bed” or experimental nature of the project, some people at Masdar called the city a “spaceship in the desert.” In this understanding, Masdar City was an innovative technological model, proposing a means of survival based on rational scientific management and calculation. The experimental hub would technologically maintain the livelihoods of its residents, even if the earth could not provide the right living conditions for the frontier people on the ship. As Peder Anker<sup>23</sup> shows in his history of ecological architecture, this is by no means a new trend in design. Since the 1970s, cybernetically informed imagined or real environments from space have inspired the making of ecologically sensitive architecture, underscoring that adopting space technologies constitutes the singular means for being in harmony with the ecosystem. According to this perspective, space provided an alternative environment of peace and rationality, standing in opposition to the destructive and irrational crises of the earth. The spaceship therefore served as a finite, computationally and technically sophisticated and insular habitat for a group of beings facing an outside world of crises. In the words of Peter Sloterdijk,<sup>24</sup> the spaceship would offer an “exclusivity dressed up in claims to universalism.” Likewise, Masdar City set a contrast to the current fossil fuel driven economies of

the world and to the future world of climate catastrophe. The imagined eco-city not only relied on a future oriented temporality, but also reproduced a particular spatiality with firm boundaries.

These are spaceships with peculiar properties. While it is assumed that failure of any system in space leads to death, here death is forestalled by rebranding or reframing. Currently, for example, one hundred or so Masdar Institute students reside at Masdar City, occupying the dorm rooms of the Masdar Institute campus. Around three hundred professionals who work with Masdar (and recently with Siemens) commute there from Abu Dhabi or Dubai. In addition, there are many male low-wage immigrant workers on site, who are bussed back to various labor camps at the end of every workday. And yet construction efforts have stalled since the 2009 economic crisis. The Foster + Partners master plan has been canceled. These days, Masdar City is underlining its identity as a special and “smart” economic zone, promoting its capacities as “the city of possibilities”<sup>25</sup> with perpetual potential, and inviting technology companies to come and build inside the 600 hectare area, which neighbors the Abu Dhabi airport and the Formula 1 tracks.

Like Songdo, Masdar operates on a model of temporal and spatial bounding into the logic of demonstration, where “failures” are turned into experiments and justifications (in a seeming irony) for ever more integration of technology, particularly computer and digital technologies, into the environment; and ever more speculation, algorithmically managed, to derive value from the possible never realized futures that these spaces might produce. In these cities, the site of performance and demonstration associated with democracy and the “demos”, terms first emerging with the idea of the polis or city, have now become a literal “demo” as in prototype. The inhabitants of Masdar City are test subjects, responding to this prototype real time.<sup>26</sup> The performance of the infrastructure becoming a logic in itself that bounds time and space, to manage futurity without needing to know the endpoint, and always legitimizing another version, another brand, another derivative, another technical system. In fact, it is the seeming separation between the computational and prototype infrastructure, and the lived world that is precisely the justification for ever more testing, demoing, and development of technology.

## **Technological Futures**

A fantasy of the future managed, or destroyed, by technology is nothing new, of course. Since the 19<sup>th</sup> century machines have been envisioned as leading to both the emancipation and destruction of humanity. In the past six decades, technologically realizable species suicide has been a historically unique and specific site of fascination, made possible by way of nuclear weaponry. What is interesting, however, is the way that today's "demos" and "test-beds" differ in their logic from the game theories and simulations of nuclear war.

One of the most powerful ways to think this difference is through distinguishing between risk and uncertainty. If the Cold War was about nuclear testing and simulation as a means to avoid the unthinkable but nonetheless predictable—nuclear war—the formula has now been changed. This distinction is best summated in the separation between risk and uncertainty first laid out in the 1920's by the economist Frank Knight. According to Knight, uncertainty, unlike risk, has no clearly defined endpoints or values.<sup>27</sup> It offers no clear cut terminal events. In this case, the test no longer serves as a simulation of life. Rather, the test-bed makes human life itself an experiment for technological futures. This "uncertainty" embeds itself in our technologies—both of architecture and finance. Thus in financial markets we continually "swap", "derive", and "leverage" never fully accounted for risks in the hope that circulation will defer any need to actually represent risk, and in infrastructure, engineering, and computing, we do the same.

