Inside/Outside
Urban Form in the Future

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> "Long ago, in the days of knights and dragons, the kings and dukes had lived in castles, with high walls and drawbridges and slots on the ramparts so you could pour hot pitch on your enemies, said Jimmy's father, and the Compounds were the same idea. Castles were for keeping you and your buddies nice and safe inside, and for keeping everybody else outside."
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> —**Margaret Atwood,** *Oryx and Crake*

Introduction

This article is a study of how physical and social divisions will affect urban form in the future. Cities are dividing themselves into two separate kinds of urban form that I describe as INSIDE and OUTSIDE. The inside consists of gated communities, office parks, and shopping areas with entry control points and barriers to physically demarcate a social division from the rest of the city, excluding those who cannot afford the inclusive lifestyle outside. Divisions that are social in nature, like income inequality and class stratification, are reinforced by physical barriers that serve as positive feedbacks to the social divide. Once physical barriers are erected to separate one part of society from the rest, the social divide widens. In other words, physical divisions lead to social divergence.

In a previous paper, I made the case that subdivisions have divided the neighborhood away from the city. This model was then applied subsequently from the city to the human scale. Within each subdivision, single-family detached homes with garages isolate their occupants from their neighbors. Family members that live in the homes are further separated from each other and divide themselves into their own spaces within the home. Individual behavior reflects the divisions that exist on the macro scale of the city. As a means of analyzing the nature of these divisions, I relied upon film and music, which can serve to communicate how society responds to changes in the built environment. These art forms describe how people feel about their surroundings in a way that a social science journal article cannot—by appealing directly to human emotion.

I will again turn to literature as a way to predict what the built environment and society will look like in the future. I will apply Margaret Atwood's 2003 novel *Oryx and Crake* in my analysis of the near future, and EM Forster's 1909 short story *The Machine Stops* for an analysis of the distant future. Not to discount the value of social science, I will examine works that describe the history of the city

Detroit, Michigan Photo: Scott Curry   **Detroit, Michigan Photo: Natasha Krol Mauskapf**

with respect to physical and social barriers and also to describe the initial conditions of today's urban form.

Before making predictions about the near and distant future, I first want to take a glimpse at the near and distant past. What follows is a brief personal narrative of the late 20th century subdivision, and a brief historical narrative of the Medieval European walled city.

Compound Fractures

When I finished my time in the army in 2004, I returned to my hometown of San Diego to go to college. It had changed a lot in four years. It was more crowded, more expensive, and I decided to settle in Oceanside, a quieter surf and military town 60 miles to the north. Oceanside also had grown over the past few years, sprouting more developments, but not necessarily more *neighborhoods*. Subdivisions were characterless, and I lived in one such gated community. For four years in the Army, I was most often living "inside the wire," surrounded by chain link fences, concertina wire, and the colors brown, green, and black. Now, in Oceanside, I was still inside a gate. It was a nice enough house, with nice enough roommates, but there was something weird about the place. It was too quiet, too isolated, too *separated*. I didn't like it because it wasn't a real neighborhood.

I grew up on a grid street with an alley. I could walk or ride my bike to 7-Eleven for a Slurpee, Thrifty for an ice cream, and all over the scruffy, filthy, saltiness that is Ocean Beach. I lived on a street that ran all the way down to the Pacific Ocean and into the OB pier. It ran all the way up to Catalina Boulevard, which ran north-south to the tip of Point Loma. Guizot Street ran from sunset cliffs to Nimitz Boulevard. Ours was the steepest street in town, and it was called Niagara Avenue. From my house, the east-west and north-south extents of those streets spanned the entire range of Ocean Beach. That was my neighborhood. Now my "neighborhood," just outside Oceanside, had shrunken to the walled-in space containing the dozens of single-family tract homes within. If I walked out my front door in any direction, I would soon hit a fence or a wall. I called the development "The Compound." This moniker came from the Oceanside development's likeness to the housing compounds in the Middle East.

