Tomorrow's World That We Shall Build Today¹

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Astro Boy, Godzilla and the Attack on Tokyo Bay

Tetsuwan Atom first graced the science fiction screen of manga comics in 1951. This super-boy robot, who came to be known in the western world as Astro Boy, was the creation of Osamu Tezuka who later gave Astro Boy movement in the form of a science fiction animated television show – also called *Astro Boy*. Astro Boy's fictional birthday – April 7, 2003 – finally arrived when reality caught up with fiction and, to make this reality even more 'real', the urbanscape of the future envisioned by Tezuka (the super-transport systems, the gleaming architecture, and a world where human and robot live in harmony) also appeared to have arrived. Having influenced an entire generation of Japanese roboticists, it comes as no surprise that Astro Boy has become an iconic figure who embodies the future now. Furthermore, Astro Boy's birthday celebrations began on April 6, 2003 "with the launch of a new Tetsuwan Atom Japanese animated series on the Fuji TV network".² Beyond the robot star that it promotes, the Fuji TV network itself recalls additional science fiction iconography as it rises majestically like a network matrix in all of its metallic glory, centered by a mega-ton globe that appears to defy gravity – the structure is one of many impressive symbols that reflect the futuristic imperatives that drive urban development on the island of Odaiba, a man-made island that is situated just outside Tokyo in Tokyo Bay.

I've seen the future, and it is Odaiba. Odaiba is one of the many islands first constructed in the early C17th when Shogun Tokugawa Ieyasu ordered the drainage of swamp land and the creation of these daiba (cannon emplacements) as strategic locations where soldiers could defend Edo, the new capital of Japan, from invaders. These military posts also became integral to fending off Western colonizers and traders, perhaps most famously, in 1853, which was the year U.S. Commodore Matthew Perry arrived in Tokyo Bay, demanding that the Japanese open up trade with the West. Perry was sent on his way, but another invader – also a product of the West – was to make an attack on Tokyo Bay a century later. His name was Godzilla, and his creation was the result of the devastating realities of science and technology: Godzilla – in addition to Mothra, Ghidra, Biollante and many other mutant and robotic friends – became symbolic manifestations, within a science fiction context, of the destructive possibilities of science as embodied in this instance by the U.S. government's atomic attack on Japan. Godzilla's arrival from the depths of Tokyo Bay in 1954 – three years after the birth of Astro Boy – was to seal a contemporary relationship between Odaiba and science fiction.

Fifty years after Godzilla's inception, he would again be brought to life in Tokyo Bay – this time finding a home on the island of Odaiba within the walls of the National Museum of Emerging Science and Innovation. In 2003 the Museum opened an

exhibition that developed on the themes of science fiction's close rapport with scientific reality. Through a display of the *Godzilla* film series – its mutant monsters, robots, destructive military weapons – the show explored the ways in which science fiction has always been closely enmeshed in the social fabric. The mutant creatures, robots and advanced weapons all had their roots in scientific and technological realities that had or which would become concrete beyond the fictional spaces of the *Godzilla* films. The Museum of Emerging Science and Innovation expounds a philosophy that is integral to Odaiba in general. As its title suggests – and in collaboration with local University Science and Technology Departments – exhibitions like that showcasing the International Space Station and advances in space travel, or the frequent exhibitions that display current developments in robotics through the performance of 'real' robots like Honda's Asimo and Sony's QRIO, aim to educate the public. The lesson? That science fiction no longer exists beyond our reach, far away into the future: it is with us now.

The central logic behind emerging cities such as Odaiba is the principle of the 'learning city' – a city that promotes scientific and technological innovation by integrating it into its economic operational plan and by training and teaching its citizens the importance that innovations in the fields of information and communication technology have for competition in the global market. Combining retail developments with industry and technology, to quote Kurt Larsen, learning cities act "as drivers for the knowledge-based societies of the 21st century".³ Yet, while appearing to be focused on the present, because they borrow so many tropes from science fiction (whether consciously or unconsciously) these learning cities are imbued with an undeniable 'future' quality.

The one haunting memory that remains of my first trip to Odaiba in 2003 is the extent to which it felt like I'd entered a series of science fiction films from the post-1950s period. I was both overjoyed by the sensation, but also overcome by an uneasy feeling. The mise-en-scene was indisputable: the spotless, meticulously manicured urbanscape with the metallic and monochromatic building surfaces of structures like Tokyo Big Shot and the Telecom complex; the expedient people movers littered throughout Aqua City and Decks Tokyo Beach (the two destination shopping malls that include a 'reconstruction' of 1950's Hong Kong); the super-velocity driverless monorail that travels from mainland Tokyo to Odaiba; the mega-architectural structures that stand as monuments to corporations like Fuji TV, Telecom, Panasonic and telecommunication companies like NTT which has its offices in the skyscraper called 'Tokyo Teleport' – all seem to be straight out of films like *2001: a Space Odyssey*, *Logan's Run*, and *THX1138* or television shows like *Star Trek*. The technologically-controlled, computer reliant infrastructure of the entire city (which includes the visible presence of robots), computer games in the Joypolis game city, cutting edge entertainment complexes such as Mediage, Toyota's Mega Web, the Panasonic Center and the Sony Complex, as well as the hi-tech surveillance system that monitors every move that citizens make recall *The Forbin Project*, *Westworld* and *TRON*. In shopping complexes like Venus Fort, a women's shopping complex (and a small scale version of Caesar's Palace in Las Vegas) that caters to and celebrates the 'perfect' woman consumer, I couldn't quite shake off the feeling that I had entered a bizarre revision of *The Stepford Wives* – and as I wandered around, mesmerized by the spectacular homage to female beauty, I was also overcome by the fear that I would be caught out as the not-too-perfect woman and be submitted to central control for re-programming. And, as if we've reached a time like that predicted in *Blade Runner* when human kind has finally initiated the extinction of numerous animal species, we can visit Dog Town (Inutama) and Cat's Park (Nekotama), dog and cat 'theme parks' where we can pat and play with these 'real' animals – and even rent a dog for a couple of hours to

take him walking. All of this science fiction mise-en-scene, and the narratives we create within it, speak of a utopian existence – an environment where human and machine come together in perfect unison for the betterment of human kind. The dystopian implications of these spaces are hidden from view, but every utopia has its dark dystopian double, doesn't it? Or maybe I've seen too many science fiction films.