As future risk transforms into uncertainty, "smartness" becomes the language by which to imagine our future. Instead of looking for utopian answers to our questions regarding the future, we focus on quantitative and algorithmic methods. "Smartness," the dominant method for engaging with possible urban collapse, then becomes our new catch phrase for an emerging form of technical rationality whose major goal is management of an uncertain future through a constant deferral of future results or evaluation through a continuous mode of self-referential data collection without endpoint; what Shannon Mattern has labeled a methodolatry, a constant obsession with methods and measurement to constantly assess prototypes that are never completed; an assessment of results without endpoint.<sup>28</sup>

There is a profound difference between knowing the future, as under the conditions of nuclear war, and acting under conditions of climatic, energetic and economic uncertainty to which “smart” urban planning responds. At Songdo, which serves as a potent example of the management of uncertainty, Cisco executives and government employees repeat this discourse ad infinitum—bandwidth is valuable even if its function, and monetization, has not yet been determined.<sup>29</sup> So huge conduits (they are some three feet wide in Songdo compared to the less than a foot wide in NYC for example) for fiber optic cables are built, the environment is embedded with sensors and responsive systems—from garbage to electrical grids—all the while the space stands largely, still, empty. More interestingly, despite Songdo’s lack of accomplishment or profitability, the idea of this “smart” city linking finance, high tech research, green infrastructure, and the perfectly customized consumer lifestyle has already propagated through the financial news and the services of firms such as SAP, Siemens, Cisco, IBM, Morgan Stanley, and Arup and to many different locations from Rio’s Operation’s Centers to the Gherkin in London. The outcome, or even the efficiency, environmentally or energetically, of these developments and buildings is impossible to assess with accuracy, and no one even tries. This is a future no longer described simply acted upon with zeal and speculative optimism.



Fig.4: Incheon Bridge with Costs, September1,2013



Fig.5: Songdo Control Room, Sept.2,2013



Fig.6:Masdar Master Plan Foster and Partners March 2007  
<http://www.fosterandpartners.com/media/Projects/1515/img0.jpg>

## Disaster Aesthetics

The most striking feature, therefore, about all this speculation and demoing on and of the end, is its absolute positivity and hopefulness. Hope is an affective state, an emotion that induces new types of methods and techniques such as big data analytics or parametric design, and allows designers and policy makers to act upon the uncertain future with ease. As such, hope is also an aesthetic category; a particularly organization of sense that mobilizes, in the Rancierian understanding, affect toward action. It therefore behooves us to understand not only the technical and rhetorical infrastructure of this demoing until death, but its aesthetic sensibilities and tactics. The demo or “test-bed” is a practice of the senses, a mode of aesthetic strategies and performances born of modern architecture and computer aided design. Masdar City and Songdo are the exemplars of this new type of emotionally demarcated territory, both literally architected into space and figuratively existing in our imaginations and desires.

Designed by Norman Foster’s office in London, Masdar City (fig.6), for example, is beautifully rendered in advanced building materials. While some of the buildings mirror the desert

surroundings in their color and draw on critical regionalist architecture, others replicate the gleaming light grey of a spaceship and highlight the technologically complex nature of this new center of renewable energy. The residential units boast terracotta walls of reinforced concrete and rely on contemporary interpretations of mashrabiyas to block sunlight and foster privacy. The laboratory buildings are insulated from the heat by façades filled with inflatable cushions, which remain cool to the touch. In their marketing communications, these buildings promise to offer comfort for the body, and theoretically the soul, providing a temperate climate, while contributing to an economy of knowledge production; all theoretically with zero carbon footprint. The arid desert that in fact gives life to Abu Dhabi through its multiple resources, most importantly oil, becomes marginalized as an other space that cannot be dwelled except in this manner. Its managing executives, experts who hail from around the world, conceptualize this new territory as an opportunity for capital investment and technological experimentation in the backdrop of a world struck by climate change and energy deficiency. Perhaps the end of the Earth will be the beginning of a new market in technology. Masdar City is promoted as a utopian living arrangement that acknowledges and resolves the current energy crises of the world, while mitigating climate change. It is a Live-Work-Play space, which will grow one neighborhood at a time. It refuses a vision of a world in decay but rather envisions a world that indulges in its dissolution.

