ABSTRACT

Title of Thesis: INTEGRATED EDIBLE LANDSCAPES: CELEBRATING MULTICULTURALISM AT BROOKSIDE GARDENS

Brandt Dirmeyer, Master of Landscape Architecture, 2023

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Cultural diversity is an integral part of twenty-first century societies. The planet is interconnected now more than ever. The effects of climate change are forcing people to leave their homes in search of better living conditions. When people immigrate to a new place, they take with them their experiences, their traditions, and their identities, including their preferred foods, but the raw ingredients that one is accustomed to may be difficult to access. One way in which public spaces can help individuals adapt to their new environment is by making a place feel familiar through integrated edible landscape designs. By growing culturally relevant edible plants in a public space, the feeling of being at home can be cultivated while at the same time increasing the availability of culturally relevant crops to foreign born persons dealing with food insecurity.

INTEGRATED EDIBLE LANDSCAPES: CELEBRATING MULTICULTURALISM AT BROOKSIDE GARDENS

by

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Chapter 1: Introduction

A personal connection to nature is fundamental to all humans. No matter where people are originally from, everyone's ancestors once had a deep connection to the land on which we lived and to the edible plants that we depended upon for survival. Whether we still live on and cultivate that ancestral land is another story. For many people living in the United States, we no longer live on our ancestral land, yet many of us still maintain these cultural identities that originated someplace else through our food preferences.

As people move across continents and oceans, whether by choice or not, they bring their cultural identities and their cuisines with them to a new place where their culturally preferred foods may be difficult to access. Many acculturation strategies and models have been developed and proposed in which an individual who immigrates must adapt to their new environments, but something remains consistent. When a person moves to a new place, they will become hungry.

Faced with challenges in accessing the fruits, vegetables, and grains that they are accustomed to from their places of origin, language barriers, economic barriers, and legal barriers can all factor into food insecurity. In modern times, where every day people are forced to leave their homes due to political divides, war, food and water scarcity, and climate change related issues, it is important for the host cultures to be accommodating to people who come from different

cultures and give them opportunities to celebrate their cultural identities in the public commons. Integration in society means an individual can adopt cultural norms of the host culture while maintaining their home culture. By celebrating these individuals' home cultures in a public setting, integrated edible landscapes seek to ease the transition for people into a less familiar place by cultivating place attachment to this new home while exploring the similarities and differences in our cultural relationships to edible plants in proximity to one another.

The United States has never been a country of indigenous peoples. Before the expansion of Old-World influences to the New World, there were many native nations living across the land, but the origins of this country were in spite of these individuals. Therefore, many people living in the United States today trace their roots to someplace else, to a continent other than North America.

Our roots are adapting to this soil, but we all are here today in part because of the economics of edible plants. The United States would never have formed if not for Portuguese explorers first crossing the Atlantic in not search of India, but in search of sugar, black pepper and spices used to create curries and masalas. The United States would never have become the prosperous country it is today without slaves who brought to the Americas to labor in fields of sugarcane and rice. The United States as it exists today would not be

the country it is without open immigration policies to peoples from every corner of the planet.

Integrated edible landscapes are not just a floral interpretation of people newly immigrated to this country, but a representation of the history of immigration to this country. Nonnative edible plants from around the world grow together with native edible plants in a garden bed to reflect the diversity of the United States, and the importance of cultural diversity to our society. By displaying edible plants with cultural relevance to all people who visit a public garden, conversations can take place, stories can be shared, and identities can be celebrated.

Integrated edible landscape design seeks to join facets of ethnobotanical gardens with edible landscaping. As the name suggests, plants will not be placed in the garden based on geographic origin. Instead, plants will be arranged in the garden for ornamental value with the intention of displaying plants from different areas of the world to reflect the multicultural society in which the garden is grown. Public gardens can act as places for equitable storytelling opportunities. Instead of prescribing a narrative to an integrated edible landscape, the garden seeks to bring out these storytelling opportunities through interactions between people. Visual storytelling elements such as sculptures and signage are included to start conversations, rather than shape conversations. By displaying culturally relevant edible plants, the hope is that

by seeing these plants on display in a public garden, people will feel more comfortable with their cultural identity of origin in public settings. People may even be inspired to grow some of these plants at home, further strengthening their connection to their original home while living in a new place.

Plants included in the garden are plants that can be grown within the local climate, soil, and water conditions of the area during the growing season, or in the case of some tropical plants, they can be grown outdoors in the summer and stored inside or regrown from seed or cutting the following year after last frost. Vertical elements such as trellis and hanging pots are included in the garden to show that a person doesn't need a lot of ground space to grow edible plants if they are living transiently, or in an apartment or a rental situation that prevents them from planting in the ground. Plants are not displayed in an agricultural setting for maximum yield but in an ornamental setting to separate the notion that in order to grow these plants, one needs to adopt the lifestyle of a farmer, a lifestyle that some people left behind in their place of origin in order to pursue a different vocation. People can appreciate the beauty of these edible plants without feeling like they need to drastically change their lifestyles to accommodate these plants in their homes. Integrated edible landscaping is not a lifestyle choice, but it is a celebration of the similarities and differences of people living in a new place. Whether people are here by choice or not, it is important to recognize that we all share public

spaces, that we all share common threads in our ancestral origins, and that cultural differences should be celebrated instead of suppressed.

Chapter 2: Literature Review

Where Are We Heading?

Our planet is becoming increasingly inhospitable. Significant fluctuations in global temperatures are leading to increased frequency and intensity of extreme weather events, including droughts and floods. These events are causing food insecurity around the world, leading to the displacement of millions of people. They are forced to leave their homes but bring with them their cultures and their cuisines. Food and culture are closely linked, as closely linked as climate change and plants. By exploring these people plant relationships in public spaces, cultural integration can occur through our shared dependency on edible plants.

Plants can mitigate negative effects of climate change at both macroclimate and microclimate scales. Globally, plants are reducing atmospheric carbon dioxide levels through carbon sequestration and cooling land surface temperatures through evapotranspiration. Locally, plants reduce soil erosion and stormwater runoff, increase biodiversity, and provide food and habitat. Plants act as the primary producers for the terrestrial ecosystems which human societies rely upon for survival. Plants make nutrients, minerals, and energy available to living species. Plants provide all our food, either directly or indirectly (Poincelot & Flagler 1994, p. 4).

Plants provide many benefits, but perhaps the most significant trait to humans is edibility. Edible plants have shaped the course of human history, from fueling societies and curing ailments to influencing philosophies, mythologies, religions, and worldviews as well as both our ancestral DNA and the physical body that we lug around day after day. Edible plants are frequently found in ornamental gardens and across our planet, yet these edible landscapes are under-represented in both public and private ornamental gardens in the United States.

Edible plants are innately interesting to humans as we understand our connection to them through food. Observing and learning about plants in public spaces offers a pathway for people to build their personal relationship with plants without committing to maintaining them. By fostering positive engagement between people and plants in public spaces, people will feel more comfortable around plants and be more inclined to engage in biophilic activities, such as gardening at home, joining a community garden, or volunteering to steward the public commons.

This disconnect between people and plants could be remedied through increased interactions between people and edible plants with ornamental value in settings in which people are not obligated to maintain or care for said plants. Edibility offers a strong incentive for people to build their personal relationship with plants, as the human species has long and rich historical, cultural, and

biological relationships with edible plants. To foster and strengthen people plant relationships, edible plants with ornamental value should be displayed in public spaces, which may lead people to populate their private spaces with these useful plants.

This garden typology – which I am calling "integrated edible landscapes" – is a blending of ethnobotanical gardens and edible landscape design. Hoversten and Jones (2004) determined that the best ethnobotanical gardens provoke thought and precipitate change in visitor's behaviors and attitudes towards the landscape. Integrated edible landscapes also seek to change visitors' behaviors and attitudes towards one another. Ethnobotany as a field of study seeks to understand people, plants, processes, and products of a particular culture at a particular time and place, but in our multicultural society, multiple cultures exist currently within shared places. To celebrate the diversity of modern societies, inclusive edible landscapes seek to understand these people plant relationships of multiple cultures who exist in a shared time and place.

Culture in the Garden

Culture as we understand it, is the way of life, including customs and beliefs, of a particular group of people at a particular time, but our modern definition is based upon an agricultural metaphor. The etymology of the word dates to the Roman philosopher and orator, Cicero. In his Tusculanae

Disputationes, he wrote of *cultura animi*, or the cultivation of the soul, basing it off a similar Latin verb, colere, meaning to care for, to inhabit, to till, to worship. In this context, caring for the place that one inhabits – by the intentional use of plants in the landscape – is synonymous with worshiping said place. Cicero's idea of culture as a way of describing the enhancement of the self by relating it to the temporal cycle of tiling, planting, and harvesting land suggests a deep relationship between people, plants, and place. The phenomenologist Edward S. Casey said that "to be cultural, to have a culture, is to inhabit a place sufficiently intensely to cultivate it—to be responsible for it, to respond to it, to attend to it caringly." (Readale 2018).



Figure 1: Frieze of irrigation farming in Egypt, 2000 BCE

Since the cultivation of edible plants is so closely linked to human culture, we can discern that certain edible plants with cultural significance to a person can strengthen the attachment said person to a place. These plants can assist with place attachment, or the person-place bond that evolves from specifiable conditions of place and characteristics of people (Shumaker & Taylor 1983). By constructing this sense of place, the garden can become a way to ease people into feeling comfortable in a new setting. But the question remains, how can a design create a sense of place? For this to occur, the

designer must form a cohesive, relatable, and pertinent narrative that reflects the conditions of society as well as the land.

Landscape narratives offer opportunities for the land to tell a story. They "refer to the landscape as a changing and multi-interpretable phenomenon that engenders stories" (Van Damme 2019, p. 103). Botanic gardens frequently use landscape narratives to educate and inform park goers on various aspects of landscape, from geography and biology to history and culture (Chang, Bisgrove, Liao 2008). The integrated edible landscape as a landscape narrative seeks to tell the story of multiculturalism in the 21st century through the lens of edible plants. This goal of integrated edible landscapes responds to the research question set by Potteiger and Purinton (1998), asking "how can pluralistic landscape narratives be revealed within shared public landscapes, responding to multiple histories, and relating to a diverse contemporary culture?" Through blending edible plants from all over the world into a shared space, the integrated edible landscape garden visualizes the metaphor of cultural integration. Since many people living in the United States have cultural lineages from beyond the borders of North America, the idea of cultural integration applies not only to recent migrants, but to the people who do have generational ties to North America. With this abundance of diversity comes an abundance of views, beliefs, and understandings. The goal of the integrated cultural landscape is not to prescribe one way to interpret

the landscape, but to offer this diversity a space in which to have open dialogue about culture in the garden. While a similar approach to culture in the landscape is taken by Davis (2022) and the narrative interpretation of parks in New Zealand from both the colonial and the indigenous perspectives, the integrated edible landscape seeks to expand the number of cultural perspectives and narratives that can be interpreted from the landscape. In a sense, the landscape cultivates culture, while culture cultivates narrative.

Edible landscapes offer potential for interactions between plants, people, and places, as humans are innately interested in edibility as a trait due to its link to our survival. The definition of edible landscape is broad, as multiple people have used the term to describe different types of landscapes. Rosalind Creasy (1982) defined edible landscapes as a landscape of aesthetically pleasing and well-planned landscape of edible plants that reduces water, soil, and energy use, while Richard Haag (1980) uses a term nutrimental horticulture to develop ideas about how edible landscapes can blend aesthetics with function to help the common person to fix societal issues stemming from overdevelopment, car based infrastructure, and fossil fuel dependency to acquire food. These definitions are expansions on the original use of the term edible landscape by Robert Kourik (1980) as a new garden aesthetic combining ornamental gardening with crop production.

A recent multilingual and systematic literature review on edible landscapes by Rupprecht, Gaertner, Cui, Sardesphande, McGreevy, & Spiegelberg (2023) explored overlaps between edible landscapes and other similar terms such as agroecology, community gardening, edible forest, edible green infrastructure, edible urban commons, socioecological production landscapes, urban agriculture, urban foraging, and urban gardening. What these researchers discovered is that edible landscapes finds its uniqueness in its ability to "transcend the strict divide between city and countryside" as well as "look beyond the power of abstractions such as administrative borders to stay grounded in physical and bioregional reality." (p. 7)

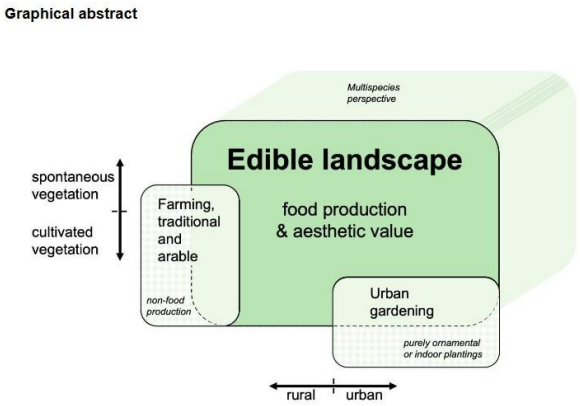


Figure 2: Graphical abstract of Edible Landscapes

Findings from another recent literature review on edible landscapes done by Zheng and Chou (2023) show the importance of edible landscapes to the future of sustainable urban development. Their literature review concludes that while edible landscapes are far from identical in their impacts on communities, edible landscapes do offer the possibility to increase local food security, enrich biodiversity, and promote social and economic benefits (p. 9).

Multiculturalism & Plural Societies

To understand the people-plant relationships in modern times, we must first understand the society in which these relationships are fostered. The United States of America is a multicultural society. As Jonathan Seglow writes in *Political Concepts*, "Multiculturalism can be acknowledged, championed, challenged or rejected, but it cannot be ignored because it describes a central feature of the world in which we live." (Seglow, p. 156). With the interconnectedness of our planet in the 21st century, the cohabitation and proximity of different cultures is an inevitability. As more and more people are displaced from their homes because of climate change, the need for inclusivity and acceptance of people from other places has never been more important.

Plural societies are societies in which people from different cultural backgrounds live together in geographic proximity and within a common social framework (MM 2019, p. 26). Cultural pluralism is an ideal model in which different cultures can coexist within a common societal framework through equitable practices. In pluralistic societies, people with different beliefs, backgrounds, and opinions co-exist, and ideally these cultures are integrated rather than assimilated. Integration seeks to celebrate the unique cultural identities of the various ethnic groups that exist within a plural society, as opposed to dismissing them in favor of the dominant social constructs. In effect, the different cultures that make up a pluralistic society do not lose their

sense of identity while cohabitating in shared spaces, and essences of these cultures can be adopted or maintained without issue.

For cultural pluralism to exist in a multicultural society, four conditions must be met. Cultural diversity must exist, interactions among diverse groups exist in the common politic, equal opportunity exists for every diverse group, and society must place value on diversity (Ellett & Wagner, 1983, p. 8).

Horace M. Kallen, a Jewish American living in early 20th century America, first coined the term cultural pluralism while teaching at Harvard in 1906 (Ratner, 1984, p. 185). Cultural pluralism was a reaction to *Americanization*, or the idea that upon arriving in the States, "individuals of all nations are melted into a new race of men" (Crèvecœur, 1782). While the metaphor of the melting pot and the motto *E Pluribus Unum* took root in the American vernacular, it speaks to Americanization "as an instrument of forced acculturation and violent assimilation" (Paul 2014, p. 259).

Kallen's theory of cultural pluralism was a reaction to the white Anglo-Saxon protestant milieu in the States at a time when there were massive waves of immigration from Southern and Eastern Europe (Ratner, 1984, p.185). Many Americans at the time believed that immigrants should adopt the customs of the dominant white Anglo-Saxon protestant culture. Kallen believed that ethnic minority groups should feel compelled to cherish their distinctive cultural traits and find ways in which they can safely express these distinctions under the

dominant culture's political structure of democracy and economic structure of capitalism (Ratner, 1984, p. 197). In a sense, Kallen determined that the various cultures within plural societies should be allowed to express their uniqueness without worry that their traditions, customs, and identity would be completely assimilated by the dominant culture of their new homes.

In *Ethnic Groups and Boundaries,* Frederik Barth writes that "categorical ethnic distinctions do not depend on an absence of mobility, contact and information, but do entail social processes of exclusion and incorporation whereby discrete categories are maintained *despite* changing participation and membership in the course of individual life histories." (Barth, 1969, p. 9). In this context, ethnic groups do not exist in a vacuum separated from other ethnic groups. Instead, ethnic groups exist in dialogue with other ethnic groups, whether that be through exclusion or through incorporation, and said ethnic groups influence individual identities despite unique, personal changes in an individuals' life. One such personal life change is the experience of moving away from home. Ethnic identities persist when an individual leaves the area wherein their ethnic group may exist as a dominant societal milieu, and these ethnic identities must be valued if they are to be integrated.

Within the modern society of the United States, the dominant American culture is still the same as it was in Kallen's era – the white Anglo-Saxon protestant culture – but the amount of immigration and the geographic areas in

which people are emigrating from have multiplied as the United States is more open to immigration from non-Western European countries. These immigrants from Africa, Asia, Central America, Eastern Europe, South America, the Pacific Islands, and elsewhere bring with them their distinct cultures and individual identities.

Barry's model of acculturation categorizes adaptation strategies to an individual's culture shock upon living in a new place with unfamiliar customs (Berry, 1992). The four strategies are integration, assimilation, separation, and marginalization, and they exist on a spectrum between whether the individual values and maintains their native culture or their host culture, and these strategies can exist separately from private and public life (Arends-Tóth, & van de Vijver, 2004). While people do not always fall neatly into only one of the four categories (Kunst et al., 2013; Schwartz et al., 2010), research suggests that integration gives individuals the most favorable psychological outcomes (Nguyuen, et al., 2007; Okasaki, et al., 2009). Integration is the ability of an individual to adopt cultural norms of the host culture while maintaining their culture of origin (Barry, 1992). The ease of integration is dependent upon the situation of the individual, including whether they are

		Value and Maintain Native Culture: YES	Value and Maintain Native Culture: NO
Value and Maintain Host Culture	YES	Integration	Assimilation
	NO	Separation	Marginalization

Table 1: Barry's Model of Acculturation

traveling with family or traveling somewhere with an existing population of people from the same origin. Food insecurity has a higher chance of affecting people who have limited English proficiency as assistance resources are harder to access (Vu 2020). Environmental factors also play a role in the individual's ease of integration (Zhou, 1997). Therefore, if an environment is welcoming to the individual's native culture, then this person may have an easier time integrating with the culture of their new home. If an environment can give an individual the sense of feeling at home, then it follows that they may have better psychological outcomes during the acculturation process. By displaying edible plants that are culturally relevant to all people living in the community, public spaces can activate this acculturation dialogue in a positive way while also providing avenues towards accessing food assistance services.