In his book *The Aesthetics of Ambivalence*, Brooks Landon extends our understanding of science fiction. He argues that our society has become science fictional as a result of emerging technologies that include advances in bio-genetics, military warfare technology and, in particular, special effects technologies that make possible the illusions of science fiction film narratives. Writing in 1992, Landon's comments about science fiction are still applicable today. In *Minority Report*, for example, the narrative links the future with our present through technological familiarity. Writing for *The New York Times*, Michel Marriott explains that "Bonnie Curtis, one of the producers of "Minority Report," said Mr. Spielberg largely depended on a group of futurists and his own imagination for much of the technological applications in the movie."⁴ Spielberg turned to major industry corporations to design the film's 'future' technologies: NOKIA designed the film's phones, and LEXUS designed the cars – both the red sports car driven by Tom Cruise's character, John Anderton, and the private Pod that rides on the Mag-Lev (magnetic levitation) system. Likewise, many other technologies envisioned in the film already have predecessors in our real space: augmented reality and surveillance technologies like the retinal identification system are already in operation, as are the security identification systems – the Spydys – which had an earlier life in our history as insect robots like the Mars pathfinder. The technology that made possible the direct address to Anderton's stolen identity (when he enters the GAP in the mall scene) is already in place: Stephan Finch and his company, Thinking Pictures, have been designing movie posters in theatre lobbies that, using patrons' 'smart cards', will eventually address individual movie goers according to their personal tastes.

At times – as in the case of *Minority Report* - the illusionistic and spectacular contents contained within the screen narrativize changes in society (in the plot's concerns with the implications of genetic engineering, computer technology, and the simulated experiences offered by augmented reality technology). But in many instances, contemporary science fiction films also employ special effects technologies that reveal the remarkable transformations occurring in our own culture from the perspective of scientific and technological advancements. Beyond the diegetic collapse of current technological progress and the projection of that technology into the future, in order to create their effects illusions, many blockbuster films rely on technologies that were once considered as belonging to the realm of science fiction. New soft- and hard-ware is being developed to provide more 'realistic' effects in the fictional spaces that audiences consume as entertainment. Yet these effects are also altering the role played by the cinema within a broader cultural context. For example, the film industry (in conjunction with the computer game industry) has taken the lead in advances in artificial intelligence (AI) and artificial life (A-Life). One of the most astounding "science fictional modes of depicting", to use Landon's term, is to be found in film special effects used in the *Lord of the Rings* trilogy (2000-3). Introducing the science fiction concern of evolving artificial life forms familiar to films like *A.I.*, *Thirteenth Floor* and *I, Robot* into their film worlds, in *Lord of the Rings* we actually witness the rudimentary beginnings of virtual, computer-generated beings that have the ability to evolve and think. 'Massive' (Multiple Agent Simulation System in Virtual Environment) is a software program created by Steve Regelous of the WETA effects company in order to create realistic battle scenes.⁵ The huge armies are, in

reality, hordes of computer generated soldiers that rely on AI models. Massive endows each character with a digital brain and gives it the power to act independent of human interference. Each character can perceive, interpret and respond to what's happening around it: to make decisions and act. In fact, in early tests of the battle scenes, some of the A-Life soldiers decided not to fight but to run away.⁶ The Massive program is now on sale, allowing users to create their own digital creatures within computer spaces.

Landon is concerned with the ways in which new imagining technologies are producing similar science fiction effects, but I want to also extend Landon's fundamental premise and argue that the science fictional has infiltrated our reality in more architecturally and socially invasive ways. The themes, narratives and technologies that were contained within the parameters of science fiction cinema are now slipping into the public sphere in very real ways. I began with the examples of Astro Boy, Godzilla and Odaiba because they encapsulate the issues that concern me in this essay: the relationship between our fictions of science that have found a voice in real terms in our urban spaces – a relationship that was forged earlier in the last century by World Expositions. Odaiba was itself originally planned as a possible venue for a World Expo in the late 1980s but plans (after a great deal of building authorized by two mayors Suzuki and Aoshima) were, in the wake of the Bubble Economy, finally abandoned by Mayor Aoshima in the early 1990s.

I Have Seen the Future... at the World's Fair

Kihlstedt has stated that: "Mass utopias are mere figments of the imagination, and most are 'embodied only in literature. Even in the nineteenth century, when some small utopian communities were actually built, utopian endeavors remained primarily literary. In the twentieth century, however, visionary images of the future were brought to life and offered to the public at world's Fairs"⁷. In the early C21st this is even more the case, for the projected utopias have also escaped the Fairs and Expositions and entered the city space, but before returning to our own utopias I'd like to travel back in time to these earlier visions of utopian communities.