Inside, Masdar City employs alternative modes of transport. The personal rapid transit (PRT) pods, the planned mode of transportation within Masdar City, were first been exhibited on the opening day of the World Future Energy Summit in Abu Dhabi in January 2009, giving the visitors a sense of the eco-city's futuristic ambitions. Designed by Zagato, an Italian engineering company famous for racing cars, and manufactured in the Netherlands by 2getthere, the pods were perceived to be the most innovative element of Masdar City. One blogger who reviewed the exhibit suggested, "The comfort and safety of the pods shows us a rather favorable vision of the future. Ride on cushioned seats, holding hands or facing each other. Have a conversation, catch up on the morning news. The car will stop to let you off at your chosen destination. Chauffeurs for everyone, and Green at that? That's our future? Not bad. Not bad at all!"<sup>30</sup> The pod cars confirmed that our future would be one of technological complexity, just like what we imagined



when we watched science fiction movies. They evidence that our imaginaries of the future would remain untouched by problems of energy scarcity, and offer a comforting and enjoyable narrative in the face of environmental conditions that are deeply unsettling.

Masdar City's neighbors also promote hope and fun. The Formula 1 tracks have been hosting the Grand Prix since 2009 in Yas Island. The Al Ghazal Golf Course is older, serving golfers since 1997. All of these zones assist the drive for economic diversification in Abu Dhabi while at the same time putting the Emirate's name on the map, promoting its brand image for diverse target markets. In their segregation from Masdar City, these carbon intensive sites stage different pathways towards which Abu Dhabi's economy can be steered. They demonstrate that Masdar City is not necessarily symptomatic of a greening effort across the Emirate – it is only one of the experiments towards the production of a future that depends less on oil revenues. Although they can easily be perceived as dissipated or unrelated spaces with no common social basis, the Formula 1 track, the golf course and the eco-city all comprise segments of the challenge to generate non-oil based revenues for the Emirate, united under the drive for possible future profits. The segregated units with seemingly contradictory agendas and drastically different relationships to climate change and energy scarcity stand together, because they are all experiments for economic survival in a future with less oil revenues. They show that Abu Dhabi has many happy alternatives.

Songdo promotes other pleasures—those of undefined futurity and eternal growth (fig.4). Songdo is thoroughly uninspired architecturally, but incredible in its display of size and infrastructure (Fig. 5). The marketers for the Incheon Free Economic Zone have strategically placed an observation deck on their skyscraper headquarters. From this observation deck, residents and visitors will marvel at the raw size of the construction site, and gaze at the seventh longest cable-stayed bridge in the world leading directly to the Incheon Airport. This spectacle of high-end development titillatingly reveals that behind the smooth towers and luxury condos there is another infrastructure—that of the Incheon Airport and Port – two of the most high-tech and largest transport and logistics facilities in East Asia. This suggestion of infinite circulation—of capital and people—all mediated through computing, offers a

sentimental and aesthetic answer to uncertain disasters of environment and economy. Songdo, and the Incheon Free Economic Zone, thus serve as a vacillating network awaiting purposes not yet assigned, and preparing for environmental and economic disasters that have not yet been assessed or definitively calculated and whose temporal horizons are eternally deferred.

Within Songdo, planners are careful to regularly point out that the environment is hyper responsive. The centerpiece of this responsivity is the quite showy, and seemingly unnecessary, “smart” pole. This very key element of Songdo, as well as other Korean smart city developments, is a device lauded and circulated as *the* design element for inducing “happy” (literally labeled that in the marketing) environments. They are very visible in the landscape. (fig.7) In theory, smart poles monitor crime and traffic and issue traffic violations through their sensors and surveillance cameras. They also offer location based and personalized marketing by providing public internet service and by linking to cell phones passing in the area, and they might, some planners suggest, even play personalized ambient music and sounds to make the environment soothing. They also give light, and in some designs, in different colors (again to match with mood). To safeguard the “happy” population these poles are also linked to disaster services and monitor for accidents and outdoor medical emergencies, along with environmental particles and, in certain designs also sense for radiation and chemical weapons (ostensibly from terrorist events, New York City already has installed such poles as part of its post- 9-11 preparedness program). For the most part what makes these little happy inducing disaster monitoring poles seem strange is how they are made deliberately visible in South Korea, and simultaneously that they are almost unnecessary considering the already extant GIS/GPS systems and direct to consumer marketing in every smart-phone, existing wi-fi and surveillance camera infrastructure within transport and public spaces, and the prevalence of fit bits and trackers and other sensor systems on and in the bodies and environments of contemporary cities and their denizens. The marketed and widely broadcast and designed visibility of these poles must, therefore, only be understood as another disaster and security aesthetic performing and demoing the ideal of a smart environment that provides security and comfort within its confines. (Fig. 10)