Occidentals working in the Middle East for oil companies or defense contractors typically live in western-style housing tracts, enclosed by stonewalls and guarded by a 24-hour security force. While on deployment, I had the pleasure of touring such a compound in Doha, Qatar, where a contractor invited us to see his home. The guardhouse at the entry control point was well appointed with a sliding Dutch door and bulletproof glass. The outgoing gate had tire spikes and a lifting barrier arm. The inside of the compound was richly landscaped; palm trees were in abundance. There likely was a garden staff of third-country nationals, laborers imported from Bangladesh, Nepal, and India. The wealth from oil exports meant that there was no such thing as a lower class Arab. Real GDP per capita was over $57,000 (Heston, 2009). The houses were all two-story affairs, with Spanish tile roofs and stucco exteriors ranging from light sand to mocha. I could have been in Oceanside.

My compound made me feel like a lonely lord. I looked out my window at the vacant lot beside our development. Kids would ride their 80cc dirt bikes across it. Eventually, every house received a notice in the door handle from the homeowners association, which put a stop to the two-stroke recreation. It could have been ox plows moving across the field. I was a kind of vassal. I received my income through the GI Bill, which meant that tax money was financing my living arrangement. I was living in a walled space, and, being on the second floor, I was above the masses. The thing was, once I mounted my trusty steed (a Honda Hawk motorcycle) and crossed over the drawbridge (out the gate), I was just like everyone else. I was a lord by geography only. And so was everyone else who lived in the compound.

What disturbed me about living in the gated compound was the feeling it gave—and the feeling it didn't give. I didn't feel safe, nor did I care to. Instead, I just felt isolated and disconnected. I was just out of the military and wanted to reconnect with society. I was already an outsider, 24 years old and in community college. Living inside the compound actually made me feel like more of an outsider. I found solace in surfing and motocross, individual pursuits that were my version of bowling alone. Then I broke my collarbone and had to face the fact that it was social interaction that I was craving. My recreational pursuits were just distractions from the feeling of isolation.

I began to notice some subtle aspects of society during my Army stint, like the ways people use cell phones and the Internet to isolate themselves. This really bothered me. The picture of a group of girls out to lunch, seated around a table and all on their phones is etched in my memory. Riding in a car with everyone talking on the phone is another. Just another brick in the wall, I suppose. Except it seemed like society was building the wall, trying to keep me out. The divisions were not only physical. They were social, too.

> "Divisions that are social in nature, like income inequality and class stratification, are reinforced by physical barriers that serve as positive feedbacks to the social divide."

Cities Long Ago

Throughout history, the purpose of a city wall was to protect the city against enemy invaders. It was for keeping outsiders out. Now, walls around gated communities serve to keep the city out.

Howard Saalman's *Medieval Cities* details the purpose of medieval walls as follows:

"While one tends to think of [town walls] in terms of siege, with the militia behind the crenellations pouring boiling oil on ascending invaders, the everyday and even more important purpose of the walls should not be neglected: control of entry and exit in peacetime. To accomplish these specialized tasks effectively, medieval town walls, following Roman tradition, consisted of three characteristic parts: wall, tower, and gate. One to two meters thick and frequently up to twenty meters high, the wall was an insurmountable obstacle to normal transit. Its dank shadow blanketed an area some fifty feet wide on either side. Every hundred feet or so the wall swelled out into a round or square tower. Broken by small openings, the towers provided garrison within a maximum field of cross fire on an attacking enemy. The critical points in the wall, however, were the gates. By definition weak points in the fabric, they were doubly protected by especially large and strong flanking towers (Saalman, 1968)."

That much seems obvious, but Saalman has another key point about city gates during peacetime, which is much less palpable—The city gates were places where people waited. This waiting gave rise to the first suburbs, *faubourgs*. Now to paraphrase Saalman's succinct explanation of how these proto-suburbs sprang up outside the city walls:

People had to wait at the city gate before they could conduct their business inside the city. Sometimes they arrived after the gate was closed and would have to sleep outside. Eventually, someone built an inn on the road leading to the gate, just outside the wall. After that, artisans set up shop to serve the guests staying at the inn. Voila. The faubourg became the first suburb (Saalman, 1968).

Faubourgs grew even as land within the city walls remained unsettled. This is because; contrary to Robert Park and Ernest Burgess' concentric ring theory of urban form, settlements within a city actually followed a starfish pattern, with densities greatest along the roads that radiated outward from the city center. This left the triangular regions between these roads unused. The faubourg, however, was on the main road leading to the city, so it grew in size as the favorable locations within the walls became saturated. It wasn't only because of this favorable location that market activity increased, but also because visitors and merchants could conduct business in the faubourg without having to pay (or, at least, could more easily evade) the city's gate and sales taxes.