Since the Chicago World's Fair of 1893, World Expositions and Fairs returned continuously to the concern with creating idealized cities. The Chicago Fair was especially significant in establishing what would later become integral not only to the logic of expositions, but to theme parks like Disneyland and EPCOT and urban destinations like Odaiba that would follow in their wake: in all instances, a ready-made ideal city was created, one that was technologically-driven and reliant on commercial imperatives and popular culture⁸. As James Gilbert has explained when discussing early Expo visitors, "the visible future they encountered was a carefully engineered vision, a prophecy... of the coming relationship between work, leisure, and culture"⁹. But unlike the dystopian futures often delineated in science fiction, in the future visions of the Expositions, the inclusion of technological and scientific innovation within the social environment could only result in the creation of utopian spaces.

Expositions like the Chicago Century of Progress Exposition of 1933-1934 and the New York World's Fair of 1939 took the first important steps not only in forging a relationship between science and society, but also integrating these concerns with the visions and consumer pleasures offered by science fiction and entertainment. Rydell explains that, in the wake of the Great Depression "1930s scientists, confronted by a 'revolt against science', joined corporate backers of the fairs in trying to pin popular hopes for national

recovery on the positive results expected from the fusion of science and business.”¹⁰ Specifically, combining the speculation familiar to science fiction with the realities of the scientific and technological innovations of the time, these fairs specialized in presenting the public with future utopias.

It was the New York World’s Fair of 1939 that became one of the most famous examples to showcase a new urban landscape – one that figured the utopian possibilities of technology and science. Appropriately, on the opening night, Albert Einstein switched on the lights that would bring life to the Fair’s motto: “Designing the World of Tomorrow”, the New York World’s Fair proceeded to create a vision of a world in which “science could become a way of life and utopia would be nigh”.¹¹ Showcasing the latest technologies offered by corporations (and, in addition to displaying Rotolactor, an automatic cow-milking machine), numerous other technological inventions were presented to an eager public: Voder, a synthetic human-speech device by AT&T; television sets by RCA, GE and Westinghouse; and Elektro, a walking and talking robot by Westinghouse¹² - it was the representation of a City of the Future that drew the crowds in by the millions.

The plans for this City of the Future, which were conceived by the industrial designer Norman Bel Geddes, set the foundations for cities that were riddled with massive freeway systems, cars, and soaring skyscrapers. In Geddes’ Futurama “Highways and Horizons” exhibit sponsored by General Motors, viewers sat high above a miniature city of the future in 1960 while a motorized belt moved them along in a full circle. As they looked down on a 36,000 square foot model city of superhighways and skyscrapers designed by Geddes, through speakers built into the backs of their seats, a narrator asked the audience to imagine how the traffic and housing problems of the present United States would be solved through these technological and industrial wonders by the year 1960. Provided with souvenir pins that read “I have seen the future”, as Morshed explains, the Futurama exhibition reinforced two things: “The first is the idea of the Future as spectacle, and the second is the process of seeing that spectacle”¹³.

In addition to inspiring Walt Disney’s design of Disneyland in the 1950s, and in presenting a glimpse of the highways and skyscrapers of the metropolis that would later dominate our contemporary city spaces, the New York Fair’s World of Tomorrow was a mediator that provided a bridge between science fiction and reality. It was the stepping stone to later urban designs and its inspiration came directly from the realm of science fiction. Geddes drew inspiration from Le Corbusier (in particular his *Ville Contemporaine* of 1922 and *la Ville Radieuse* of 1930¹⁴) and other utopianist urban planners of the 1920s and 30s but, whereas Le Corbusier’s inspiration for the transcendental themes that are evident in his ideal cities drew directly on religious traditions and iconography, Geddes turned to another form of religious experience – that provided by the prophetic wisdom of science fiction and popular culture. In this ‘ride’ into the future, the audience had entered a science fiction narrative.

The futuristic, technologically reliant cities that populated the Buck Rogers comic strips of the 1920s and film serials of the 30s had a great impact on this glimpse into the world of tomorrow, as did the science fiction novels of Edward Bellamy and H.G.Wells. In Bellamy’s *Looking Backward* of 1888, Mr.West (the hero) wakes up to find himself in the year 2000 and a “‘High-tech’ world of soaring skyscrapers, streets covered with transparent material, and music piped into the home”¹⁵. Similarly, in Wells’ *When the Sleeper Wakes* of 1899 the hero falls into a trance and comes to in 2100. The technological city he finds himself in relies on windowless houses, central lighting, air

conditioning, and an urban environment that worships mechanization and the wonders of science and technology, very like the Futurama exhibit of the New York World's Fair¹⁶. Again, like the participants in the Futurama ride, Bert Smallways, the central character in Wells' novel *The War in the Air* (1908) explores the futuristic city from the window of his aircraft, and in 1939, the artist Julian Krupa's vision of "Cities of Tomorrow" was published in *Amazing Stories*, one of the first science-fiction magazines. "The city of tomorrow, *Amazing Stories* prophesied, would consist of an idyllic, vertically stratified urbanscape in which 'dwellers and workers . . . may go weeks without setting foot on the ground, or the ground level'".¹⁷ In addition, the moving chairs in the General Motors Futurama display (which would become integral to Disney and later theme park ride technology) were called Time Machines in a deliberate allusion to Wells' novel of the same name. It was no surprise that, during the fair, H.G. Wells was asked to write the lead article about the fair and how it equated with his version of the future in the *New York Times*.¹⁸

