Phytophilia: Using intimate plant knowledge to inform design decisions

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This thesis would not have been possible without my family's continued support in achieving my goals.

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Character Driven

Form Driven

The Art of Planting Design

Why Plants?

A New Perspective

Frogs Hand

Temporality and the Long Leaf

Decay + Life

Reflections

Wind Swept

References + Images



Abstract

Landscape architecture is conflicted on the importance of plant knowledge in our profession, where often controversy emerges from questioning the amount needed to create "good" design. While the main focus is on the amount of knowledge needed, little is done to look at the lens in which designers use for planting design. By having plants in a design, regardless of their perceived value, there is an impact brought about with the inclusion of living three dimensional organisms. This thesis began with a fascination for plants, including how they are used in design and their intrinsic characteristics. Through the use of case studies and design iterations, this thesis critically discusses two common methodologies, form driven and character driven design. Through these methods, common ways of using plants are explored to determine their strengths and weaknesses. Defining these lenses allows for the creation of new ways of thinking and discussing the roles plants play in

landscape architecture. Out of this defining of lenses, a new perspective emerges which explores intimate plant knowledge as a basis for the design process. Through a series of design explorations, the idea of phytophilia is tested for its ability to create a new approach to design. This method, coined phytophilic design, explores the idea of using intimate plant knowledge to inform the overall layout of the design. The new method encompasses the process used by designers to inform decisions and the way these decisions are explored with modeling, hand rendering, and computer rendering. Exploring phytophilic design through various media allows the ideas to be tested through multiple scales of time. Using this design methodology, innovative ideas are uncovered through intimate knowledge of plants that respond to the individuality of the species in order to create unique landscapes that are novel to the site and the species.



Why Plants?

As I began my semester of research, I was often asked the questions, "Why Plants?". Professors and colleagues alike often asked this question from curiosity on the importance of plants to our profession. My answer stemmed from my passion of horticulture but I know that if a survey were conducted in landscape architecture, the answers would span the spectrum of plants are a material to the idea that plants are THE material. It is in this context that I insert myself and my thesis.

The profession of landscape architecture is split on the importance of plant knowledge in our profession. Most professionals would agree that plants are an important part of any design but designers often differ on how much knowledge of plants is needed to design "well". A common approach is to bring in consultants, such as Piet Oudolf who have an immense knowledge of plant species, into collaboration with the designers. Oudolf himself has worked on big name projects such as The High Line in New York City and The Lurie Garden in Chicago, both of which are award winning designs. Reviewers constantly praise Oudolf on his ability to choreography beautiful swaths of colors. From this recognition, we can clearly see our profession acknowledges the impact that intimate plant knowledge can have on a design.

This idea of bringing in a plant specialist consultant leads itself to problems as the conceptual design and the planting design become part of a separate process. Instead of plant selection and research being a part of the conceptual design phase, it is separated into its own phase with little reflection on the design. Plant knowledge is not learned it a short time but instead it is developed with an interaction of plants on a daily basis for many years. However, we must not let this daunting task intimidate us from our principles of designers. We should attack the realm of plants with a creative scholarship to uncover the hidden qualities that plants can bring to design.

My thesis seeks to take the idea of intimate plant knowledge to the extreme by using it as a methodology for design. It is here that I use the plant and all its qualities as a basis to drive the design phase. I explore the idea of plants being not only a part of the conceptual design phase but as a driver for the concepts of the design. What I found was a new perspective to look at plants, in which this idea explores how intimate plant knowledge can produce new and novel designs.



The Art of Planting Design

Roberto Burle Marx poetically described the role of designers when he stated, "A garden is a complex of aesthetic and plastic intentions; and the plant is, to a landscape artist, not only a plant - rare, unusual, ordinary or doomed to disappearance - but it is also a color, a shape, a volume or an arabesque in itself". The comparison of designers to artists is appropriate as we use plants to create spaces that are based on performance and aesthetic quality. Just as an artist becomes a master of their medium, so should designers become masters of planting design. A part of mastering plants is through an understanding of how we use plants.

As I started my thesis, I wanted to challenge the ways plants are used in our profession, but I had no idea where to begin. Reflecting on my first designs, I began a personal journey into how I used plants in my design. After questioning not only my thesis designs but all my past work in school, two predominant ways of looking at plants emerged: **form driven** and **character driven**. Since both of these methodologies influenced how I designed, I used them as a lens to look at the work of other designers.

These methods define the mindset of designers as they use plants in their designs. It is difficult to know the thoughts of the designer through the process and often the writings on the project are written after the process is finished. Using case studies and my own design iteration, I define both form driven and character driven in order to better understand the roles plants have in design. Like an artist understands the limitations and strengths of their medium, so can designers understand the role of plants in design. Through this knowledge we can begin to question the standard views and create a new perspective on planting design.



[form (

"Form is built upon line or direction, and both are bounded by line or silhouette. Thus mass and form, lineand silhouette must be considered together"

Florence Robinson, *Planting Design* (1940)

driven design]

[form driven design]

form

Pronunciation: /fôrm/

NOUN

¹The visible shape or configuration of something: 'the form, color, and texture of the tree' "form". Oxford Dictionaries. Oxford University Press.

The more common of the two methods, form driven is one that is most often taught in school to students when learning about planting design. I was introduced to this method both in my undergraduate work in horticulture, and also my graduate work in Landscape Architecture. This method is defined by focusing on the form and spatiality, and allowing the selection of plant species to reinforce the idea. By starting with form driven mindset, one does not get bogged down in the intricacies of plant selection so the designer can spatially conceive a space, much like a sketch up model. For example, when designing a bosque of trees there are already spatial implications in the designers mind of what a bosque entails such as height of canopy or spacing of trees.

Books are commonly written on this topic and they often take the form of rules and guidelines because all plant material is reduced to shapes and forms. One of these books, The Planting Design Handbook by Nick Robinson, discusses this way of designing not only with text but in how he portrays his graphics in the book. He talks about the spatial qualities of general form and how they relate to each other such as the spatial implications of shrubs vs trees. The book becomes a designing tool that mainly focuses on form and how this impacts design decisions such as how to create a prominent edge or how to hide the hard lines of the building. By classifying plants into forms and shapes, it allows designers to mentally inhabit a design and focus on principles of the design in regards to form 12 rather than specific characteristics or species.



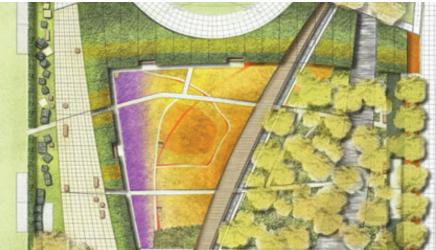
TREE CANDDY - SHRUB THICKET



TREE CANOPY - FIELD LAYER.

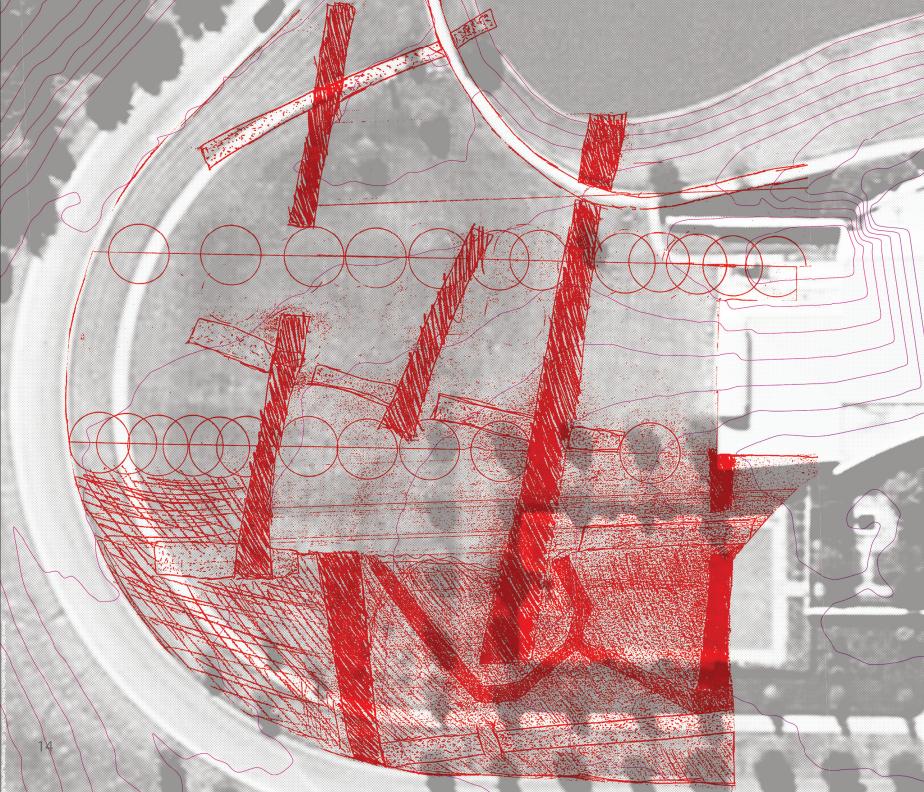
Illustratons from The Planting Design Handbook

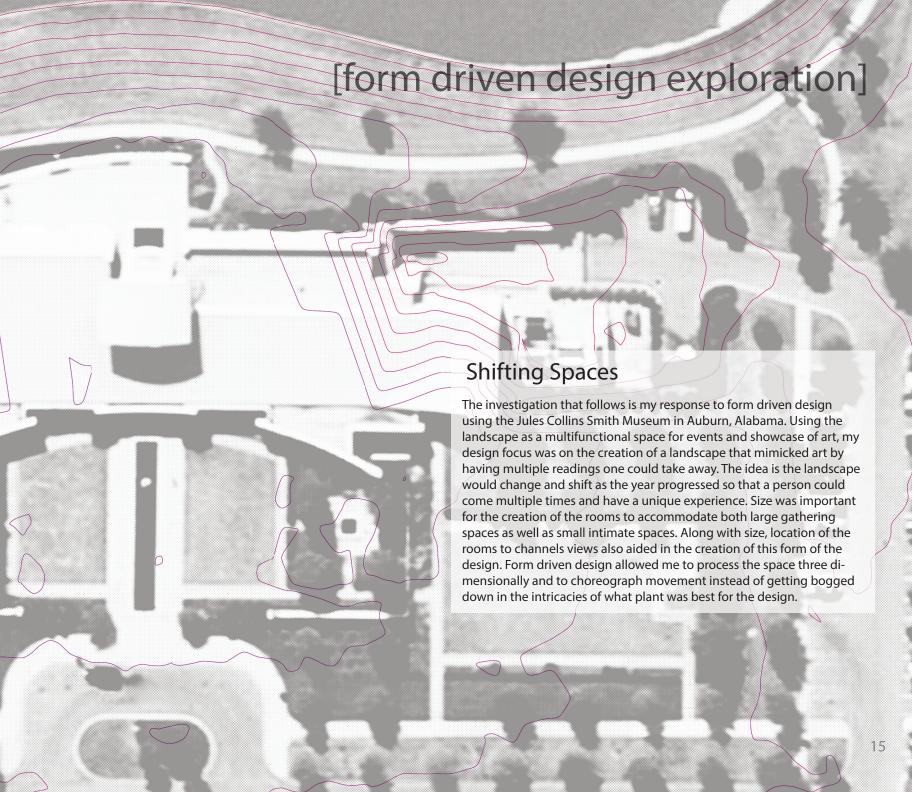


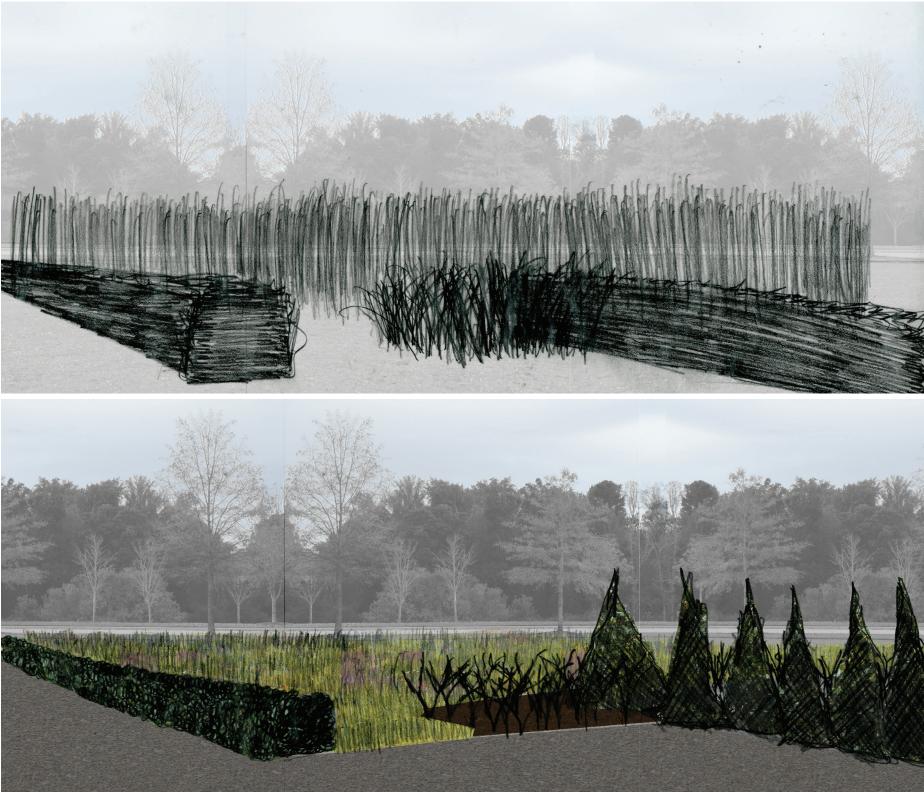


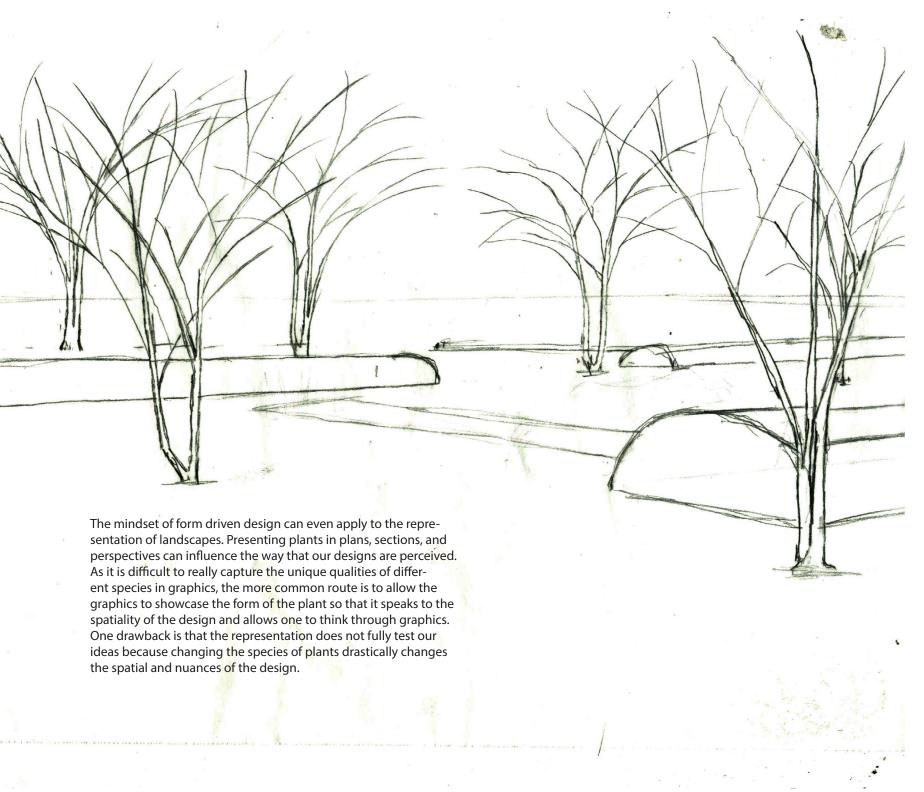


When using this lens to look at the profession of landscape architecture, The Lurie Garden designed by Gustafson Guthrie Nichol Ltd is one that speaks to the idea of form driven design. This project, which won the 2008 ASLA General Design of Excellence, is located at the Millennium Park in Chicago. According to the project statement on the ASLA Awards page, the goal of the design is to express "Chicago's distinct, urban landscape history as a bold, contemporary landmark that also offers quiet respite for people and urban wildlife" ("ASLA 2008 Professional Awards | The Lurie Garden" 2014). The designers paid close attention to detail and materiality to reference back to the historical and present conditions of Chicago. The inner plates, where Oudolf worked his magic, are symbolic of Chicago's relationship to landscape with one "referencing the marshy," mysterious past of the site and city" and the other "referencing Chicago's modern and artistic control of nature". In this way, the designer used the form of the plates to drive the design in how plants were used. There was structure and form and then plants were chosen with the right character to enforce the goals of the designer. In another section of the garden, "A giant, muscular hedge encloses the interior garden from the north and west". This hedge "is a living wall that protects the garden's interior from heavy pedestrian traffic, especially after concerts on the adjacent Great Lawn." It is trimmed using a large steel frame in order to the keep the shape of the hedge so that the goal of the design is upheld. This garden is a prime example of a form driven plant design method in which the design principles of the plates and the hedge wall were the driving force behind the selection of plant species.