Not only were faubourgs the first suburbs, they were also the first satellite cities. Eventually, the city walls would leapfrog the faubourg and it would become part of the city. In 1968, Saalman even noted, "The *faubourg* markets quickly turned into major satellite nuclei of economic life in competition with the older and usually smaller markets within the walls" (Saalman, 1968). This notation is a prescient one. Over the many years since Saalman published this work, the proliferation of developing green spaces outside the city for "big box" stores such as Home Depot and Target, which dwarf downtown hardware and drug stores, fits this description.

Saalman touches next on the fact that, despite the advantage of economic freedom, what the faubourgs truly wanted was to eventually be included inside the city wall:

"For whatever the limited advantages of a market in competition with the city, inclusion within the walls with all of the physical security, legal privileges, and economic opportunities that it implied—particularly if viability was enhanced by the demolition of the old inner wall ring—had greater attraction still (Saalman, 1968)."

So here we have an explanation for the preference merchants had to first locate along the main roads within the city walls. The second most desirable location was just outside the city gates, along these same major roads. But how did these entrepreneurs, who set up outside the gate, get what they wanted, which was inclusion within the city? Demolishing the old wall while simultaneously building the new one was expensive, not to mention time- and labor-intensive. The answer lies in the fact that the city first wanted to collect taxes from the faubourg, and second, populations were outgrowing the city, so more people were living outside the wall. These pressures led to the inclusion of the faubourg within a new city wall, but Saalman cites many examples of cities whose faubourgs did not gain inclusion, such as Aachen, Geneva, Paris, Strasbourg, and Barcelona.

In any case, the motivations of the medieval faubourgs and the modern day satellite developments are the same. In each example, these new developments founded outside of a major city will earn eventual inclusion within the city limits, as population and the economy grow, raising the value of their structures and land, which was acquired on the cheap. "There is a public challenge in the very fact that in these localities civic and industrial institutions are being created brand-new, on a wholesale scale, without the handicaps and restrictions which high land values and prior improvement impose on every effort to reconstruct the congested centers" (Taylor, 1970). As major city borders

expand outwards to contain their satellites, metropolitan advantages benefit the industrial suburbs. The economist Alfred Marshall presented the concept of localization in 1920, along with the idea of external economies, and what contemporary economists call technological spillover. As Saalman puts it, "It was the expectation of this eventual inclusion within the magic circle of production and trade that had brought the hopeful future franc bourgeois to the foot of the walls in the first place"(1968). The similarities between the faubourgs and the satellite cities seem to point to a want of inclusion and protection. As faubourgs grew, some cities, such as Breslau, expanded their walls to protect them.

The purpose of exploring the form of medieval cities and their expansions around the faubourgs was to determine whether or not this study would come into play when defining the initial conditions that are the basis for predicting the future of urban form. An understanding of medieval cities as a whole yields the striking similarities to today's urban growth patterns. Both the medieval and the modern city spawned developments outside their physical limits, and expanded in many cases to include them. The inhabitants of the faubourgs and satellite developments settled outside of the city with the hope that they would be included in the future. Today, instead of entire cities fortifying themselves within walls, residential developments that are located *inside* the city are erecting barriers to keep the rest of the city *out*. Settlers in these gated communities want to be included in the city geographically, but want to exclude everyone else.

What follows is an examination of the literature dealing with gated communities to trace their historical roots. Once I have examined both the city as a whole and the fortified subdivision, I will be able to define the initial conditions and make predictions based on the fictional texts.

Walls inside Cities

A city with a wall and a gate was common in Medieval Europe, as was a single building with a wall and gates. But a collection of dwellings, private spaces within a public space, with a wall enclosing them all, effectively turning the public streets into private paths, was unheard of until the 19th century.

In the mid 1800s, the first such enclaves for the rich in the US were built in New York, New Jersey and Boston. Tuxedo Park, a hunting and fishing retreat built in New York in 1868, featured an eight-foot high barbed wire fence twenty-four miles long (Hayden 2003). Julius Pitman designed St. Louis's private streets for the business elite to isolate themselves from the filth of rapid industrialization.

