Urban agriculture remains a broadly defined term. Commonly understood as an alternative to the rural nature of conventional agricultural practices, urban agriculture encompasses everything from the ambitious backyard gardener in the suburbs of a major city to rooftop gardens in the middle of downtown. The different ecological conditions in urban environments require appropriate extensions of the techniques and knowledge established by conventional farming. The ideal urban agricultural system incorporates organic fertilization and pest management techniques, symbiotic mixed plantings of species, and resource efficiency measures to create a highly productive, closed loop growth cycle. According to research done at the US Department of Agriculture, as much as 30% of food production in the United States is produced in metropolitan areas (and up to 15% of food supplies on a global scale). This proportion continues to grow as populations expand, and the range of applications for urban agriculture will also continue to grow.

The program for this Institute of Urban Agriculture is based on the values and goals of the many organizations around the United States that promote and advocate the value of urban agriculture. Organizations such as this have a particular place in the fabric of the Washington, DC culture. As the seat of national government, Washington, DC is a place for any group focusing on advocacy and lobbying. These “think tanks” are typically on the leading edge of their prospective fields, and perform a wide range of functions from political lobbying to public educational campaigns.

A think tank will typically lease office space in any number of Washington’s office buildings, and work with designers to create a space that exemplifies the values and goals of the organization. Even greater potential to communicate their values arises when the organization has the opportunity to design and build a new building. As a building type, the think tank gives a designer a great amount of flexibility to integrate a variety of programmatic concerns with the ideals of the organization.

The proposed Institute of Urban Agriculture would be an active part of the Dupont Circle community in which it is based, a valuable resource for food, electricity, waste treatment and public functions. The basic requirements for space within the building include:

- Offices
- Experimental facilities
- Classroom space
- Research library
- Food production
- Restaurant
- Public forum
- Restaurant

The philosophical underpinnings of the Institute began with the primary goal to create a building which exposes the numerous natural cycles ever-present around the residents of the city. The building would express the symbiotic relationship with these cycles, and show through the architecture how the lives of humans, plants and other inhabitants of the urban ecosystem can enrich each other. The characteristics of the Institute as an organization were developed alongside the design of the building.
The selection of the site for this building was an important part of the design intent. I realized early on that the site would play an crucial role in expressing the nature of the relationships among the building, its inhabitants, the public and the neighborhood around it. With the goals of the thesis in mind, I developed a list of criteria and began to explore the city for potential sites.

The first quality I looked for was a boundary condition between parkland and developed land. I wanted the building to serve as a gateway between two distinct zones of space, and use the dialog between the natural setting of a park and the urban qualities of densely built areas to express the thesis. This gave me a good range of possibilities, ranging from the hills of Anacostia, the extensive edges of Rock Creek Park and the Glover Park Branch, and a large portion of the waterfront along the Anacostia River.

Access to public transportation was another criteria that important to developing a building that works socially and environmentally. The use of public transportation would substantially reduce the amount of parking the building would use, and more importantly, it would bring greater pedestrian traffic to and from the building. Pedestrian traffic serves multiple functions for the neighborhood, slowing traffic, reducing congestion, and drawing people into surrounding businesses to support the local economy.

I also considered the density of surrounding areas and land use patterns in the neighborhood. A well developed, mixed use area in an established community would best support the program elements of restaurant, auditorium, and educational facility planned for the design.

This combination of criteria reduced the number of potential sites substantially. The areas that best met all criteria were all along Rock Creek Park, from as far north as Van Ness, to the Calvert/Woodley Park area, down to the Dupont area. Of these, the piece of land at the intersection of 22nd and P Streets NW was best suited for this project. Currently the location of a Mobil gas station, it seemed appropriate that the design for a new building on that site would present an antithesis of the culture that placed a gas station at one of the most beautiful places in the city.

