Colonizing the urban wilds: invader or pioneer?

THESIS

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Abstract

Conventionally, weeds, or invasive species, are harmful because they often displace plants, which human beings hope to grow, or they invade places where people do not want them to grow. However, this paper challenges this common notion, and re-identifies these weeds as pioneer species. Scientifically, the article analyzes the biological features and ecological benefits of this group of species, illustrating their value in the urban landscape environment. Moreover, the paper draws comparisons between this native/invasive dialogue and queer theory, analyzing the position towards nature that should be held by landscape architects. The site of East Franklinton was selected as the study field, because of the current situation and the revitalization plan it is facing. In the site, the concept of queer space is developed with three practices, which emphasize the infinite diversity and possibilities, instability and changeability, non-hierarchy and inability to classify urban spaces. These practices consist of a utopian world, different from the traditional design philosophy, in which humans are no longer the dictator of the world who can dominate and control everything: they play only a part of the whole ecological system. The practice is aimed to explore what is the real nature, not man-made nature.
Key words: urban landscape; invasive species; weeds; urban ecology; queer theory; wildlife; ecological urbanism
Dedication

Dedicated to the students at The Ohio State University
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Weeds generally refer to plants that are not desired within a certain environment. A plant that is a weed in one context is not a weed when it grows where it belongs or is wanted. They are often identified as “invasive species” in an urban environment, since they have taken root everywhere in the cities, along roadsides and chain-link fences, between cracks of pavement, and within vacant lots, rubble dumps and highway medians.

“Invasive” has two levels of meanings. The first level refers to something’s origins. Most things that are invasive came from other areas of the world. They spread by human activity, bird immigration or wind. In fact, as humans first began to move around the earth, they took familiar plants and animals with them for use as food, medicine, or technology (Fritz, 1994). For instance, in the group of popular Ohio urban weeds, Musk Thistle, Canada Thistle, Purple Loosestrife and Wild Parsnip all originated from Eurasia. In this case, “invasion” is synonymous with immigration. A second level of meaning of “invasive” refers to something’s strong ability to survive. Usually, these kinds of species have a stronger ability to absorb nutrition from soil
than other species, which results in the death of weaker species. Therefore, invasive is an alternative way of saying something is aggressive.

In the mind of the majority, these kinds of plants cannot be accepted. They are commonly identified as significant threats to biodiversity. Some have been classified as noxious weeds by governmental authorities because if left unchecked, they often dominate the environment where crops are grown or they cause harm to livestock.

Hence, people usually organize events to expel the undesirable species, such as the Columbus Honeysuckle Removal Program. Held by the Columbus Recreation & Park Department. The program has eradicated 15.91 acres of, so called, “invasive species” in public places in Columbus with the help of 296 dedicated volunteers from 2011 to 2012 (Columbus Recreation & Parks Department, 2012).
The Federal Noxious Weed Law (1974) controls the importation of weed species into the United States. Most states also have their own noxious weed laws. Ohio has several laws governing weed control. Regulation 907.10 outlines the duties of the director of Agriculture, one of which is to establish primary and secondary noxious weeds; regulation 731.51-731.53 gives municipal corporations the authority to eliminate noxious weeds from properties; 927.681 and 927.682 claim the specific
regulations for multi-flora rose and purple loosestrife; regulation 4959.11 gives managers of toll roads or railroads authority to destroy certain listed weeds and brush; 5579.04-5579.08 gives highway departments and township trustees authority to control noxious weeds. According to the Ohio regulations, county and township officials may regulate noxious weeds on private property and public roadways.