Public Spaces

Public spaces offer chances for social interaction between people of varied backgrounds. Common green spaces encourage social bonds between neighbors that improve the overall social quality of a space (Westphal 2003). Urban green spaces have the potential to promote social cohesion across cultural boundaries by providing feelings of comfort, connection, and place attachment (Peters, Elands, & Buijs 2010). Social interactions improve moods and reduce stress (Heinrichs, Baumgartner, Kirschbaum, & Ehlert 2003). They

offer opportunities for individuals to develop attachment to a place outside the home, school, or work, and opportunities to interact with plants in garden settings. Place attachment theory suggests that positive benefits of public spaces increase with proximity to one's home or one's frequently occupied places (Ryan 2006).

Public spaces can act as third places (Oldenburg 1999), or a place where an individual feels a sense of belonging and community beyond their home or their workplace. Oldenburg determined eight characteristics that third places share. Third places act as *neutral ground* wherein individuals can stop in with minimal obligations, commitments, or entanglements. Third places act as *levelers* where an individual's social status or job status are not important, nor are there any prerequisites or membership requirements to exist in the third place. These third places act as centers for playful, low stakes *conversations* between individuals. *Accessibility and accommodation* are sufficient for all who frequent the space, and especially for the *regulars* who are open to newcomers and give the space a characteristic mood. The third place should feel as if they are *low profile*, or homely and without pretension. *The mood is playful* in third places. Ultimately, a third place should feel like *a home away from home*.

For some, public gardens act as this third space. Public gardens offer all these eight characteristics plus the added inclusion of other living species

whose seasonality provide a sense of time as well as place. If these public gardens feature plants from around the world, it stands to reason that at least one of these plants may serve as a touchstone to a person's place of origin, making the person feel more at home in their new home. If the plant is also edible, then there could be a greater desire by the individual to grow this plant in their new home after seeing it growing in a public setting. Research by Farrier, Dooris, & Morley (2019) and by White & Bunn (2017) show that public edible landscapes can promote community health, increase the sense of community belonging, and positively engage marginalized communities. While there is less interaction between people and plants in a public garden than in a community garden, there is also a reduced burden on the individual as they do not need to physically tend to the garden to gain positive benefits. In this way, public gardens can use their ability to display landscape narratives as a way to entice people to adopt edible landscapes elsewhere, whether that is by creating an edible landscape at their home, or by joining a community garden. While this outcome is possible, the ability of public spaces to cultivate personal attachments to edible plants rests upon the individual's proclivity towards plants.

People Plant Relationships

Humankind has depended upon botanical knowledge to sustain our existence (Janick 1992) yet many people today cannot identify more than a few edible plants. Numerous examples exist of how people plant relationships manifest in coevolution (Schaal 2018, p. 15). Evidence of people plant relationships exists in both the biological traits of plants (Pollan, 2001) and the biological traits of humans (Schaal 2018). Edible plants often serve humans in medicinal ways (Martin & Li, 2017) and this medicinal and edible knowledge of plants was often passed down in cultures through storytelling (Baker, 2008; Lehner & Lehner, 2003; Hood, 1945). While there is a disconnect between people and plants in American society (Parsley, 2020; Louv, 2005; Wandersee & Schussler, 1999), edibility as a characteristic offers a strong incentive for people to build their personal relationship with plants.

People have experienced and intuited the connection between our health and plants for tens of thousands of years, but now within the last few decades this relationship has been studied through scientific analysis. Studies suggest that interactions with plants in both natural and cultivated spaces reduce people's stress (Van Den Berg & Custers, 2011), improves people's self-esteem (Barton, Hine, & Pretty, 2009) and wellbeing (Bowler, Buyung-Ali, & Knight 2010), decreases anxiety (Mackay & Neill, 2010), improves physical health (Maas, Verheij, de Vries, et al 2009), leads to greater life satisfaction

(Waliczek, Zajicek, & Lineberger 2005), and reduces socioeconomic health inequalities (Ward, Roe, Aspinall, et al 2012). Positive interactions between people and plants can also increase an individual's likelihood of environmental stewardship (Hoover 2021) and overall mindfulness (Barbaro & Pickett 2016).

While simply being in a green space can offer these benefits, direct interactions between people and plants should be encouraged to deepen individuals' understandings of why plants are important to human health and ecological health. A hurdle to this is the fact that many people suffer from a type of cognitive dissonance known as plant awareness disparity, or PAD (Parsley, 2020, p. 1). PAD is a new name for plant blindness, an ableist nomenclature that implies a disability metaphor in which a disability is a negative trait that must be "fixed" (Schalk, 2013; Smith, 2015). Plant blindness was first defined by Wandersee & Schussler (1999) as "the inability to notice plants in one's environment, recognize their importance, or appreciate their unique biological features." While this definition is valid for explaining a cognitive dissonance in which there is a weak relationship between people and plants, the nomenclature needed updating to be more inclusive.

Explanations for why plant awareness disparity exists include the companion theory of nature deficit disorder, which is a correlation between the recent trends of children spending less time outdoors during their developmental years and the inability of adults to understand, identify, nor care

about plants (Louv 2005). Other concepts for explaining PAD include that humans primarily pay attention to objects within fifteen degrees above or below the midline of vision (Wandersee & Schussler, 2001), and that our brain uses visual cues to identify individual objects, implying that masses of green plants are less distinguishable than moving animals (Feldman, 2003).

While our brain seems to inherently prefer animals to plants, the attitudes of individuals and the importance of plants in cultural contexts can also play a role in plant awareness disparity. Industrialized societies who outsource food and resource production elsewhere place less importance on people plant relationships and are less connected with the landscape than indigenous societies who rely more locally on the landscape for food and resources and must share knowledge of plants for survival. This sharing of plant knowledge throughout history often came in the form of storytelling, wherein plants are given voices and roles and act as if they were human. Research has shown that intentionally anthropomorphizing plants and empathizing with plants can generate positive interest in plants (Balding and Williams, 2016). This anthropomorphizing of plants leads people to relate more with plants as we see them as living creatures as opposed to resources or static objects.

Many cultures from all over our planet placed emphasis on the connections between edible plants and human survival through stories that

anthropomorphize plants and empathize with plants as living beings. People of some cultures relate humans to plants in ways that deepen the empathetic connection between the two. The Lamet people of Laos believe in a special energy shared between humans and rice (*Oryza sativa*) called *klpu* (Needham 1976, p.71). This energy is symbiotic in the sense that for rice harvests to be bountiful, respect must be given to the rice throughout the year in various ways. Similarly, Mayans held an origin myth in which humans are made from maize (*Zea mays*).

Greeks and Romans believed that fava beans (*Vicia faba*) carried with them the souls of deceased humans (Albala 2007), which was likely influenced by how fava beans were treated in ancient Egyptian culture. The Greek historian Herodotus wrote that Egyptians refused to eat fava beans as they associated the bean with death and decay. This association came about either because people observed that the seed of a bean decays faster than the seeds of grains such as wheat and barley, or that the flesh of the fava bean appeared like the flesh of humans (Flandrin, Montanari, Sonnenfield, & Botsford 2013, p. 119). Some likened eating beans to cannibalism – including the poet Orpheus – who wrote, "to eat broad beans amounts to eating one's parents' head" (Frevel & Nihan 2013, p.277), while others like Pythagoras refused to eat fava beans likely due to favism (Scarborough 1982), which is a medical condition where hemolytic anemia can occur from eating the beans or inhaling their pollen

leading to heart failure. While people living in these ancient Mediterranean societies did not have the depth of medical knowledge of our current society, they still understood the relationship between the fava bean plant and human health and used storytelling to spread this information.

In ancient Greece and Rome, parsley (*Petroselinum crispum*) played an important role in death rituals. In *Discovering the Folklore of Plants* by Margaret Baker (1969), she notes that ancient Greeks would decorate tombs with parsley as it stayed green long after it was cut (p. 118). They reasoned that parsley stayed green due to it being the blood of the hero Opheltes, known as the forerunner of death.

While some plants were linked through storytelling to death, other plants were seen as offering immortal life. From Mesopotamia survives one of the oldest written stories, the Epic of Gilgamesh, that contains a section known as *Gilgamesh and the Quest for the Herb of Immortality*. In this quest, Gilgamesh meets Utnapishtim who says "I will reveal unto thee, Gilgamesh, a mystery of the gods I will announce unto thee. There is a plant resembling buckthorn; its thorn stings like that of a bramble. When thy hands can reach that plant, then thy hands will hold that which gives life everlasting." (Arnolt 1901). This plant, likely a species of *Rhamnus*, was linked to everlasting life, and this genus of plant is used in multiple, different places around the globe as a medicinal plant (USDA).

In China, there is a myth about Wu Gang the woodcutter and his quest for immortality. The Jade emperor told Wu Gang that he would become immortal if he could cut down an Osmanthus flowering tree (*Osmanthus fragrans*) that the Jade emperor had planted on the moon. The tree had magical powers of regeneration, which made the task impossible. Thus, Wu Gang achieved immortality, but his immortal life is one in which he must constantly work to chop down this tree. In this story, immortality is linked not only to a plant, but to an interaction between people and plants, suggesting an understanding that to survive, one must work with plants.

There are multiple instances in the old world of fig trees gaining cultural & religious reverence, becoming symbols of abundance and prosperity through their usefulness to humans. David Wilson and Anna Wilson document the importance of fig trees in their 2013 paper *Figs as a Global Spiritual and Material Resource for Humans*, published in the journal Human Ecology. They document that people from Asia, Africa, Europe, and the Americas all associate fig trees with sustaining cultural and religious identities.

African fig trees with cultural importance include *Ficus sycomorus, Ficus thonningii, Ficus artocarpoides, & Ficus chlamydocarpa*. The Eurasian fig tree, *Ficus carica*, which is also native to northern Africa, is the first fruit tree alluded to in the Bible and the Torah. The fruit of knowledge depicted in

the story of Adam and Eve is said to be this species of fig, of which the leaves are used by the couple for clothing (Genesis 3:7).

The predominant Asian fig trees, *Ficus religiosa* & *Ficus benghalensis*, known as the sacred fig and the banyan fig respectively, are important to Buddhists, Hindus, and Jains who seek out the species to meditate beneath. The Bodhi Tree is the most famous of the sacred figs. It is the fig tree under which Siddhartha Gautama, the Buddha, sat under without moving for seven weeks and attained spiritual enlightenment. In India, Hindu temples were often constructed near existing banyan fig trees to take advantage of their shade. The banyan fig is further revered as the national tree of India. Both the sacred fig and the banyan fig hold an important place in Hindu mythology. The creator god Brahma was turned into a banyan fig, which is seen as the male form with its female form counterpart, the sacred fig. It is thought that if one plants both a sacred fig and a banyan fig, then they are saved from being sent to hell. The reverence for these two fig species goes as far as the Mikir people of Assam region believing that to damage a sacred fig or banyan fig carries the same weight as killing a saint.

This association with abundance is perhaps due to characteristics of the fig tree family, Moraceae, and their ability to easily produce fruits despite harsh growing conditions. Trees in the family Moraceae are known to be fast growing and tolerant of variable climate and soil conditions. In tropical and

subtropical climates, fig trees produce fruit all year, becoming a staple to human diets in cooler or drier weather when other plants are not producing fruits. The fruits of fig trees are nutritious and abundant, with trees producing tens of thousands of fruits in a good season. Many species of figs produce edible leaves and edible shoots as well as their fruits, offering even more dependability as a food source.

Other non-fig trees in the family Moraceae are seen as culturally important in places where *Ficus* species are not as prevalent, such as in Oceania, South America, and North America. The breadfruit tree, the jackfruit tree, and mulberry trees are part of the Moraceae family and also offer prolific fruiting in conditions that other food plants struggle to produce.

Eurocentric cultures up until the mechanization of agriculture during the Industrial Revolution embraced and understood the place-based connection between plants and people. Shakespeare mentioned over two hundred plants in his plays, including details such as plant growth, propagation, grafting, pruning, manuring, weeding, ripening, and decay (Janick 1992). These references would have been understood by Shakespeare's audience, as admission to the yard of the Globe Theater was for the poor agrarian groundlings that could only afford a one penny ticket.

While stories such as the ones described in the previous section once permeated the cultural milieu of Eurocentric societies, they have long since

been forgotten as said societies shifted focus from agriculture to industry. The story of plants became mechanized as agriculture intertwined with industry. Plants were no longer personified. Instead, plants became objects of monetary value. Urbanization pushed plants further outside of the human landscape as cities minimized the amount of green space to maximize car-based infrastructure while suburban sprawl pushed farmland further and further from the people they were feeding.

This disconnect is apparent in our food production systems, wherein people do not know where their food comes from, how their food grows, or what the plants that produce the food look like. The absence of edible plants in the landscape furthers the disconnect between the food we eat and where it comes from. Food miles is a term describing "the distance food travels from the location where it is grown to the location where it is consumed." (Hill 2008, p.1) According to the publication *Food Miles: Background and Marketing* by the National Sustainable Agriculture Information Service, "processed foods in the United States travel over 1300 miles and fresh produce travels over 1500 miles before being consumed." (Hill 2008, p. 1) When there is a 1500 mile distance between farm and table, not only is there a sustainability issue from the amount of petroleum and resources that it takes to transport the food to the consumer – the food industry accounts for 10% of all fossil fuel use in the United States (Hill 2008 p. 2) – but there is a lack of

personal connection between the plants that grow the food and the food that is eaten.

Garden Design Theory

Garden design and plant preferences are diverse and relate the social environment of the individual, as well as to both aesthetic and non-visual traits (Kendal, Williams, & Williams 2012, p. 34). Within plural societies, the social environment of the individual is complex and dependent upon individual cultural identity as well as proximity to other cultures. Findings from Kendal, Williams, & Williams (2012) also suggest that high levels of plant diversity in gardens is in part attributed to the heterogeneity of plural societies (p. 34). When a society is diverse, their gardens are diverse.

Companion planting, sometimes referred to as intercropping or plant guilds, is a design practice wherein plants are planted and grow together in shared soil, as opposed to traditional agriculture where individual plant species are planted in uniform rows. Companion plants grow synergistically with one another, occupying varying ecological and spatial niches to reduce competition and prevent weeds from occurring. The three sisters garden

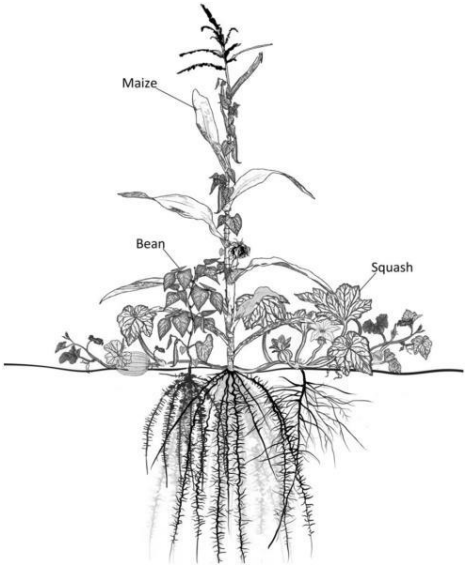


Figure 3: Three Sisters companion planting. Image by Lopez-Ridaura, S., Barba-Escoto, L., Reyna-Ramirez, C. A., Sum, C., Palacios-Rojas, N., & Gerard, B.

is a narrative representation of companion planting originating in the Western Hemisphere. The origins of this garden theory began in Mesoamerica 7000 years ago (Landon 2008). The garden typology made its way north, south, east, and west from the Pacific to the Atlantic in North America and down the Andes Mountain range in South America.

The garden system was widespread throughout the North American continent by the time of colonization, and the colonial European people adopted this gardening practice upon their arrival. In this system, the squash acts as groundcover that suppresses weed growth while the corn acts as structural elements for the beans to grow upon. The beans in turn fix atmospheric nitrogen into the soil which improves the health, quantity, and quality of the corn and the squash. The corn uses its deep taproot to pull useful nutrients and minerals from deeper in the subsoils, and through composting the corn then returns these nutrients and minerals to the surface soil, providing next year's crops with these beneficial nutrients.

Chapter 3: Case Studies

Eden Project, Cornwall, UK



Figure 4: Eden Project map



Figure 5: Child on trail among sweet peas at Eden Project

The Eden Project is a globally focused indoor and outdoor garden attraction in the United Kingdom that sits on a formerly barren clay mine. The project displays ethnobotanical landscapes from around the world in climate controlled geodesic domes, as well as interpretive,



Figure 6: Rainforest Biome, at Eden Project. Photo by Jessica Wilde, 2020

educational, and sustainable garden designs that seek to inspire visitors to reconnect deeply with nature. As seen on their flier above, the mission of the project "is to create a global movement that builds relationships between people and the natural world to demonstrate the power of working together for the benefit of all living things." The project also seeks to raise awareness on the negative effects of global biodiversity loss while inspiring visitors to work closely with nature at their homes and in their communities.

The intention of the Eden Project is to recreate a sense of place for people visiting the site that represents authentic biomes and cultivated landscapes from elsewhere in the world. As an example, there is a recreation of a typical Caribbean dwelling with a typical food garden and a typical wild space all designed and installed within one of the geodesic domes that also recreates



Figure 7: Bee sculpture at Eden Project, 2016

the typical atmospheric and soil conditions of the tropics for the plants to survive.

The Eden Project uses sculptures and art to aid the dissemination of their mission. Some examples include a giant bee sculpture in the outdoor gardens that magnifies the importance of pollination by increasing the visual scale of this ecological function so that it is unavoidable to the eye. There are sculptures in the Mediterranean Biome that represent a bacchanal, with satyrs and bulls dancing around grape vines to showcase the importance of plants to culture.