It would take a century before the gated development became accessible to the middle class, in the form of retirement communities in the 1960s and 70s. Gates and walls then began to enclose and surround resorts, country clubs, and finally, subdivisions and even existing city streets.

There are two works that I found particularly useful in understanding the current place of gated communities in our society. The first is Evan McKenzie's *Privatopia* (1994). Second is *Fortress America* (1997), by Edward Blakely and Mary Gail Snyder.

Secession of the Successful

Evan McKenzie's study of the Common Interest Development (CID) covers a range of issues, but mainly focuses on the "private government" structure of homeowner's associations and how they relate to local governments. He traces the formation of CIDs from Ebenezer Howard's Garden Cities to the present day form of privately owned luxury subdivisions in the United States. To ensure that the land would not be used for other purposes in the future, the restrictive covenant was born. In the 1970s, municipalities faced budget deficits and were encouraging the building of subdivisions with private infrastructure (1994). The CID was a kind of garden city, one with greater government powers than that of the city, and one that could restrict access to its "territory." Since CIDs give their residents the opportunity to leave the city, McKenzie cites what Robert Reich calls a "secession of the successful," writing that the constant growth of CIDs over time could perhaps lead to "a gradual secession from the city that would leave it stripped of much of its population and resources." This describes the condition Detroit and other industrial mid-western cities have faced over a half-century of gradual decline. McKenzie mentions ominously "this steady secession would make the lives of those who remained in the city increasingly difficult" (1994).

Charles Murray predicted in 1991 that a caste system of the rich who govern themselves on private land will view cities the way Americans today view Indian reservations (1994). Rather than addressing social concerns in the cities, people have rejected urban life, moved away and built walls around themselves.

The Increasing Divide

"From the beginning, the suburbs have intended to separate their residents, first from the city and later even from each other," write Blakely and Snyder, in *Fortress America*. They examine the motivation and desire that suburbanites have for living behind a wall. One reason is that developers have used gates as marketing tools. Like the bonus room, a gated community is just one more option that differentiates one cookie cutter development from the next, until every developer has accepted the need for gates. "With their often elaborate guardhouses and entrance architecture, gates also provide the crucial product differentiation—and clear identity—that is needed

in crowded and competitive suburban new home markets" (1997). Indeed, these developments display names that are "meant to conjure up bucolic rural imagery and only coincidentally reflect the actual landscape" (1997).

Marketing aside, people choose to live in gated communities because they want two feelings: One of safety and the other of community.

These reasons can be seen in the types of gated communities that exist. Blakely and Snyder classify three types: lifestyle, prestige, and security zone. While the lifestyle and prestige communities are typically separated from cities first through physical distance, security zone communities can start as ordinary neighborhoods with grid streets. Due to crime or traffic, these neighborhoods erect barriers so that their residents can control the space. "The fortress mentality is perhaps clearest here, where groups of people band together to shut out their neighbors" (1997). Here is a situation where fear of localized crime or increased traffic has resulted in the erection of gates and barriers to close off public streets and create defensible space (Newman, 1972). The gain in a feeling of safety can come at the cost of a loss of community. Blakely and Snyder posit that the purpose of these barriers is to preserve the sense of community but counter that "gated communities are no better or worse than society as a whole in producing a strong sense of collective citizenship" (2003). The issue of building barriers can even lead to stiff resistance by some residents, citing racial and class motivations. Some residents may simply move out of a newly barricaded neighborhood completely. Whitley Heights, CA and Miami Shores are examples of barricading that shattered cohesion within the community.

Insiders, Outsiders, Dividers

From the McKenzie and Blakely/Snyder texts, I pull two main points. First, there is an increasing social divide between those living in gated communities and those who remain in the city. A member of Citizens Against Gated Enclaves (CAGE), who fought against the Whitely Heights gate, best illustrates this point in a remark. "[A gate] says 'stay out' and it also says, 'We are wealthy and you guys are not, and this gate shall establish the difference'" (Blakely 2003).