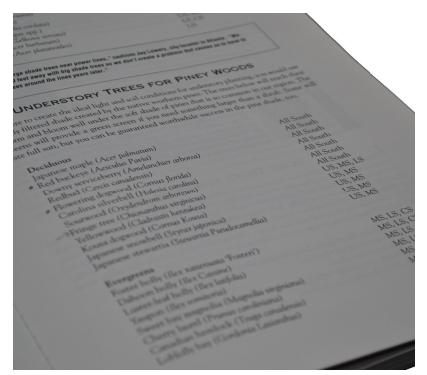














Excerpts from The Southern Gardeners Book of Lists

[charactero



Piet Oudolf, A Landscape in Winter, Dying Heroically

driven design

[character driven design]

character

Pronunciation: /'kariktər/ NOUN

^{1.2}The quality of being individual, typically in an interesting or unusual way:

'the island is full of character'
"character". Oxford Dictionaries. Oxford University Press.

movement



control



Character driven design is not as prevalent as the form driven design, as it takes a different mindset than what is taught as the usual method. With the methodology of character driven design, the designer uses qualities of plants to drive the design process. This method calls for a greater degree of plant knowledge of the plants and their qualities. While form driven focuses mainly on aesthetic qualities of the plant, character driven can be used to include other senses and qualities besides spatiality. An example of this methodology is when designs are based around mood such as a feeling of contraction and expansion. While these feelings speak to more than just spatial implications, they call on things such as texture, ephemerality, and other unique qualities of plants. In this way, the designer focuses on creating a mood first and allows the form and selection of species to reinforce that idea.

Piet Oudolf is a big proponent of character driven design. His book, Designing with Plants, speaks to this style of design in great detail. He covers the aesthetic character of plants such as texture of leaves or the different shades of color that perennials bring to the table. With each style, he talks about specific plants and how they relate back to the character of the plants. Going beyond the physical, Oudolf speaks to qualities of plants that move past the form of plants and into a realm of emotion. He deems these qualities as mood that plants create such as light, movement, harmony, control, the sublime, and mysticism. Oudolf is a large voice in the conversation of character driven design. One of his most popular ideas is using the death of plants as character that should be present in the garden that celebrates brown as color that has merit. Oudolf is a master of using this style of design and it has created some lovely designs. This methodology allows for designs to play on the emotions as one can create mood of the garden and then let those decisions determine the selection of plant species.







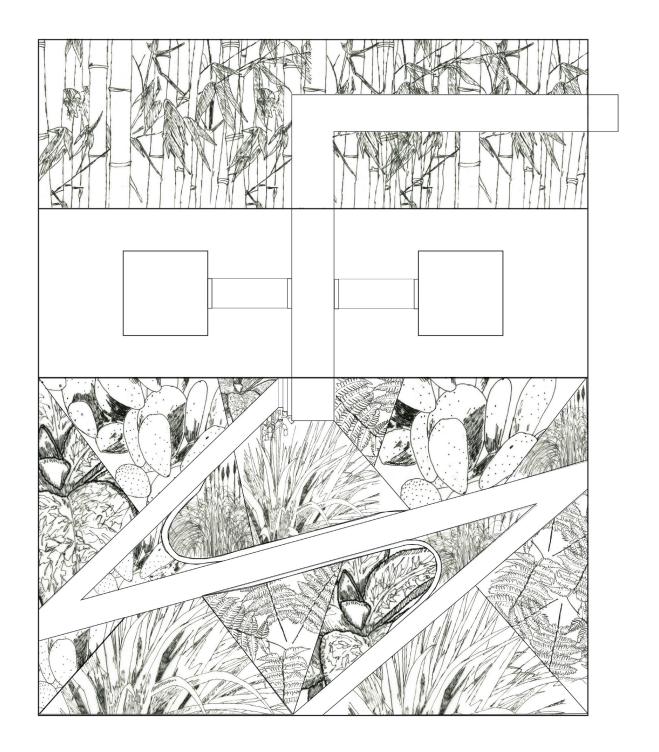
When the lens is turned to the profession, it is almost impossible to know if character driven design was a methodology that was used to influence decisions because it is a mindset of design. The case studies used are examples of projects in which certain aspects were character driven through my conclusions and the description by the designers. One example is the rain garden at the Medlcock Ames Tasting Room and Alexander Valley Bar in Sonoma County, California. The designers, Nelson Byrd Woltz Landscape Architects, describe the rain garden as "native wetland plants naturally filter and absorb rainwater captured from the site" ("ASLA 2013 Professional Awards | Medlock Ames Tasting Room and Alexander Valley Bar" 2014). The idea of native plant species and wetland species both are character driven design as they both inform design decisions. The 9/11 Memorial by PWP Landscape Architecture, also employed the use of character driven design when choosing trees for design as the designers looked for specific characteristics that they wants such as "the high canopy of leaves provides welcome shade in the heat of the summer and seasonal color in the fall" and "in the winter." the sun will cast shadows through a light tracery of bare branches, and in spring, the trees will express the renewal of nature" ("ASLA 2012 Professional Awards | National 9/11 Memorial" 2014). Another example, at a much larger scale is the design of the The High Line by Field Operations where character driven design was used in the design process when the designers describe the project as "inspired by the melancholic, 'found' beauty of the High Line, where nature has reclaimed a once-vital piece of urban infrastructure, the design aims to refit this industrial conveyance into a postindustrial instrument of leisure" ("ASLA 2010 Professional Awards | The High Line, Section 1" 2014). All of these examples show ways in which certain characteristics of plants drive the design process.

[character driven design exploration]

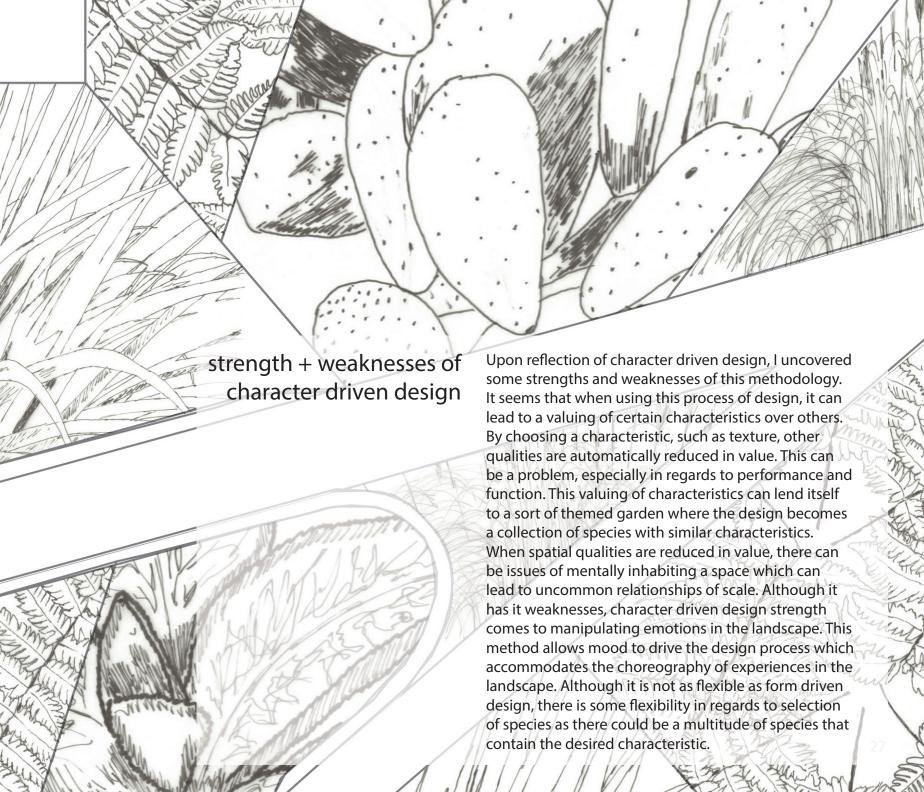
Going Green

As an exploration of character driven design, I chose plant textures as the driving force as I feel it is a quality of plants that is underutilized. Using texture as my basis, I made decisions on the layout of the design based on this character. As this garden was designed as a courtyard between buildings, it added to the complexity of emotion as people would experience it on a 1:1 scale and from the perspective of the windows overlooking it. My design takes advantage of the spectrum of plant textures to create feelings of separation from the outside world with the creation of an all green garden.

A feeling of sublime scale encompasses the user as plants are arranged in mass to allow textures to have more of a presence rather than the form of the individual species. By only engaging the ground plane, the human scale is reduced in the landscape. Instead of the 1:1 relationship, it more resembles the relationship of Godzilla and the buildings it destroys. Due to scale change, views of the landscape are sweeping to allow for the observation of the entire landscape and the users place in it. This locating of themselves is supposed to reflect back to the feeling of being lost at sea, a sea of green texture. Both the change in scale and broadcasting of views create a feeling of separation from the world as the landscape resembles something out of a Dr. Seuss book. These moods designed in the landscape are a result of character driven design.











How can phytophilia inform design decisions?

phytor

"Designing the garden is like learning to speak. You begin with odd words – learning the individual plants. Then you create a simple phrase, finding two or three plants that look well together, next comes a sentence and finally the complete story."

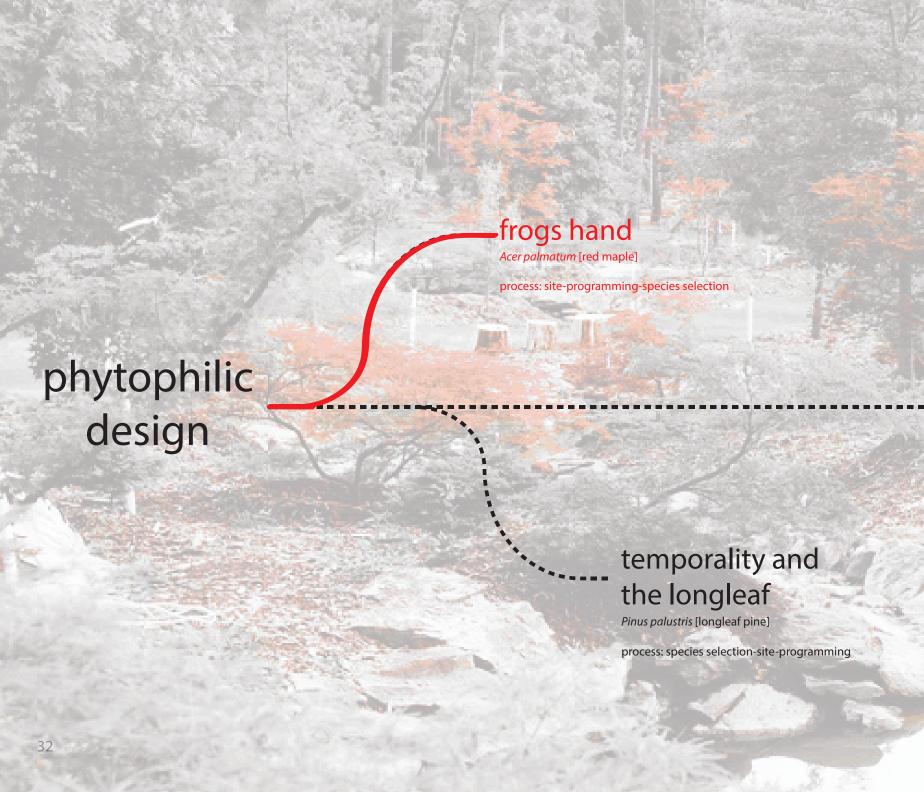
Beth Chatto

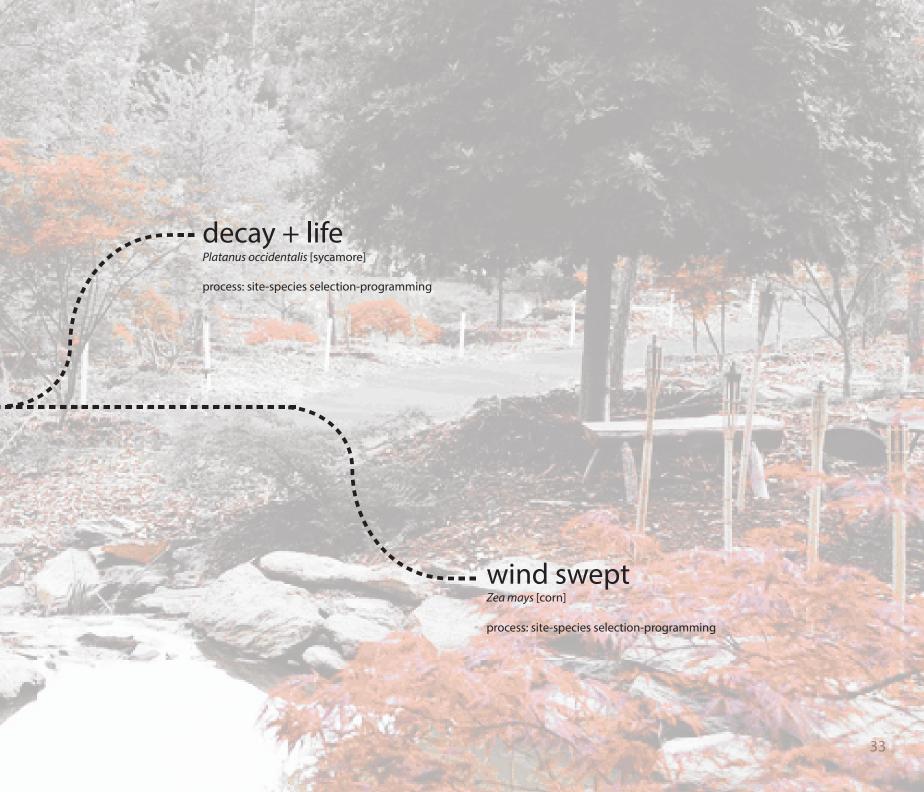
hilic design

This method of design is one that I coined to represent a new way of looking and thinking about how plants are used in the design process. It is an understanding of not only the form or the character of the plant, but how these things work together and contribute to the uniqueness of the plant. It is knowledge that a nut needs to pass through the digestive system of a bird before it can germinate and so the tree should be placed accordingly. In this regard, it is not bound strictly by aesthetic or performance label but goes beyond to include them and how they relate to each other. For example, an interesting character of the longleaf pine is that the length of their pine needles makes them prized for mulch because one can cover more area with less. One also knows that a pine causes very little shade based on its form so placing it above a bed would allow for the pine to self-mulch the plants around. These relationships go back to a deep understanding of a Longleaf pine and more importantly how these relationships causes this tree to be unique in what it brings to a design.

With this process, plants become more than just a material. Instead, they provide validity and inspiration for design decisions. Plants, like humans, are distinct from each other from species to species. By gaining an intimate knowledge of species, we can begin to unlock the potential of novel experiences that plants can provide. These intrinsic qualities guide the designer in decisions such as layout, number of plants, and programming. Beth Chatto says it best when she describes her process as starting with a species and allowing the garden to evolve based on that principle.

Attempts have been made to write about this method of phytophilic design but most fall short of what it means to be informed by plants. Plant-Driven Design by Scott & Lauren Ogden makes the argument that plants should be prevalent throughout the design process from the beginning and on into how to maintain these gardens for many years to come. The authors even go as far to argue for a deep understanding and knowledge of plants to help inform the placement of plants in the garden. While this is speaking to the idea of phytophilic design, it is a limited view and does not unpack the full potential of the idea of plants informing placement. Through their designs, it seems they have a design philosophy that promotes aesthetically natural gardens and their conversation stem from this perspective. Plants informing design decisions should not be limited to only natural or aesthetic based gardens but instead should be applicable to any site no matter the condition. This ability for plants to inform decisions can happen in a courtyard that contains four plants or to a master plan of a community that contains thousands of plants. Using this design methodology, new ideas are uncovered through intimate knowledge of plants that respond to the individuality of the species in order to create unique landscapes that are novel to the site and the species.