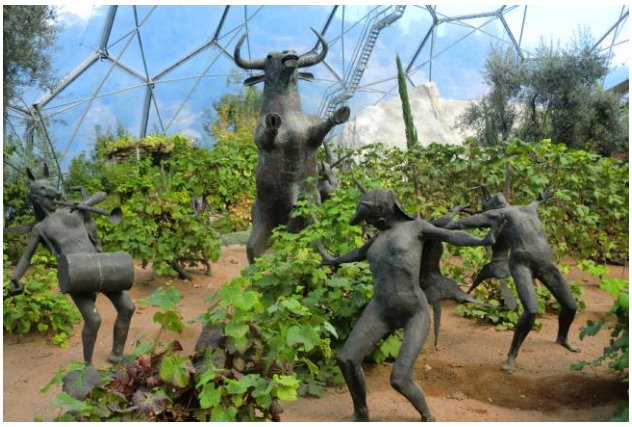


Figure 8: Bacchanal sculptures in Mediterranean Biome

The project is an ambitious example of ethnobotanical garden design with highly engineered systems in place that allow the recreation of authentic landscapes from other areas of the planet. The use of art to visualize the mission of the garden and the importance of biodiversity is something that I want to replicate in my design for this thesis.

Cleveland Cultural Gardens, Cleveland, USA



Figure 9: Immigrant Mother statue by Joseph Turkaly in Croatian Garden being cleaned by volunteers before One World Day. Photo by Joshua Gunter

"Symbolic sculptures and replicas of or tributes to sacred monuments in other lands," together with "poets, philosophers, peacemakers, composers, scientists, and others who have contributed to world culture" are featured in thirty-five devoted gardens representing various cultural groupings (Clevelandculturalgardens.org). The gardens are sponsored and developed by the people of these ethnic communities and aim to celebrate the cultures that make up the larger Cleveland community.

Started in 1916 with the Shakespeare Garden established by journalist Leo Weidenthal, editor and publisher of the Jewish Independent. He then had the idea to establish gardens that celebrate the artists and cultural icons of various immigrant communities in Cleveland. The Cleveland Cultural Gardens Federation (CCGF) was established in the mid-1920s with help from Charles Wolfram.



Figure 10: Sculpture of Confucius gifted by the city of Taipei, Taiwan to Cleveland Cultural Gardens in 1985.

The Cleveland Cultural Gardens is part of Rockefeller Park, established in 1896 and designed by landscape architect Ernest Bowditch and architect Chas Schweinfurth. The park covers approximately two hundred acres on the east side of the city.

The first official garden of the CCGF was the Hebrew Garden established in 1926, followed by various European gardens that were established in the 1930s and 1940s as part of Franklin D. Roosevelt's federal Works Progress Administration. In recent decades, cultural gardens for various Asian, African, and Middle Eastern communities have been established, as well as a dedicated African American Cultural Garden.

The complete list of cultural gardens within the Cleveland Cultural Gardens include the African American Cultural Garden (1977), Albanian

Cultural Garden (2012), American Cultural Garden (1935), Armenian Cultural Garden (2010), Azerbaijani Cultural Garden (2008), British Cultural Garden (1916), Carpatho-Rusyn Cultural Garden (1939), Chinese Cultural Garden (1985), Croatian Cultural Garden (2011), Czech Cultural Garden (1935), Estonian Cultural Garden (1966), Ethiopian Cultural Garden (2019), Finnish Cultural Garden (1958), German Cultural Garden (1929), Greek Cultural Garden (1940), Hebrew Cultural Garden (1926), Hungarian Cultural Garden (1934), Indian Cultural Garden (2005), Irish Cultural Garden (1935), Italian Cultural Garden (1930), Latvian Cultural Garden (2006), Lebanese Cultural Garden, Lithuanian Cultural Garden (1936), Peace Garden of the Nations (1936), Polish Cultural Garden (1934), Romanian Cultural Garden (1967), Russian Cultural Garden, Serbian Cultural Garden (2008), Slovak Cultural Garden (1935), Slovenian Cultural Garden (1991), Syrian Cultural Garden (2011), Turkish Cultural Garden (2016), Ukrainian Cultural Garden (1940), and the Vietnamese Cultural Garden (2020).



Figure 11: Mural in Ethiopian Gardens depicting the history of Ethiopia. Mural by Zerihum Yetmgeta, 2019, and developed by ceramic tile artist Ernesto Spinelli.

Gardens still in development include the Columbian Cultural Garden, Egyptian Cultural Garden, French Cultural Garden, Korean Cultural Garden, Mexican Cultural Garden, Native American Cultural Garden, Pakistani Cultural Garden, Peruvian Cultural Garden, Scottish Cultural Garden, and the Uzbekistani Cultural Garden.

After the brutal killing of George Floyd in 2020 by policeman Derek Chauvin, the Cleveland Cultural Gardens hosted peaceful demonstrations that turned violent. In response to this, the Cleveland Cultural Gardens encouraged park visitors and members of the Cleveland community to sign the Pledge to Promote Equity and Inclusion in my Community. Their pledge included statements about being an informed citizen, to engage in civil civic dialogue and keep an open mind, to actively seek out people with different backgrounds and listen to their thoughts without judgment, to understand the sources of anger, and to gain a better understanding of the wider Cleveland community.

The park hosts the One World Day celebration for the city of Cleveland. This event begins with a naturalization ceremony and a parade of flags, as well as music, dancing, and food from around the world. A program for kids called the Passport to Peace was introduced to educate families about cultures around

the world that are represented in the diverse Cleveland community.



Figure 12: One World Day at Cleveland Cultural Gardens

Grown@Pope Farms

Grown@Pope Farms is a project that is run by the community gardens program of Montgomery County, Maryland. The project goal is to increase the availability of fresh produce for food insecure households. Grown@Pope works towards this goal by utilizing farming practices that improve ecosystem health,



Figure 13: Crop rows at Pope Farms. Gaithersburg, MD.

improving access to culturally important and fresh produce, and by engaging communities in Montgomery County with farming through volunteer work that helps to showcase the impacts of small farming operations on local food security.



Figure 14: HarvestShare produce collection event at the Fenton St. community garden. Silver Spring, MD.

The project partners the Montgomery County Community Gardens program, Pope Farm Nursery, and HarvestShare. Pope Farm Nursery is the county owned and operated plant nursery that supplies county projects with local ecotype plant species. HarvestShare is an all-volunteer nonprofit organization that connects food insecure populations with produce from the community gardens throughout the county, as well as a handful of grow-to-donate gardens whose whole output is donated to food insecure

populations in the county. The nonprofit asks community gardeners to donate surplus produce to food pantries and donation sites.



Figure 15: Produce collected from Pope Farms.

Chapter 4: Site Inventory & Analysis

Process of Site & Topic Selection

From the early stages of forming a thesis, I knew that I wanted to research relationships between people and plants. The fulcrum of this interest rested in edibility, specifically how to use edible plants to strengthen the bond between people and plants. This notion led me to edible landscape design.

There were a few different sites that I considered, ranging from urban sites to rural sites, but I decided on Brookside Gardens in Wheaton, Maryland due to its unique ability as a public display garden to connect people to plants.

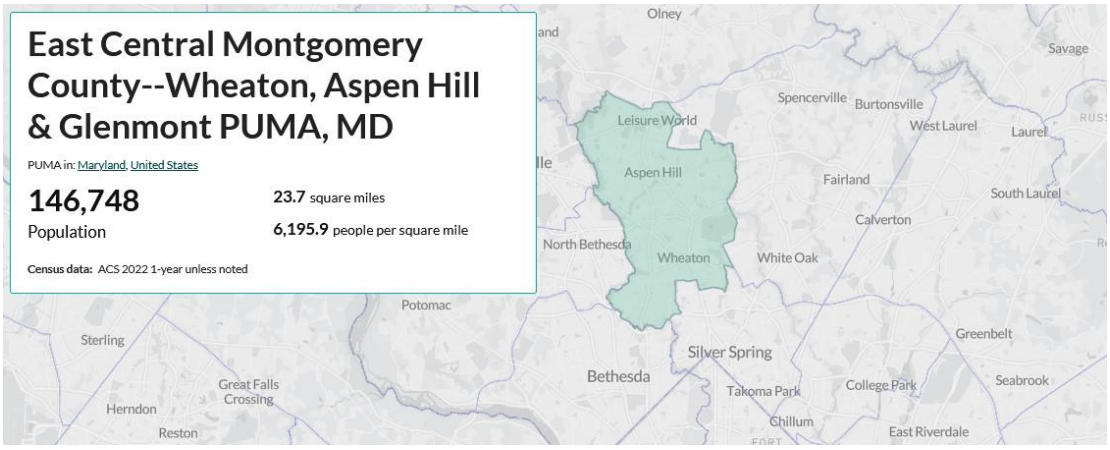


Figure 16: US Census Public Use Microdata Areas, East Central Montgomery County. Source: censusreporter.org

Wheaton is a suburban city in the greater DC metropolitan area. It is in Montgomery County, Maryland and is in what MNCPPC defines as the mid-county area. It is situated between the densely urban lower county areas around Silver Spring and Bethesda, and the exurban to rural areas of upper county

closer to Frederick. Wheaton is home to Wheaton Regional Park, the first regional park in Montgomery County. Brookside Gardens is a public display garden that sits on a former tree nursery that later became part of Wheaton Regional Park.

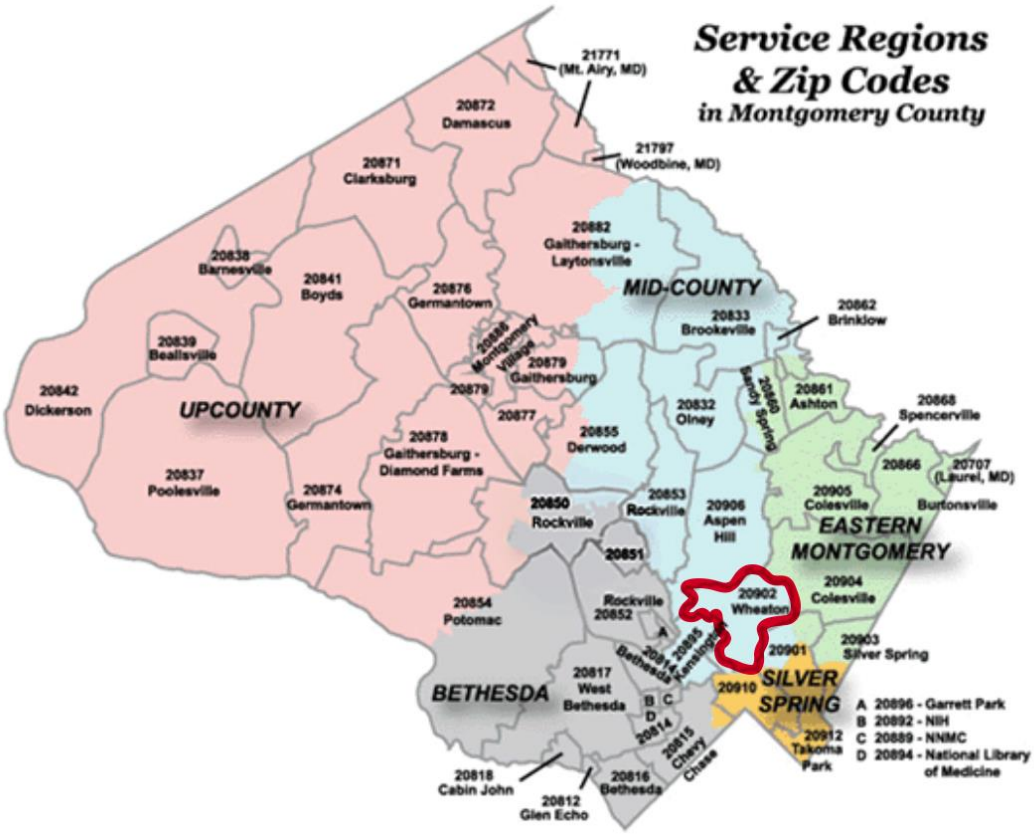


Figure 17: Planning Areas of Montgomery County, MD. Source: https://www.montgomerycountymd.gov/Government/rsc.html

Due to its proximity to both urban and rural areas and its location in Montgomery County, Maryland, Brookside Gardens attracts a diverse population of park users. Recreational users include those who walk the gardens for exercise or leisure. Educational users include those who visit to observe, or to study, or to document plants and ecology. Professional users include those who work for Brookside Gardens, who use the gardens for

photography appointments or to hold conferences and meetings, or who create other visual artwork in the gardens.



Figure 18: Gude Garden looking towards Japanese Style Garden. May 2023

Within Brookside Gardens, I first identified a large patch of lawn known as the Gude Garden for reconsideration to turn into a mid-Atlantic native edible display garden or an edible meadow garden. Next to the Gude Garden is the Japanese Style Garden, known to the local community as the Tea Garden. I was drawn to this site as well for its ability to convey edibility in plants through the introduction of plants used for tea preparation and consumption.



Figure 19: Idea Garden showcasing colorful displays of annual plants, Sept 2023.

After meeting with Chistopher Elenstar, the assistant director of horticulture at Brookside Gardens, he suggested I shift my focus towards imagining an edible landscape at the Idea Garden. Christopher Elenstar mentioned in our first meeting that the Idea Garden began as an edible landscape display area where annuals and edibles were showcased in ornamental fashion. I decided to include this

area of Brookside Gardens, along with the Gude Garden and the Tea House, and focus on creating edible landscape designs that fit the aesthetics of each space.

My original intention for this thesis was to use different garden typologies with edible plants as the design focus to highlight native edible plant species. To make native edibles more accessible, I intended to create replicable edible landscape modules to accommodate the property ownership status of various park users.



Figure 20: Nanticoke squash, a landrace species cultivated on the Delmarva peninsula. Source: Experimental Farm Network

I presented this idea for my thesis proposal to the faculty of the University of Maryland's Landscape Architecture department. After a question-and-answer session with faculty, I shifted the focus of my thesis from Montgomery County native edible plants to edible plants of the Montgomery County community. To put it another way, I was no longer solely focused on native edible plants. Instead, the focus became edible plants that are native to community members' home countries that will grow in the local climate and display non-invasive growth characteristics. Eventually, I would further shift away from exclusively native edible plants of community members' places of origin to edible plants that are grown

commercially, whether agriculturally or ornamentally, in these places. Because of the diversity of people in Montgomery County, it is easier to focus on commercially grown edible plants as there are many overlapping edible plants grown across longitudinal planes. Many similar plants are grown in the tropics, in the subtropics, and in temperate climates across geographic, oceanic, and political boundaries. It would be much more difficult to find endemic or landrace specific edible plants to each place of origin in part because of the amount of human diversity that exists in Montgomery County. It would also prove more difficult for the staff at Brookside Gardens to grow endemic and landrace species as these species are acclimated to specific regions of the world, whereas commercially grown agricultural and ornamental plants are more common around the world, and therefore generally have more adaptability to different climates, soils, sunlight and water availability as they are grown in many different regions of the world.

After shifting my thesis focus from increasing awareness of mid-Atlantic native edible plants to creating an ethnobotanical edible landscape display garden, I decided that this new focus was far too dense to continue to include redesigning the Gude Garden and Japanese Style Garden. I decided to focus solely on the Idea Garden, and instead of using the exact framework of an ethnobotanical garden, where plants are displayed based on place of origin and uses of indigenous people, I adopted this framework to be more flexible to

a multicultural society where local knowledge and use of these edible plants is not based on the specific place in which the garden exists. Instead, the knowledge and use of these plants is from people who have left their home country of origin and are now living somewhere else, which is more inclusive than only displaying edible plants native to the mid-Atlantic region of North America.

Brookside Gardens

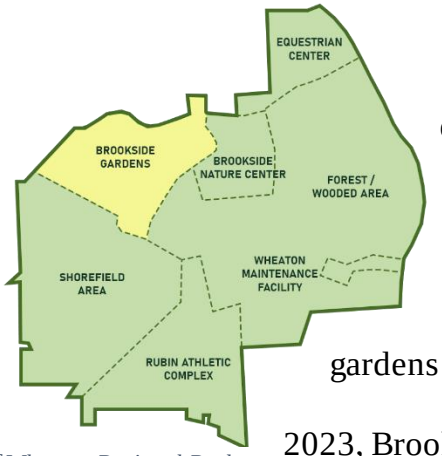


Figure 21: Map of Wheaton Regional Park

Brookside Gardens is a fifty-four-acre public display garden with thirty-two acres of cultivated gardens. Twenty-nine career staff, fifty part time staff, and over a thousand volunteers work at the gardens to keep it maintained, functional, and beautiful. In 2023, Brookside Gardens attracted 1.2 million visitors. This is in part because it is a destination for plant and garden enthusiasts, but it is also readily accessible and well known to the public as part of the larger Wheaton Regional Park, which was the first regional park in Montgomery County, MD and was established in 1956 (Master Plan 2022, p.5).

Wheaton Regional Park is a 538-acre park that is subdivided into three main areas: Shorefield, Glenallen, & Orebaugh. The Shorefield area is home to picnic areas, an adventure playground, a miniature train, the Ovid Hazen Wells

carousel, an outdoor exercise station, both paved and natural trails, and the Pine Lake stormwater pond. The Glenallen area is home to Brookside Gardens, Brookside Nature Center, and the horse stables. The Orebaugh area is home to the Wheaton sports pavilion, the Wheaton ice arena, indoor and outdoor tennis courts, and a dog park. Brookside Gardens & Brookside Nature Center make up 77 acres or 14% of the total area of Wheaton Regional Park. (Master Plan 2022, p. 7)

In June 2022, MNCPPC approved and published the Wheaton Regional Park Master Plan. In this master plan, a multilingual survey of two thousand respondents showed that 38% of park goers visit Brookside Gardens the most often, compared to 27% indicating that they visit the natural surface and wooded trails most often, and 16% saying that they visit the Shorefield play areas most often. (Master Plan 2022, p. 16)



Figure 22: Survey results from the multilingual community survey.