When You Wish Upon a Star: Disney, Disneyland and Project X

Expositions like the New York World's Fair would have a dramatic impact on real-world spaces that would be built a decade later – most memorably in the form of Walt Disney's Disneyland, which finally opened its doors to a utopian landscape in Anaheim California in July in 1955. Clearly, in his conception of Disneyland, Walt Disney was inspired by the Exposition structure: the pavilions and corporate sponsored exhibits were transformed into 'lands' – Adventureland, Tomorrowland, Frontierland, Fantasyland – and the corporate sponsor was now the Disney Corporation and its technologies were now on display in the form of cutting edge rides that were 'themed' according to Disney films, including *Dumbo*, *Alice in Wonderland*, and *Cinderella*. In addition, many of the utopianist writings of the 1920s-30s also impacted on Disney, but what was most interesting was that while Disney embraced the desire to build the future now and to construct utopian environments that pushed the envelope when it came to scientific and technological innovation, he rejected many of the visions of how this future would be conceived.¹⁹ Already in the 1950s, the freeways riddled with automobiles and super-scrappers that towered towards the heavens, which had been central tropes of science fiction writers, utopianists and Expositions, had become a reality – and Disney was not impressed with this version of the future. Instead, in Disneyland, Disney set about creating his version of science fiction, one that later filtered into the conception of our contemporary urban spaces.

Marling has argued that Disneyland "presented a powerful critique of the manifest ills of Los Angeles in 1955... Disneyland included pedestrian spaces free from vehicular traffic. In the form of rides (or "attractions," in park lingo), it spotlighted every imaginable kind of people-moving device that did not entail a driver piloting himself through increasingly congested streets-and chewing up the landscape in the process: trains, monorails, passenger pods, canal boats, riverboats, and double-decker buses".²⁰ Wanting to escape the increasing attack by the Los Angeles urbanscape on Disneyland in Anaheim in the 1950s, Disney proceeded to purchase thousands of acres of property in Florida, which would become the home of the new Magic Kingdom in the 1970s. Here, the realities of Norman Bel Geddes' imagined skyscrapers and automobile society would find it difficult to infiltrate Disney's vision of the future now. Disney's allegiance with science fiction was clear when he hired the famous science fiction author Ray Bradbury to work at the Disney Imagineering Studio. Bradbury had met Disney when Tomorrowland was being conceptualized and Bradbury had expressed his interest in collaborating on the design of

this land. But, while recognizing the value of such an alliance, Disney had insisted that such a partnership between two geniuses would be doomed to failure. Nevertheless, Bradbury's talents as creative consultant were later put to use not only in the design of the U.S. Pavillion at the 1964 New York World's Fair, but in the planning of Spaceship Earth – one of the central attractions at Disneyworld's EPCOT theme park – in 1982.²¹

EPCOT (Experimental Prototype Community of Tomorrow) was loosely based on Walt Disney's plans to create a futuristic community – plans that never came to be according to Disney's vision because of his death. Called Project X, "the original EPCOT was a bold New Town scheme intended to show that the problems of present-day American cities were not beyond solution. That it was possible, for example, to eliminate the automobile from the urban equation, or at least minimize its depredations by running service roads under and around city centers and providing cheap, efficient forms of mass transit"²². Disney's "utopian dream of a real city" not only focused on building a community with "dependable public transportation", but this perfect city would also be "covered by an all-weather dome" and its factories and key industries (which would be "concealed in greenbelts that were readily accessible to workers housed in idyllic suburban subdivisions") would embody the latest innovations in science and technology.²³ Disney's Project X was the original 'learning city' that would later influence cities like Odaiba.

Despite Disney's death, Project X was to finally be transformed into two realities – albeit in revised form. Firstly, in the form of the town Celebration, which occupies Disney property in Florida and which went through various stages of development in the 1990s and early 2000s: this community attempts to bring life to Walt Disney's dream by time travelling back to a utopian and idealized version of a non-existent past when small town America embodied the aspirations of the American Dream. While fascinating as a study of utopian ideals, its conception of a "future now" is, in actuality, more about the "past now". Celebration, in fact, is more aligned with the horror genre than science fiction and, as such, lies beyond the scope of this essay – only to say that, it comes as no surprise that the kind of community it idealizes was indeed the stuff of horror in episodes of *The X-Files* and *Millennium*. More importantly, the second development that Disney's Project X took was in the form of the EPCOT Center, a Disney Corporation theme park that opened its doors in 1982, and which has, as its central theme, the future – specifically, a future supported by the possibilities of scientific and technological advancement in the hands of multi-national corporations. As Marling has stated, EPCOT "became a kind of permanent World's Fair" complete with corporate sponsored pavilions²⁴.

Both 'lands' – Future World and World Showcase – owe a great deal to the conventions and philosophical concerns established in the Fairs. The World Showcase, which themes the world by including miniaturised versions of France, Morocco, Japan and Germany, updates the displays of different cultures that were found in the Midway section of the expos and fairs in the C20th. But it is Future World that displays the most dramatic inspiration of fairs and science fiction. Radiating around Spaceship Earth, the giant geosphere that dominates the theme park, are numerous themed attractions – Innoventions, Journey into the Imagination, Universe of Energy – all of which are sponsored by major corporations. It is Spaceship Earth, however, that displays the most dramatic connection to science fiction. The earlier Futurama ride of 1939 took visitors forward in time to experience the city of the future in 1960. On Spaceship Earth visitors enter a time machine that takes them back in time, to travel a 15 minute journey through the history of technology and communication. Displaying this history through a series of animatronic performers, and beginning with a Cro-Magnon shaman who recounts the

story of a hunt while others record it on cave walls, viewers witness a series of communications milestones: the Phoenician and Greek alphabets, the printing press, the telegraph, radio, film, television – even outerspace where the power of satellite systems is on display. Finally, exiting the ride, participants find themselves in a pavilion sponsored by another communications giant, AT&T, and invited to sample a range of technological goodies – from computer games to simulation rides – all made possible by the company's electronic network.