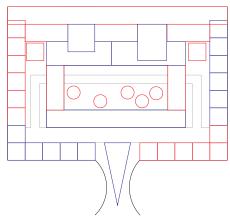


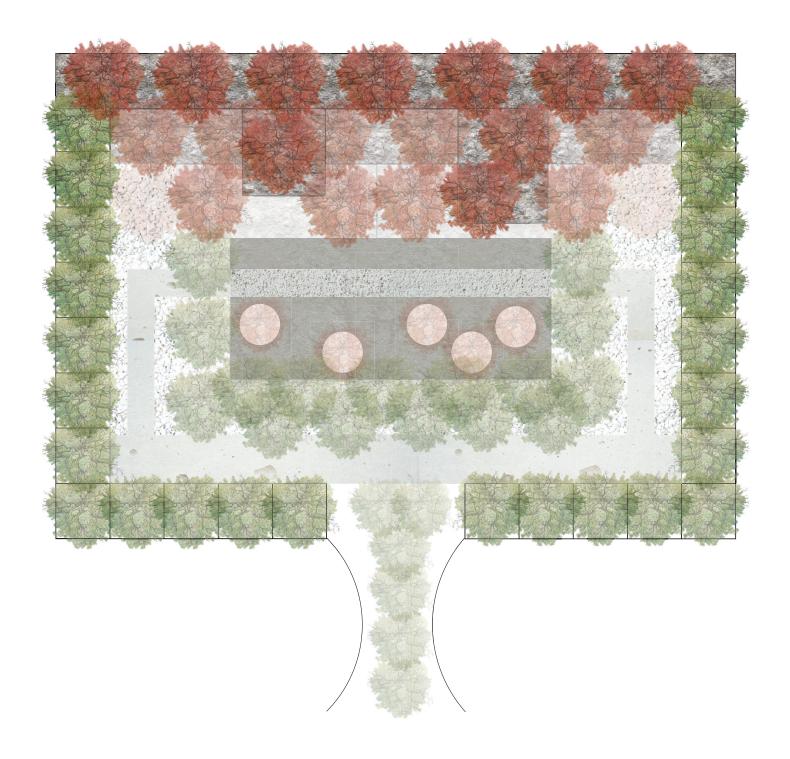
My first exploration of phytophilic design is where the inspiration of my thesis came from. Using Quail Hollow Japanese Maple Nursery located in Notasulga, Alabama as my site, my design focused on creating a garden that revealed the unique qualities of the Japanese maple as a display for the nursery. Never before had I used a species as the determining factor in the design process. I had always valued plants being involved in the design process, but the idea of letting the intricacies of one species guide my hand as a designer was challenging. Through this design, I began to become passionate about phytophilic design as I began to explore the impact it can have on a design.

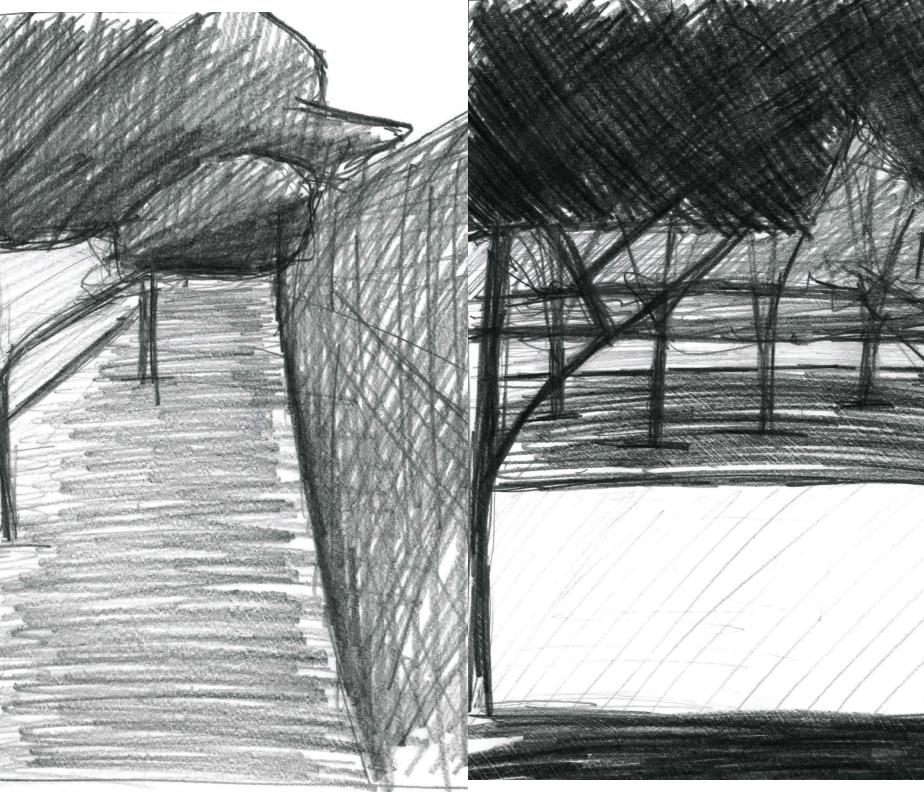
Acer palmatum, or Japanese maple, was actually given its scientific name based on the leaf shape that resembles the hand with five lobes, which is responsible for the nickname "frog hands" in Japanese culture. I focused on the quality of leaf texture because the Japanese maple has over 20 types of leaves that each create a different texture. The finer textures allow for a wispy cloud-like canopy. Also the small size of the leaves create a screen that is permeable and allows it to partially conceal the objects behind it. In contrast, the broad leaves create wall-like structure that veils objects in the summer and reveals them in the winter. These qualities make it quite adept at manipulating views in the landscape in a way that can create feelings of separation and feelings of not knowing ones location in the garden. The deep fall color of the Japanese maple stands out and captures the eye. Different varieties of the Japanese maple create different shades of red, from a red-purple to a blood red. Once the tree is void of the leaves, the real beauty is revealed as the Japanese maple branching structure makes an artistic entrance in the garden. With this design, the unique qualities of the Japanese Maple informs the overall layout of the garden that turns it from being a "one-hit wonder" species and gets to the heart of what is really valuable about this species.

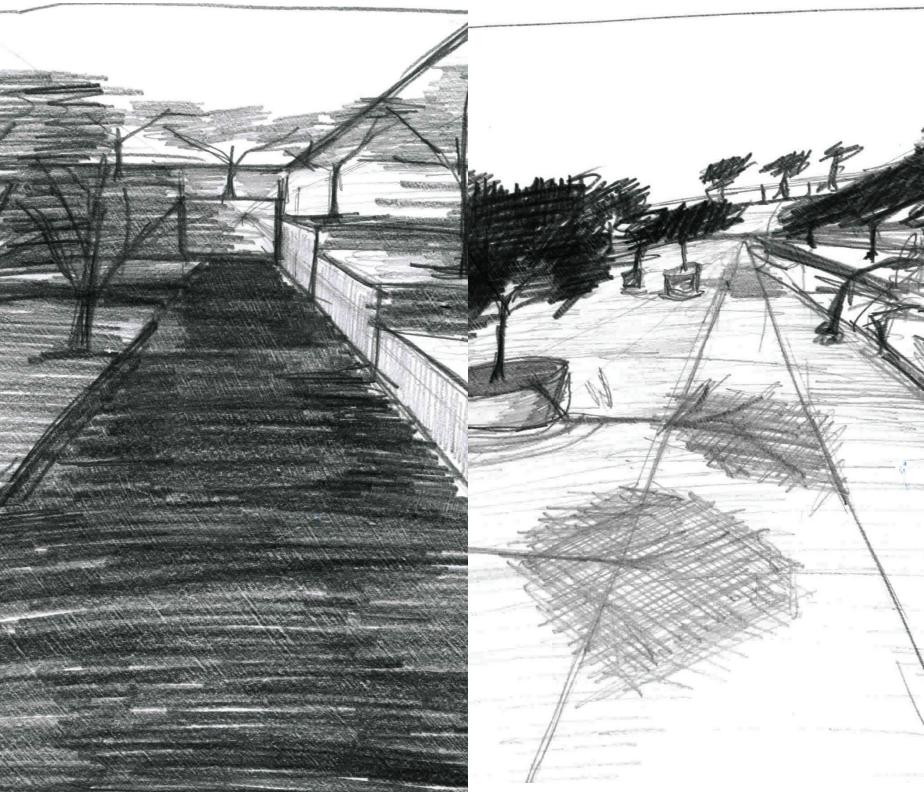


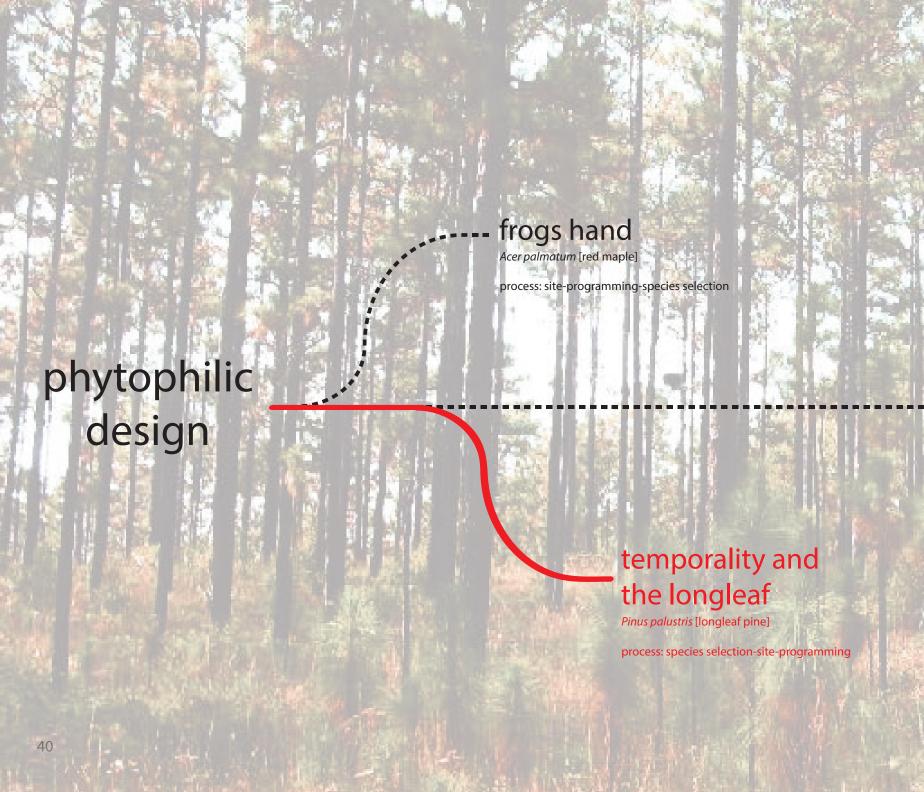














Temporality and the Longleaf

Redesign of landscape at the Auburn University Forestry building

The goal of my next investigation was to address certain questions that arose from using phytophilic design with the Japanese maple. Upon reflection, I felt that the previous design had barely scratched the surface of what phytophilic design could bring to the table that would separate itself from other methods. The Japanese maple had informed some design decisions but others were made based on other design principles. With this new investigation, I wanted to start with a species and allow every decision that I made in the design be informed by the species. The idea of a Longleaf pine design came from conversations I had with a dear friend of mine who is currently in pursuit of his degree in forestry. His concern was that graduates in forestry only hands-on exposure to the longleaf pine was in its mature stage. This causes a problem because students are not exposed to the unique life cycle of the pine and it can cause problem with managing a stand.

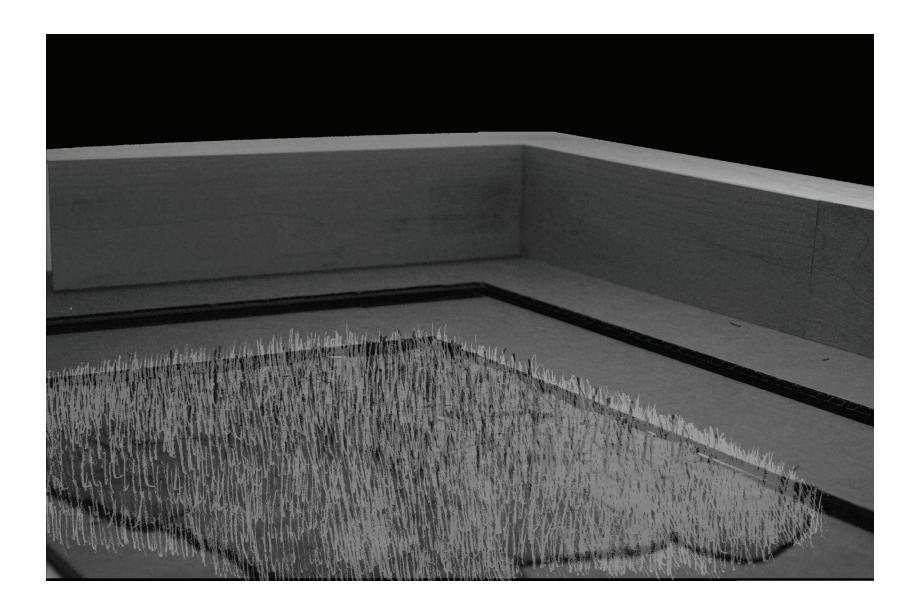
After this conversation, I took it upon myself to design a landscape with real world implications. After my species had been established, I began looking for a site that would best showcase the individuality of Longleaf pine. My selection of the Forestry and Wildlife Science building stemmed from the notion that the best way to expose stu-42 dents to the longleaf pine is to completely envelope them with the

landscape while also serving the programming of a campus landscape. Instead of the typical method of designing through plan, section, and perspectives, I choose to build a model in which I could explore how the long leaf's changing spatial qualities through time can have a large impact on the design.

Pinus palustris, or longleaf pine, is a plant that has become quite popular in our current profession for the ecological biodiversity of the native longleaf pine ecosystem. The longleaf is considered the Cadillac of the pines because it is prized for its long needles for mulch and the wood that is obtained for the tree is more valuable, according to the North Carolina Forest Service. The reason this tree is being replaced, by such pines as the loblolly, is because of its slower growing nature than other pines which create a faster turnaround for production. One of the by-products of the slow growth cycle is that the pine goes through 3 distinct spatial growth cycles, from grass stage to shrub stage to tree stage. This change allows for dynamic spaces that examines the pine throughout its whole life cycle. Using the pine to inform the layout of the design, the land-scape uses choreography of time involving vertical and horizontal rooms that take advantage of the pines growth cycle, from the grass stage to the 100 foot tall pillars that reach for the sky.

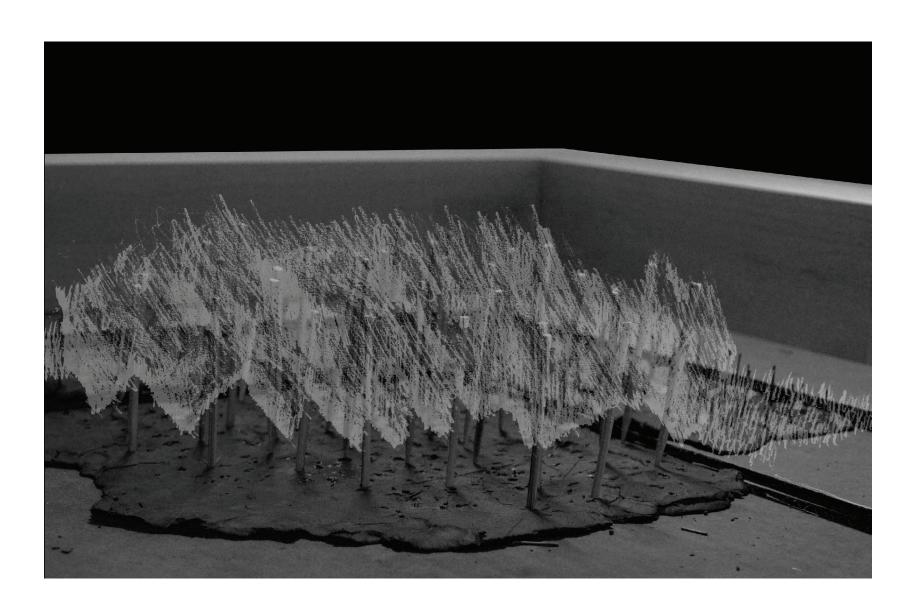


As the design is implemented, the garden will resemble a meadow as the pine goes through its grass stage. In this stage the space can be used by students to study outside, picnic, or used as an outdoor classroom for students to learn about fertilization and BPM for the agricultural production of the longleaf.