According to the Montgomery Parks website for the history of Brookside Gardens, the opening day was on 13 July 1969 after a four-year development period. The site was the former location of Stadler Nursery. Hans Hanses was the landscape architect who was commissioned to do the original design, and he used inspiration from his training in Germany and Switzerland to develop a plan focused on aesthetics of materials and plants readily attainable and suitable to the region. Formal and informal areas were created, and rooms were created within these areas using contrasts of material and plant colors, as well as with walls, trees, and shrubs. Areas in the original design that are still intact include three formal gardens now known as the Perennial Garden, Yew Garden, and Maple Terrace, as well as the Wedding Gazebo, an Azalea Walk, and the Conservatory, located in the upper right quadrant of the site plan above. The original space was twenty-five acres. There were ten employees staffed at the site, and in the first year there were about 35,000 visitors to the garden.



Figure 23: Brookside Gardens map

Between 1972 and 1997, many more areas were added to the acreage of Brookside Gardens. These areas included the Fragrance Garden, the Gude Garden, the Japanese Tea House, the Rose Garden, the Trial Garden (now called the Idea Garden), and the Aquatic Garden. An expansion of the Azalea Walk created vistas over the Aquatic Garden, and a Viburnum Collection, Winter Garden, and Camellia Garden were created as part of the Azalea expansion.

In June 1998, the Visitors Center opened, which contains a gift shop, info desk, horticultural library, classrooms, auditorium, and offices. The plantings around the building feature specimens first introduced to the United States by Brookside Gardens. A Children's Garden with changing displays to encourage children to learn about plants and gardening was installed near the Visitors Center, as well as a Native Plant Garden.

On 1 October 2004, the Reflection Terrace was dedicated to the victims of the 2002 sniper shootings that occurred in Montgomery County, and in 2006 a labyrinth was installed in the Gude Garden. In 2007, a Rain Garden was installed near the conservancy to serve as a demonstration of best management practice to the public.

The Montgomery County Planning Board approved a Master Plan for Brookside Gardens in 2009, which is a fifteen-phase plan that will be implemented over twenty-five years. The first phase includes a renewal of the

entrance to the park for aesthetic and safety purposes. The second phase includes a parking lot expansion and increased stormwater management on site. Phase three includes stream restorations of the two boundary streams of the park.

Idea Garden

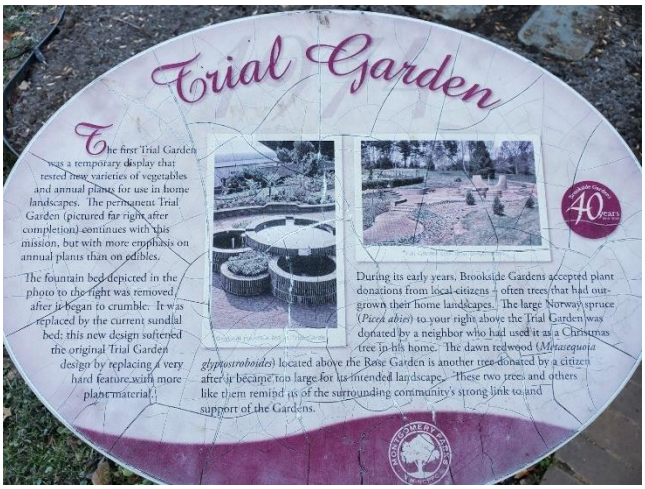


Figure 24: Informative sign at Idea Garden, 2023.

The Trial Garden at Brookside Gardens, now called the Idea Garden by Brookside staff, was first installed in 1974. The original intention for the Trial Garden was to be a space to display ornamental annuals and edible vegetables in creative ways to inspire visitors to recreate similar gardens at their homes. The garden features seasonal displays that change each year. In spring, the garden is filled with bulbs such as tulips, lilies, hyacinths, daffodils, and alliums. After any chance of frost occurring, usually by mid-May, the garden becomes transformed into unique, thematic displays of annuals and edibles that lasts until first frost in autumn. Once the first frost falls in November, the garden is stripped of plants and transformed into part of the nighttime light show called the Festival of Lights, which runs through the

month of December. The garden sits fallow until the spring, when the bulbs bloom and the seasonal displays start over again.



Figure 25: Four seasons at the Idea Garden. Photos taken April 2023 - January 2024

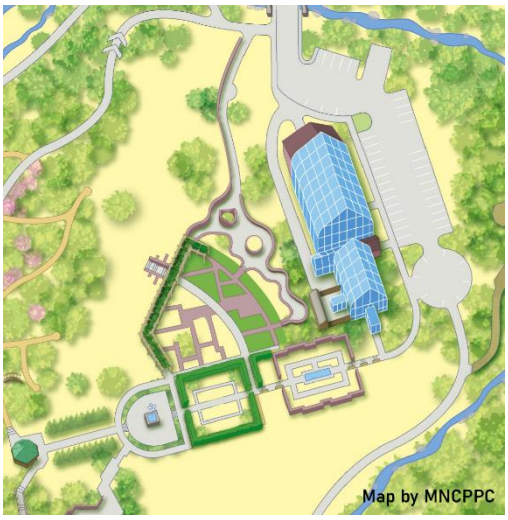


Figure 26: Zoom in on area around Idea Garden.

The Idea Garden is located next to the original areas of Brookside Gardens, including the three formal gardens and the conservatory. The path from the Conservatory parking lot to the Idea Garden features a pollinator garden and a rain garden, as well as a sculpture built from an existing sycamore stump. Other pathways in the garden lead to the Rose Garden and the Yew Garden. The ground plane emphasizes the distinction of the Idea Garden from other areas of Brookside Gardens as the path changes from pour in place concrete to unit brick paving. The geometry of the Idea Garden furthers the distinction between other surrounding gardens as the Idea Garden pathways and beds are

curvilinear and organic in shape while the other gardens in the area are more formal and squarer in shape, as seen in the aerial image below from Montgomery Parks.



Figure 27: Aerial view of area around Idea Garden. Source: MNCPPC Flickr

While the original intention of the garden was to display ornamental and edible annuals in creative ways, the garden lost this original intention over time to be more horticulturally intensive. The gardens became less replicable to visitors and more about creating stunning horticultural displays.

Overall, the garden has shifted focus less on edible annuals and more on ornamental annuals, although more recent designs have introduced more edible plants with ornamental value to the space, including ensete, okra, peppers, and celosia. In this design proposal, I am reintroducing the original intention of the site as a place to inspire park visitors to replicate design elements at their homes, but with more emphasis placed on the cultural relationship between people and plants. I am also interested in displaying edible plants in ways that are not just in-ground, but also using vertical elements such as trellises and hanging baskets to inspire people to include edible plants in their homes even if they have no soil to cultivate themselves.

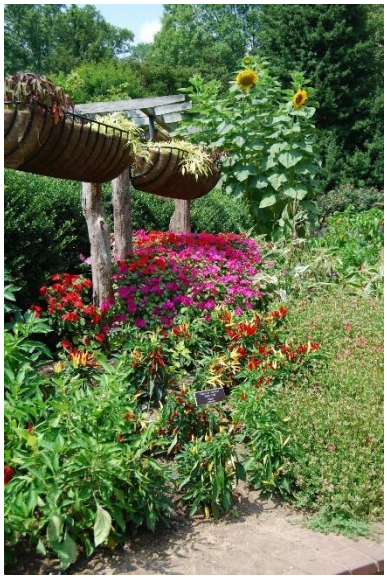


Figure 28: Hanging baskets at the Idea Garden.

Christopher Elenstar, the assistant director of horticulture at Brookside Gardens, envisions the mission of the Idea Garden as a space to use thematic designs to educate and inspire park visitors to better understand horticultural practices while inspiring visitors to create gardens of their own. Thomas Crawley, the manager of the Idea Garden, has thought of ways in which to use thematic designs towards this purpose, including a design proposal to educate park goers on common horticultural plant families such as Amaranthaceae, Asteraceae, Lamiaceae, and Malvaceae, as well as ideas for a design that tells

the story of African American ethnobotany with a focus on West African crops brought to the Americas during the colonial slave trade. Both staff members expressed an interest in displaying edible plants in the space, although I was told that previous edible installations in the garden have had various degrees of browsing by the park visitors, which is discouraged by park policy.

Of course, to pull off these educational and thematic garden designs, there must be space in which to garden. The Idea Garden consists of five distinct garden beds that cover an area of approximately 4000 square feet. The garden beds are mostly raised with short brick walls to about a foot in height with some areas reaching closer to two feet. All five of the beds are almost entirely in full sun throughout the day apart from the eastern beds that have trees and shrubs growing on their eastern borders.

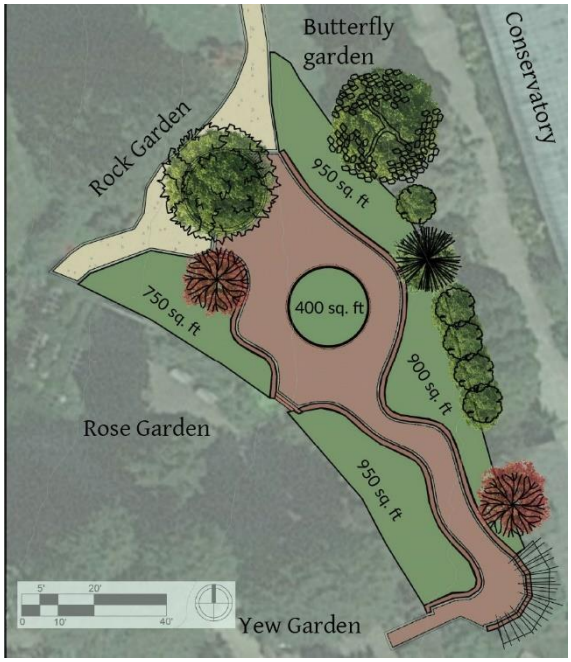


Figure 29: Garden bed areas of Idea Garden.

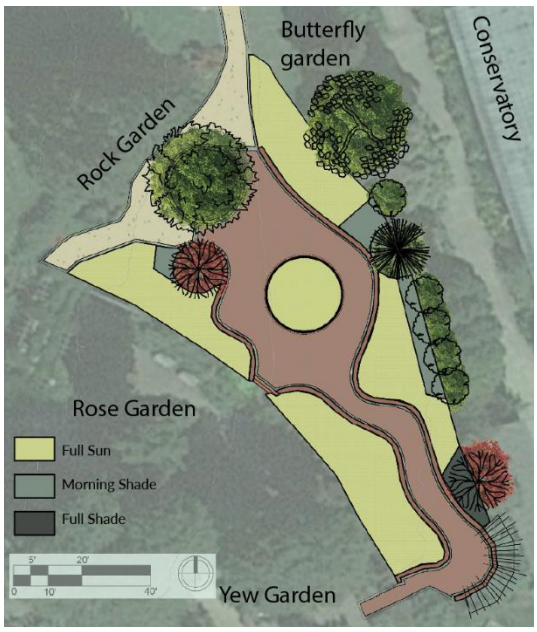


Figure 30: Sun/shade analysis of Idea Garden.

Overall, the garden has a southern exposure with minimal canopy cover. The beds are all longways north to south apart from the center circular bed, called the sundial bed, as it has an equidistant radius of approximately 12 feet. The beds are raised to an average of 1.5 feet with brick retaining walls. Soils in the garden are nonnative soils as the yearly removal of old plants and introduction of new plants means that the topsoil layer is predominantly commercial potting soil. Irrigation exists in the southernmost garden bed that leads to the Yew Garden. Vertical elements are used in the garden to add visual interest. Trellises and hanging baskets have been used in the past, as well as more artistic installations. Recently, the resident welder at Brookside Gardens built flamingo hanging basket holders, and in the past other sculptures have been introduced in the garden through the



Figure 31: Living sculpture of a beekeeper with bee box in Idea Garden.

seasonal installations. An installation that educated park goers on the importance of pollination included a living sculpture of a beekeeper next to a bee box.

Diversity in Montgomery County & Culturally Relevant Food Access

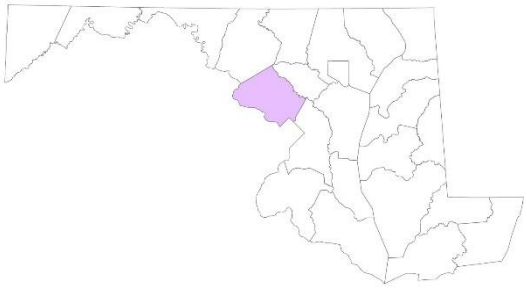


Figure 31: Montgomery County highlighted in purple.

Montgomery county is one of the most diverse counties in the United States, and the largest county in Maryland in terms of population. According to a WalletHub study using metrics on ethno-racial diversity, linguistic diversity, and birthplace diversity, Montgomery County is home to four of the top ten most diverse cities in the United States. The US Census data from the American Community Survey of 2022 shows that within Montgomery County, 43.2% of people speak a language other than English at home while the foreign-born population is 34.1% of the total population. These numbers are both double the average for the state of Maryland as well as for the United States.

Rank	County	Population
1	Montgomery County	1,056,910
2	Prince George's County	957,189
3	Baltimore County	850,737
4	Anne Arundel County	588,109
5	Baltimore city/county	584,548

Table 2: Population in Montgomery County, MD. US Census 2022.

Brookside Gardens is located within the census tract for Wheaton, Glenmont, and Aspen Hill. With a population of 146,748 people in 23.7 square miles, the area has even greater percentages for other languages spoken at home and for foreign born population, with 49.9% and 40.7% respectively. The number of people who speak a language other than English at home is nearly triple the average rate of Maryland at 19.5% and the United States at 21.7%. The total foreign-born population for the Wheaton, Glenmont, and Aspen Hill census tract is also nearly triple the rate of Maryland at 16.7% as well as the United States at 13.9%. We see similar percentages in the East Montgomery County census tract that neighbors the Wheaton, Glenmont, and Aspen Hill census tract. Of the 124,626 people who live in the 42.9 square mile East Montgomery County census tract, 43.2% of people speak a language other than English at home while 35.4% of people are foreign born.



Figure 33: Art installation at Brookside Gardens

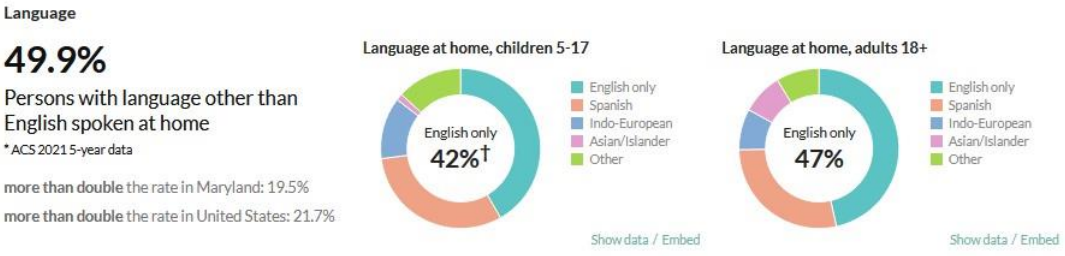


Figure 32: East Montgomery County data on spoken languages. Source: censusreporter.org

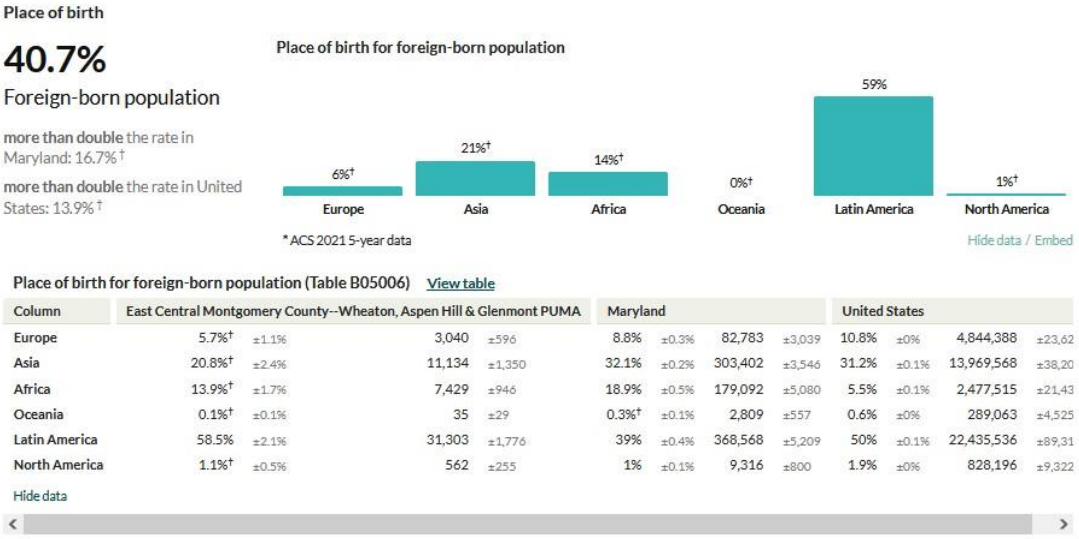


Figure 34: East Central Montgomery County census data for foreign born populations. Source: censusreporter.org

People who are foreign born are more likely to experience food injustice and insecurity. The Montgomery County Food Council Food Recovery and Access Working Group was initiated to evaluate the supply and demand of culturally relevant foods to foreign born populations in Montgomery County, Maryland. The working group published the Montgomery County Food Security Plan (2017) that identified trends among people who are foreign born and difficulties in accessing culturally appropriate food, including comparing the likelihood of an individual being food insecure based upon their place of origin.

The plan states that limited English proficiency is a barrier for foreign born residents to access food security programs. If a person who does not speak English does not live nearby an ethnic food store where their language is spoken, then the person may have more barriers such as transportation costs

that reduce their ability to access culturally appropriate food. Likewise, having limited English proficiency may lead to misinterpretation or misunderstanding of rules for different food access programs, which could lead towards distrust of assistance programs as well as distrust of government agencies or institutions that are in place to assist with food insecurity and injustice. If a person who is foreign born is also an undocumented immigrant, they will have a difficult time safely accessing food insecurity programs such as SNAP or TANF due to fears over eligibility or the potential for deportation if they make themselves known to a food assistance program. A study by Greenwald and Zajfen (2017) on food insecurity of urban immigrant communities in San Diego documented that there are cultural stigmas regarding food assistance, that the process of waiting in line for food reduces utilization and satisfaction for these types of food assistance programs, and that being non-Christian can decrease access to food assistance resources that are available through religious organizations. Even if a person who is foreign born does seek out access to a food assistance program, these programs will likely recommend or provide foods that are unfamiliar to them. Greenwald and Zajfen (2017) point out the lack of fresh produce available through programs like SNAP and TANF. While food assistance programs in the county are working to increase access to culturally appropriate foods, the current resources do not meet demand.