All this “happiness” is refracted in the gleaming marketing materials issued for Songdo, Masdar,

and a myriad of other similar complexes in locations ranging from Azerbaijan to China. As other architectural critics have also noted, almost every such real-estate development on earth has a similar video usually involving a scalar swoop into the city from space, and a fly through the main architectural spaces, all landing on images of consumer-citizens easily downloading data and services from their smart phones and/or perched in their shiny offices. The buildings are almost always rendered as though aerodynamic and ergonomic, maximizing the flow of people, energy, and information. This effect is created through long tracking shots merged with renderings that lack strong light and shadow thus intimating pure flow without resistance through the city, and between interior and exterior spaces. This seamlessness is amplified, at least in animated ads for Songdo and Masdar City, through many scales, from the individual “smart” high-tech employee in their office on their smart devices, up to satellites that suggest links to the global supply chains directly referred to by showing the airport and adjacent shipping facilities as well as the time it takes to reach major global centers. Songdo’s promotional material is all done with the latest of standardized computer aided rendering, while at the same time feeling cheap and ill produced; a result of the obvious use of standard objects and forms from already available templates making the animated ad films feel low quality. The already obsolete feeling is enhanced by the fact that many features of the city in the Songdo promo and the Masdar City videos have yet, or perhaps ever, to be built.

But this “failure” according to sales reps only proves how great the next version of the city is. In Songdo, economic disaster has been met with resilience; instead of trademark buildings by big name architects, cheaper condos were built, and universities were found to rent space. Instead of being zero carbon and absolutely green (a goal IFEZ gave up in the name of deregulation and encouraging development) now the UN’s offices that regulate environment reside in the more cheaply built office buildings! In Masdar City, the master plan has been cancelled, allowing third parties to come in and build inside the declared green special economic zone. Masdar City will no longer be zero-carbon, but it will experiment with climate change knowledge, technology and governance, and impose sustainability protocols. To this end, it houses the International Renewable Energy Agency (IRENA) global headquarters, a tenant that moved in to the city in June 2015, as well as Siemens Headquarters, and hopes to attract others, such as Doubletree

Hilton. The part of the city which was built according to the Foster + Partners master plan – that is the Masdar Institute campus – remains perched atop a 20 feet basement level.

Unlike in the apocalyptic prophecies of the New Testament, the end therefore will never arrive. In managing the time and space of the demonstration of futures, any issues of translating outside of the closed world of the demo, or of engaging with the implications or results of these demonstrations of technology are deferred eternally. This deferral finds itself literally enacted in the financial maneuvers necessary to keep these spaces moving and growing, Songdo has seen repetitive debt restructuring and flipping schemes, most recently in 2013, and Masdar has seen itself transformed, essentially, into a real estate developer. Every demonstration is a failure that self-referentially legitimates more of the same. Every demo a mode of reenacting disaster and failure, only to never, in theory, die...but only in theory. In practice from labor to biodiversity these projects are inducing massive forms of extinction and suffering in the name of an eternally deferred, but always hopeful, future.



Fig.8 Pionen Datacenter,  
Stockholm Sweden



Fig. 9 Norway Svalbard Seedbank



Fig. 10: Gardens by the Bay,  
Singapore

Songdo and Masdar are thus part of a global emerging design strategy (figs. 8-10) that parades spectacles of high technology infrastructures constructed in anticipation, and embrace, of extreme

disaster (fig.4-6). In responding to the uncertain apocalypse, these cities, seedbanks, server farms, gardens are not merely sites *of* survival, but also testing grounds *for* futurity and speculation.

But “smart” and “eco” cities are particular forms of life, and death, and warrant special attention as they occupy and perhaps consume the imaginative future for most of human habitation. It is rumored that most of humanity is soon to live in cities. This becomes significant when one recognizes that the polis is the historic site where the Greeks conceived of “the demos” as well as the line demarcating the human from nature, one might assume that at stake are contemporary notions of democratic politics and of the environment.