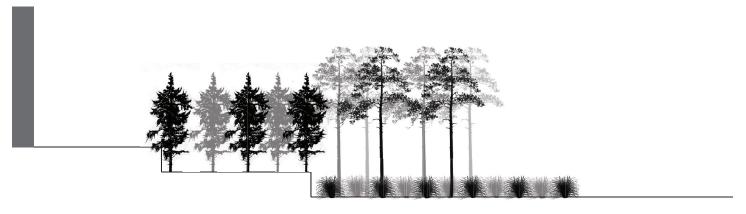


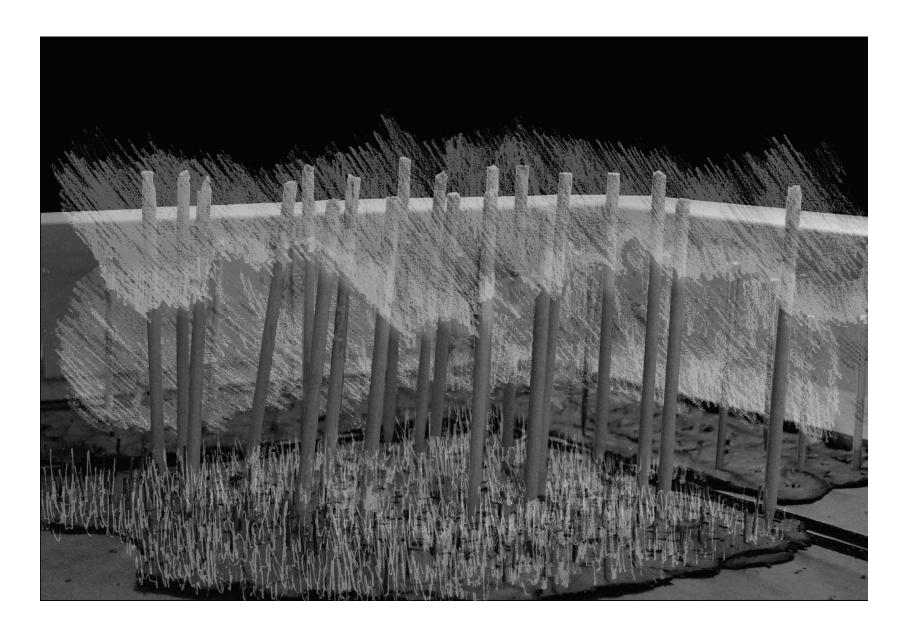
As the pine moves into the shrub stage, gone are the wide open views of the landscape. It now becomes a more intimate setting with smaller rooms framed by the pines. This allows for small group settings and an ability to conceal the landscape with a filtered view through the pines. At the same time, another tier is planted with pines so that students are exposed to pines both in the grass and shrub stage. So as people move through the landscape, the grass provides an open view and as you move through the landscape into the shrub level, there is a feeling of compression that changes the way people perceive their surroundings.



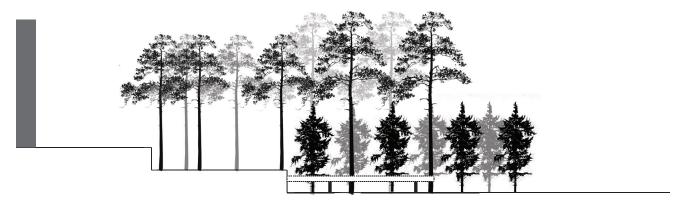


During this time span, the visitors are greeted with all three stages of the longleaf pine. As you move from the building into the landscape, immediately your vision is obstructed by the shrub level of the pines. However, from this view you can also see the canopy of the tree level but the actual space is concealed. Once you enter the shrub layer, they are compressed. Upon the other side of the shrub layer, the space opens up vertically as the longleaf pine is in its small tree form which creates a sort of roof and interspersed among the trees, the grass stage along with the tree form creates and interesting vertical spatial relationship from the grass scale, to the human scale, to the small tree scale.



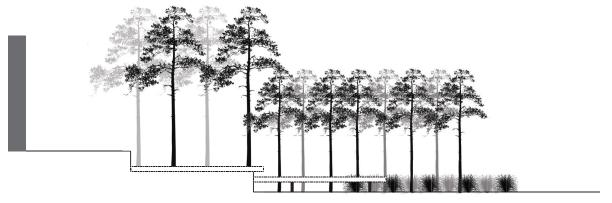


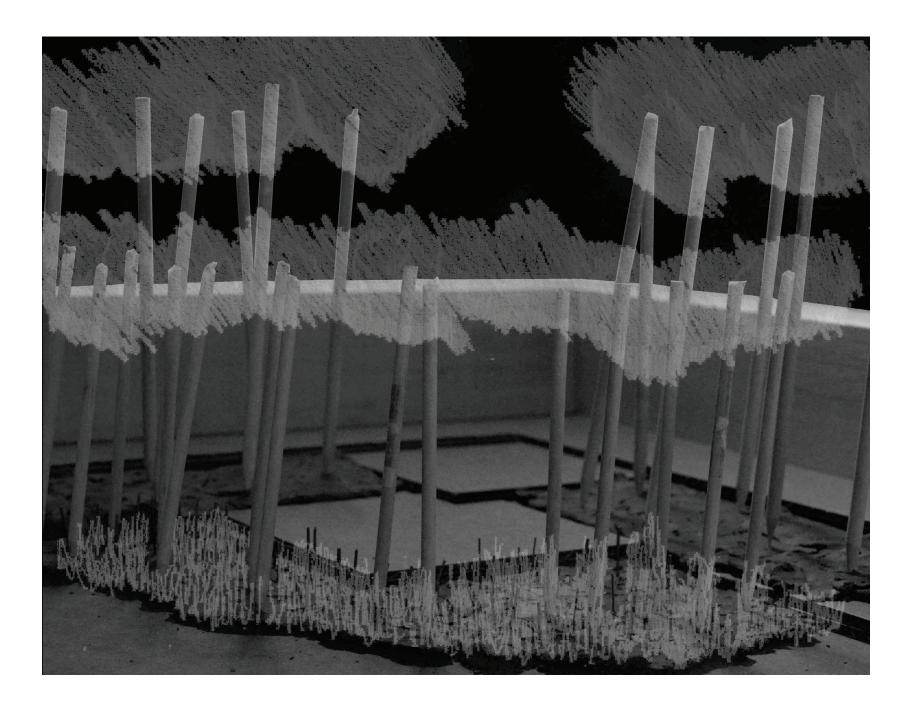
Upon entering the garden from the building, the tree form of the pines in the foreground creates a vertical space. The canopy of the pines conceals the canopy of the mature pines as you move farther away from the building. In the background, the shrub stage of the pine creates a border and frames the pine stand. The middle ground pines are the oldest in the stand and create a more dramatic vertical space. This is the time also when the students are exposed to the harvesting of the pines as there is a design/build of a wooden deck built out the longleaf pine that were harvested when the pines were thinned.



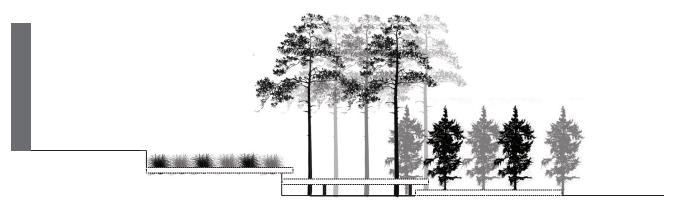


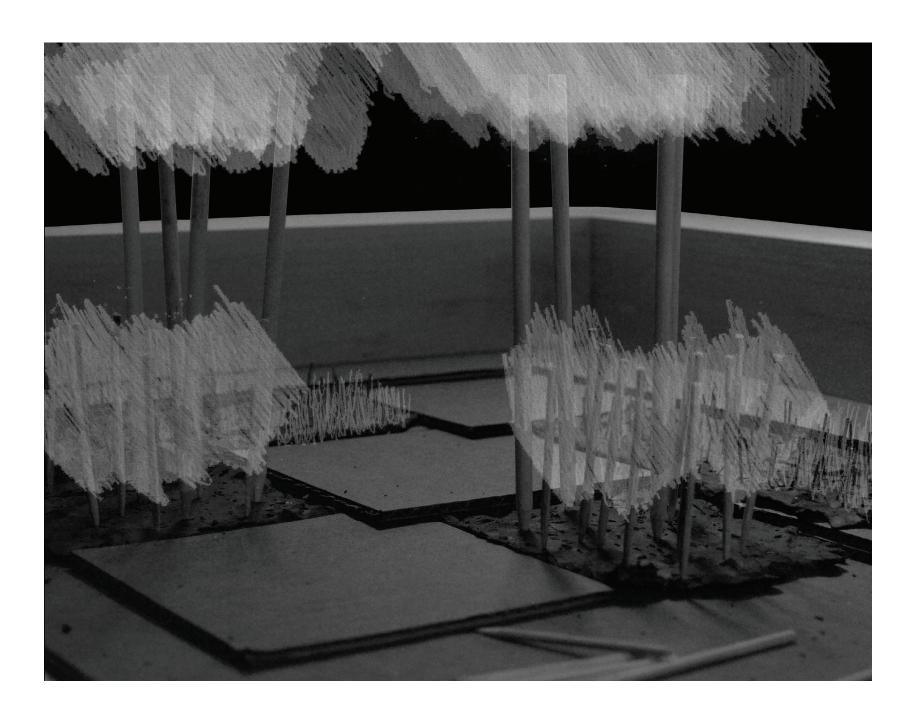
This phase of the design incorporates both mature pines and younger tree pines. This allows for a change of vertical separation as you go from the tall mature level with a reduction of vertical space as you move thorough the design. This gives an open view into the landscape and the space is framed by the canopy of the pines. Also in this stage, there is a planting of pines so that the grass stage begins to make way for a shift of spatial condition. During this time, another platform is built with the harvested wood from the thinning of the pines.

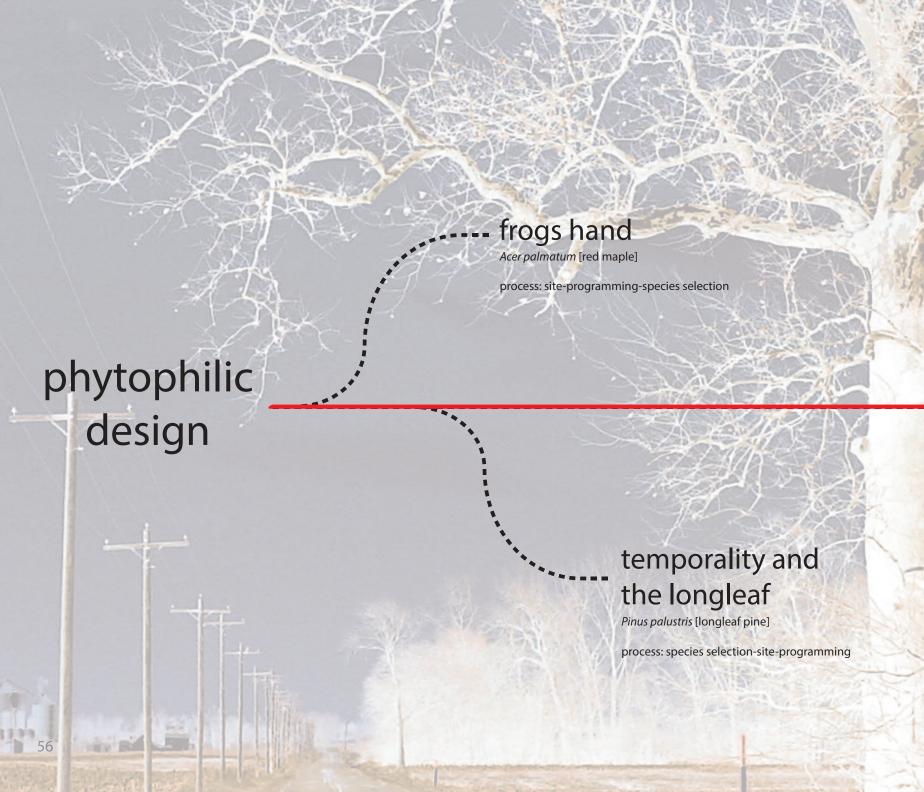


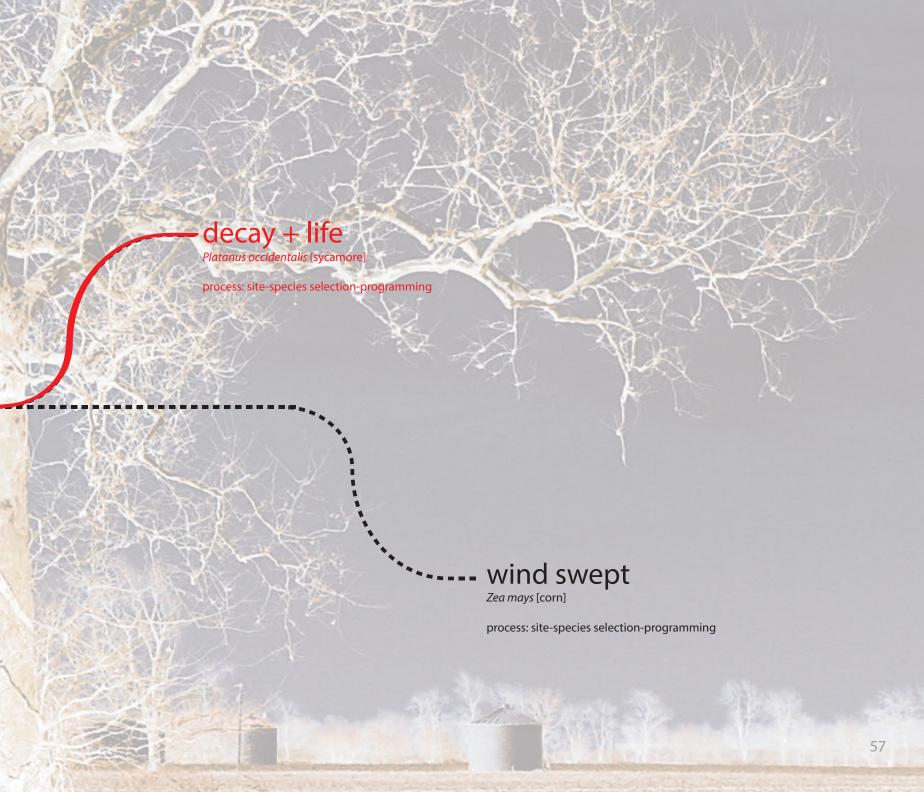


In this phase, one enters the garden from the building and is met with a level of longleaf pines in the grass stage resembling a green carpet. As you move through the landscape, there is a dramatic spatial shift as you enter into the mature pine stand. This stand forms a visual room as it is surrounded by pines in the shrub stage to cut conceal the landscape behind it. In this phase the third and final platform is built and a new space is created for meetings, parties, classes, or as an informal setting for a lunch.