Neon Glitz and Experience Architecture

Since Disneyland opened its doors in 1955, the theme park slowly became an important feature not only of contemporary retail and leisure culture, but also as venues which – like their World Exposition predecessors – showcased the possibilities of new technologies. For film studios such as Universal, Warner Brothers, Paramount and C2oth Fox the theme park became both a marketing tool for its film products (where popular films were “themed” as rides or environments), and a spectacular symbol of the power and economic potential of cutting edge technology delivered in an entertainment package, a concern that obviously drives EPCOT. Since entering the new millennium, our urban spaces have continued to embrace the logic of the theme park with an amazing zeal. One of the most fascinating revisions of the theme park/Exposition foray into science fiction realities is the ‘theme park’ Futuroscope, which is situated in Poitiers, France. Initiated by the local politician, Rene Monory, who wanted to build a park that was the “centrepiece of a new-tech industrial estate”, Futuroscope, which opened in 1987, was built with the support of the local Council of Poitiers and assisted by national government funding. Over the last five years, it has become radically revised as a ‘learning city’ more aligned with Odaiba.

Situated 200 miles outside Paris, in the 1990s it offered Disneyland Paris some serious competition while also boosting the local economy in the role it serves as an entertainment destination. The theme park's premise is to use entertainment attractions in order to educate and acclimatize audiences to new imaging technologies. Scattered across an idyllic landscape are a series of futuristic looking buildings that appear to be part of a science fiction film set (one is shaped like a giant crystal, another like an enormous set of glass organ pipes, and another still looks like a 1950s retro spaceship), and within these buildings, audiences can experience some of the most amazing audio-visual technologies that the entertainment industry has to offer. The attractions (which are sponsored by hi-tech corporations) include: a 360-degree cinema; a 3-D Cinema experience; a Kinemax-IMAX Theater; a Dynamic Motion Simulator using the Showscan system devised by Douglas Trumbull (the effects guru who was responsible for the effects of films like *2001: a Space Odyssey* and *Blade Runner*); a dual IMAX cinema with one vertical and one horizontal screen; a Multi-Screen Show with ten 35mm projectors projecting onto 10 screens of different sizes (including the hemispherical Omnimax screen); the ‘Cineautomate’, an interactive film; and an hourly night show that features a computer generated ‘Water Symphony’ (a la the Belaggio in Las Vegas) that comprises of dancing water fountains, laser lights, fireworks and music.

The park director Daniel Bulliard has stated that “The park's theme of image is based on the observation that ‘easy, daily access to reality or dream, the omnipresent image is the backdrop to our lives and changes how we see the world. It seduces, captivates and invades our professional being and devours our leisure time’” and Isabelle Houllier, assistant to the director extends on this: “By offering a wide array of contemporary

images, the park educates as well as entertains. 'People have a tendency to not understand technology they see every day... Here, they can learn and see technology through cinema, and have fun at the same time'." ²⁵ Clearly, Futuroscope has adopted an identity as a 'learning city' in that it aims to promote innovation through its showcase of cutting edge technologies. But, in addition to what is contained within the walls of the theme park, unlike EPCOT or the Expositions of the past, it extends the promotion of innovation beyond its walls into the social realm that contains and surrounds it. The park itself has become a hub around which an entire industry in multimedia, computer and communication technology has evolved.

Larsen explains that for Futuroscope "research and development with education and leisure activities, is the focus of its strategy. Thus far, it has attracted 70 firms and created 1,500 jobs in the park and 12,000 jobs indirectly in the whole region. It is also a major tourist site, drawing visitors from around the world".²⁶ Importantly, since 2000, the area around the theme park has undergone a dramatic transformation: hotels, residential areas, big business sectors have flourished. Recalling *Star Trek*, 'Teleport' is the technology park near the theme park that companies like Telecom France and e-Qual (a company with specialization in IP-based network solutions and satellite communications) call home. Near Teleport – and part of the training and research area – is France's first combined experimental high school and university "where students matriculate from high school directly into the same area of study in college. Engineering and technology degrees are emphasized"; and also included as part of the complex is the International Institute of Long-Term Forecasting.²⁷ Like the New Bad Future films of the 1980s – *Robocop*, *Total Recall*, *Blade Runner* – corporations combine forces with the government to control the products of science and technology and, in turn, the shape of the society that develops around them.

So, science fiction books and films impact upon the New York Fair's 1939 vision of the tomorrow of 1960, which eventually becomes tomorrow by being incorporated into theme park and urban spaces, which are then reincorporated as images of the future in science fiction films like *Blade Runner*, *A.I.* and *Minority Report*. In many respects, *Blade Runner* is a paradigmatic example of the complex interchange that occurs between society, as reality, and the realities of science fiction. The film inspired architects to redesign the urban landscape by using the film's focus on neons to unify buildings. In his thought provoking book *The History of Forgetting*, Norman Klein writes how "In February 1990, at a public lecture series on art in Los Angeles, three out of five leading urban planners agreed that they hoped L.A. would someday look like the film *Blade Runner*... By 1990, Frank Gehry's architecture is praised in a mainstream review as 'post-apocalyptic', having a '*Blade Runner*' inventiveness... The film *Blade Runner* has indeed achieved something rare in the history of the cinema. It has become a paradigm for the future of cities".²⁸