Figure 2. Ohio Noxious Weed Species List
Authorities may issue a written notice to eradicate noxious weeds which spread or are about to set seed. Upon receiving the notice, a resident has five days to comply or the weeds may be removed at the resident’s expense. The list of restricted species in Ohio include Wild Mustard, Musk Thistle, Oxeye Daisy, Canada Thistle, Poison Hemlock, Wild Carrot, Purple Loosestrife, wild parsnip Russian Thistle, Cressleaf Groundsel, Shattercane, Johnsongrass, Grapevine and Mile-a-Minute.
Cities represent entirely different conditions that native species are not necessarily adapted to. Native plants often require extensive human management to survive (Del Tredici 2010). However, if the urban “invaders” are examined, these are the species that establish themselves on their own and thrive without the input of human energy. In general, they are pre-adapted to the early successful conditions that humans create in an urban environment, and as such they can legitimately be considered as “natural vegetation” (Larson et al, 2004). Furthermore, we ignore many potential benefits and valuable contributions, ranging from ecological value, such as storm water infiltration, carbon sequestration in addition to pollution uptake, and soil remediation.

Best fits in ecological succession

All ecosystems are constantly evolving and often in ways that are discontinuous and uneven. Despite some ecosystem states that are perceived by us to be stable, this is not a strict stability in a mathematical sense. It’s just our time-limited perception of stasis (Lister, 2010). Crawford Stanley Holling, a Canadian ecologist, called it “shifting steady-state mosaics” (Lister, 2010). Therefore, there is a relatively balanced,
but not an absolute stable status of ecological systems, while human beings, as part of the world, are too small and weak to perceive the change of the biological structure. Indeed, climate and other conditions are steadily changing, which will change the living environment for many species. Most urban land has been totally transformed from what it once was (Del Tredici, 2010). With heavy human intervention and construction, the climate, soil and nutrients that the original flora was adapted to may soon no longer exist. Since many native species cannot adapt to the new area they now exist in, they are made obsoleted by natural selection. Meanwhile, many of the weeds species are tolerant of roadway salt or compacted soil, and are thus able to survive.

Del Tredici has re-branded weeds as “wild urban plants” alluding to their important role in the urban landscape. In his opinion, plants that grow and flourish without frequent maintenance are, by definition, sustainable. Weeds came and settled in the “new ecosystem” responding to and often thriving in the altered habitat, since the existing conditions are able to meet their needs. Thriving in that natural situation, these species do not need extra human supplement for water or fertilizer. In this case, they are the best fit and most naturalized and sustainable species for the land.
Rapid colonizers for urban bare ground

The plants that grow and survive in derelict urban wastelands are famous for their ability to grow under extremely harsh conditions. There are many reasons why they can survive while others die. One study concluded that many successful urban plants are native to exposed cliffs or dry, open grasslands, both of which are characterized by soils with a relatively high pH (Lundholm and Marlin, 2006). Cities, with their buildings and foundations, are in a sense the equivalent of the natural limestone cliff habitats where many of these species originated. Similarly, the increased use of deicing salts on our roads and highways has resulted in the development of micro-habitats along their margins that are typically colonized by calcium-loving grassland species adapted to limestone soils as well as salt-loving plants from coastal habitats (Del Tredici, 2010). Therefore, with the development of cities, these species have become more and more comfortable with the urban environment.

Nina-Marie Lister, associate professor of Urban and Regional Planning at Ryerson University in Toronto, introduced the concept of “hybrid ecologies” in Ecological Urbanism (Mostafavi, 2010). She states that co-evolving assemblies of weeds often populate urban brownfields. Those species are able to rapidly colonize disturbed and moderately contaminated sites. Meanwhile, they can tolerate and metabolize toxic
materials. Peter del Tredici, an ecologist at Harvard University, writes in his book Wild Urban Plants of The Northeast, that the important general characteristics of spontaneous urban plants are that their seeds can germinate under a wide variety of temperature and light conditions and they can tolerate problematic soil conditions. Species in North America with this ecological function include: Carpertweed, Redroot Pigweed, Wild Carrot, Common Burdock, Spotted Knapweed, and other over 40 plant species.