The second point is that as city form becomes disrupted with isolated, gated communities, society fractures as well. Blakely and Snyder note that a lack of social contact leads to a disintegration of the social contract. The sense of community becomes lost within gated communities and their greater urban areas. Hired

guards substitute for responsibility to look out for one another and the social contract starts to break. Without this responsibility, residents lose interest in their neighbors. The physical isolation of the gated subdivision works its way down to the individual. The theory holds true that a community that divides itself away from the city will become divided within.

These points combined together form the initial condition from which predictions will be made in the following section. The trend in increasing social divide between insiders and outsiders is my basis for predicting the near future, using Margaret Atwood's *Oryx and Crake* as a guide. The trend of divisions that arise between individuals is my basis for predicting the long-term future, using E.M. Forster's short story *The Machine Stops*.

Cities in the Near Future
Compounds and Pleeblands

Margaret Atwood's *Oryx and Crake* is a dystopian description of a world many years in the future. The ice caps have melted, Greenland's ice sheet has slid into the Atlantic, Lake Okeechobee has shrunken to a mud puddle, New York has been swallowed by the sea, and many animal species have gone extinct after failing to adapt to a climate where Canadian summers start in February (and corporate vice presidents take vacations to Hudson Bay for the cool weather).

The stress for resources has stratified society in two, determined by where people live and work. In the *Compounds*, the privatization of the city has reached a nexus in the form of fortified corporate campuses (typically in the field of bioengineering), each complete with housing for all the workers and their families, schools (including universities) and malls. The bioengineering corporations like HealthWyzer, Watson-Crick, OrganInc, AnooYoo, and RejoovenEsense have the technologies to meet the world's demand for basic necessities in the face of dwindling resources, and then some. Consumption has continued to increase, especially in the image department, and the corporations grow organs, engineer children, and have pills to make you "fatter, thinner, hairier, balder, whiter, browner, blacker, yellower, sexier, and happier" (2003).

However, the Compounds are not completely self-sustaining, as some Compounders lament. After a case of corporate sabotage, one man says that they should bring delivery services "in house." Security is carried out by the CorpSeCorps, strict and all knowing. The high compound wall is rimmed with razor wire. Towers and guardhouses recall medieval city walls. Travel between the

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Compounds and Modules (smaller Compound outposts) is achieved via bullet trains with bulletproof glass that crisscross the *Pleeblands*, the name given to everything outside the Compounds.

Remember when everyone lived in the Pleeblands?

 "Rows of dingy houses; apartment buildings with tiny balconies, laundry strung on railings; factories with smoke coming out of the chimneys; gravel pits. A huge pile of garbage… (2003)."

In the Pleeblands, everything is disorderly, left to chance. The main character Jimmy is a perfect example of how isolation from the Pleeblands affects the individual. He had "grown up in walled spaces, and then he had become one. He had shut things out" (2003).

Atwood's world is not so different from our own. It simply shows a divide in urban form that is on par with the social. Blakely and Snyder give the case of Rosemont, Illinois, outside Chicago, which "has installed guardhouses, staffed by police, on the public streets leading into its main residential area. Left *outside* is the commercial area of freeway off-ramp hotels, businesses, and several apartment buildings" (2003, emphasis added). This sounds eerily similar to the comparison of the Compound and Pleebland.

In Atwood's world of Compounds and Pleeblands, the Compound has put up a wall that surrounds every aspect of one's life. Home, work, and leisure are all contained within the wall. In today's world, these aspects are still separate. Yet walls surround each. In the case of gated communities, homes are surrounded by a wall. Office parks with restricted entry and parking garages are another kind. Shopping malls with high levels of security and closed circuit television surveillance to maintain order and keep out undesirables is yet another example.

Another present day example of the increasing physical barriers between the stratified layers of the upper and lower class can be found in post-Apartheid South Africa. As Martin Murray writes in *Taming the Disorderly City: The Spatial Landscape of Johannesburg after Apartheid:*

 "As the era of white minority rule came to an abrupt end, middle-class urban residents began to move indoors, safely ensconced behind a prohibitive labyrinth of interdictory spaces. The proliferation of enclosed suburban shopping malls, gated residential communities, and fortified office complexes on the ex-urban fringe, together with the steady expansion of underground parking garages with restricted entry and above-ground walkways that bypass the streets… has usurped the conventional role of town squares, public parks, and downtown sidewalks for everyday social interaction. This expanding network of cocooned urban environments…has fundamentally reshaped the uses and meanings of urban space in the new South Africa. Barriers, walls, and security perimeters are the visible signs of the growing fortress mentality in urban South Africa after apartheid. (2008)"