The effects of *Blade Runner* were felt not only in the buildings of Frank Gehry but in the Jerde Partnership's designs for Universal City Walk in Los Angeles, which is the micro-city that is the thoroughfare to Universal's theme park complex. Relying on the bold and funky colours of neon lights to decorate the facades of the buildings of this urban entertainment destination, a melodic rhythm is created that unites the distinct complexes. While *Blade Runner*'s mise-en-scene is clearly an inspiration, Jerde's unified city space (which Klein argues succumbs to the logic of an "electronic baroque")²⁹ strips away the dystopian vision that marks Ridley Scott's film. Here, in Universal City, citizens inhabit a science fiction utopia. Then, in 2001, Universal City Walk was science-

fictionalized for the Spielberg directed film *A.I.* Rewriting the famous arched entrance that marks the separation between Universal Studios and the City Walk, the film's set designers 'technologized' the actual city icon by transforming the stone archway into one comprising fluorescent neon lights favored by Jon Jerde via *Blade Runner* for the City Walk. In *A.I.* the Universal arch becomes the illuminated icon of the futuristic and fictional metropolis Rouge City. This time, reflecting the science fiction film tradition, this iconic image gives voice to a darker, more apocalyptic double – a fact that is marked by the highway entrance to Rouge City, which takes the form of a mouth of Hell familiar to painted depictions of the underworld since the C15th.

Learning cities and urban destinations like University City and its CityWalk, rely on what is known as 'experience architecture'. Beyard et.al explain that "The field of experience architecture blends environmental design, media technology, and narrative to create compelling 'event-places'... [furthermore] These projects exemplify the social tradition of making places that are designed to remove us from everyday life".³⁰ Like the World Expositions, or theme parks like Disney's EPCOT, integral to this removal from everyday life is our placement within the future. However, Beyard et.al. make a very significant distinction – one that clarifies the ways in which our contemporary environments differ to the earlier models. One of the central features of environments that rely on 'experience architecture' is that "the future is in retreat. Experience architecture has always thrived on innovation-and supported concepts that promote a social contract between environments and progress. World's fairs typically hosted offerings with futuristic themes, and expositions showcased industrial-and then technological-leaps forward", however, the fascination with the 'future now' has undergone a transformation. The gap has closed further still. "Simply put", says Beyard, "the future isn't cool anymore. What we have only imagined can now be experienced. Of the dreams we had postponed in search of technology, much - perhaps too much - is available today".³¹

From Elektro to Asimo: do Androids Dream of Electric Aibos?

As mentioned, the New York Fair of 1939 was dramatically important in framing (and predicting) our future in a science fiction light. In addition to displaying future cities and houses filled with technological gadgets, the Fair also emphasized the role that robotics would play in making our lives free of mundane activities. In the Hall of Electrical Living, viewers could be entertained by Elektro, the amazing Westinghouse Moto-Man. Influenced especially by the hundreds of robots that had made appearances in science fiction films like *Metropolis* and the *Buck Rogers* and *Flash Gordon* film serial tradition, Westinghouse's mechanical man (despite looking like an anthropomorphized washing machine) was to have a dramatic impact on public consciousness. Like the Futurama City of 1960, Elektro embodied the technological possibilities of the future.

Robots are closer to being norms in our everyday environment. To paraphrase Beyard, as a dream we had once postponed, robots are now available today. Honda's android Asimo (in an obvious homage to Asimov – father of the laws of robotics) has made many media appearances in the last couple of years – and his battery pack gets less bulky every time we see him. In the last year, he has been making public appearances in Odaiba. In early 2003, in Odaiba's Museum of Emerging Science (and next door to the Godzilla and technology exhibit), visitors could see Asimo walk, talk and perform his very own robot-version of the chicken dance.

In his book *Robots: the Quest for Living Machines* Geoff Simons has stated that “the robot dream has existed in the human mind from antiquity to the present day. Fantasy precedes coherent theory, which in turn precedes practical realization: there were many ancient dreams about humanoid artifacts before the earliest engineers and craftsmen began to shape their working models”. Simons understands these “robot dreams” as reflecting the way human beings struggle “to cope with an incomprehensible universe”³². From the ancient Greek legends of Pygmalion (who breathed life into a statue Galatea) to Dr. Victor Frankenstein (who animated the flesh of human corpses with electricity to create his monster), the myths and legends that deal with the creation of artificial life are as old as human history. As Simons suggests, creation myths are not only common in most cultures, they “often have an interest in robotics”³³. The early myths posed many important questions: where did the world come from? What is the genesis of human beings? What happens, however, when these legends move beyond fiction and enter reality?

We have come a long way since the days of Pygmalion, Frankenstein and Elektro. Current prototypes in robotics are already revealing the collaborations between multinational corporations, scientists, the government and military institutions – associations that have featured as narrative scenarios to be feared in science fiction since the 1950s. In the western world – and, in particular, the U.S. – robotics has primarily entered the private and public sphere in the form of entertainment products found in films and theme park attractions. Particularly significant is the escalation of so-called ‘entertainment robots’ that has occurred in the last decade – especially within Japan. During the mid-1990s, Tatsuzo Ishida, Sony Corporation’s robotics engineer (who had, since the 1980s, overseen the production of entertainment technologies such as Walkmen, handycams, and game consoles) proposed that Sony engineer a new species of humanoid entertainment robots along the lines of C-3PO, the famous screen robot of the blockbuster science fiction film *Star Wars* (1977). The Sony Corporation agreed, and with fellow roboticists Yoshihiro Kuroki and Shingo Tamura, development chief at Waseda University’s famed robotics lab, they began designing entertainment robots. Toshio Doi, Sony corporate vice president and president of Sony Computer Science Laboratories, believes that “such ‘entertainment robots’ will create ‘a new industry’ for emotionally gratifying mechanical playthings”.³⁴ Unlike the robots that operate within the service industry, or Hollywood’s animatronics (which focus on repeated, pre-programmed movements), these entertainment robots lack a functional drive: they are meant to entertain and offer amusement to their owner and their behaviour develops in a random way. Behind this seemingly empty rationale, however, lies an extremely focused one. The freedom and lack of specific function makes possible the robot’s ability to advance in intelligence through adaptive learning. The random interactions with its environment are conducive to learning.