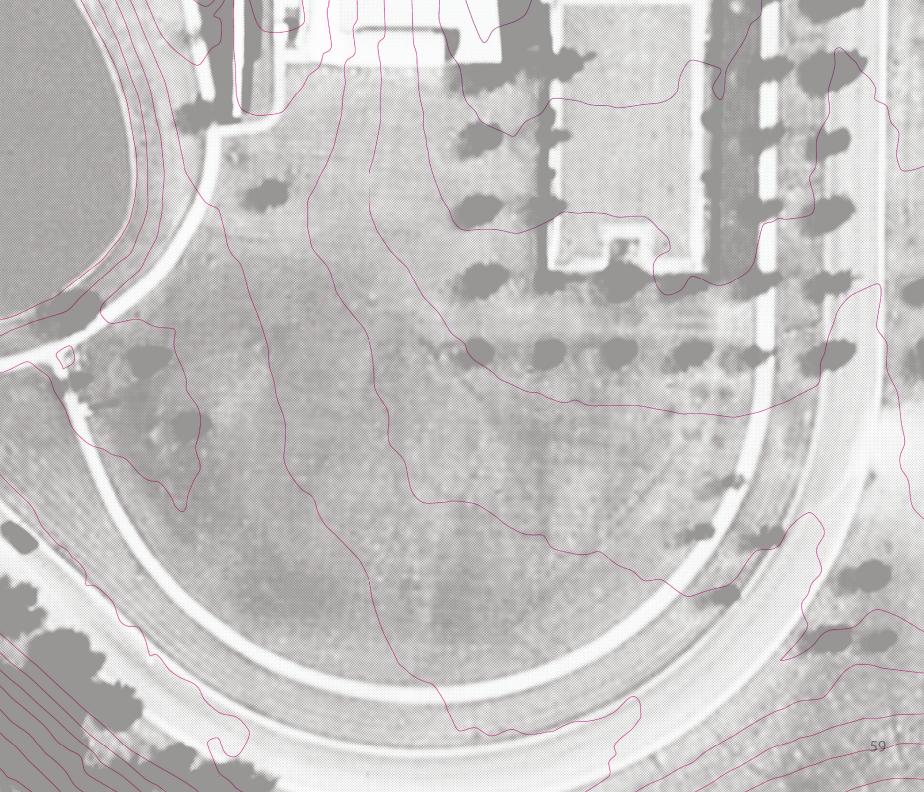


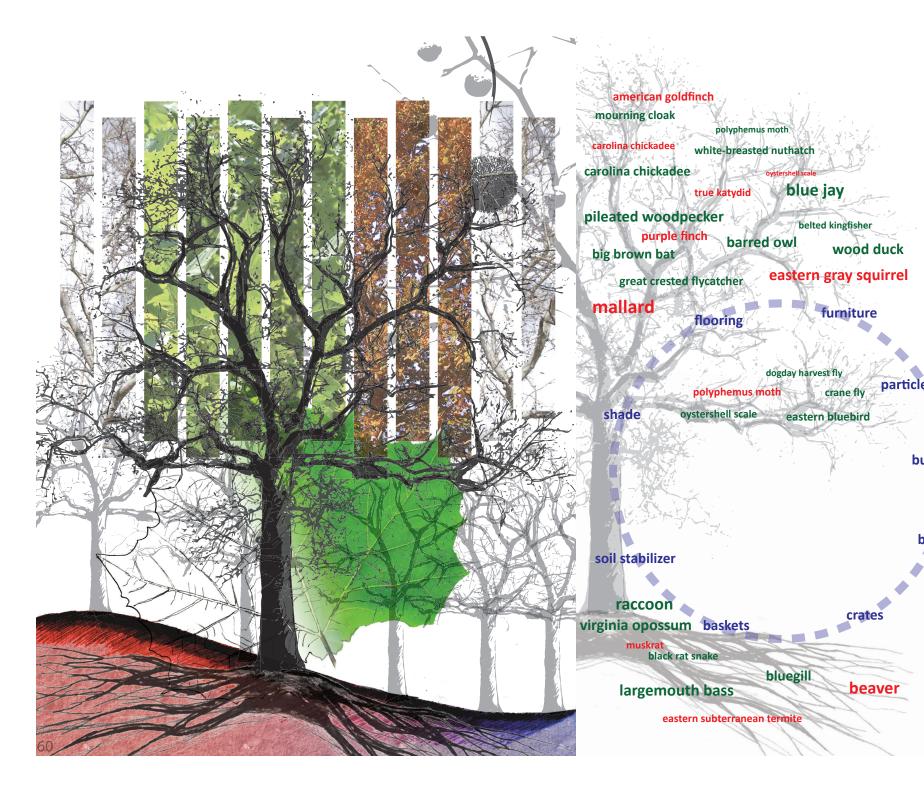
Decay + Life

Using phytophilic design to rethink the Jules Collins Smith Museum landscape Auburn, AL

Through the exploration of the longleaf pine design, a major concern was revealed as the design did not respond with the site. Instead the design came across as an equation that could substitute most any sites and the design could stay relatively unchanged. This was especially troubling for me as I feel that the site is important in the design phase and through the site, our designs become novel as every site is different in its own way. Since the site has such an impact on the growth of plant species, from rain to amount of shade, I felt it important that it should be more involved with the design process. I selected the Jules Collins Smith Museum, which I explored in my form driven design, because of their willingness to engage the landscape. Using the site, I selected a species that would help connect the landscape to the museum. The sycamore, Platanus occidentalis, is a species that is referred to as having sculptural branching. Since the site is a museum of fine art, I thought it would be a good connection to select a species that also has artistic 58 qualities.

Before I began the process of designing, I spent time researching and observing the sycamore. As I began my research I found that most of the data is in tables or text format and the graphic data ismerely pictures of the form of the tree, the leaves of the tree, or the bark of the tree. I felt that these ways of representing the information is efficient and informational but it lacks the ability to speak to things that are not quantifiable in some way. Through this, it is hard to see the tree as a unique species because the information is displayed in a mass produced format used to compare species. Instead, I created a graphic that speaks to the information obtained from research but also speaks to qualities that are often overlooked because they cannot be measured. This allows me to familiarize myself with the common features of the species, while introducing me to new relationships that I had not been aware of because the information was not presented graphically. This part is important because false assurance of plant knowledge can be worse than lack of plant knowledge.





platanaceae [**Platanus occidentalis**] sycamore

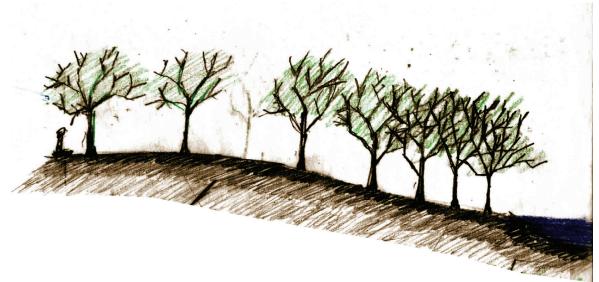
The sycamore tree has many distinguishing qualities that are overlooked but are quite beautiful in their own way. The bark is often a trademark of the species as is begins to pull off and reveal the smooth white bark underneath. It is a deciduous tree that tends to have a yellowing fall color which is dramatic because of the overwhelming size of the leaves. Since the leaves are so large, they create a deep shadow because of the course texture. Once the tree is void of the leaves, it fruits in the winter which provides an interesting ecological benefit as there are many species of animals that use is as a food source. It is often found growing along the banks or even in a stream or river. In this setting the roots become shelter to many aquatic species. It is not only found in hydric soils but can be found in dry sites as it is tolerant of drought. It prefers a moist well drained soil to keep the shallow and fibrous roots happy. It is an early succession species so it grows fast and can reach heights of over 100 feet. It doesn't produce the best timber but we do harvest it for flooring, furniture, particle board, and crates. Although it is a fast growing species, it is relatively long lived relative to other fast growing trees. As it gets older, it is susceptible to sycamore anthracnose which causes it to slowly decay from the inside out while the tree is still alive. This is why the tree serves a shelter for many species of bird that use the hollow and decaying wood. This quality is seen as bad feature of the tree but part of learning about the species is not to place a value judgment on them but see the quality as part of what makes the tree unique. All these features and more make up the sycamore, it is more than just the form of the tree or certain characteristics, but instead is a combination of these things and the relationships between them.

shelter materiality food solutions

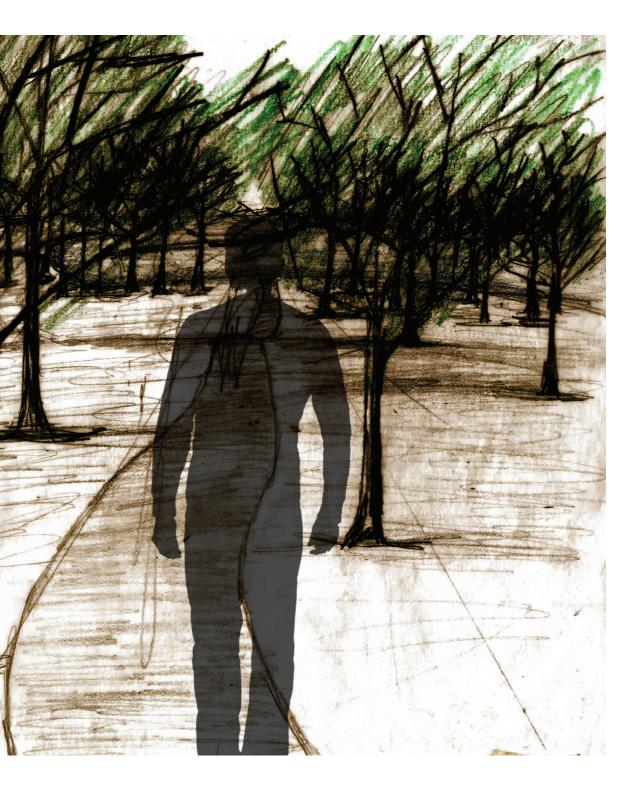
concepts:

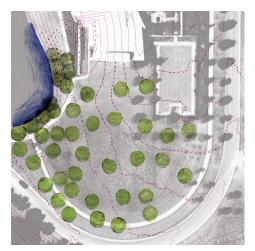
[hydrology]

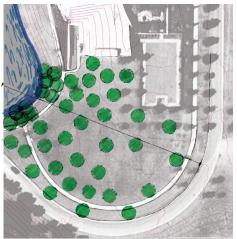
Hydrology is a quality of a species that can aid in the layout process, as species are known to have a certain affinity for specific conditions. Sites that are high and dry lend themselves to drought resistant plants while places where water collects are more suitable for species that can handle waterlogged soils. Hydrology did not exactly impact my design as the sycamore can handle both dry and waterlogged soils.

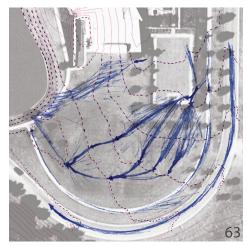






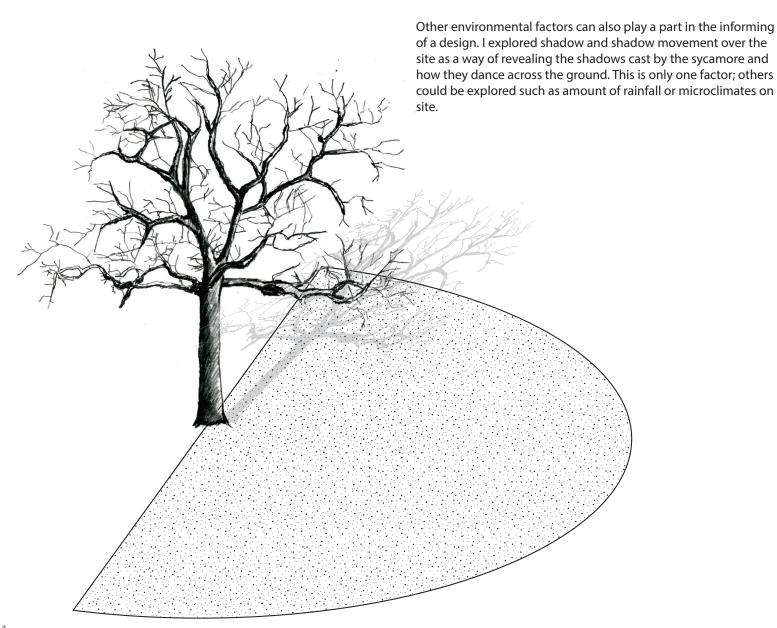


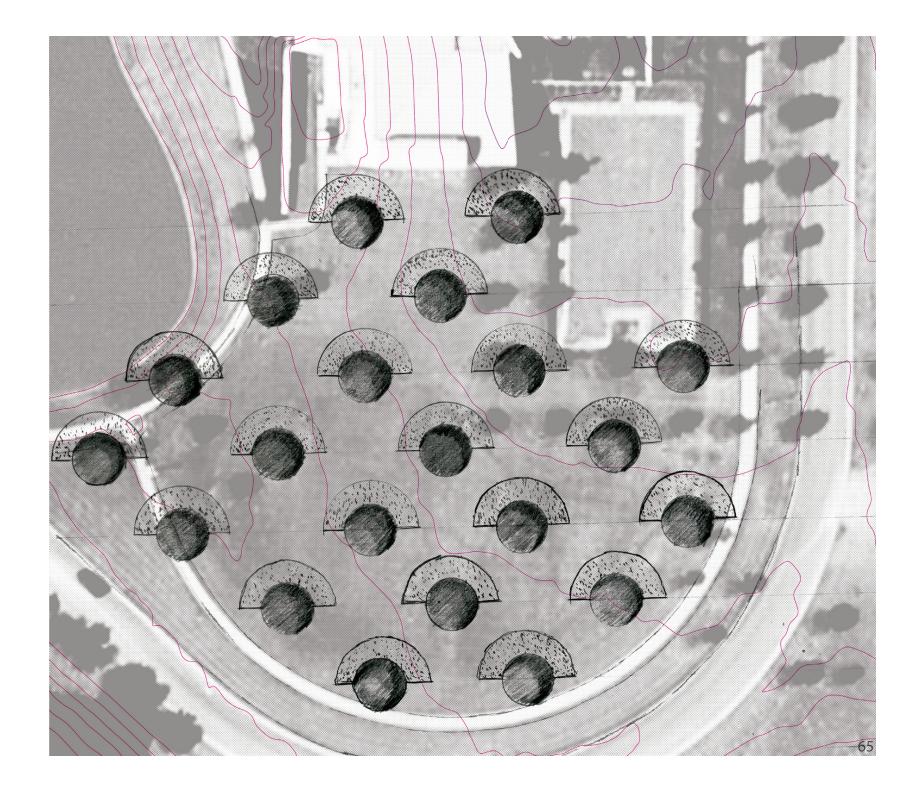




concepts:

[shadows]







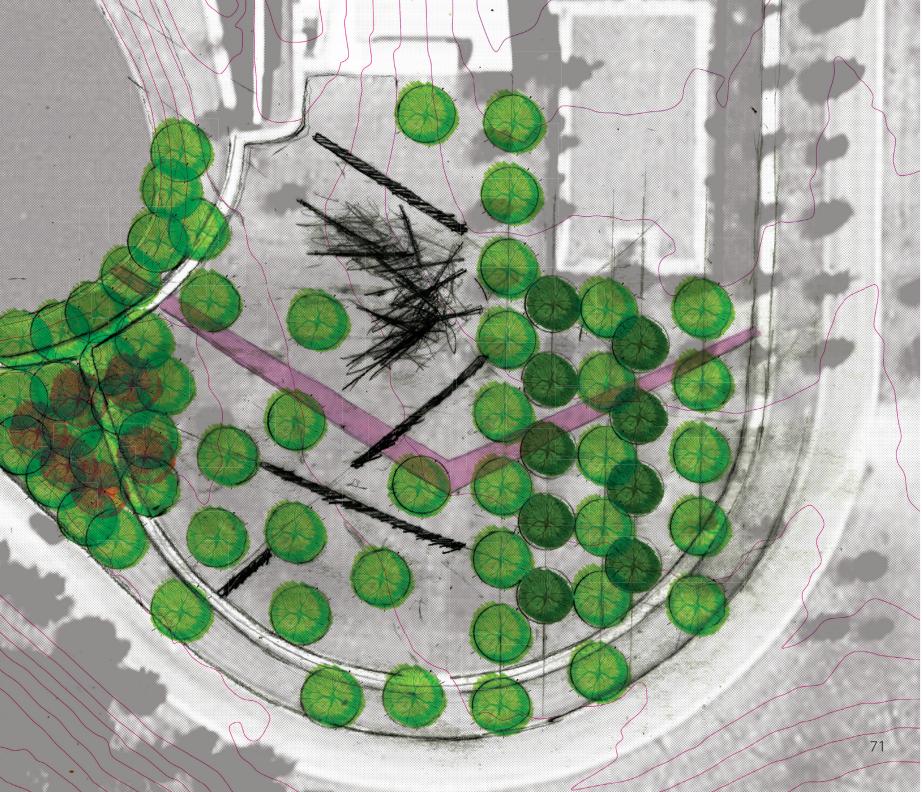


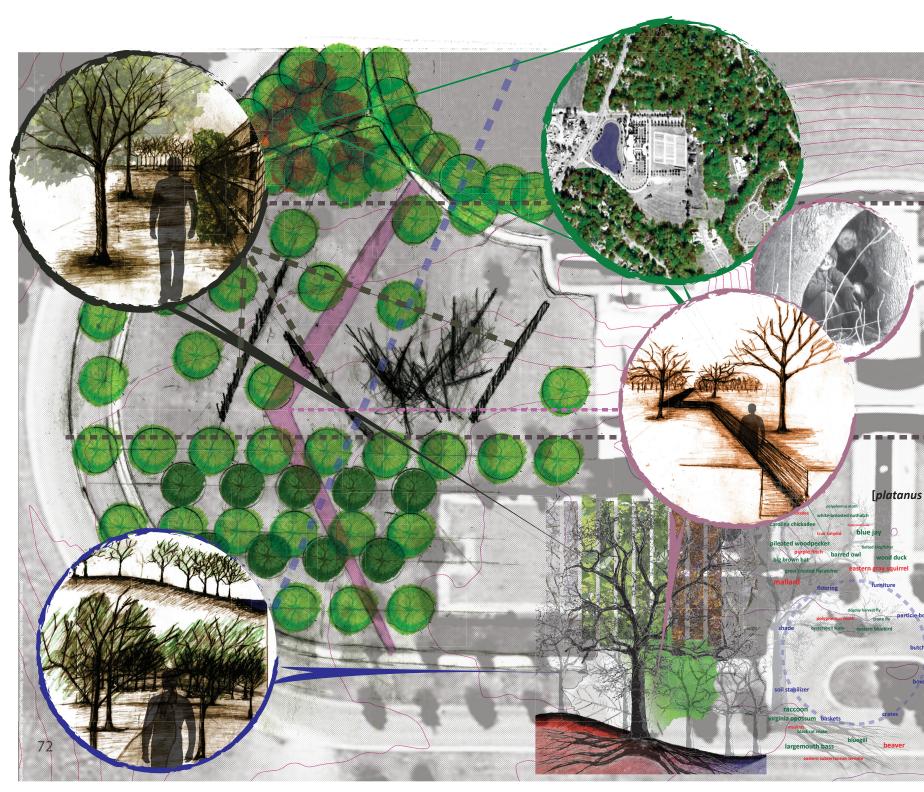




I took all the things I had learned about the sycamore, from the tree diagram to the conceptual sketches to create a design that was more than inspired by the sycamore but was instead informed by the things that make this tree unique. By starting with a species, the design is completely dependent on the species to the point where one could not substitute another species and get the same structure nor would the result be the same on another site. The design addresses site specific ideals that allow this design to be completely novel based solely on the species and site.