Ecological servicers for environment remediation

Steven Handel, an ecologist at Rutgers, has done a number of innovative ecological restoration projects, including Fresh Kill Park in New York City and the Orange County Great Park in the Orange County, California. He has conducted considerable research in restoring ecological functions to brownfield. He often uses the concept “ecosystem services” to sell the benefits of habitat restoration projects. While weedy sites may be an eyesore to some people, Handel claims that they are also a legitimate ecosystem in so far as they perform a variety of ecological functions such as storm water infiltration, carbon sequestration in addition to pollution uptake and soil remediation.
Del Tredici argued that the unintended consequence of campaigns to eradicate invasive plants and to grow native species at all cost has overtaken the potential benefits provided by urban weeds plants of site remediation. In his book, he provides a list of ecological functions of those kinds of plants, which includes temperature reduction, erosion control on slopes and disturbed ground, stream and riverbank stabilization, nutrient absorption in wetland, and soil building on degraded land (Del Tredici, 2010). For example, species remediate degraded land usually through nitrogen fixing or phytoremediation, which is a sustainable method to be applied wherever the soil or static water environment has become polluted or is suffering ongoing chronic pollution. Species that have these functions include: Mugwort, Prickly Lettuce, Common Lambsquarters, Crownvetch, Black Medic, Sweet Clover, White Clover, Chicory, Autumn Olive, Princess Tree, Tree-of-heaven, Oxeye Daisy, Common Tansy, Birdsfoot Trefoil, Red Clover and Japanese Knotweed.

Wildlife habitat and food supplement

Instead of threatening biodiversity, recent analyses suggest that invasive species do not represent a major extinction threat to most species in most environments. In fact, the introduction of noxious species has almost always increased the number of species
in a region (Mark, 2011). According to an article in *Discovery News*, scientists from Penn State University found evidence that bird populations are both more numerous and more diverse if honeysuckle invaders have sweetened the air. The findings champion the need to embrace this invasive species rather than weed it out of sight. Species that can provide food for wildlife include Japanese Yew, Japanese Barberry, Japanese Honeysuckle, Morrow’s Honeysuckle, Oriental Bittersweet, Burning Bush, European Spindletree, Autumn Olive, and est. Moreover, with the shape of wildness, some species provide good habitat for animals, such as Amur Corktree, Bittersweet Nightshade, Porcelain Berry, Chicory, Common Tansy, Common Lambsquarters, Ground Ivy, Japanese Hops Reed and Canarygrass.

Terminology of “pioneer species”

Given all the benefits above, species of weeds have indeed contributed to land that has been badly disturbed by human beings. Rather than using the term “invasive”, I will identify these plants as “pioneer species” for their positive effects to the environment.
<table>
<thead>
<tr>
<th>Common Name</th>
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<td>Figure 3. North America Weeds Species Collection</td>
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Chapter 3: Re-identify Pioneer Species in Landscape Architecture

Why is it that human beings cannot accept these pioneer species? The reason is they are invasive to the rules that have been set up by human beings. In other words, human beings cannot easily control them. We call them “harmful” because they often are seen as displacing plants, which human beings hope to grow, or they invade places where people do not want them to grow. In fact, people often have an overarching moralistic tone that pits good against evil, with little regard for fact (Del Tredici, 2006). Calling a plant “invasive” allows us to blame it for ruining the environment when really it is humans who are actually to blame (Del Tredici, 2010).

In our regular construction activities, we arbitrarily damage these species under the concept of “nature” or “ecology,” in order to create all kinds of man-made “nature.” Take Highline Park in New York as an example. In the 1990s, as the line lay unused and in disrepair, it became known to a few urban explorers and local residents for the tough, drought-tolerant wild grasses, shrubs, and rugged trees such as sumac that had sprung up in the gravel along the abandoned railway. An ecological system had been stealthily established. However, with the re-introduction of human beings, the
scenario completely changed. The wild grass was removed and a series of “native” species were planted. Therefore, the wildlife was replaced by species that have been tamed by human beings, so that wildlife began to perform in a human way. For instance, designers created a number of birdhouses in the park, in order to feed and train the wildlife in such an artistic way. Unfortunately, people did not consider who was the real invader of the site, who came earlier, who remediated the soil and who fed the animals before humans arrived.