The demo in these cities is, therefore, not like that of seedbanks or server farms that are imagined as bunkers against change. Rather the urban space is envisioned to be *in* time; so synchopated to the moment that there can be no history, only an eternal and repetitive obsolescence. Unlike other infrastructural projects, these particular forms of “smart” or resilient projects, while invoking biblical arks from which they take their moral and aesthetic legitimacy, are peculiar ships that are allowed to sink. What is unthinkable for a server farm, is all too conceivable for a city.<sup>31</sup> “Demo or Die” is not a threat, it is an invitation to participate in a new practice; perhaps one that will replace the older demos of democracy and realms of appearance, into a neo-liberal call for endless digital “entrepreneurship” and “creativity”. These cities appropriate the public realm of appearance, what that was once “the demos” and transformed it into the demo, also a realm of appearance, but one with severely limited temporal horizons, group imaginaries, or citizenship benefits. The demo allows us to die, repeatedly, under the safe, secure, and in theory, profitable watch of our networked machines.

## Apocalyptic Hope(s)

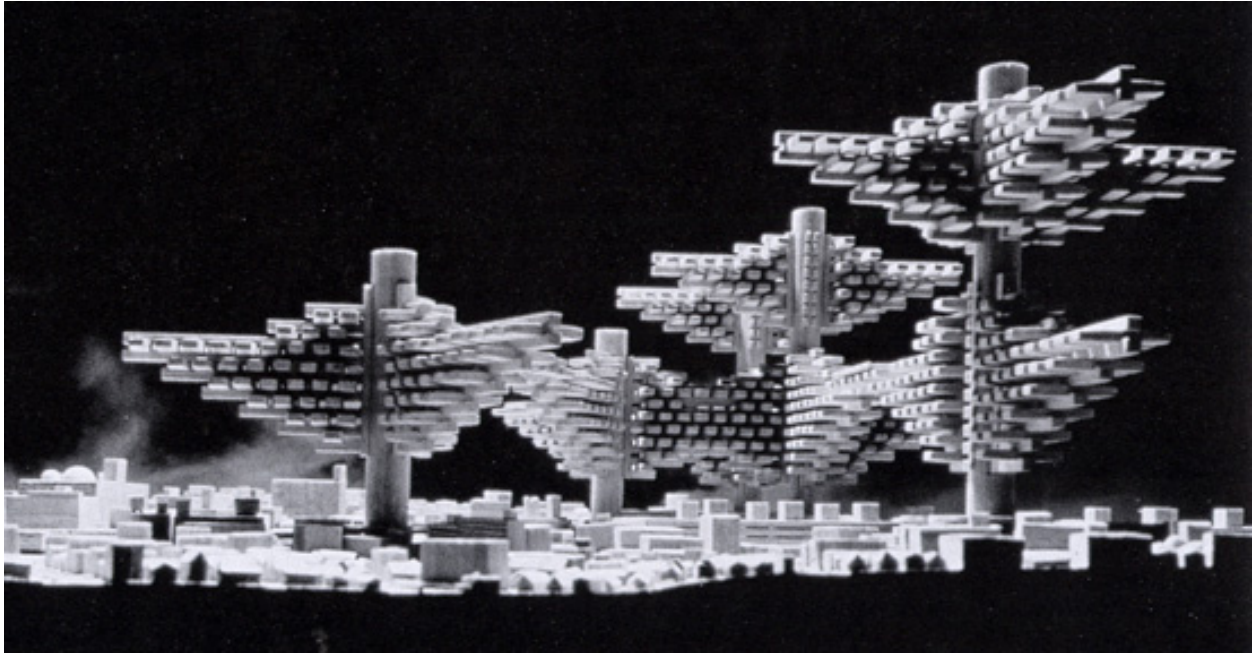


Fig. 11: Arata Isozaki, "Clusters in the Air for Tokyo", (1960-62)

<https://workjes.wordpress.com/2008/01/30/clusters-in-the-air/>

Death is not the only option. It behooves us to examine other moments where devastating disasters were responded to, to ask about different possibilities, to develop new vocabularies. To this end, we wish to demonstrate a possible alternative vision of the future of a high-technology Asian city. The work of Japanese architect Arata Isozaki is shown above (fig.10). Isozaki, like so many engineers and designers in today's "smart" developments, attended MIT for training in the 1950's, leaving the war-destroyed Japan to learn about American architecture. He is famous as an affiliate of the Metabolist movement of architecture.