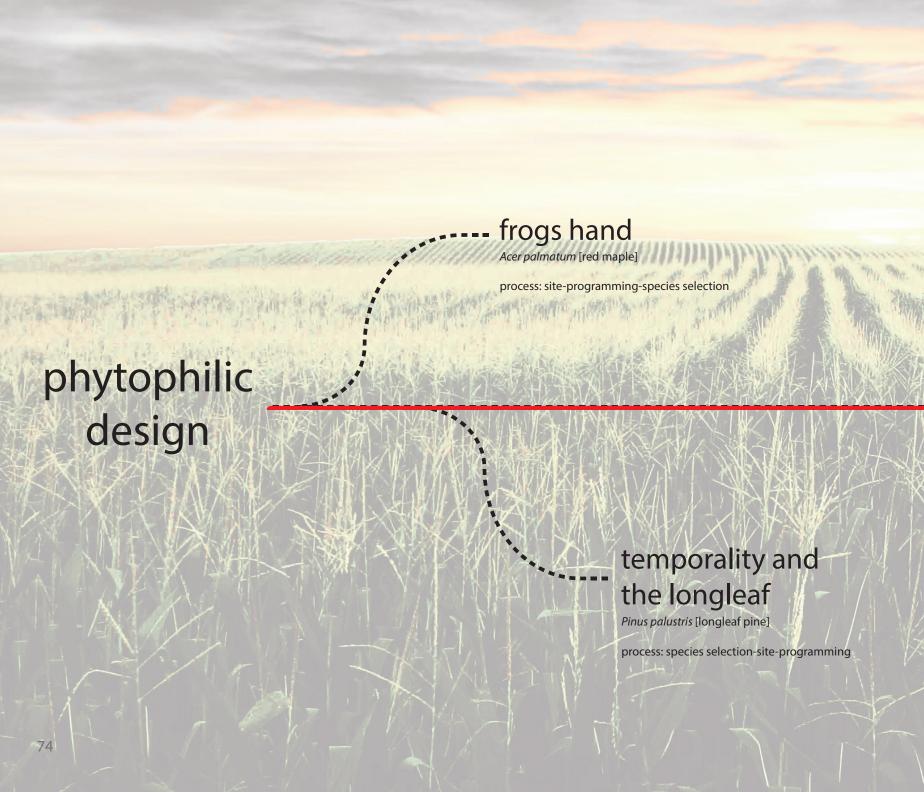
My phytophilic design process started with using the bark of the sycamore to inform the overall layout of the design. Since the bark has three distinct stages, I broke the garden into thirds and used the theme of each stage of the bark as to what the layout and programming of that section would have.

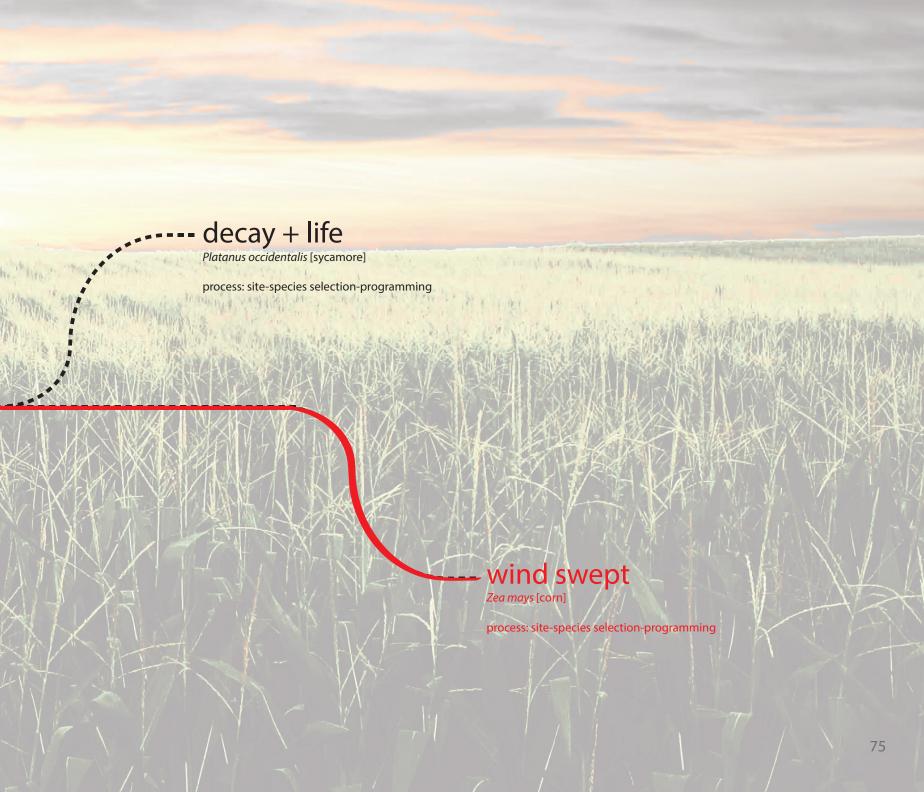
The first section is the ridged and furrowed stage of the bark and it tends to be on the lower section of the tree towards the ground. Since this is stage is closest to the root system, I used the knowledge of the root system to inform the programming of this section. So from this I created a sycamore habitat that seeks to connect the design to the ecological patch of woods across the driveway and to the water's edge of the retention pond in order to encourage the movement of species through the landscape. This is also a place where other companion species are encouraged to be allowed to grow in order to provide the widest array of habitat and food.

The second section is informed by the peeling back of the bark to reveal the smooth white texture of the branches. This is where the idea of the vertical walls come into the design, as I explored the concept of the vertical walls there was realization of a certain amount of trimming of these walls. In order to keep the clippings on site to promote habitat, I proposed strategically placing the limbs in a pile that becomes an interactive sculpture that is framed by the growing wall to change the perception of what we see as waste. This section also has the sycamores space in a way so that they become solemn sculptures and seen as specimen rather than in groupings. This allows for a more dramatic shade patterning across the ground.

The third section comes from the patchy peeling of the bark from the sycamore. With this, the patchiness was reminiscent of a combination of small spaces. So this section was planted with a grid of trees to create a room that is connected to an open space that can be used for events and for showcasing works outside. After the first grid of trees had begun to reach a certain height, a sub grid of trees would be planted underneath the existing sycamore. In this process, the older trees would be encouraged to decay as they protrude from a newly created bosque that intruded a vertically complex series of spaces.

The last design decision was based on the conceptual idea of a cut into the landscape that is a metaphor to the decay of the sycamore. Since the decay happens regardless of the type of bark, the cut slices through all three sections of the design in a way that exposes one to all three sections of the design.







Wind Swept

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In my final design exploration, I was eager to take the things I had learned from the sycamore and apply them to my project. In order to move my thesis forward, I knew that there was a need to address issues that arose from the sycamore design. The next design iteration began with both opportunities and concerns of my previous design and the inclusion of these thoughts in helping to guide my decisions.

"Is phytophilic design applicable to multiple plant strata or is it restricted to trees because of their constant presence?"

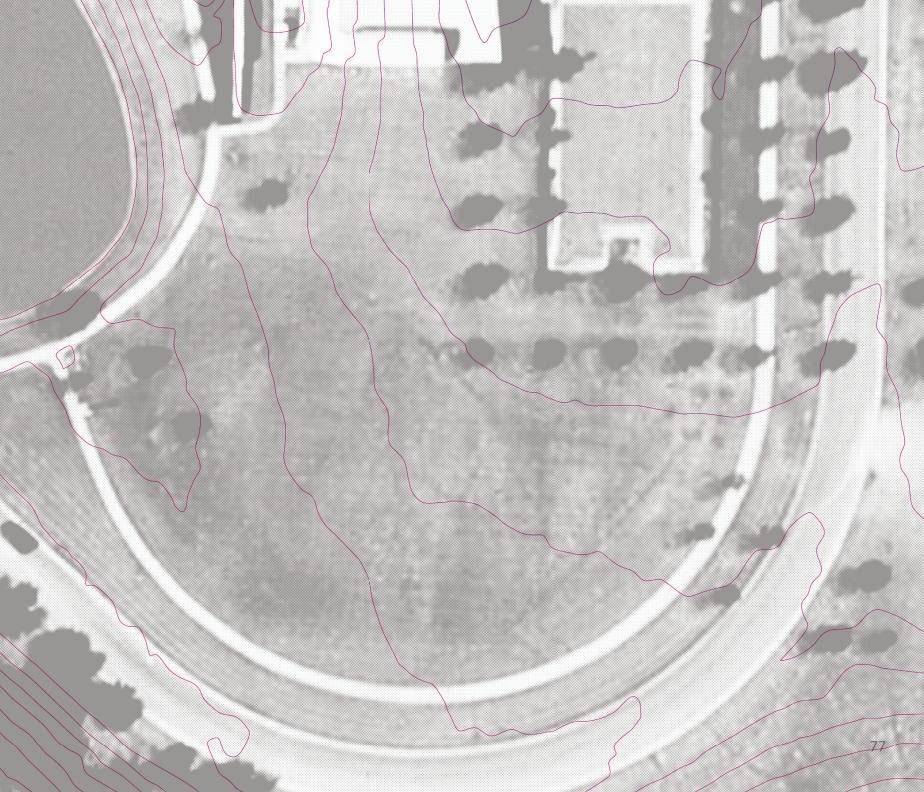
--- Reviewer

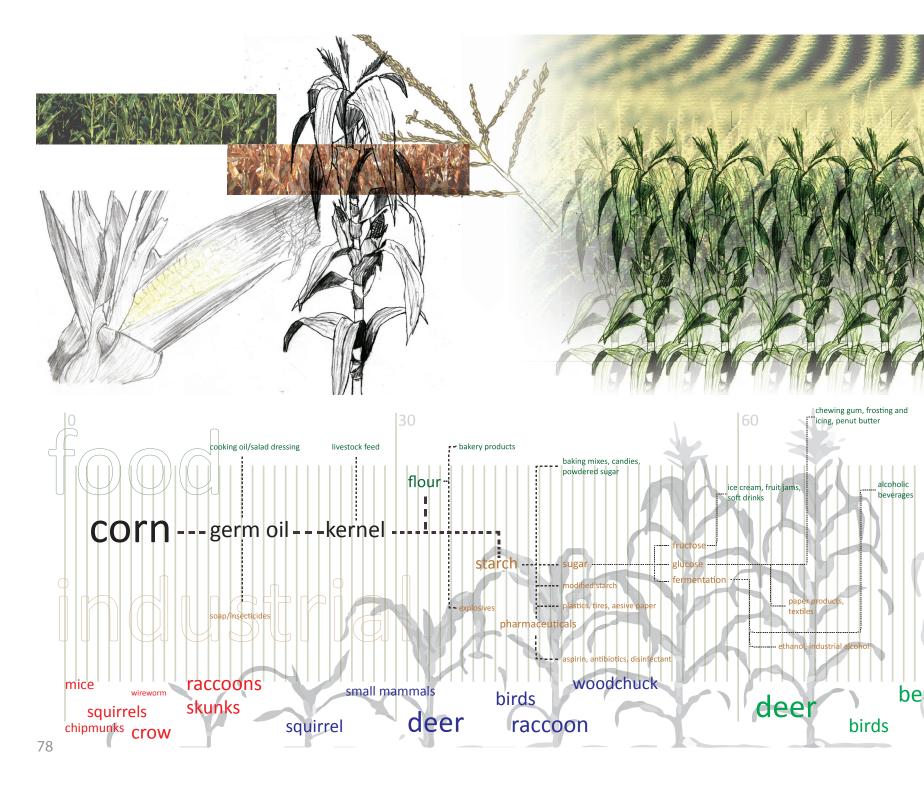
My selection of species sought to engage an annual to take on this concern head on. Corn, Zea mays, became my species of choice because of the connection to a historical corn plot across from the museum. Since corn is predominately seen as an agriculture crop, the use of phytophilic design allows for dissolution of stereotypes and redefines it with the unique qualities it brings to design.

"Does the sycamore inform the design or does it inspire the design?"
--- Reviewer

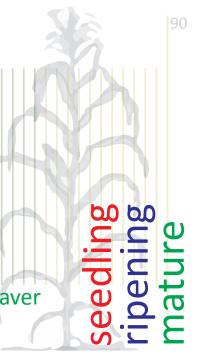
Another question that needed addressing was this idea of inspiring vs informing. Inspiring is a way of informing design but it is expressed in an abstract way. The problem arises in the interpretation by the designer of the information. Using corn, I wanted to allow the design to inform decisions in a tangible way so that I could test the ability of plants informing design in a literal way.

Using the same graphic method as the sycamore, I explored these qualities in great detail in order to alleviate my own bias of corn formed from my time working on my grandfather's farm.