Is the nature we usually notice really natural in landscape architecture? If there is no bad plant, then why are some species allowed to live, while others are forced to be eradicated?
Figure 4. Highline Park, 2002

Figure 5. Birds Houses on Highline Park
I would like to draw comparisons between this native/invasive dialogue and queer theory. The acceptance of the dominant species is the same as the acceptance of heterosexuals, while the invasive species share a similar fate with homosexuals that have been marginalized by society. “Re-inscribing lesbian sexuality within a heterosexual matrix calls the heterosexuality presumption of priority into question, reworking the notion that lesbianism is an imitation of ‘original’ heterosexuality” (Butler, 2004). However, there is an error that there is no priority and originality. They both happen in the natural world. “Lesbian identities do not imitate heterosexual identities; rather, they panic them by confusing the origin-to-copy/heterosexual-to-lesbian line of causation, thereby exposing heterosexual claims to originality as an illusory” (Butler, 2004). Satiric practices such as drag spotlight the imitative nature of all gender identities which are copies of copies without an original in particular; they expose the panicked, imitative nature of heterosexuality even as it attempts to set itself up as “natural” (Butler, 2004). The significance of considering the pioneer species confuses the priority and emphasizes the nature of co-existence, especially in order to explore the property of nature in landscape architecture.
My site is located on the former B&T Metals Company and Eickhold Glass Company in East Franklinton, which is adjacent to the west of Columbus downtown. Lucas Sullivant first explored this area in 1797. It used to be a county seat in 1803 and then was later used by the military. In 1816, the first bridge connecting Franklinton to Columbus opened and from then on, the center of the city began moving to Columbus, but it is important to note the area was very prosperous during the industrial era. In recent decades, the city has dramatically shrunk. As indicated by 2010 Census data, ESRI, the population of this area has seen negative growth of -4.4%, as compared to the growth rate of 9.4% in Columbus and 8.8% in Franklin County overall. During this time household exchange dramatically increased. For the age composition, young people aged from 25-34 consist of 12.2% of the population, compared to the 18.9% of Columbus, which indicates the lack of vigor of East Franklinton. Residents in East Franklinton were most likely to identify as black or African American. Black people make up 57.6% of this area, while for Columbus as a whole this number is less than 30%. East Franklinton consists of 70% poor people, while Columbus only has 17.2%. Median income within East Franklinton was only $10,000, less than a quarter of the citywide median ($43,569). Moreover, residences in this area hold a relatively lower level of education.
However, with less human maintenance, weeds had a chance to survive in this area freely and informally. Varieties of pioneer species have occupied most of the blocks within the area. Also, numbers of wildlife such as squirrels and birds were attracted and settled here.

Unfortunately, this phenomenon is going to stop. Last year Columbus accepted a proposal to revitalize this area. In that plan, this area is going to be changed into an art and innovation area and they hope to attract a “creative class” coming to work and settle in the neighbor. Their plan indicates that 800–1,300 rental and ownership lofts and live/work areas via primarily new construction will be created. As well as roughly 25% more affordable housing, 85,000–150,000 SF of studio and incubator space in renovated older industrial buildings, 10,000–20,000 SF of unique stores, cafés, galleries, live/work businesses along the two main streets.