The Manna Food Center is a main distributor of food assistance in Montgomery County and started a program to increase the availability of fresh, culturally appropriate foods through a "Farm to Food Bank" program and a "Community Food Rescue" (CFR) program. In partnership with the Montgomery County Food Council, the organizations surveyed the 110 food assistance providers within the CFR network between August 23rd and September 15th, 2021, to determine what food products are most desired by the people that the food assistance providers serve. Of these 110 providers, 23 responded with 57 total products documented in the survey, which includes animal products as well as edible plant products. Of the providers surveyed, there was a high interest in green beans as the primary source of plant protein (69% of the responses for legume preferences). For edible plant products, the most sought-after items were fruits (34%), followed by leafy greens (20%), brassicas (14%), root vegetables (11%) and vegetables for diverse populations (11%), other vegetables (7%), and squash (3%).

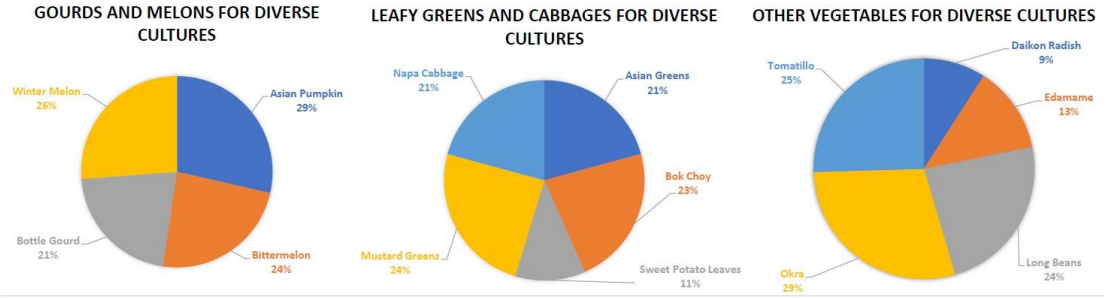
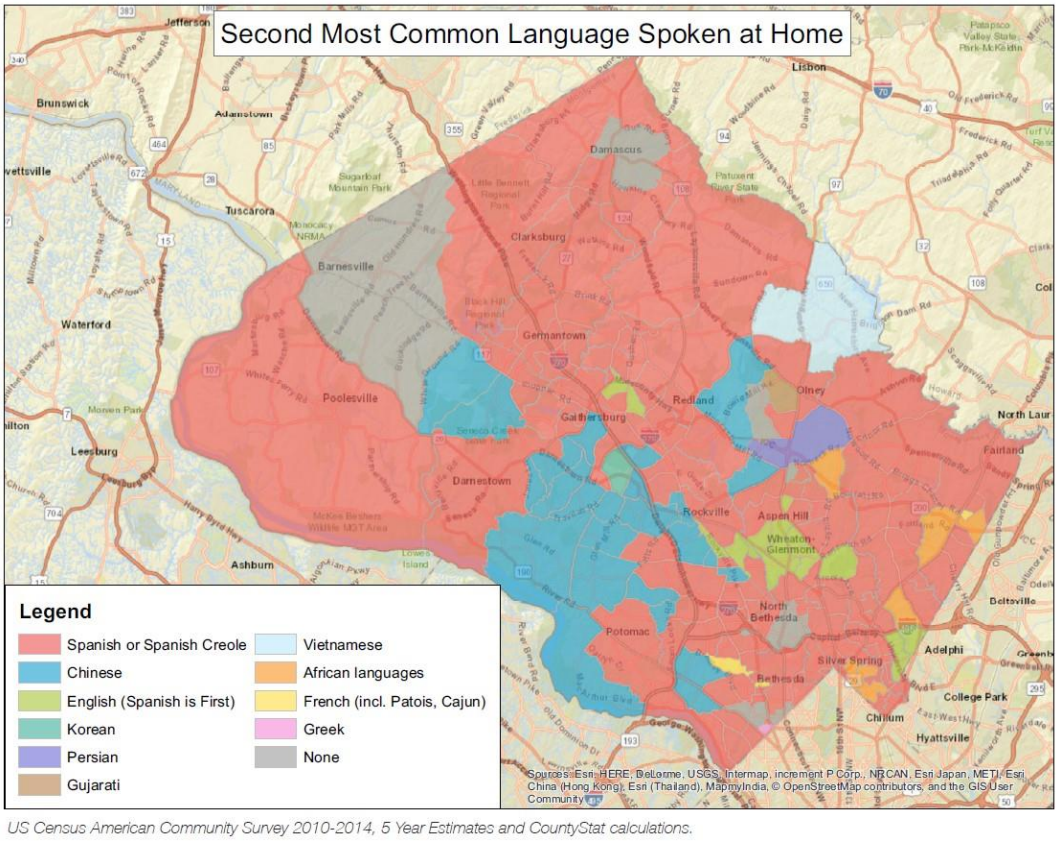


Figure 35: Survey results for food preferences of people from diverse cultures.

The survey also categorized vegetable preferences for diverse populations as separate from the total population responses. The survey

subdivides the vegetable preferences for diverse populations into gourds and melons, greens and cabbages (brassicas), and other vegetables. The results reflect the overall diversity of Montgomery County, with plants from Asian, African, and South American cuisines as the most preferred.

People who are foreign born are important members of the local community who visit Brookside Gardens, as well as important to the greater multicultural Montgomery County community. In the neighborhoods surrounding Brookside Gardens, English is the second most used language at home, with Spanish being the primary language spoken.



US Census American Community Survey 2010-2014, 5 Year Estimates and CountyStat calculations.

Figure 36: Second most common language spoken at home in Montgomery County, MD.

While half of the people who live in the neighborhoods surrounding Brookside Gardens speak languages other than English at home and two fifths of the total population in Wheaton-Glenmont-Aspen Hill are foreign born, the people who only speak English at home and who were born in the United States also likely trace their ancestry to another place of origin. Very few indigenous people live within Montgomery County, only .9% of people in the county identify as American Indian, meaning that many of us have lineage someplace else in the world. This shared legacy of immigration, whether our ancestors chose to come to the Americas or were forced to by slavery, conflict, famine, drought, or other social, economic, political, or environmental factors, is what makes us American.

Chapter 5: Assumptions & Limitations

Assumptions

Assumptions occur in the thesis process to expedite the design process. While every facet of a design should be informed by research, in some instances research is either lacking or non-existent, or they are too site-specific to be included in general research libraries.

A key assumption of my thesis is that by including edible plants from park goers' home countries and places of origin, they will be more engaged with the landscape than if these plants were not included. Following this thread, an assumption is made that park goers will want to include displayed plants in their home gardens after being inspired by the integrated edible landscape.

Limitations

Limitations occur because of several factors, the primary of which is time. As this thesis is for a master's degree and not a Ph.D., there is only one year in which to complete the paper and the design. The limitation of time permeates throughout the thesis, but a key component that would be included in this thesis with added time would be community engagement during the design process. With added time, I would be able to survey and canvass people

who visit Brookside Gardens, Wheaton Regional Park, and community gardens in Montgomery County.

Another key limitation to community engagement is representation. To be inclusive and ensure that everyone has a voice, the surveying would have to be done in multiple languages and dialects as this thesis is focused on celebrating cultural diversity. This multi-linguistic surveying would strengthen the design of an integrated edible landscape as it could generate more edible plants and culturally preferred crops that my literature research did not visit. It may even help to showcase people in the neighborhood with ethnobotanical knowledge of edible plants from their original homes. The surveying could also bring out more cultural stories where edible plants play a part in the narrative. As I was attempting to display at least one story from each continent of a represented person's culture in the neighborhood, I limited my ability to display more than a few stories.

This limitation of cultural representation is furthered by the scale of the site. If this site were smaller, then it may be difficult to represent multiple stories, and if this site were larger, then it may be able to represent more diversity through visual storytelling.

As this thesis is a design proposal, the garden only exists as a concept. Since I am proposing that integrated edible landscapes can inspire people to grow plants at home, join a community garden, or become environmental

stewards, I am limited to assume this because I am unable to survey people after their experience with the design. If the garden were to exist, then data could be collected about the effectiveness of the design in how it affects people.

Limitations exist for the ability of community members to include plants in their home gardens if they have limited space, are transient, have health issues, or have unsuitable conditions at their place of residence, such as only north facing windows or no balcony.

The limitation of time also prevented me from surveying people who use community gardens in Montgomery County to discover existing crop preferences, as well as surveying the gardens themselves for precedents of culturally relevant edible plant species. Ideally, a study would be done on community gardens in Montgomery County to determine the demographics of garden users as well as the plants grown by people of various ethnic groups who are represented in the census demographic statistics for Montgomery County.

Despite this limitation, I was able to find non-profit organizations in Montgomery County that help connect people to culturally preferred foods, such as Afrithrive and the Manna Food Center. I was also able to find research on culturally preferred foods done by Montgomery County and by the University of the District of Columbia.

Limitations on the design itself include the client's preference for site aesthetics. The garden space is an ornamental display area, so the client as well as the people who visit the park expect the Idea Garden to be colorful and vibrant. Staff at Brookside said that they had complaints from the public one year when the annual tulip display was less colorful and more muted.

Chapter 6: Design Proposal

An Integrated Edible Landscape at Brookside Gardens



Illustration 1: Anansi Garden

Illustration 2: Anansi Garden

The integrated edible landscape design for the Idea Garden at Brookside Gardens aims to represent the diversity of people who visit the garden through culturally relevant edible plants. By including sculptures that represent stories and fables from around the world where edible plants play a key role in the plot, the intent of the garden in celebrating the cultural diversity of Montgomery County is more apparent. Vertical elements such as the gourd trellis, the yam hills, and the hanging baskets help showcase plants by bringing them to eye level. The gourd trellis displays gourds with cultural relevance integrated into a shared architecture. The hanging baskets showcase a way in which edible plants can be included in the homes of people who may not have ground to grow a garden. By proposing that Brookside Gardens hosts an event where children from the surrounding neighborhoods can come and paint the hanging baskets, a

stronger connection can be visualized in the garden between the people who visit the garden and the plants that grow in the garden. Further event planning for neighborhood inclusivity can include partnerships with local restaurants and chefs where people can learn more about the cuisines of the community, as well as events for seed saving and sharing. An educational sign installed in the garden that highlights the importance of diversity, the importance of edible plants to human survival, and offers people a way to learn more about the plants in the garden and how to grow them. On the sign, a QR code is displayed that takes people to a website where there is an interactable site plan that displays information on each plant in the garden. The website would prompt the user to choose a language so that the text on the website can be translated into someone's preferred language through Google Translate or a similar web application.



Illustration 3: Website to access information on plants and stories in garden.

Illustration 4: Website to access information on plants and stories in garden.

The garden design itself reflects the history and mission of the Idea Garden. The space was first proposed as an experimental garden where edible

and annual plants are ornamentally displayed to inspire visitors to grow these plants at home. The integrated edible landscape design for the Idea Garden expands upon this idea by offering ways in which transient populations, renters, and apartment occupants can bring plants into their homes. The design also brings the focus of the garden back to edible ornamental plants and away from annual ornamental plants. The design also brings this space into the twenty-first century by celebrating the cultural diversity of Montgomery County. Instead of arranging plants by place of origin and visually separating these plants in a traditional botanic garden layout, the plants are integrated in the landscape to metaphorically represent our multicultural society. In some of the vertical design elements such as the gourd trellis and the hanging baskets, plants from different places of origin that share the same plant families are grown together to further visualize the metaphor of an integrated, multicultural community.

Seasonality in the garden is limited by the site as the Idea Garden is on display between the last frost of Spring and first frost of Autumn. The integrated edible landscape design does include colorful visual elements throughout the growing season by way of variegated and colorful foliage as well as flowers and fruits. The Idea Garden is known by Brookside visitors as a colorful and vibrant space, so this design seeks to meet the expectations of

routine park goers.



Illustration 5: Partial plant palette for each garden area.

Areas of the westernmost garden beds that are along the path of the garden are reserved for herbs and seasonal plants that need to be replaced, pruned, or generally require more maintenance throughout the growing season. These areas were put along the pathways to make maintenance easier for the horticultural staff. These plants are also all non-toxic on the chance that curious people who attempt to browse the garden will not become sick, and many of the plants chosen for these locations also either require or are tolerant of pruning, so these plants will be able to tolerate human browsing to a degree.

While Brookside Gardens and Montgomery County discourage browsing of their gardens, it is inevitable that an edible display garden will

receive some browsing attention. The design attempts to mitigate browsing through keeping known ripe edible fruits at a distance, such as the hanging baskets growing Solanaceous crops like peppers, eggplants, and tomatoes. Thorny, rough plants such as cardoon and artichoke were strategically placed at areas where visitors may attempt to walk into the garden. Plants that require processing before their parts are edible are out of reach of the park visitors.

Maintenance of the garden was a constant factor throughout the design process. I talked with horticultural staff at Brookside Gardens about the routine labor and people hours allotted to the garden and attempted to create a design that is manageable by these constraints. While designing to reduce browsing by visitors, I made sure that interior areas of the garden could still be accessed by the maintenance staff if weeding or watering is required. Areas that require more maintenance such as the hanging baskets, gourd trellises, and yam hills are accessible by the staff. The hanging baskets will require pruning to better

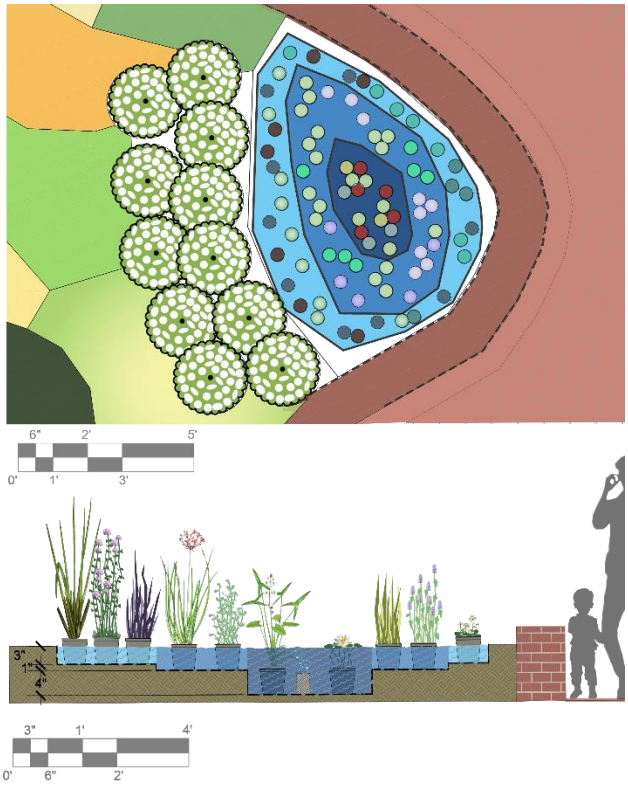


Illustration 6: Pond Garden plan and section.

Illustration 7: Pond Garden plan and section.

display the fruits and reduce the chances of pest damage which is why I specified *Carex* to be planted below the structure. The *Carex* will not be visible to park visitors but will take up ground space to reduce weed growth and they can be walked upon by the staff during maintenance. The hanging baskets will also have irrigation running up the wood beams and over the baskets to reduce the need for hand watering by the horticultural staff.

Companion planting theories are used in the design to further reduce maintenance needs. The three sisters' garden in the circular sundial bed acts as an example of companion planting that is easily digestible by the park visitors. The yam hills garden is another example of companion planting, showcasing plants that are traditionally interplanted with yams. Other areas of the garden are less overt, but the design follows a general companion planting rule regarding distancing plants that share either a genus or a family to reduce the chance of pest damage. Other companion planting theories that are adapted to the site include spacing out species of pollinator plants to increase their effectiveness and



Illustration 8: Three Sisters Garden

Illustration 9: Three Sisters Garden

increase habitat for beneficial insects. Edible plants with long blooms such as borage, echinacea, marigolds, and zinnias are planted in multiple beds not only to improve the overall color of the garden, but to include redundancy of pollinator food and habitat.

Because the purpose of an integrated edible landscape is to display culturally relevant edible plants, there must be thought behind what to do with the crops grown in the garden. As part of the research process, I investigated community gardens and food security programs in Montgomery County to see the feasibility of getting the produce grown in the Idea Garden to community members who are food insecure or who lack access to their culturally preferred foods. Pope Farms, which is the county owned nursery that grows plants for the community gardens, has a program called Grown@Pope which seeks to increase access to culturally preferred foods. They partner with a nonprofit called HarvestShare that connects people with food insecurity to food donation centers where culturally preferred foods from local community gardens are available. As part of this design proposal, I am proposing that the staff of Brookside Gardens work out a partnership with Grown@Pope and HarvestShare so that the food grown in the integrated edible landscape design does not go to waste. Another option for Brookside Gardens would be to incentivize volunteering in the garden by offering volunteers access to the produce grown in the garden in exchange for labor.

The design of the garden started with researching edible plants. I found sources for information on edible plants, including info on growing conditions as well as ethnobotanical information. I compiled this information into a spreadsheet which I divided into common edible plants, native edible plants, and culturally preferred edible plants. Common edible plants include those found at commercial grocery stores or edible plants that have become cosmopolitan in the past few hundred years. Native edible plants are those plants native to the mid-Atlantic United States. Culturally preferred edible plants are plants that are not commonly found at grocery stores but are important to people who live in Montgomery County.