The reason that urban form has not changed drastically toward Compounds with walls that surround the entire area where we live, work, and play, is due to the automobile. But in Atwood's world, the internal combustion engine is obsolete. There is no mention of petroleum or petrol-powered cars, or even of jets. Compounders get around in electric golf carts, and bullet trains connect the Compounds. With urban planning trending towards "compact, walkable" cities, I find it plausible that suburban developments in the future will consist of these same characteristics. In Atwood's future, there is no feasible substitute to the gasoline engine, and automobiles with ranges of over 300 miles are nonexistent. If this holds true in our future, it will be necessary to bring all aspects of life closer together. Since each aspect of home, work, and leisure already have barriers around them today, bringing them together in a single geographic location, there will be a wall that surrounds the entire *Compound*. These will be linked by high-speed MagLev or electric trains.

In Atwood's future, the privatization of the city is carried to the extreme, as cities become *corporatized*. Each Compound houses its employees and support staff. It's very similar to a military base, where all work takes place, and where most of the soldiers live. There is a post exchange for shopping, with a food court and barbershop, dry cleaners, and pharmacy. The hospital is nearby on its own defended territory. There is even an education center where soldiers can take night classes. Located just outside the base is the definition of a Pleebland, complete with payday loan offices, pawn shops, tattoo parlors, used car lots, and strip clubs.

I consider the fortification of residential neighborhoods with guardhouses as a kind of "militarization." Setha Low, author of *Behind the Gates,* writes, "Living in a military compound is like living in a gated community" (2003). To complete the model of a Compound, it is necessary to determine how exactly Greenfield developments will arise in the form we have described. The answer, I believe, lies in climate change.

A major problem of climate change lies in its uncertainty. The probability density function of climate sensitivity has a "fat tail," meaning that given a doubling of carbon and equivalent emissions in the atmosphere, global mean temperature can rise by an amount with an unknown upper bound (Yohe, 2004). For this reason, Atwood's description of a rapid rise in sea level that washed away coastal towns and cities, including New York, is plausible. The people who have the financial means to evacuate a

flooded city will have to set up anew on a Greenfield site. Since these people will be of a certain socio-economic status that meets some minimum requirement to evacuate and relocate, it is sensible that the resulting settlements will be socioeconomically homogeneous. There is precedent in this pattern, as seen in the racial segregation of Detroit and the surrounding Wayne and Oakland County suburbs, and as described by Beall et al. when describing post-Fordist spatial segregation in Johannesburg after Apartheid (2002).

New developments will, of course, depend on the employment opportunities available from the corporations that decide to locate and develop Greenfield sites. Those relocating will be in the upper class, and will earn the right to live inside the Compound. These Compounds will be master-planned, and built on the theoretical foundation of New Urbanism. Schools, hospitals, and malls will all be included in dense, mixed-use blocks that will be accessible by foot. The compact nature of the design will facilitate the building of a circular wall. The poor will set up outside the wall, forming the new faubourg, the new favela, the new Pleebland.

Cities in the Distant Future
Accessibility and Isolation to the Extreme

One of the buzzwords in the field of urban planning is "accessibility." In the most prescient work of fiction I have ever read, E.M. Forster predicted, in 1909, how people interact with each other in the future to an astonishing degree of accuracy. Accessibility in Forster's world has reached a nexus, where things are brought to people instead of people going to things. People isolate themselves in their rooms, because there is no need to travel to acquire anything, not even face-to-face human contact. Already today, our perception of isolation has changed. We feel isolated not when we are separated from people, but when we are separated from communication technologies.

In The Machine Stops, humans have been forced underground by an inhospitable atmosphere and into a honeycomb arrangement of single rooms, called The Machine. Man lives alone in his room, and does not need to leave it for any reason. Everything is available at the press of a button.

"There were buttons and switches everywhere—buttons to call for food, for music, for clothing. There was the hot-bath button, by pressure of which a basin of (imitation) marble rose out of the floor, filled to the brim with a warm deodorizing liquid. There was the cold-bath button. There was the button that produced literature. And there were of course the buttons by which she communicated with her friends. The room, though it contained nothing, was in touch with all that she cared for in the world (Forster, 1909)."