Metabolism is a different idea for thinking the future. Metabolic processes have complex relationships to death. They are both mechanisms for assimilating the outside into our bodies, and mechanisms for producing growth and change. Metabolism is about decomposition and growth at the same time; it is at the center of life. The Metabolist movement also reflected this idea. Emerging out of a devastated post-World War II Japan, these architects and designers attempted to envision the future.

At this moment when Japan was rebuilding from the devastation of American air raids and atomic weapons, a pure tabula rasa of destruction, the question of suicide or life was very much in discussion. In the Arato Isozaki project, the future was constituted through hanging buildings with computerized control that would hover over the past, the remains of Tokyo, rather than destroy all memory of the past and its traumas. The mega-structure offered a solution bridging the dreams of developers at that time, to build homogenous constructions, anticipating the Songdos and Masdar Cities of the world, and the nostalgia to return to a pre-war way of life, to Empire, and to the village like structures and small paper homes of Tokyo. Neither “smart” nor “dumb”, not making the decision between the end or the past, these structures emphasize and attempt to work through notions of time and change; “metabolism” as architecture. The mega-structure would insert technology in a floating territory above the old Tokyo, leaving both temporalities to work at their own pace, allowing Tokyo to remain partially un-rebuilt, still scared and mostly destroyed, a constant rent in the fabric of time. These multiple temporalities operate simultaneously, neither returning to the past, nor falling into the eternal present conceived through the apocalypse of war that also invites the next one. Neither seeking to forget Japan’s own militarism and obsession with technical death, nor attempting to cease using technology.

We must attempt to find ways to use our graceful machines and networks in different ways. There is, therefore, still critical work to do—in art and in scholarship to envision, and to sense, alternative images of the future; to produce images of life that are not same as those we make in the present. What is now required is to realize that uncertainty is possibility. The pleasures of insecurity need not be solely diverted into spectacles of consumption. We have to open the discussion about what constitutes management and control, and how to add temporal multiplicity, whether its allowing weeds to grow as a strategy to “green” cities, or thinking about multiple aesthetics not just spaceships or sleek glass towers. The future of politics therefore demands that we imagine alternative futures and split with the techno-futurist, and modernist, aesthetics borrowed from science fiction or from urban planning, design, and technology. We must move past the assumption of the necessity of apocalyptic survival to pose another question; not how *must* we survive the present, but how would we *like* to live in the future?

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<sup>1</sup> Nicholas Negroponte, [http://www.brainyquote.com/quotes/authors/n/nicholas\\_negroponte.html#iP4yI7eJt0kBQzrS.99](http://www.brainyquote.com/quotes/authors/n/nicholas_negroponte.html#iP4yI7eJt0kBQzrS.99)

<sup>2</sup> See: Nicholas Negroponte, *The Architecture Machine* (Cambridge: MIT, 1970) and Nicholas Negroponte, *Soft Architecture Machines* (Cambridge: MIT, 1976).

<sup>3</sup> For more on this history see: Orit Halpern, *Inhuman Vision*, *Media-N*, Special Issue: Art and Infrastructures: Information, Fall 2014: V.10 N.03 <http://median.newmediacaucus.org/art-infrastructures-information/inhuman-vision/>

<sup>4</sup> The research conducted in Songdo South Korea was done in collaboration with two architect/designers—Nerea Cavillo and Jesse LeCavalier, and with the excellent assistance and translation help of Electronic Arts Curator—Dooeun Choi. I am indebted to all of them for the inspiration and education they provided.

<sup>5</sup> <http://www.fez.go.kr/en/incheon-fez.jsp>

Downloaded: 10/01/2012

<sup>6</sup> Rita Lobo, “Could Songdo Be the World’s Smartest City?”, *World Finance: The Voice of The Market*, Tuesday, January 21<sup>st</sup>, 2014. <http://www.worldfinance.com/inward-investment/could-songdo-be-the-worlds-smartest-city> Accessed January 25, 2015.

<sup>7</sup> “Songdo International Business District”, *Wikipedia*, [http://en.wikipedia.org/wiki/Songdo\\_International\\_Business\\_District#Ownership\\_and\\_Design](http://en.wikipedia.org/wiki/Songdo_International_Business_District#Ownership_and_Design) Accessed January 21, 2015.

Landon Thomas, JR. “How Turkey’s Troubles Could Spread in Emerging Markets”, *The New York Times*, *Economix*, December 20, 2013. <http://economix.blogs.nytimes.com/2013/12/20/how-turkeys-troubles-could-spread-in-emerging-markets/> Accessed January 21, 2015.