The entertainment giant Sony – the company that introduced radios, televisions, walkman and Playstation consoles to the general public has, since the mid 1990s, developed a lucrative market for its entertainment robots. In fact, Sony has become a leader in this field. In 1998 Sony announced Aibo the pet robot dog – a pet companion who plays ball, recognizes its owner, and performs a variety of tricks. As the most popular entertainment robot released on the market, Sony could barely meet demand for sales and on November 16, 2000 the second Aibo model went on the sale in Japan (and online) for \$3200. Being one of the most advanced examples of artificial intelligence, currently, the latest model of Aibo (who, admittedly, I was besotted with when I first saw it in action) is available worldwide via some department stores and

Sony's website. Aibo is also on sale and regularly performs at the amazing Sony Complex in Odaiba.

In 1999 Honda Motor Corporation unveiled a bipedal robot dubbed 'P-2'. Since 1999, P-2 has evolved through various prototypes. The current version is called Asimo, who is not only another one of the regular robot stars to make appearances at venues in Odaiba, but whose name is a clear homage to the famous scientist and science fiction writer Isaac Asimov who 'invented' the 'Three Laws of Robotics' in his 1942 science fiction story *Runaround*.³⁵ Asimov's robophilia and his specialization in robotics and artificial intelligence (in his novels) have had a significant impact on roboticists. In 2002 Honda added more complex artificial intelligence technology to Asimo's programming and it has become one of the most advanced robots ever produced. In addition to being able to access the internet for relevant information, Asimo can move with incredible agility, is capable of interpreting gestures, can recognize faces, voices and environment, and he responds to questions in real time by using a vocabulary of hundreds of words. Asimo is the world's first humanoid robot to exhibit such a broad range of intelligent capabilities, and with further improvements planned in his programming, he will become even more capable of adaptive learning³⁶.

In addition to being influenced by the science fiction writings of Asimov, it is a Japanese fictional robot that has had the most dramatic impact on Japanese robotics. Since introducing Tetsuwan Atomu/Astro Boy in 1951, the popularity of Tezuka's creation was to retain an amazing presence in public consciousness – especially in Japan, but also on a global scale. The impact of Astro Boy was clear when, in 2003, Honda Motor Co. promoted its Asimo rental business (renting Asimo to make public appearances) to coincide with Astro Boy's 'birthday' on April 7. The sentiment is evident in the following words spoken by Minoru Asada, an Osaka University robotics researcher: "Astro Boy was like our religion"³⁷. And the connection between the science fiction character Astro Boy and real life science continues to become stronger. In 2000 Sony built a small humanoid robot which it called the SDR-3X (Sony Dream Robot), to be followed by the SDR-4X. In 2004, the SDR-X4 was superseded by QRIO who has more advanced artificial intelligence programming than both the SDR series and the Aibo dog-robots. QRIO – whose name stands for 'Quest for Curiosity' – can listen to and follow commands, walk, fall and pick himself up. He also sings and dances, revealing an agility lacking even in Asimo. Information on the Sony website explains that "QRIO knows your voice. It can determine who is speaking by analyzing the sounds it hears with its built-in microphones... It knows tens of thousands of words already, but can also learn new ones... It will ask what sort of things you like and remember them, getting to know you better all the time... QRIO has its own emotions - and expresses them in a variety of ways, such as through its movements, actions, sounds or colors"³⁸. In the realm of robotics, QRIO is emblematic of the fact that the science fiction robot has become a reality. While its pre-engineering phase was inspired by robots like *Star Wars*' C3PO, it is, again, Astro Boy who has left his mark on this boy-like creature. QRIO is about the height of a small child (like Astro Boy), and it even starred in the new series of the *Astro Boy* cartoon (Fuji-TV). Appearing in Episode #43 titled "A Robot that Admires Humans", QRIO starred as itself. It was the first time a robot actually starred in a film, and to add to QRIO's talents, it was also responsible for dubbing its own voice in the episode. Like the examples of urban architecture mentioned above, an invention of advanced scientific reality actually migrated into the realm of science fiction, thus sealing the slippery nature of the rapport that these two concepts – science fiction and science fact – have always had with one another.

However, in more recent times, it is the ‘real’ scientific creations that enter the realm of science fiction, lending a sense of futuristic legitimacy to the fictional spaces. It is as if the present has surpassed science fiction in its depiction of ‘future-ness’.

In 1950 the scientist Alan Turing proposed a very science fictional concept when he devised the Turing Test, which determined when or if a machine can be said to possess human intelligence. The Turing Test asked: “can machines think?”³⁹ Further to this, does the fact that a machine can duplicate human thought mean that the machine possesses human-like consciousness? Until recently, it was believed that this was a question that would be addressed within the confines of science fiction, but the gap between reality and fiction is increasingly closing. In quite real, yet rudimentary, ways these robots reflect the beginnings of the struggle between human and machine, a struggle that has always obsessed science fiction cinema. Science fiction films like *Metropolis*, *Frankenstein*, *I, Robot* and *A.I.* all revolve around individuals who seek to reverse the laws of nature by creating life through technology and science. According to Moore’s Law (which claims that integrated circuitry doubles its capacity every two years), by the year 2020 computers will achieve the “memory capacity and computing speed of the human brain”⁴⁰. Science *fictions* have become science *realities*. Society is experiencing a major turning point: it is following a journey along the path of Moore’s Law.