It is the concept of accessibility taken to the extreme, which leads to extreme isolation. When Vashti ("She" in the above passage) receives what is best described as a videoconference call from her son on the other side of the world, he says that she must come to him via airship. She does with reluctance, and for the first time in months, leaves her room and enters a hall where:

"She would summon a car and it would fly her down the tunnel until it reached the lift that communicated with the air-ship station…And of course she had studied the civilization that had preceded her own—the civilization that had mistaken the functions of the system, and had used it for bringing people to things instead of for bringing things to people. Those funny old days, when men went for change of air instead of changing the air in their rooms! (Foster, 1909)"

It is amazing how precisely accurate E.M. Forster's accounts are, considering the story is more than 100 years old. He essentially describes the Internet, but also foretells the way people will use it, and the self-imposed isolation that results from it. Ironically, there is even a button for isolation to block incoming messages. In one instance, after three minutes in isolation, Vashti turns off the isolation switch and is swamped with incoming messages. "To most of these questions she replied with irritation—a growing quality in that accelerated age" (Foster, 1909). How true that people have, to a degree, lost the desire (and ability, perhaps) to communicate face to face and would rather send text messages. Direct experience terrifies Vashti. When the attendant on the airship touches her arm, she finds the act barbaric. Technologies that make communication possible for people who are far apart, end up pushing people at arm's length more distant. At anytime, someone can pull out her phone and take more interest in its tiny screen than her immediate surroundings. How many hours per day do we spend looking at a screen (computer monitor, cell phone, television) and how many hours do we spend engaged in face-to-face communication?

The caution that E.M. Forster warns against is that this sort of behavior, this need to know information instantly, this addiction to all things digital and our preference for their second hand representations of real life interaction, goes even beyond basic isolation, and that leading to an aversion of "frightening" direct experience. He warns that when fractures in society become so deep that society begins to crumble, we will allow things to go from bad to worse, unchallenged (Foster, 1909).

In E.M. Forster's underground world, man has separated himself from the surface of the earth. He subtly describes that this did not happen suddenly, nor was it man's choice. The discrete, individual cells in the honeycomb worlds were probably set up as a form of redundancy, in

case there were leaks or failures in parts of the machine, to ensure mankind's survival. The air-ship system, the cars in the halls, and the communication system were all in place so that people could connect with one another, and not feel so alone. But as Vashti pointed out, that was the old civilization. Eventually, man made the change from people going to things, to bringing things to people. The decrease in physical travel occurred because the world looked the same everywhere. There was no point in going to Pekin when it looked just like Shrewsbury, wrote Forster. When we separate ourselves from our environment, we separate ourselves from each other. This is clearly exemplified in the situation wherein someone pays more attention to a tiny digital screen than to others.

Conclusion

Society is becoming increasingly stratified due to income inequality. As stratification increases, physical divisions in urban form increase. Technology has made the use of personal communications and entertainment devices pervasive. As the use of these devices increases, human face–to–face interaction declines. This decline in interaction leads to deliberate isolation. There is a positive feedback effect between an increasingly divided urban form and decreasing social interaction.

In the near future, cities will become further divided and approach the form described by Margaret Atwood in her novel, *Oryx and Crake*. In the distant future, society will behave in a manner approaching that described by E.M. Forster in his 1909 short story, *The Machine Stops*.

In many ways, we already live in the setting of *Oryx and Crake,* and behave like the underground civilization in *The Machine Stops*. We have divided cities into isolated, fortified communities, and isolate ourselves through the use of technology. In both of these stories, the environment, in the ecological sense, was damaged. In *Oryx and Crake*, the planet was still inhabitable, but the standard of living was only maintained for those in the Compounds, and then, only through some radical feats of bioengineering. In *The Machine Stops*, the atmosphere was unbreathable, and man took the drastic step of separating himself from it, and as he did so, his society broke apart until each man isolated himself fully from virtually all direct contact with others. The reason this happened is because people were separated from the natural environment. When we put a barrier between ourselves and the natural world, we lose our connection to all living things, including each other.

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