<sup>8</sup> Market and Markets, “Press Release: Smart Cities Market worth \$1,134.84 Billion by 2019”, <http://www.marketsandmarkets.com/PressReleases/smart-cities.asp> Accessed January 24, 2015.

<sup>9</sup> Tracey Schelemetic, “The Rise of the First Smart Cities,” *Thomasnet.com* September 20 2011. [http://www.songdo.com/songdo-international-business-district/news/in-the-news.aspx/d=360/title=The\\_Thinking\\_City](http://www.songdo.com/songdo-international-business-district/news/in-the-news.aspx/d=360/title=The_Thinking_City) Access date: October 12, 2012.

Charles Arthur, “The Thinking City,” *BBC Science.Technology. Future FOCUS* January, no. 237 (2012).

Taken from sales pitches performed by IFEZ officials, Kyung-Sik Chung (Director of Cultural Affairs) and Jongwon Kim (Director of Marketing and Development for IFEZ Authority), on July 4, 2012.

<sup>10</sup> Safety is one of the most prevalent discussions repeated by sales reps and government administrators. In Halpern’s two visits to Songdo, the first in 2012, and the second in September of 2013, a marked shift had moved to accepting the possible threat of North Korean sabotage or attack of computer and other networks, as well as the possibility of other types of biological or nuclear weapon use. There was also a marked shift from emphasis on greenness as a mandate to a decision for developers, that supposedly was dominant because in the words of Jongwon Kim, it “makes better sense”.. Government officials also emphasized the profitability of the complex, its rising rates of occupancy, and the technical and business aspects of the complex. Interviews conducted September 2, 2013.

<sup>11</sup> Stanley Gale cited in “Metropolis Now”, *Wallpaper*, 2010, available at: [http://www.songdo.com/songdo-international-business-district/news/in-the-news.aspx/d=232/title=Metropolis\\_Now](http://www.songdo.com/songdo-international-business-district/news/in-the-news.aspx/d=232/title=Metropolis_Now) Accessed August 7, 2015.

<sup>12</sup> Tracey Schelemetic, “The Rise of the First Smart Cities,” *Thomasnet.com* September 20 2011. [http://www.songdo.com/songdo-international-business-district/news/in-the-news.aspx/d=360/title=The\\_Thinking\\_City](http://www.songdo.com/songdo-international-business-district/news/in-the-news.aspx/d=360/title=The_Thinking_City) Access date: October 12, 2012.

Charles Arthur, “The Thinking City,” *BBC Science.Technology. Future FOCUS* January, no. 237 (2012).