Clearly, the planners have completely ignored these pioneer species as one of the most important identities of the site. And these species once again are marginalized in the formal design philosophy.
Figure 6. Data of Franklinton County
Figure 7. Data of Franklinton County
Chapter 5: Site Identity Argument

As far as I am concerned, the “creative class” is significantly similar to the group of pioneer species. Creative people are attracted to, and high-tech industry takes root in, places that score high on our basic indicators of diversity—the gay, bohemian and other indexes… Why would this be so? It is not because high-tech industries are populated by great numbers of bohemians and gay people. Rather, artists, musicians, gay people and the numbers of the creative class in general prefer places that are open and diverse (Florida, 2002). For instance, Singapore’s government has recently turned to “creative city” strategies. But in the literature on this, important critiques have been leveled that the city-state’s developmental efforts are irrational, bureaucratic, hierarchical narrowly economistic, and, most importantly, socially polarizing (Oswin, 2012).

Spaces for the creative class are supposed to represent their property of openness and diversity. Packing the city into a formal master plan, controlling and limiting the growth of pioneer species, is definitely against this principle. Therefore, the concept of queer space adequately fits the site.
The term “queer” is invoked spatially on the basis of unclassifiable difference or marginality. The queer space shares a conceptual affinity with the term “vague terrain” and its cultural recognition of anomalous, marginal, and unclassifiable spaces (de Sola-Morales Rubio, 1993). It is a space of difference, an arena of doubt, self-criticism and “possibility of liberation” (Betsky, 1995). “Queer” subjects are multiple; they are differently positioned in relation to the dominant heteronormative order along lines of race, class, and gender (Oswin, 2012). Unlike designed spaces such as parks, the urban wilds have more complex and uncertain relationships with the surrounding land and property value. Typically, people may see queer spaces as a symbol of dilapidation or decay, and transform them to a “normal look” in order to be commonly accepted, which reveals the social inequality and cultural repression. And the “assimilationist” approach to urban spatial normativity may work to reinforce the human-domination inequalities (Gandy, 2011).
In the project of East Franklinton redevelopment, I will attempt to implement the queer space concept into design, exploring the new spatial experience. The new matrix of space emphasizes ambiguous territory, anomalous configuration, and unclassifiable landscape spaces, which would encourage and create infinite diversity and possibilities. The project also emphasizes the features of instability and changeability. The rapid colonizing and wild pioneer species are exactly what we need as a significant component of the new system. Moreover, the new space demonstrates my understanding towards nature and the role of human beings within the whole system.
Chapter 6: Three Queer Spaces Practices

First practice---Trampoline

The first queer space emphasizes the idea of a vague boundary horizontally and vertically, which exhibits the author’s anti-priority position. The trampoline is a huge net weaved by a rubber tube floating in the air. Within the huge trampoline net, people are set up in a non-hierarchical and unclassifiable system. The intervention of the configuration breaks up the formal spatial rules powerfully, in order to create a new spatial rule. In the new rule, the competition between human beings and wildlife are amplified, rather than one completely controlling the other. Meanwhile, serving as a medium within the system, the trampoline encourages the communication between human beings, pioneer species and other wildlife.

The idea was inspired by the Tomos Saracero’ exhibition--On Space Time Foam in Milan. His idea came from spiders’ perception to each other. They perceive the world through vibrations. He claims, “Let us invent an instrument that all the humans in the planet can play at the same time, so that when you play one string it reverberates in all the other strings. That will tune us all. When we are able to produce a harmony as a
species then maybe somebody else will hear us”. We both hope to create a Utopian world, in which, rather than controlling or preserving, we create more opportunity for communication and interconnectedness.