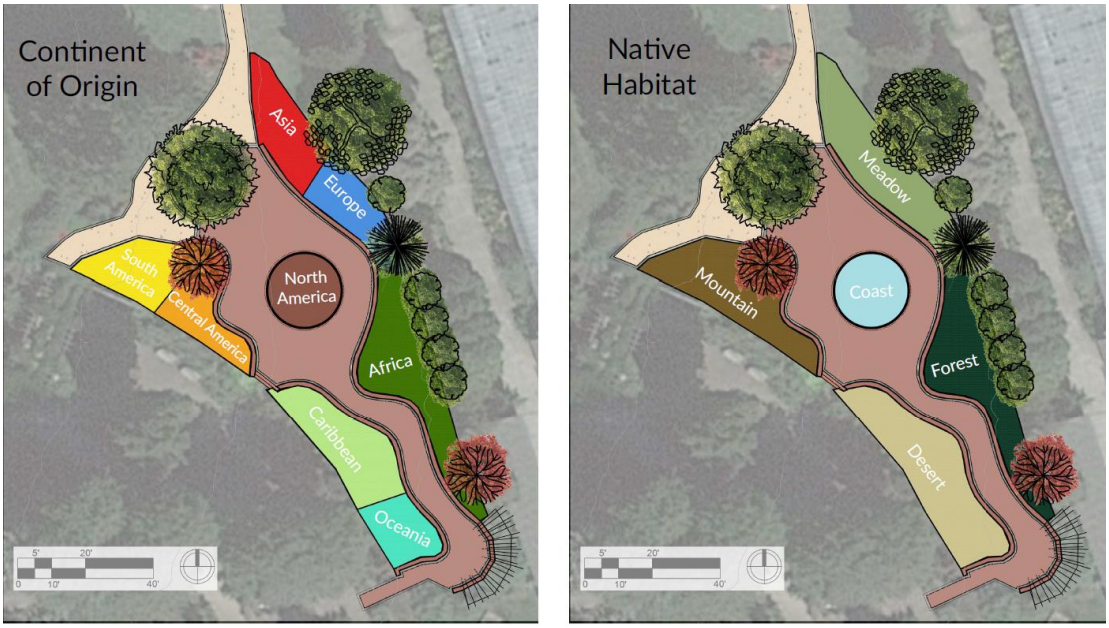


Illustration 10: Concepts

Once I had a comfortable number of plants in the database, I began to think about how to arrange plants on the site. I decided against the traditional

ethnobotanical garden design of segregating plants by place of origin because I wanted the visual metaphor of the garden to reflect cultural inclusivity. I also thought about displaying the plants by their native ecosystem, but many edible plants have been selectively bred over hundreds of years to the point where they would no longer grow well in the conditions of their native ecosystems. I had also thought about arranging plants by plant families, but this idea could potentially increase the amount of pest damage in the garden. I ultimately ended up focusing more on ensuring that there is color and visual interest in every garden bed throughout the growing season as well as a mix of ornamental flowers, foliage, and fruits in each bed.

A key point of the integrated edible landscape and a design parameter requested by Brookside Gardens is that the garden is educational and informative to park visitors. At first, I was thinking that each plant would have a tag in the garden showing its name, continent of origin, and what parts are edible through icons. I realized that tagging each plant would detract from the ornamental quality of the garden and make it seem more like a scientific research garden. I also planned to have a QR code on each tag that would link to a website with the information that I gathered in my research spreadsheet, but I realized that not every tag would be scannable as some plants would be out of reach.

Instead of tagging each plant, I decided to create an educational sign for the garden that speaks about the theories and intention of the integrated edible landscape, displays the planting plan, and features the QR code that links to an interactive planting plan where park visitors can select a plant on the plan and learn more about each plant through this central hub. Because the information is displayed through a website, I also posited that an application such as Google Translate could be integrated into the site to prompt the user to select their preferred language, thereby increasing the exposure of information to people who are uncomfortable or unfamiliar with reading English.

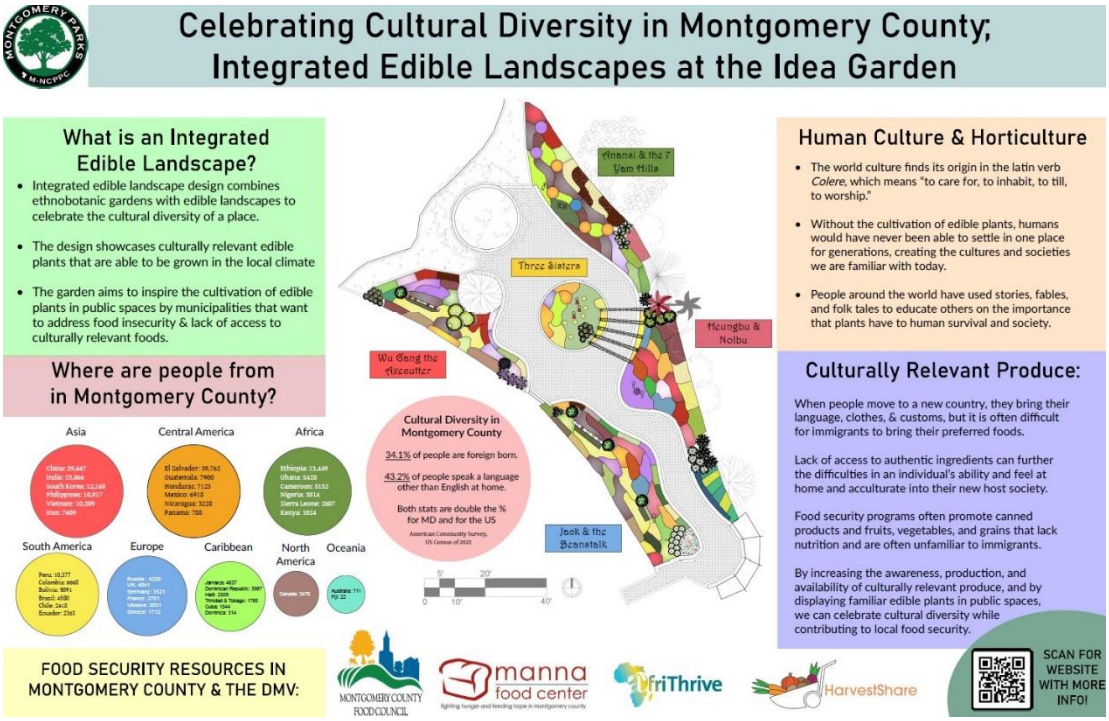


Illustration 11: Educational signage for installation

Illustration 12: Educational signage for installation

Sculptures on display in the garden show stories from around the world where edible plants play a key role in the narrative. The sculptures depict a traditional folklore figure from China, a children's story from Korea, an agricultural legend from the indigenous peoples of the Americas, a fable from West Africa that was brought by slaves to the Caribbean and to the Americas, and a tale from the Proto-Indo-European and Proto-Indo-Iranian people of Eurasia.

Wu Gang is a traditional folklore figure from China whose story helps to explain the phases of the moon. In the story, he travels to the moon and asks the Jade Emperor for immortality. The Jade Emperor obliged Wu Gang, but unbeknownst to him, he would spend eternity chopping down a forest of flowering osmanthus on the moon. He travels across the face of the moon, chopping the trees down, but by the time he finishes the task, the forest begins to grow back.



Figure 37: Wu Gang Cutting the Osmanthus Tree, colored woodcut by Qian Huian, 1889.

Figure 38: Wu Gang Cutting the Osmanthus Tree, colored woodcut by Qian Huian, 1889.

Heungbu & Nolbu is a children's story from Korea where two brothers grow up with completely different lives and personalities. Their father is wealthy and intends to split his fortune between the two brothers, but once he dies, the firstborn son, Nolbu, deceives Heungbu and banishes him and his family from the estate. Heungbu, being kind and humble, accepts a life of poverty. One day he chases a snake away from eating an injured sparrow. Heungbu and his family nurse the sparrow back to health, and the sparrow thanks them with a pumpkin seed. They grew the seed and treasure burst from the pumpkins. News spread and Nolbu learned of his brother's new wealth. He finds Heungbu, asks him what he did, and attempts to replicate the event by breaking a sparrow's leg himself. The sparrow gives Nolbu pumpkin seeds whose fruits produced a demon, debt collectors, and a flood. Upon hearing what happened to Nolbu, Heungbu takes in his now impoverished brother, and they live happily ever after.



Figure 39: Heungbu & Nolbu, artist unknown.

Figure 40: Heungbu & Nolbu, artist unknown.

Three Sisters is an agricultural metaphor from the indigenous peoples of the Americas. The polyculture system of agriculture began in Mesoamerica around 7000 years ago with the domestication of squash, then corn, and finally beans. This polyculture proved wildly successful as the system spread across North and South America (Landon 2008). The three sisters, or corn, beans, and squash, is a companion planting agricultural system wherein the squash acts as the ground cover and the corn acts as trellises for the beans. The beans fix nitrogen into the soil, helping the other two plants to grow. The Iroquois famously use the story of the Three Sisters as part of their origin myth, where these spirits arose from Earth Woman's deceased body. These released souls also include edible plants such as sunflowers, strawberries, tobacco, and sunchokes.



Figure 41: Three Sisters, artist unknown.

Figure 42: Three Sisters, artist unknown.

Anansi and the Seven Yam Hills is a fable from West Africa that was brought by slaves to the Caribbean and the Americas. Anansi is known as the spider trickster god, and in the



Figure 43: Anansi the Spider by Gerald McDermott

Figure 44: Anansi the Spider by Gerald McDermott

story, he steals yams from seven hills that were forbidden to touch by the community elder before the harvest festival. Anansi sneaks around at night eating the yams, and when the harvest festival day arrives, the townspeople realize that someone had been eating the yams. They discover that Anansi ate the yams and banish him from the festival while also requiring that he give his own yams to the community.

Jack and the Beanstalk is a tale from the Proto-Indo-European and Proto-Indo-Iranian people of Eurasia where a child sells a cow for some magic beans that grow a beanstalk that reaches up into the clouds. Jack climbs the beanstalk to discover a land of giants. He goes into a castle, steals gold, escapes a giant, and returns to his mother with newfound wealth.

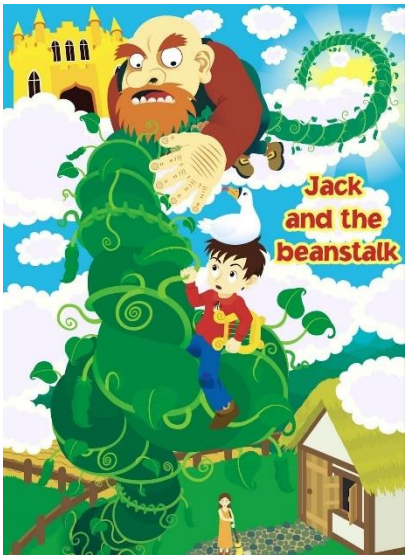


Figure 45: Jack & the Beanstalk, artist unknown.

Figure 46: Jack & the Beanstalk, artist unknown.

By including these stories as sculptures in the garden, the visual connection between people, plants, and culture becomes more obvious, and the educational intention of the garden becomes more apparent. The garden also becomes more engaging for children, whose minds will one day shape the future. If children are exposed not only to their personal connection with edible plants, but to stories about how people from multiple cultures relate to edible plants, then

they have the capacity to grow into cosmopolitan thinkers who will appreciate cultural diversity and have respect for people from different backgrounds. It is often said that the best way to appreciate someone else's culture is through their food, and this is said because we inherently understand the connections between food, culture, and identity. If children start to appreciate this



Illustration 13: Gourd Trellis

Illustration 14: Gourd Trellis

connection at an early age, they can grow into compassionate people who take interest in others.

Other vertical elements in the garden exist to display edible fruits at eye level to the park visitors to further engage people with edible plants. The gourd trellises bring the plants closer to the park visitors while also allowing the

different gourds to grow atop one another. The design decision behind having separate trellises as opposed to one continuous trellis was due to sunlight requirements by the plants and constraints of the site. I chose to put the trellis on a secondary path in the garden in case there are visitors who do not want to walk below it. Because of the location of the secondary path as well as the existing weeping spruce tree above, the sunlight hitting the western side of the trellis would be limited and may limit the growing ability of the gourds as well as nearby plants in the Three Sisters Garden.



Illustration 15: Hanging Buckets

The hanging baskets display solanaceous crops upside down to bring intrigue to the specimens as well as reduce the maintenance needs of the crops. By displaying hanging baskets in an ornamental garden, the reach of influence extends beyond people who have the capacity to plant in the ground to people who are limited in space.

The hanging baskets also display artwork of children in the neighborhood. As part of the design, an event would take place for children in

the surrounding neighborhoods to volunteer to draw on the buckets that will be hung in the garden. The children will be prompted to draw about edible plants, nature, or their home countries to keep the designs consistent with the integrated edible landscape design. The children will be encouraged to make the designs colorful and bright.



Illustration 16: Hanging Buckets construction details.

Chapter 7: Results

With culturally relevant edible plants on display in a public space, the integrated edible landscape aims to strengthen the relationship between people and plants by raising public awareness, acceptance, and appreciation of edible plant species with cultural relevance to the people of Montgomery County. By showcasing culturally relevant edible plants, the garden would create a sense of belonging to a place as well as a feeling of being at home in a new home for people who have immigrated to Montgomery County. The garden is a celebration of our multicultural society and people visiting the garden would hopefully gain an appreciation of multiculturalism through edible plants.

If this design were to be installed at Brookside Gardens, many people would benefit. With culturally relevant edible plants on display in a highly trafficked, free to access public garden, more people would be aware of the necessity for culturally relevant produce. Park visitors would also gain more understanding of cultures other than their own, as well as more appreciation for the impact that edible plants have on our everyday lives.

By increasing the access of information about these plants, the garden aims to increase the amount of people who will grow edible plants. The knowledge and ability to grow edible plants increases an individual's sustainability as they become less dependent on large scale industrial agriculture in favor of small scale, local produce. If more people adopt this

hobby, there also exists more opportunities for people who do not garden to access locally grown produce, as well as culturally relevant produce, as the people who are gardening will end up with surplus produce. By connecting people to food security resources as part of the educational signage on the site, the integrated edible landscape not only helps those in need of food security resources, but it also increases awareness of food security and access to culturally relevant produce to the larger Montgomery County community.

While the garden seeks to achieve these results, there are potential barriers to achieving them. The biggest barrier is whether people visiting the garden will understand the visual metaphor of an integrated edible landscape and its connection to our multicultural society. While the educational signage and website seek to elucidate the intention of the garden for the visitors, some people visiting the garden may not notice the sign nor connect the sculptures or vertical elements to the deeper meanings of the space.

Another potential barrier to the space achieving the intended results is whether the ornamental aesthetic of the garden would deter people from thinking that they could grow the displayed plants at home. The intention of the Idea Garden is to inspire park visitors to garden at home, but the ornamental nature of the garden may seem too lofty or out of reach for some people. While the design is not intended to be exactly replicated, the vertical elements of the garden are intended to be replicable to park visitors, including

the hanging buckets and the gourd trellises. While the four-by-four posts are slightly over-engineered for the average visitor, I am hoping that park visitors will focus more on the hanging buckets and realize that they could be incorporated into a less engineered system, such as a patio railing or a shepherd's cane.

Some park visitors may infer that every part of every plant included in the garden is edible when raw. Information on what parts is edible and if they need to be cooked can be accessed while in the garden by visiting the website and reading the individual plant species pages, but this may be too many steps for some people to access the information. Ultimately, I hope that if an individual sees a plant in the garden that they are interested in growing for themselves, that they will research the plant further before sampling any part of the plant.

To ensure that the garden directly addresses local food security for migrant populations, a partnership between Brookside Gardens and Grown@Pope and HarvestShare needs to be pursued. Horticulturalists that work at Brookside Gardens will need to ensure that there is time allotted for harvesting the edible parts of the plants in the garden. Perhaps to further include the community as part of the garden design, Brookside Gardens could request for more volunteers specifically for this garden at times when plants should be harvested, or Brookside could reach out to the communities that use

the culturally relevant edible plants to come and harvest and take home the produce themselves during volunteer events. This would be achieved through interacting with these communities as part of the design process to ensure that there is transparency. Community members with knowledge of culturally relevant edible plants could request that the integrated edible landscape client grow plants specifically for their community, and then this partnership would culminate in a volunteer harvest event where community members could harvest what they want, and the excess produce would be donated to local food assistance programs such as HarvestShare.

Chapter 8: Discussion

For further study, the most important facet would be surveying park visitors as they interact with the garden to see if the intended results of the design will work.

Garden specifications including a maintenance schedule would help the horticulturalists at Brookside Gardens with anticipating seasonal maintenance tasks and labor hours required for said tasks.

For the website to work, there would need to be someone hired to do the actual website design. The website would hopefully be hosted by Montgomery County, but a third party may need to be part of the process for the website to work and to be cost effective.

An increased overlap between Brookside Gardens and the Montgomery County Community Gardening Program would bolster the edible landscape design. This would also ensure that culturally relevant edible plants that are grown in community gardens in the county would be on display. The proposed design does showcase plants that I saw being grown in community gardens in the District of Columbia, plants that were mentioned in interviews with educators, practitioners, and community gardeners, plants that are available for sale at nurseries and seed companies, as well as culturally relevant edible plants that are researched by local universities and nonprofit organizations for their economic potential in local farmers markets, but actually visiting

community gardens as part of the design process could unveil plants that I did not come across as part of the research process.

As this design is ultimately the introduction of a new design typology, the specific plants and layout in the garden are not set in stone. Difficulty in sourcing plants for the garden will change the actual design of the garden. If community members with knowledge of culturally relevant edible plants were surveyed after visiting the garden, then the next iteration of the design would be strengthened as there would be more community input on what is being displayed. Likewise, future iterations of the Brookside design would seek to include different cultural stories where edible plants are featured. I researched the importance of fig trees to people around the world, but I could not find a way to include them in this version of the design, but a future design might showcase these trees in the circular sundial bed where my design has the three sisters sculpture.

While this iteration of an integrated edible landscape is more focused on the ornamental quality of the garden due to the site being an ornamental display garden, other variations of this design style may be more focused on production than on visual qualities. If an integrated edible landscape design were focused more on food production, it would look very different from the proposed design for Brookside Gardens. Produce would be planted in rows with intercropped flowers and integrated pest management plants between

rows in a more traditional small scale agricultural or cottage style garden. The clients for this design requested large masses of plants as well as bright colors, whereas a client more focused on production might request a design that looks more like a community garden plot than an ornamental garden.