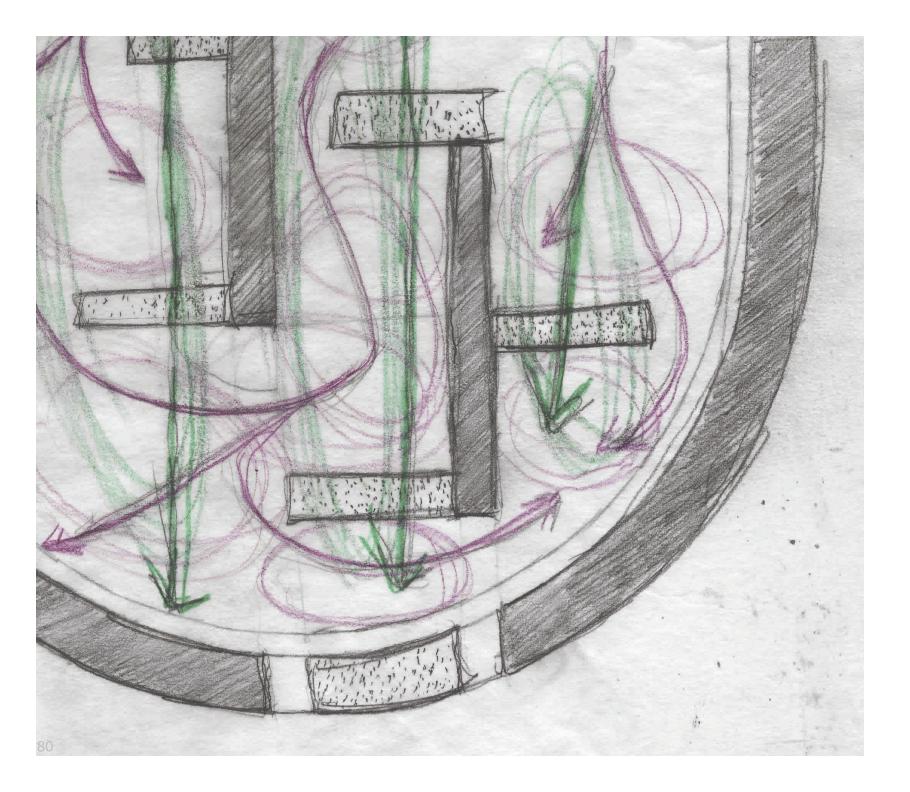


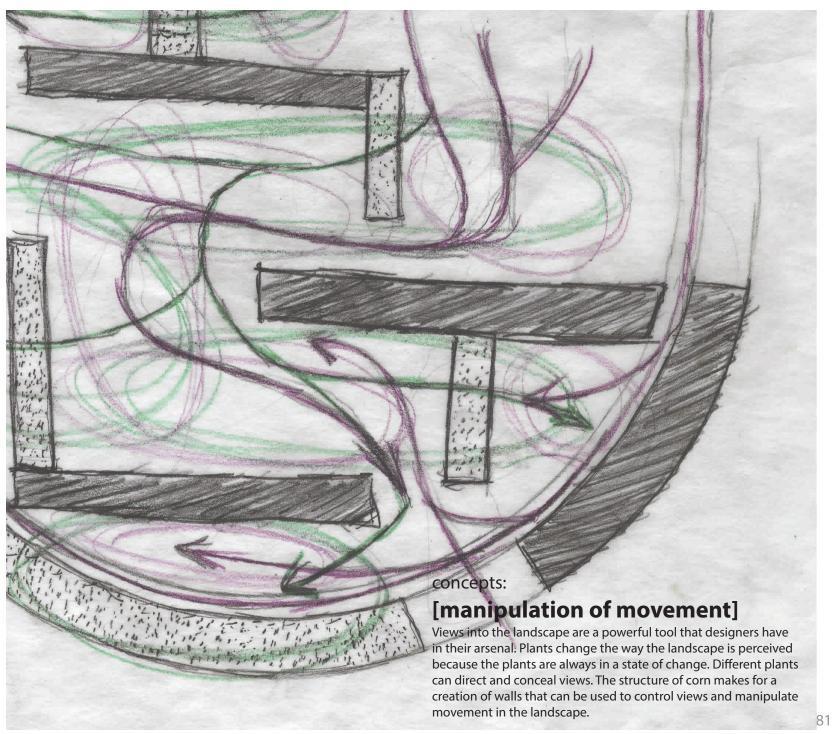




poaceae [**Zea mays**] corn

Corn has its own baggage as its cultural history is quite robust from the time of the Native Americans to the contemporary vision of industrial production. Being an annual, corn completes its life cycle in as little as sixty days. That means from the moment it is planted to the time it reaches heights upward of seven feet is two months. This creates dynamism in the landscape as the sublime nature of corn is revealed. Even as it transitions from healthy green stalks to brown dry stalks, there is still a presence in the landscape. Like other species in the grass family, corn has unique relationship to wind. As wind blows through the landscape, corn's height allows for a display of movement and a funneling of wind. Not only is there movement in the process, but there is also a certain amount of noise distinct to corn as it rustles in the wind. Corn is also responsive to wind as it relies on wind as the predominate pollinator. Without the wind, corn would not produce and could not be harvested. Corn can be traced back to at least one product that we use on a daily basis which speaks to the importance that this plant has in our society. Not only is it valuable to humans, but it also serves as significant food source for multiple species depending on the stage of growth.





concepts:

[performance landscapes]

As plant species vary, so does their performance in the landscape. Their performance is part of the intrinsic characteristics of the species. Phytophilic design allows for the performance of species to inform design decisions. I explored the performance of corn and how one could expose the process of growing corn for livestock feed and then using the manure from the livestock as fertilizer for the corn.



concepts:

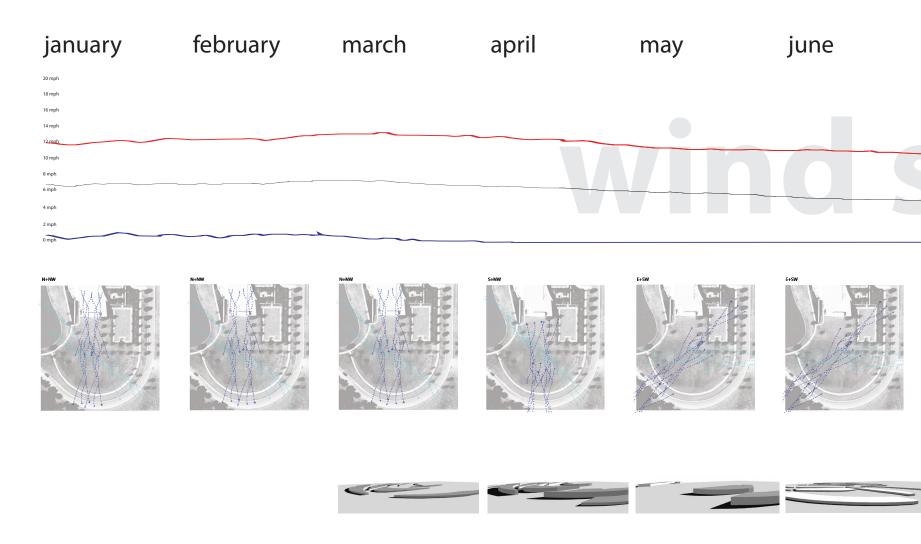
[process of pollination]

Part of understanding how plants can inform design is looking at processes that plants undergo that separate them from other species. Designing for these processes assures that the site and the plants relate in intimate way, such as the process of pollination with corn.

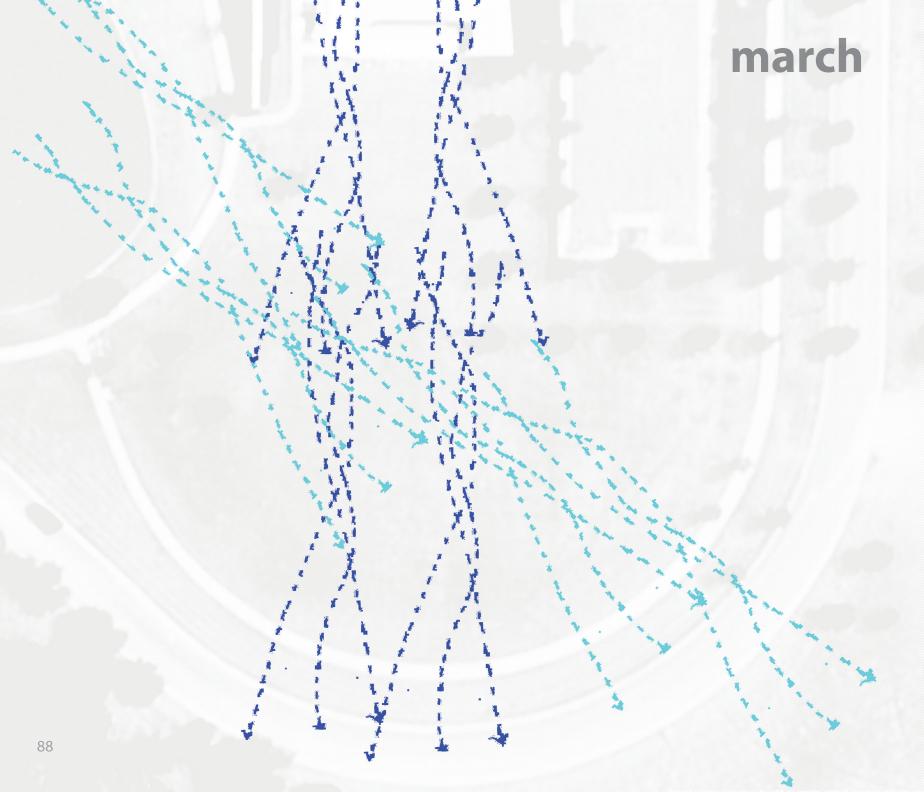




[relationship to wind]

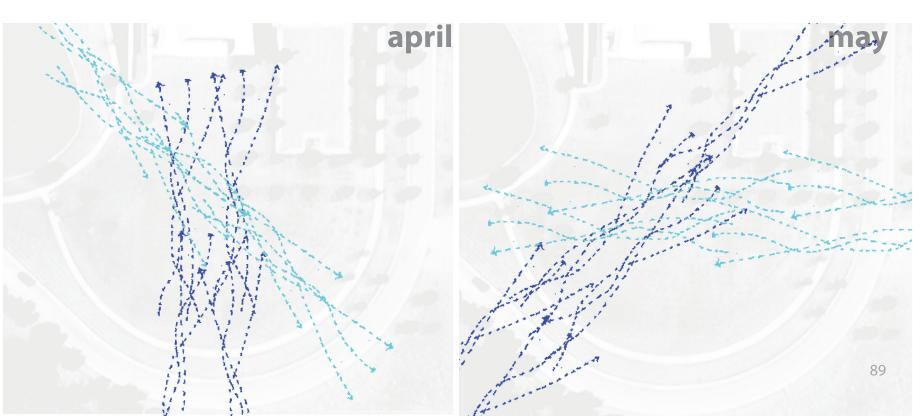


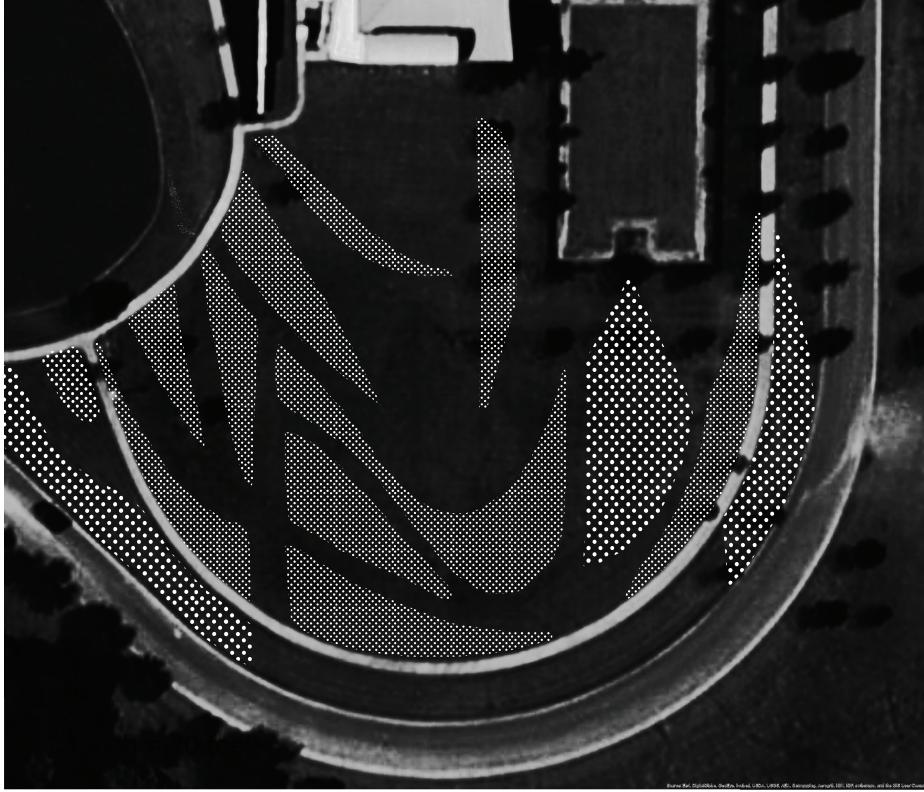
july august september october december november



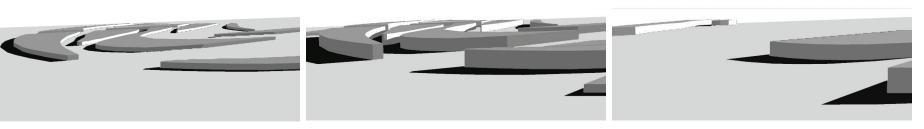
[phase 1: march,april,may]

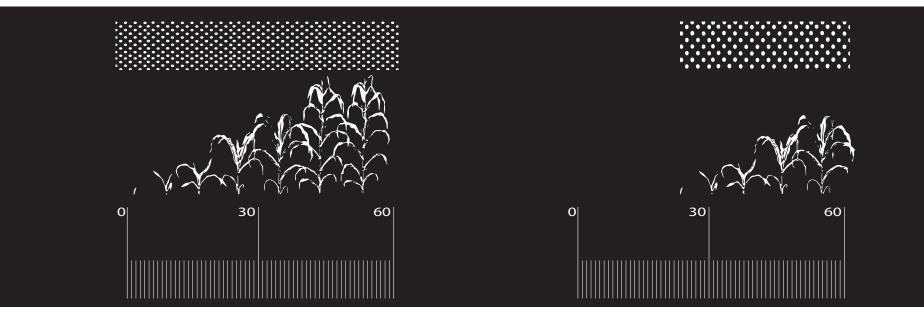
Using wind direction as the informing factor of design, the landscape orients itself to the predominant wind direction during the two months of its life cycle. The layout is informed by wind which has a unique relationship to the corn from the early stages of the life cycle to the old and dry stalks swaying in the wind. The design focuses on the choreography of growth throughout the year and the alternating of the design to the predominant wind direction. The design is informed by the wind and creates a landscape that is novel to the site and corn and reframes the way we see this species.





[phase 1: march,april,may]

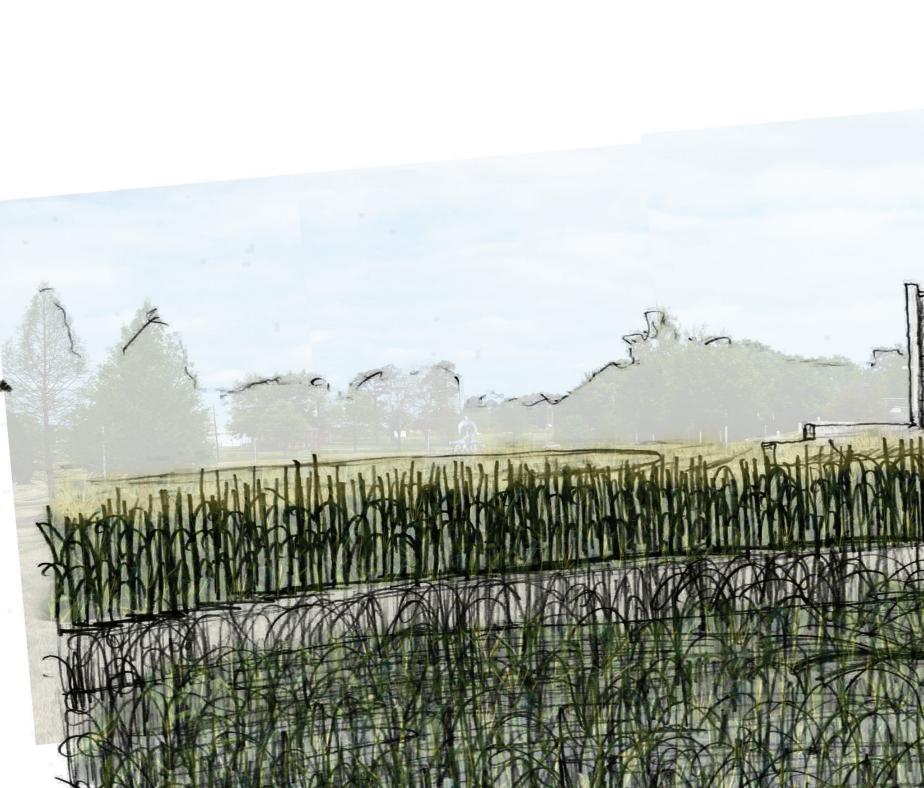






[march]