While sharing the enthusiasm for ‘future-now’ urbanscapes, Eastern and Western cultural attitudes to robots differ markedly. In western culture, the anxiety regarding humans taking on the role of creator has been present since early pre-Christian myths, but it is with the rise of Christianity and Judaism that this anxiety reached a pinnacle. From the C16th, science and technology began to advance to a point where the creation of artificial beings that appeared to move of their own volition were becoming a reality. The Church’s response was a negative one in that the role of creation was one that was associated with God as Creator. Human-as-creator of artificial life was considered blasphemous. This anxiety regarding artificial life has continued into contemporary culture. It is experienced most dramatically in science fiction cinema, which has always warned of the dangers of creating artificial beings: since the time of Shelley’s *Frankenstein*, these products of ‘man’ inevitably turn on their makers. Perhaps this age-old anxiety about artificial life is one of the reasons that western culture has been more hesitant about accepting robot technology to the extent of the Japanese, and it certainly explains the persistent presence of religious subtexts in science fiction films like *Minority Report*, the *Matrix* trilogy, *I, Robot* and *A.I.*

The situation in Japan is very different. Writing in response to the start of the modern robot era in Japan, writers have drawn attention to the Buddhist and Shinto beliefs that have encouraged the Japanese to embrace robots⁴¹. For example, in his book *The Buddha in the Robot* Japanese philosopher and roboticist Masahiro Mori states that robots have a Buddha-nature within them. Relying on animist traditions, Shinto religion posits that many objects (living and artificial) possess a soul or spirit. As Simons explains, samurai swords can have their own souls, as can robots⁴². In fact, it is quite common in robot industrial plants to hold religious ceremonies to welcome the new robot soul in the world on the day of its activation. The belief systems that are present in Shinto and Buddhism (which are absent in Christianity and Judaism) encourage an enthusiastic attitude to robot culture that has accepted the robot as potential equal of the human within the social sphere – a fact evident in science fiction anime from *Astro Boy* and *Gigantor* to *Laputa* and *Ghost in the Shell*.

We are living in exciting times. This era has witnessed the birth of the intelligent machine and has placed it within an environment that once was the stuff of science fiction. Soon enough we'll be responding to Turing's question "Can machines think?" with a resounding "Yes!"

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Endnotes

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- 1 This is taken from the theme song of the New York World's Fair. The complete passage is "We're the rising tide coming from far and wide
Marching side by side on our way
For a brave new world,
Tomorrow's world that we shall build today". Rydell 1993, p.132.
 - 2 Nakada 2003, n.p.
 - 3 Larsen 1999, n.p.
 - 4 Marriott 2002, n.p.
 - 5 See <http://www.Massivesoftware.com/>)
 - 6 See Lehane 2002 and Fordham 2003.
 - 7 Kihlstedt 1986, p.97.
 - 8 See Gilbert 1991, p.15. Gilbert explains that "The Fair organizers, in this instance, attempted to demarcate a boundary between the two in identifying the ideal city with the neo-classical architecture that came to be known as the Expo's White City and the popular and commercial with the Midway zone, which offered all sorts of amusements and displays. Progressing into the C20th, this attempted binary increasingly broke down".

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- 9 Gilbert 1991, p.37.
 - 10 Rydell 1993, p.526.
 - 11 Rydell 1993, p.111.
 - 12 Kuznick 1994, p.341.
 - 13 Morshed 2004, p.74.
 - 14 For more on Le Corbusier, see Frampton 2001.
 - 15 Kihlstedt 1986, p.100.
 - 16 Kihlstedt 1986, p.101.
 - 17 Morshed 2004, pp.78-80.
 - 18 For detailed accounts of the impact of science fiction literature, see Nancy Knight, “‘The New Light’: X-Rays and Medical Futurism” and Folke T. Kihlstedt, “Utopia Realized: The World’s Fairs of the 1930s”, in *Imagining Tomorrow: History Technology and the American Future*. Ed. Joseph J. Corn. Massachusetts: The MIT Press, 1986: pp.10-34 & pp.97-118.
 - 19 At the New York World’s Fair, “Disney was represented by a specially commissioned Mickey Mouse cartoon in the Nabisco pavilion”. Marling 1997, p.35.
 - 20 Marling 1997, p.30
 - 21 Bradbury 1999, p.7.
 - 22 Marling 1997, p.31.
 - 23 Marling 1997, p.31.
 - 24 Marling 1997, p.31.
 - 25 O’Brien 1992.

 - 26 Larsen 1999, n.p.

 - 27 Larsen 1999, n.p.
 - 28 Klein 1997, pp.94-5.
 - 29 See Klein 1999.
 - 30 Beyard et.al 2001, p.8.
 - 31 Beyard et.al 2001, p.9.
 - 32 1992, p.12.
 - 33 1992, p.16.
 - 34 Anderson 1999, n.p.
 35. 1) A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2) A robot must obey the orders given it by human beings, except where such orders would conflict with the First Law.
3) A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.
 - 36 See <http://world.honda.com/ASIMO/history/>
 - 37 Larimer 2000.
 - 38 [http:// www.sony.net/SonyInfo/QRIO](http://www.sony.net/SonyInfo/QRIO)
 - 39 Turing 1950, n.p.
 - 40 Kurzweil 1999, p.3 & pp.26-32.
 - 41 Simons 1992, p.29.
 - 42 1981, p.29.

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