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- <sup>13</sup> Keller Easterling, "Zone: The Spatial Softwares of Extrastatecraft", *Places*, June 2012. <https://placesjournal.org/article/zone-the-spatial-softwares-of-extrastatecraft/> Accessed December 20, 2014.
- <sup>14</sup> Taken from promotional materials and interviews with IFEZ officials, Kyung-Sik Chung (Director of Cultural Affairs) and Jongwon Kim (Director of Marketing and Development for IFEZ Authority), on July 4, 2012. Also: [http://en.wikipedia.org/wiki/Incheon\\_Free\\_Economic\\_Zone#Yeongjong\\_Island](http://en.wikipedia.org/wiki/Incheon_Free_Economic_Zone#Yeongjong_Island)  
<http://www.fez.go.kr/en/incheon-fez.jsp>  
Downloaded: 10/01/2012  
Also from interviews with many curatorial staff at The Seoul Art Museum, and particularly with Dooeun Choi September 9-13, 2013, with the architect Taeseok Ha, of SCALe, on September 12, 2013.
- <sup>15</sup> Orit Halpern, Jesse LeCavalier and Nerea Calvillo, "Test-Bed Urbanism," *Public Culture* 26.March (2013).
- <sup>16</sup> From interviews with Professor Dr. Donyun Kim, Professor of Urban Design at Sung Kyun Kwan University at Samoo Architects and Engineers on July 3, 2012 and September 11, 2013. Dr. Kim was also the one of the lead members of the Presidential Committee on Ubiquitous Computing and Infrastructure in 2013-14.
- <sup>17</sup> Su Hyun Lee, "Companies Turn to South Korea for Product Testing", *New York Times*, November 10, 2010, Global Business, [http://www.nytimes.com/2010/11/11/business/global/11iht-sk-consume.html?\\_r=0](http://www.nytimes.com/2010/11/11/business/global/11iht-sk-consume.html?_r=0) downloaded August 6, 2015.  
San Jae Kwon, "Korea's early adopters set the tone for electronics giants". *Korea.net*, August 10, 2010, Business Section <http://www.korea.net/NewsFocus/Business/view?articleId=82272> accessed August 10, 2015
- <sup>18</sup> Orit Halpern, Jesse LeCavalier and Nerea Calvillo, "Test-Bed Urbanism," *Public Culture* 26.March (2013).
- <sup>19</sup> For a book length analysis of the Masdar City project, please see: Günel, Gökçe. Forthcoming. *Spaceship in the Desert: Energy, Climate Change and Green Business in Abu Dhabi*. Durham: Duke University Press
- <sup>20</sup> Masdar City, Abu Dhabi: the gulf between wisdom and folly: <http://www.theguardian.com/artanddesign/2010/dec/19/norman-foster-masdar-city-review> Last accessed August 10, 2015
- <sup>21</sup> Ground breaking marks start of Masdar City: <https://www.masdar.ac.ae/component/k2/item/5623-ground-breaking-marks-start-of-masdar-city--10-02-2008> Last accessed August 10, 2015
- <sup>22</sup> Nevertheless, Masdar Institute students, the frontiers people of Abu Dhabi's emergent eco-city experiment, remained unsure about the translatability of Masdar City into other settings. In February 2011, they gathered in the Masdar Institute auditorium to debate whether "Masdar City is an elite enclave of sustainability, unsuitable for the rest of the world" or not. The team that defended the statement argued how Masdar is "too unique" to be applied elsewhere. First, Masdar was very expensive. Which other country, other than the oil-rich UAE, would be able to devote 22 billion dollars for an eco-city? Second, they recalled how this project had been put together to bolster the economic vision of Abu Dhabi, contributing to its economic diversification, and perhaps would not be financially feasible or meaningful for other countries with different economic strategies. Third, they added, authoritarian rule was working in favor of Masdar City by providing prolonged commitment and stability. "Well, other than that," the pro-team reiterated, "the concept of a green city has existed for a long time." In this understanding, Masdar City no longer comprised a vision that would unfold into the future. Rather it remained an island contingent on a specific set of circumstances, only available within the United Arab Emirates. Abu Dhabi's oil capital, its future economic vision, and its authoritarian rule were thus perceived as the preconditions for the emergence of the Masdar City concept.
- <sup>23</sup> Anker, Peder. 2010. *From Bauhaus to Eco-house: A History of Ecological Design*. Baton Rouge: Louisiana State University Press.
- <sup>24</sup> Sloterdijk, Peter. 2014. *Globes (Spheres II)*. South Pasadena: Semiotext(e), p. 249
- <sup>25</sup> See Masdar City website for this slogan: <http://www.masdar.ae/en/masdar-city/detail/we-are-masdar-city-the-city-of-possibilities> Last accessed July 29, 2015

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<sup>26</sup> Please see: Günel, Gökçe. 2014. "Masdar City's Hidden Brain: When Monitoring and Modification Collide" *The ARPA Journal, Applied Research Practices in Architecture*: <http://www.arpajournal.net/masdar-citys-hidden-brain/> Last accessed August 10, 2015

<sup>27</sup> Frank Knight, *Risk, Uncertainty, Profit*, (Boston: Schaffner and Marx Houghton Mifflin, co., 1921), October 12, 2012 <<http://www.econlib.org/library/Knight/knRUP.html>>.

<sup>28</sup> Shannon Mattern, "Methodolatry and the Art of Measure", *Places*. November 2013, <https://placesjournal.org/article/methodolatry-and-the-art-of-measure/> Accessed January 21, 2015.

<sup>30</sup> Zagato's PRT Pod A Huge Hit at WFES <http://alternate-power.org/zagatos-prt-pod-a-huge-hit-at-wfes/> Last accessed August 10, 2015

<sup>31</sup> The architectural historian Daniel Abramson has suggested already that obsolescence as a defining term in urbanism, and as a concept governing urban planning and design already began to emerge in the immediate post-World War II. <http://www.grahamfoundation.org/grantees/5127-obsolescence-an-architectural-history>