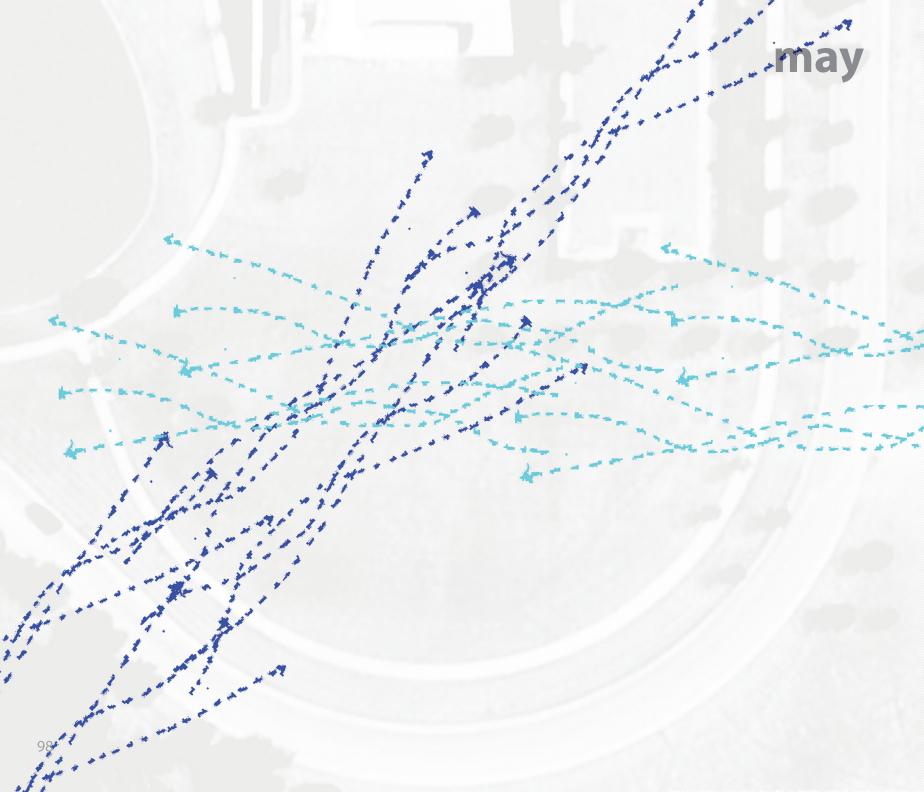






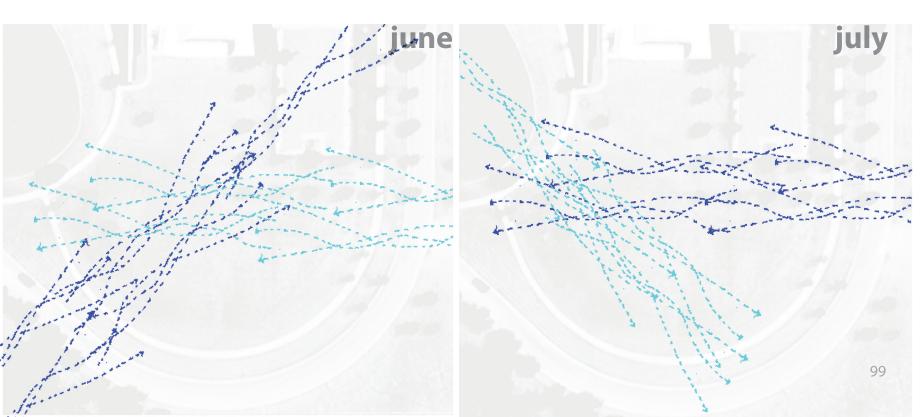
[may]

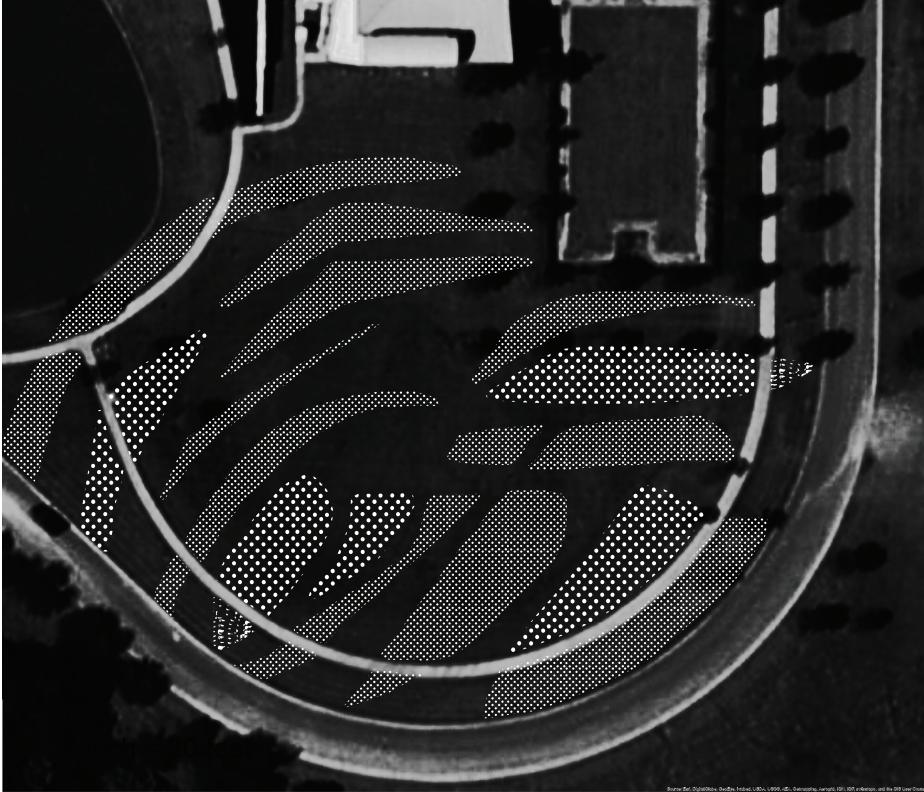




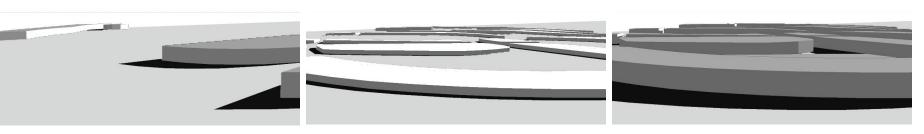
[phase 2: may,june,july]

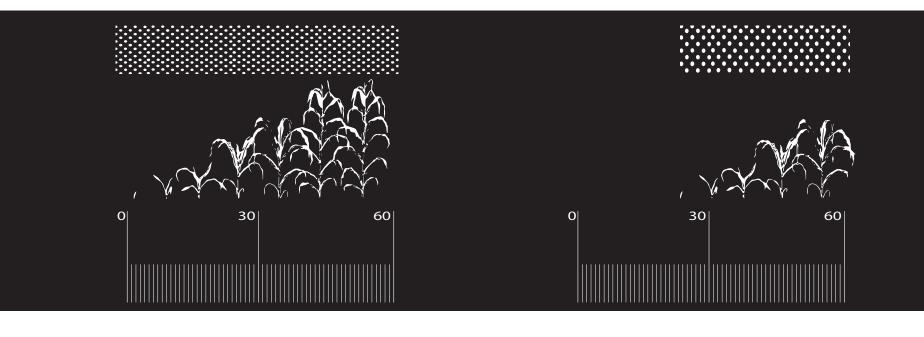
As the life cycle of the corn changes, there is a funneling of the wind as the corn provides corridors for the wind to sweep through the landscape. By concentrating the wind, the design creates an auditory experience as the wind blows through the stalks of the corn begin to uproar. The choreographing of the life cycles allow for the wind to sweep through all stages of growth in order to expose one to the different pitches of sound, from the whooshing of the grass stage to the rustling of the dry stalks.





[phase 2: may,june,july]

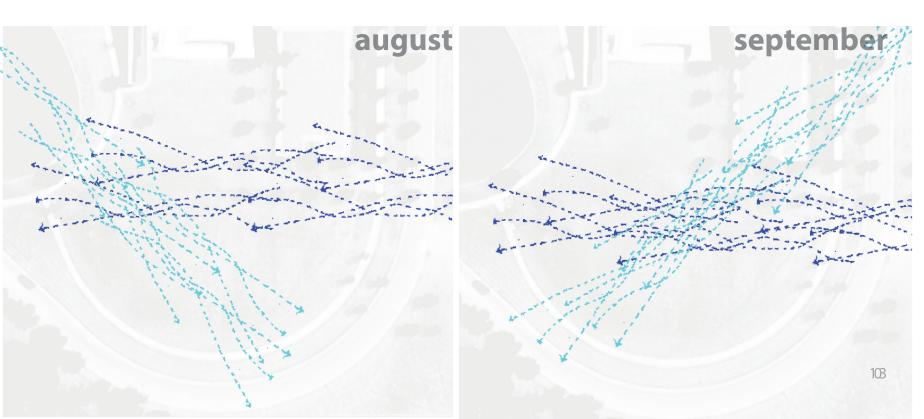


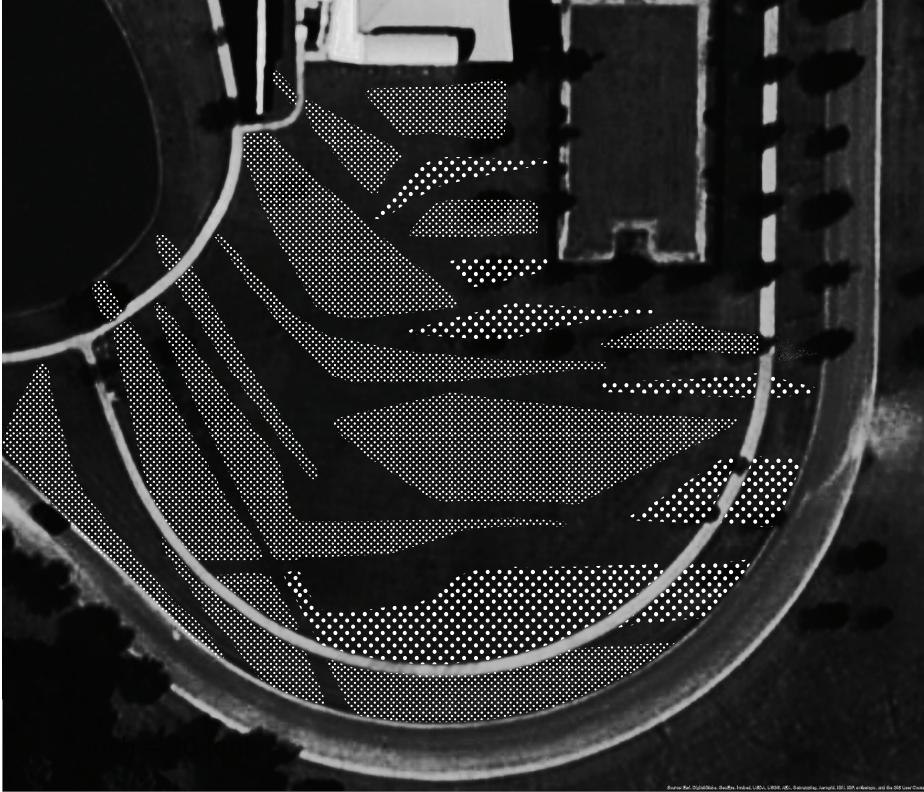




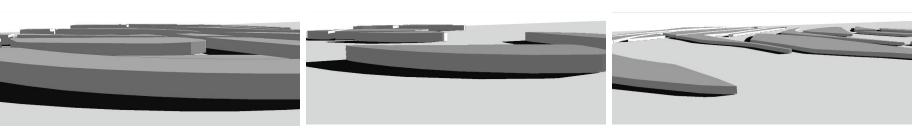
[phase 3: july,august,september]

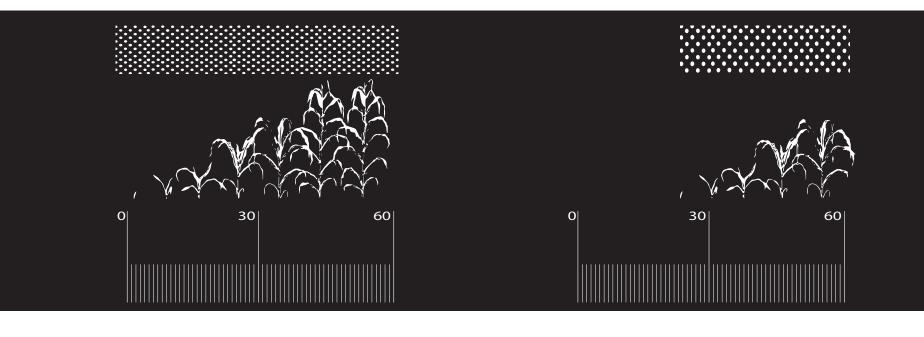
Corn is dependent on wind to pollinate the fields. Orientating the corn to the dominate wind direction allows for the pollination process to occur so that the corn can produce fruit. This reorientation every two months is a way to reveal the dynamism of the wind and how this quality is transferred literally to the cornstalks.





[phase 3: july,august,september]

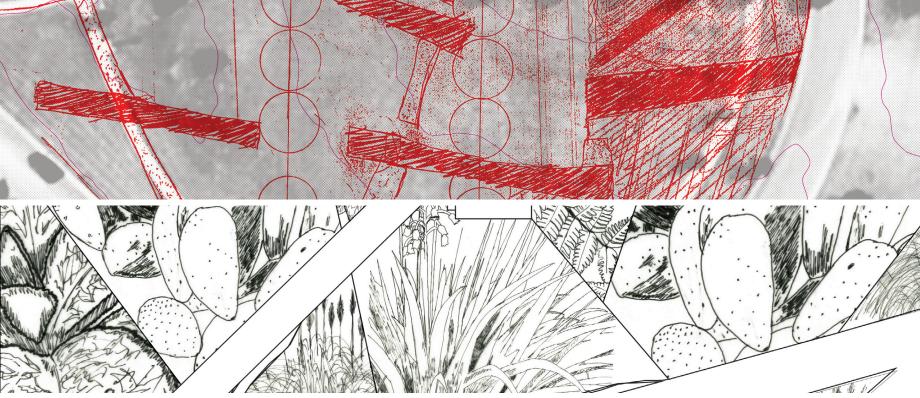








Reflections

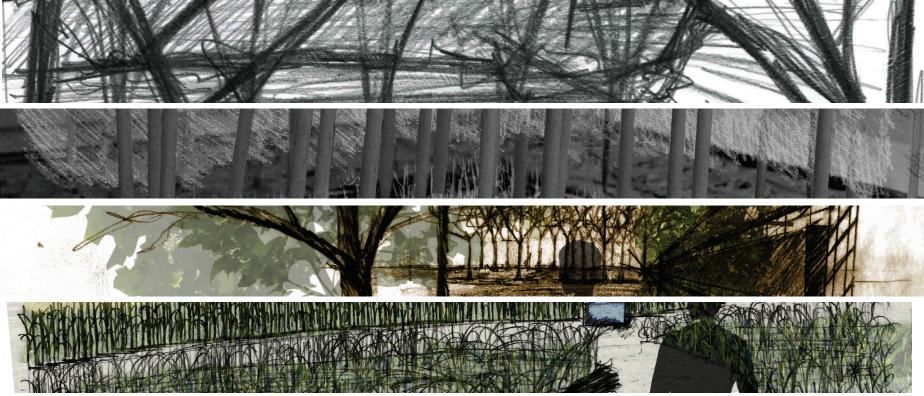


form driven design + character driven design

As designers, there is always the urge to question the normality of everyday life. We take simple objects, like a chair for example, and reduce them down to their core principles and try to recombine them in new ways. The hope is that new, not necessarily better, ways of thinking will be born from this reconstruction. As a designer who is also a horticulturalist, I wanted to use this process to explore something that I am passionate about, plants. My thesis began as a self-evaluation of my own strategies in hopes of better understanding this material that I care so much about.

The purpose was not to place a value judgment on form driven and character driven design, but rather to define them through examples and experiences. As I discussed previously, each of the methods have their strength and weaknesses but the goal is to attempt to understand the mindset involving plants and design. This allowed me to better understand my own methods and how I use plants in design so that I can take advantage of the situation and choose a method best suited for my goals in the future.

The process of design is a long and sometimes confusing path. The reduction of this process into two methods at times felt as if I were dumbing down design to categories of black and white. There is a grey area in which ideas from form driven and character driven design can be combined or they may become jumbled as one goes deeper into the design process. The main purpose of separating these ideas out is to explore the mindset that designers have towards plants. Once the ideas are defined, it is our job to question these methodologies in hopes of recombining the principles of design to birth new ideas that push against normality to create new lenses to view design through.



phytophilic design

The last designs of my thesis completely changes how I saw plants. I am often guilty of superficial researching species in the design process. Phytophilic design has allowed me to evolve the lens in which I see plants. Plants bring so much to design but far too often their full potential is not reached. It is our faults as designers for not digging deep into the value that plants can bring to a design. By superficially scratching the surface of the true spirit of plants, we can miss an opportunity to really explore our designs to the farthest extent. As plant knowledge is becoming valuable in the design world, its our job to use this knowledge as an innovator to drive new ideas.

One of my reviewers asked me if I thought that phytophilic design was my new method for how I view the world of design. Instead of using as the guiding method for design, it is a new perspective on which to look at how plants inform design decisions. I don't feel that I would use this methodology as a basis for every design but instead its value comes from its ability to flush out ideas. Phytophilic design produces ideas that I may not have thought of previously. Before my thesis, if I were asked to design a landscape with corn, a very different design would have

resulted. It is not to say I am abandoning the notion of phytophilic design as I feel it has potential to be taken further. One possible future is exploring the method when more than one species is brought into the process. Would it still hold up or are there too many variables to consider? Another potential is using this lens in mapping where individual species inform selection of sites. Could phytophilic design be used to inform the arrangement of infrastructure?

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Page 13: ASLA

[www.asla.org/awards/2008/08winners/441.html]

Page 23: ASLA

[www.asla.org/2013awards/440.html]

Page 23: ASLA

[www.asla.org/2012awards/512.html]

Page 34/35: Quail Hollow Gardens

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