Chapter 9: Conclusion

Integrated edible landscapes have the potential to address many issues in society, including food security, cultural competency, and biodiversity loss. Ornamental public displays of edible plants with cultural relevance to people in local communities can act as catalysts for conversations about multiculturalism, the environment, and public health. By displaying these plants in public spaces, integrated edible landscapes can increase the likelihood of interactions between individuals and plants. If people interact more with plants in their daily lives and can easily access culturally preferred produce, people may become healthier physically, mentally, and emotionally, and they may find greater life satisfaction as well as deeper connections with neighbors.

Appendices

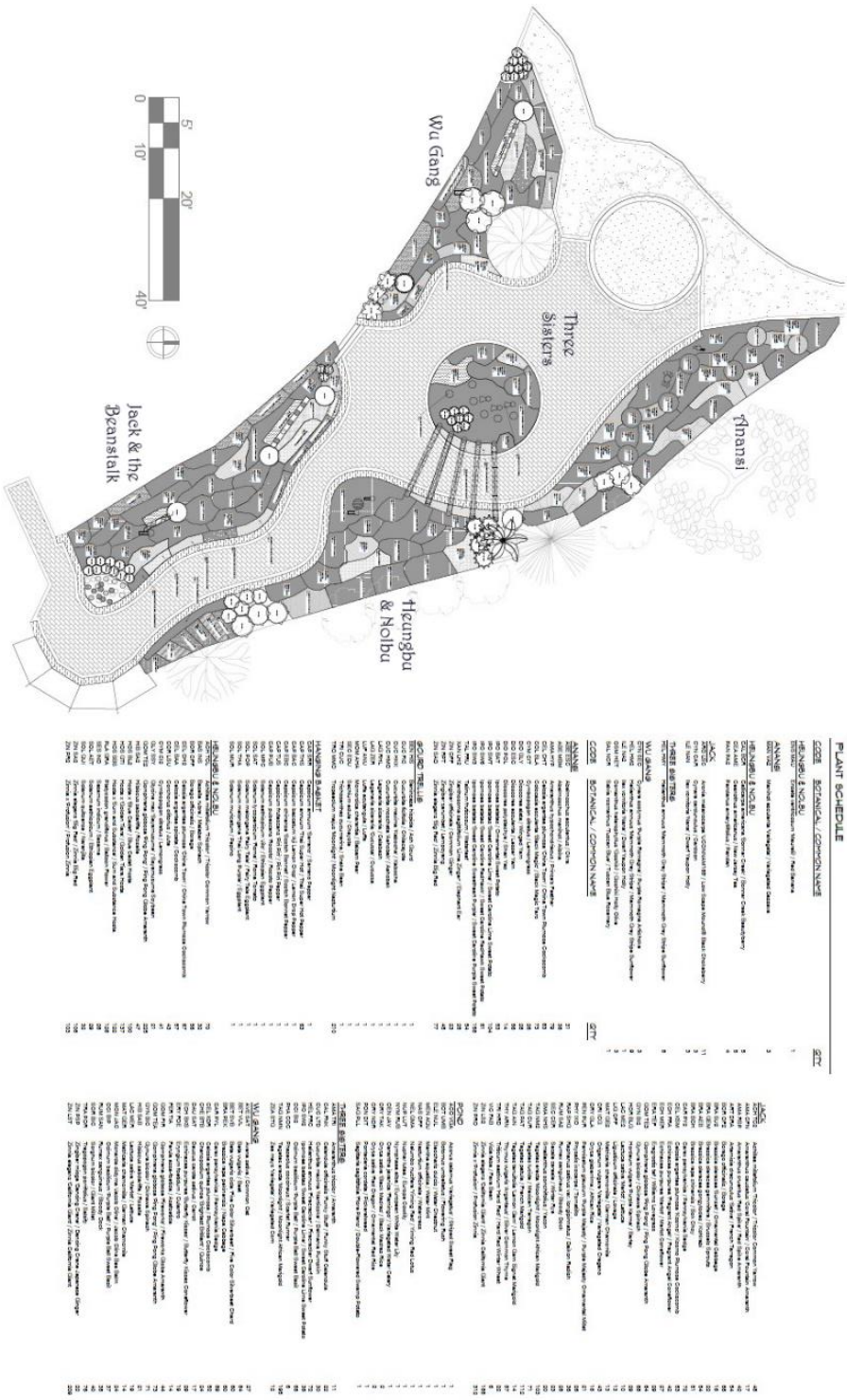


Illustration 17: Site Plan



Illustration 18: Site Plan color render.

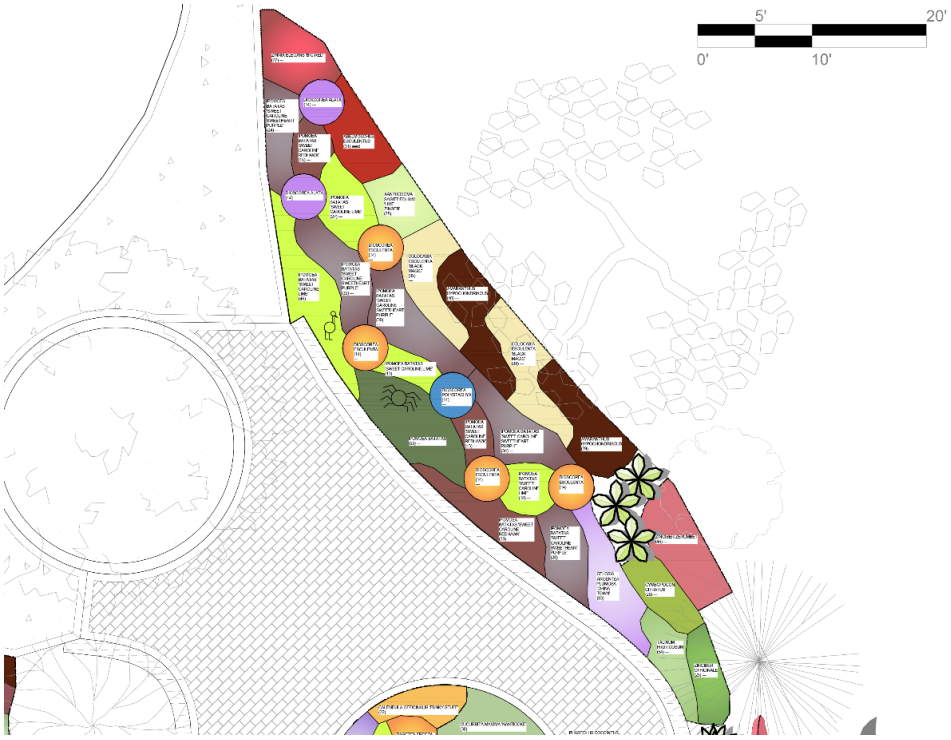


Illustration 19: Site plan enlargement north

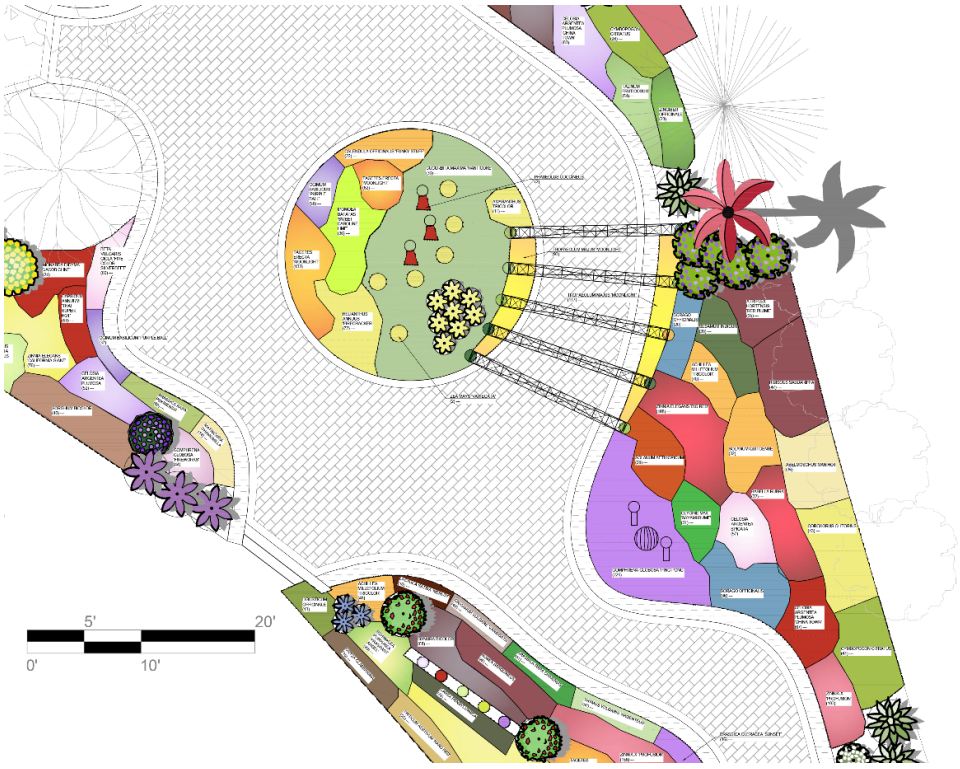


Illustration 20: Site plan enlargement center

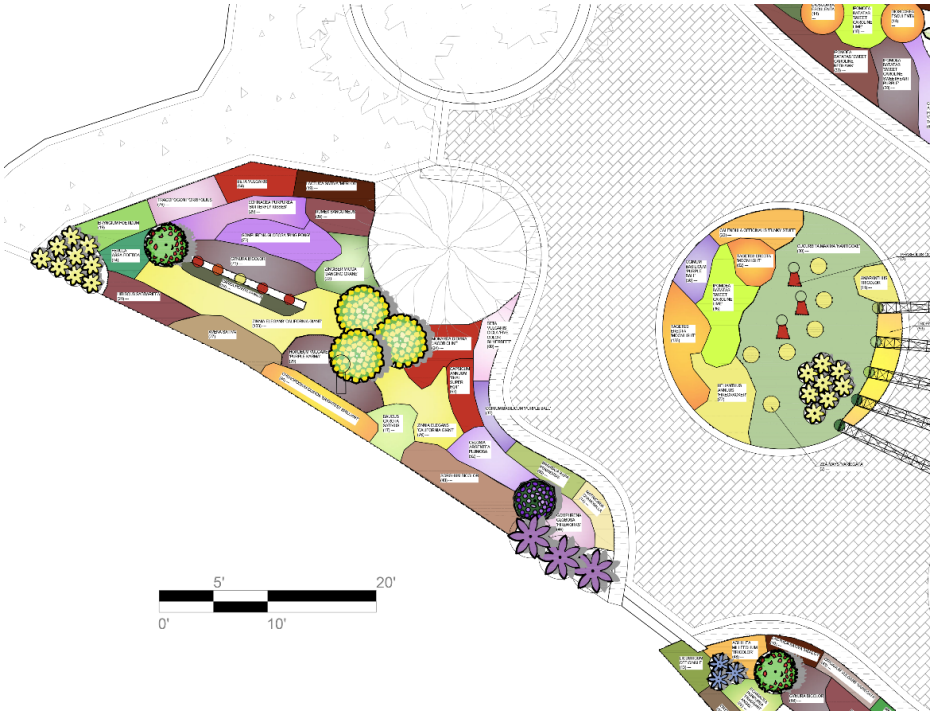


Illustration 21: Site plan enlargement west



Illustration 22: Site plan enlargement south

Heungbu & Nolbu

Korean Fairy Tale, Joseon Dynasty (1392 - 1897)





Once upon a time, there were two brothers named Heungbu and Nolbu. Despite being siblings, they were as different as night and day. Heungbu was kind, polite, and respectful towards his father, while Nolbu was rude, mean, and disliked by many people.

One day, the father of the two brothers fell ill and called his sons to his bedside. He told them that his last wish was for them to remain loyal to each other and help each other as siblings. After their father passed away, Heungbu grieved his loss, while Nolbu was happy to learn that he would inherit all of their father's wealth and property, including the house they lived in.

As the new owner of the house, Nolbu did whatever he pleased. He ordered Heungbu and his family to move out, refusing to let them stay even temporarily. Forced to leave their home, Heungbu and his family were left with no choice but to live on the streets before finally settling on the mountainside where they built a small hut. The family worked on farms, but they did not earn enough and often had to skip meals.

Heungbu could not bear to see his children suffering from hunger and went to his brother's home to ask for help. Nolbu refused to provide any assistance, even after seeing his brother's children crying from hunger. When Heungbu asked his sister-in-law for boiled rice, she cruelly refused and even hit him with a wooden spoon.

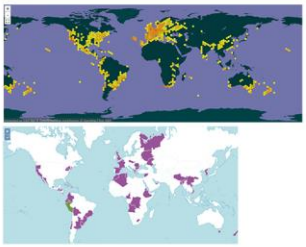
Some time passed, and spring arrived in the town. A

Illustration 23: Website page for stories

Tropaeolum majus (Nasturtium)

Tropaelocaea Origin: South America Interest: Spring, Summer, Fall





Common Names:

han lian hua (China), nasturtium (English), capucine grande (France), cresse du Pérou (France), Kapuzinerkresse (German), cappucina (Italy), fior (Italy), nasturzio (Italy), capuchinha (Portugal), chagas (Portugal), capuchina (Spain), nasturcia (Spanish), slingerkrasse (Sweden), mastuerzo (Peru, Mexico)

Cultivars:

'Alaska Hybrids' 'Cherry Rose Jewel' 'Double Gleam Hybrids' 'Empress of India' 'Gleam Hybrids' 'Hermine Grasshof' 'Jewel Hybrids' 'Jewel of Africa' 'Moonlight' 'Park's Fragrant Giants' 'Peach Melba' 'Salmon Baby' 'Strawberries and Cream' 'Strawberry Ice' 'Tip Top Hybrids' 'Tom Thumb Hybrids' 'Whirlybird Cream' 'Whirlybird Hybrids'

Related Edible Species:

Tropaeolum leptophyllum, Tropaeolum minus, Tropaeolum patagonicum, Tropaeolum sessilifolium, Tropaeolum tricolorum, Tropaeolum tuberosum

USDA Hardiness:

2 - 11

Growing Habit:

Forb. Prostrate perennial vine. Orange flowers bloom spring through fall. Self fertile.

Growing Conditions:

Sun: Full sun to light shade. Prefers afternoon shade.
Soil: Prefers light, rich, well drained, but is tolerant of most soil types.
Frost: Tender to frost

Pollinators:

Ornamental Uses:

Groundcover, trellis, container, border, massing, vertical spaces, specimen, patio, slope, walkway

Propagation:

Seed - sow April in situ. The seed usually germinates within 2 weeks. Seed can also be sown in March in pots in a greenhouse and planted out in late spring or early summer.

Where is it grown commercially?

Peru, Albania, Algeria, Amsterdam-St.Paul Is, Angola, Argentina Northeast, Ascension, Assam, Azores, Baleares, Bangladesh, Belgium, Bermuda, Bolivia, Brazil South, Brazil Southeast, Bulgaria, California, Cameroon, Canary Is., Cape Verde, Central European Rus, Chile Central, China South-Central, Colombia, Connecticut, Costa Rica, Cuba, Czechoslovakia, Dominican Republic, East Aegean Is., East Himalaya, Ecuador, El Salvador, Eritrea, Ethiopia, France, Free State, Great Britain, Greece, Guatemala, Gulf States, Haiti, Hawaii, Honduras, Jamaica, Juan Fernández Is., Korea, Kriti, Lebanon-Syria, Madeira, Maryland, Massachusetts, Mauritius, Mexico Central, Mexico Northwest, Morocco, New Hampshire, New York, New Zealand North, New Zealand South, Norfolk Is., North European Russi, Oregon, Pennsylvania, Puerto Rico, Romania, Rwanda, Réunion, South European Russi, Spain, St.Helena, Tasmania, Tibet, Trinidad-Tobago, Tristan da Cunha, Tunisia, Uruguay, Vietnam, Zaïre

Edible Uses:

Leaves - raw. A hot watercress flavour. Very nice on its own or as a flavouring in mixed salads. Rich in vitamin C. The leaves are available from early summer until the first frosts of the autumn.
Flowers - raw. A very ornamental and tasty addition to the salad bowl, the flowers have a hot watercress flavour and are available all through the summer. The flowers contain about 130mg vitamin C per 100g.
Young seed pods - raw. These are even hotter than the flowers or leaves. They can also be harvested whilst immature and pickled for use as a caper substitute.
Seed - raw or cooked. Very hot. The mature seed can be ground into a powder and used as a pepper substitute. The seed contains 26% protein and 10% oil.

Medicinal Uses:

Nasturtium has long been used in Andean herbal medicine as a disinfectant and wound-healing herb, and as an expectorant to relieve chest conditions. All parts of the plant appear to be antibiotic and an infusion of the leaves can be used to increase resistance to bacterial infections and to clear nasal and bronchial catarrh. The remedy seems to both reduce catarrh formation and stimulate the clearing and coughing up of phlegm. The leaves are antibacterial, antifungal, antiseptic, aperient, depurative, diuretic, emmenagogue, expectorant, laxative and stimulant. A glycoside found in the plant reacts with water to produce an antibiotic. The plant has antibiotic properties towards aerobic spore forming bacteria. Extracts from the plant have anticancer activity. The plant is taken internally in the treatment of genito-urinary diseases, respiratory infections, scurvy and poor skin and hair conditions. Externally it makes an effective antiseptic wash and is used in the treatment of baldness, minor injuries and skin eruptions. Any part of the plant can be used, it is harvested during the growing season and used fresh. The German Commission E Monographs, a therapeutic guide to herbal medicine, approve Tropaeolum majus Nasturtium for urinary tract infections, cough, & bronchitis.