After the analysis of human circulation, four ground entrances are set up to welcome people from different directions. People enter the trampoline from various entrances, and then are transported into the second floor and then the roof of the buildings. In this way, the design attempts to create an unruly sequence, linking open spaces, semi-open spaces, and private spaces. The project explores the spaces of building roofs, which provide more space for pioneer species, as well as human beings. The reason why a rubber tube is selected is its resilience provides possibility for instability. The gathering of human beings will squeeze the space of plants, which demonstrate human invasion to the life of wild species in real life. In order to configure the huge trampoline net, the design makes use of the existing electrical poles. Working with a numbers of new poles, the electrical poles supply the fundamentals for the structure. The trampoline is attached to the poles through powerful springs. Poles, springs, and the net consist of the basic structural elements of the design.
Second practice---Tumors

In order to show the vigorous boundary, instability and diversity in absolute indoor spaces, I selected an inflatable transparent installation as a series of “tumors.” The inflatable works of ANT FARM and the German architect Raumlabor are used as inspiration. The in-between status of inflating or not inflating gives people an opportunity to consider the environment and make their own decisions. The concept of “tumor” came from the idea of “invasion.” Compared to these pioneer species, human beings are the real invader of the site. So I created these tumors spreading out of the existing buildings, in order to illustrate the property of human action growing. After being inflated, the indoor space attempts to obscure the boundary between human beings and pioneer species, as well as offer more opportunity for communication. With the growth of some dense species, human beings will be enclosed by other species. Therefore, the terrain vagueness is reflected in the inability to inflate and its material transparency.

First of all, I transformed a damaged building on this site. Due to the long-term lack of maintenance, we can see the rebars of the roof. Because of the exposure of the roof, the second floor of the building was occupied by some of the pioneer species. The
project punched the ceiling, with the indoor spaces spreading out of the first floor like tumors. These tumors float above the second floor, making use of the rebars for structural support.

Secondly, I implement the idea of a tumor to another building. The design changed the property of windows, letting indoor spaces spread out from them. In this way, the indoor spaces began to exist in the open spaces through the vigorous and changeable boundaries, creating new relationships between human beings and wildlife.

Third practice--- Shingles

Michel Foucault wrote in his book Of Other Spaces, “The heterotopia is capable of juxtaposing in a single real place several spaces, several sites that are in themselves incompatible.” This queer place visualizes the juxtaposing world of human beings and pioneer species.

In the beginning, the shingles work as pavement, which is materialized in a kind of light mesh. With the growth of plants, some of the shingles are lifted up by the species. The sizes, weight, and location of the shingles are different. In this way, shingles become walls, benches, or more of an unclassifiable status, with the interaction force
between human beings and plants. The shape keeps changing, which demonstrates the uncertainty in the natural world.

Figure 8. Trampoline Project

Figure 9. Perspective On Roof
Figure 10. Tumors Spreading Out Building

Figure 11. Tumors Spreading Out Building
Figure 12. Shingle Project
Chapter 7: Conclusion

Conventionally, pioneer species are harmful, because they often displace plants, which human beings hope to grow, or they invade places where people do not want them to grow. However, if we give up the perspective of a human being, these species are actually of no harm. They are just the winner of natural selection. They work for degraded soil remediation, and feed other animals. Indeed, they play an important role in a complete ecological system. They exist on earth as ordinary biological individuals. It is not necessary for us to evaluate them as “good” or “bad” plants, or even demonize some of them. They are very similar to homosexuality as a natural phenomenon happening in the world, but are marginalized and unpermitted by policies. They are both pushed down by policy and identified as “anti-nature,” which probably indicates our misunderstanding to nature in the field of landscape architecture.

This is the same as other vulnerable groups; pioneer species should strive for their equal right of survival. Therefore, in my project, their voices are amplified. I try to explore the relationship between human beings and these spontaneous species, and
also illustrate my understanding of nature in landscape architecture through the project, as well as the role of human beings in the whole ecological system. In the utopia queer space, different from the traditional design philosophy, humans are no longer the dictator of the world who can dominate and control everything: they play only a part of the whole ecological system. Human beings begin to adapt to and integrate into the system, with a more moderate gesture. The practice is aimed to explore what is the real nature, not man-made nature.
Bibliography:


Appendix: Design Development Illustrations

Figure 13. Diagram of Site Condition
Figure 14. Diagram of Trampoline Circulation
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