With a view over Rock Creek and two of the nicer bridges across the Park, the site at 22nd and P St. is at the joint between Dupont Circle and the beginnings of Georgetown. The site is visible across the tops of the trees from a popular dog walking area and baseball field across the valley. This intersection was a perfect place to work with the perception of relationships between the surrounding buildings and the park.
The first phase in the creation of the new building would be the removal of the existing gas station that has been present on the site for many years. Accomplishing this in a way that benefits the environment is a challenging prospect. Certainly, the removal of a facility that leaks and dispenses a toxic material would be an improvement for the immediate area, but the concerns here extend to the surrounding region and include what might happen to all of the demolished material that would leave the site. Much of the demolished building would typically be taken directly to landfill. Research shows that 80% or more of construction and demolition waste can readily be reused or recycled. In this case, the demolition of the gas station is intended to be a source of materials for the construction of the new building. What cannot be used in the new construction onsite would be sent to recycling centers or to reuse operations in the metropolitan area for resale or donation. Hazardous materials would be safely removed or remediated during the deconstruction process.

Deconstruction of a facility (as opposed to demolition) implies a level of care and skill in recovering materials. The process takes as much skill, planning and preparation as the construction of a new building. Properly done, the deconstruction process can be nearly as fast as a standard demolition process, and yield high quality materials that can be reused, resold or recycled easily. Potential materials in the existing gas station that could be salvaged for reuse in the new design or by others include stone cladding, windows, air conditioning equipment, fans and water heaters. Furniture and point-of-sale equipment could also potentially be reused by other facilities.

The primary construction materials used in the existing gas station are concrete and masonry units, and steel. Both of these materials are readily recyclable. The concrete paving, foundations and masonry walls will be crushed into aggregate for the fill used in the construction of new foundations and masonry walls. The remaining steel, used for roof structure, equipment and shelters above the gas pumps, can be recycled back into new steel. In fact, structural steel used in the construction industry is typically nearly 98% recycled content. While it is unlikely that any of the exact steel taken from the deconstruction of the gas station would end up in a new building on the same site, it is very likely that the steel will return to the construction industry for use in another building.

Below ground, the existing station keeps their supply of gasoline in large steel tanks. As the deconstruction of the gas station proceeds, these tanks would be removed from the ground and modified into planting containers for the future street trees. After the trees are planted in their final locations along the streets, the tanks would be used as the growth beds in the waste treatment greenhouse west of the building.
Between the time the existing gas station is taken apart and the beginning of construction on the Institute, the design team would complete the planning for the building and present the design to the city for the necessary approvals. Rather than leave the site in an unsightly state of disarray as so often happens around the city, there would be a plan in place for an intermediate use of the property as a public park.

The park would be a public space that began to relate the ecology of the site to the building that will eventually take its place. At the same time, the plants and structures on the site would clean the soil and remove harmful contaminants from the ground. The park would control the rainwater and road runoff around the site and maintain the area without eroding the soils into the stream or streets around it. As the Institute of Urban Agriculture establishes its educational programs, the park could serve as a place for local workshops on urban gardening, a farmer’s market location, and a place for people to learn how the new building will interact with the local ecology.

Perhaps one of the more important functions of the interim park design is its attention to the remediation of damaged urban soils. Gas stations in particular contribute substantially to the pollution of soils in the immediate area and those around the station through runoff from pump areas and garage facilities. Phytoremediation is a technique which uses plants to draw harmful minerals out of the soil and/or break down harmful chemicals. While the science behind phytoremediation is still young, present results are promising and experimentation is encouraged.

This urban gas station probably has high concentrations of oil and gas products beneath the surface, as well as substantial lead contamination from older fuel compositions. Heavy metals such as copper and chromium are also likely to be in the soil on the site. The pollutants in the ground are probably shallow enough that a root system could reach a substantial portion of the them. The plants would also help aerate the soil to allow safe microbes to consume contaminants. Companies could conceivably harvest the plants after they have absorbed the metals, incinerate the organic plant matter, and reclaim the valuable metals from the ashes of the plants (the incineration process could also generate useful heat energy). The lawn and plantings for the interim park would be carefully selected for the particular pollutants present on site, and their use in an public space.

The overall layout of the park sets up the spatial relationships that the future building would have on the site. The solar angles designed to be visible in the building can be marked and placed specifically for this site. The rubble that will be used for fill in the stone wall is stored on site in the location of the future wall. A terraced area at the north end provides seating in the location of the future café seating area, and a lawn area marks the spot which would become the west lawn of the Institute. Even the large underground gas tanks are used as planting containers for the future street trees in the area that will become the metaphoric tree columns. These containers would also be used for urban garden workshops as a part of the Institute’s educational programs. Additional educational material on site would explain what the future building would be used for, how it would contribute to the neighborhood, and a place for public announcements regarding progress of the development.