Other Uses:

The seeds yield a high percentage of a drying oil that can be used in making paints & varnish. The growing plant attracts aphids away from other plants. Research indicates that aphids flying over plants with orange or yellow flowers do not stop, nor do they prey on plants growing next to or above the flowers[201]. An insecticide can be made from an infusion of leaves and soap flakes[201]. More and lusher leaves are produced when the plant is growing in a rich soil, though less flowers are produced[238]. When grown in a soil of low fertility the leaves are smaller and less lush, though more flowers are produced[200, K] [PFAF] May cause irritation of gastrointestinal tract in infants, small children, and in adults with histories of ulcers or kidney disease

Ethnobotanical Significance:

Worldwide grown in gardens. In the 18th cent. widely cultivated not only as ornamental but also for medicinal (as diuretic and antiscorbutic) and culinary use. In China still important as medicinal plant. May be the result of spontaneous hybridisation between T. ferreyrae Sparre × T. minus L. which may have taken place in the Lima area. All cultivated strains probably originates from a single fertile clone brought to Europe in 1684 by a Dutch clergyman. Plants were grown at the University of Leiden from where it was distributed. Later crosses with T. peltophorum Benth. and back-crosses with T. minus increased variability in many characters (Sparre & Andersson, 1991; with a list of horticultural names).

Illustration 24: Website page for plants

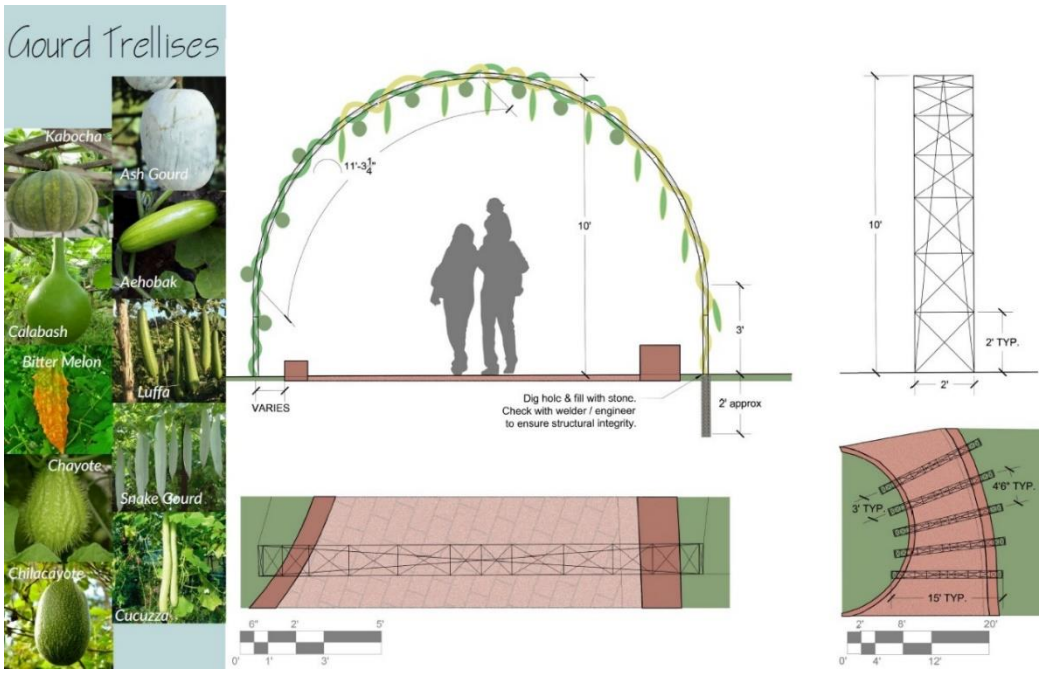


Illustration 25: Gourd Trellis



Illustration 26: Hanging Buckets construction detail.

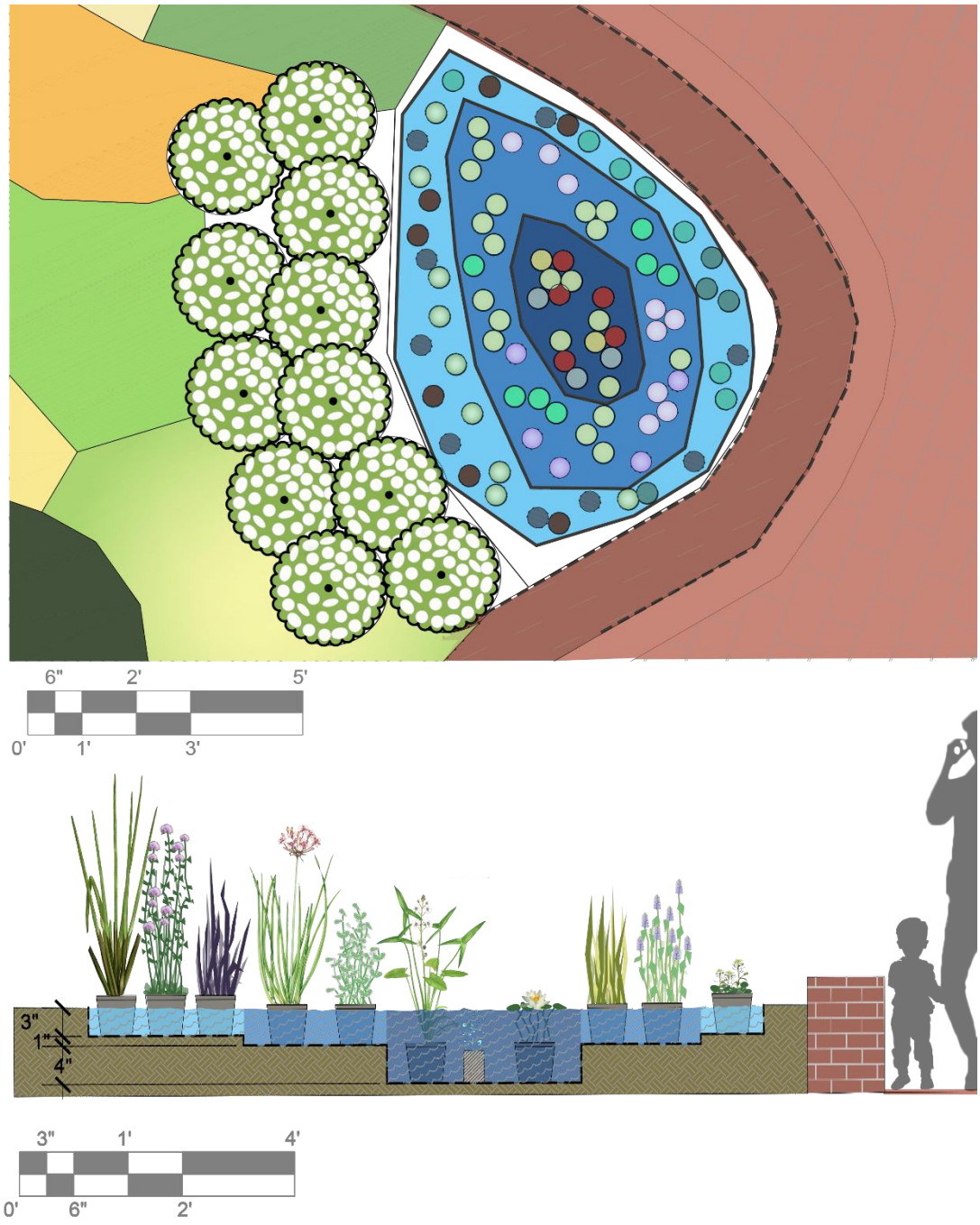


Illustration 27: Pond Garden

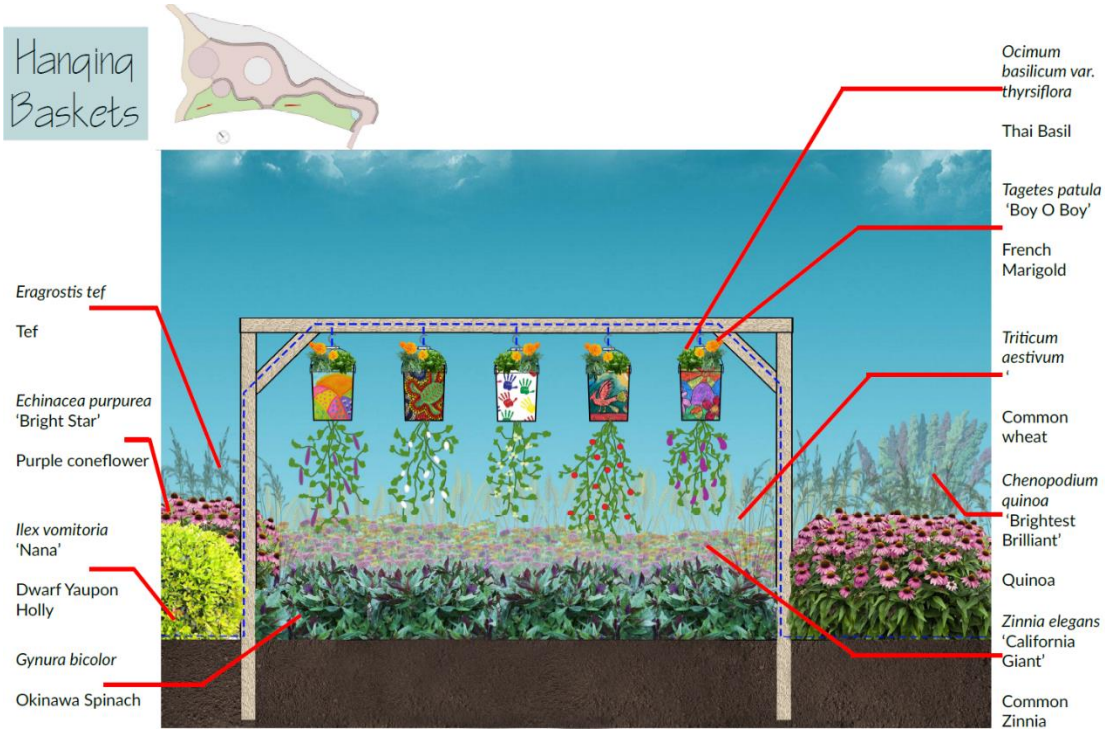


Illustration 28: Hanging Baskets plants.

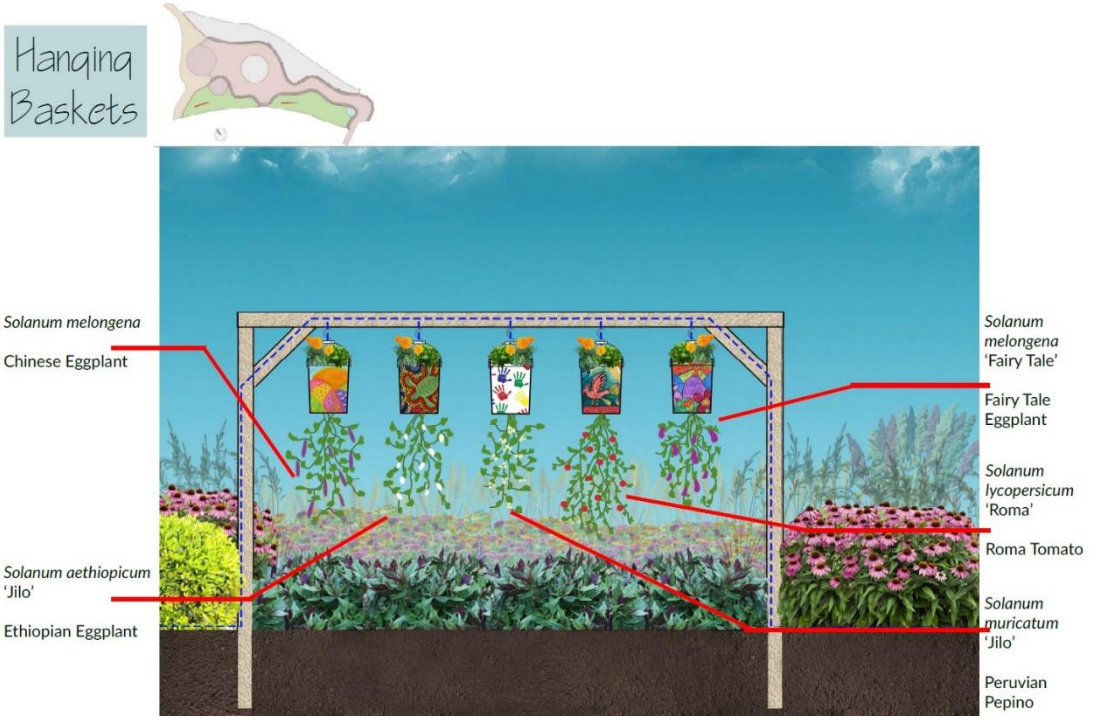


Illustration 29: Hanging Baskets container plants.

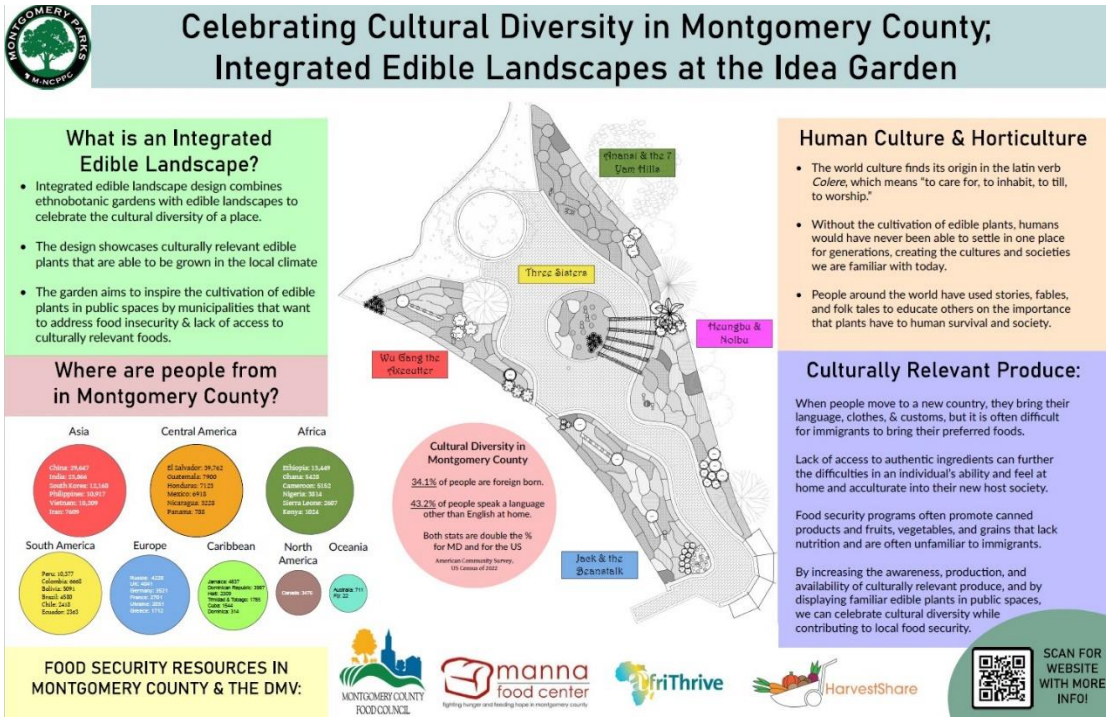


Illustration 30: Educational Signage



Illustration 31: Biophilia silhouette



Illustration 32: Anansi Garden



Illustration 33: Three Sisters Garden

Bibliography

Baker, Margaret (2011 [1969]), *Discovering the Folklore of Plants*, 3rd edition, Oxford: Shire Classics.

Barbaro, N., & Pickett, S. M. (2016). Mindfully green: Examining the effect of connectedness to nature on the relationship between mindfulness and engagement in pro-environmental behavior. *Personality and Individual Differences*, *93*, 137-142.

Barton, J., Hine, R. & Pretty, J. (2009) The health benefits of walking in greenspaces of high natural and heritage value. *Journal of Integrative Environmental Sciences*, 6:4, 261-278, DOI: 10.1080/19438150903378425

Bowler, D.E., Buyung-Ali, L.M., Knight, T.M. *et al.* (2010) A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health* **10**, 456. https://doi.org/10.1186/1471-2458-10-456

Chang, L.-S., Bisgrove, R. J., & Liao, M.-Y. (2008). Improving educational functions in botanic gardens by employing landscape narratives. *Landscape & Urban Planning*, *86*(3/4), 233–247. https://doi-org.proxy-um.researchport.umd.edu/10.1016/j.landurbplan.2008.03.003

Davis, S. (2022). Stories from the Land: Revealing Plural Narratives within One Landscape. *Landscape Review*, *19*(1), 64–75.

Ellett, F. S., & Wagner, P. A. (1983). Introduction: Cultural Pluralism. *Journal of Thought*, *18*(4), 8–9. http://www.jstor.org/stable/42589025

Flandrin J.-L. Montanari M. Sonnenfeld A. & Botsford C. (2013). *Food : a culinary history from antiquity to the present*. Columbia University Press. Retrieved October 23 2023 from http://site.ebrary.com/id/11242238.

Frevel, C., & Nihan, C. (Eds.). (2013). *Purity and the Forming of Religious Traditions in the Ancient Mediterranean World and Ancient Judaism*. Brill. http://www.jstor.org/stable/10.1163/j.ctv2gjwnr2

Gelder, J. (2003). BIRDS AND BUILDINGS. *Environment Design Guide*, 1–10. http://www.jstor.org/stable/26148829

Haag, R. (1980). Edible Landscape. *Landscape Architecture*, *70*(6), 634–637. http://www.jstor.org/stable/44664735

Heinrichs, M., Baumgartner, T., Kirschbaum, C., & Ehlert, U. (2003). Social support and oxytocin interact to suppress cortisol and subjective responses to psychosocial stress. *Biological psychiatry*, *54*(12), 1389-1398.

Hood, S. C. (1945). FOLKLORE AND PLANT LORE. *Quarterly Journal of the Florida Academy of Sciences*, *8*(1), 53–57. http://www.jstor.org/stable/24313316

Hoover, K. (2021) Children in nature: exploring the relationship between

childhood outdoor experience and environmental stewardship. *Environmental Education Research*, 27:6, 894-910. DOI: 10.1080/13504622.2020.1856790

Kendal, D., Williams, K., & Williams, N. (2012) Plant traits link people's plant preferences to the composition of their gardens. *Landscape and Urban Planning*, 105 (1-2), 34-42, ISSN 0169-2046, https://doi.org/10.1016/j.landurbplan.2011.11.023.

Landon, A. (2008). The "How" of the Three Sisters: The Origins of Agriculture in Mesoamerica and the Human Niche. *Nebraska Anthropologist*. 40, 110-124. Lewis-Jones, K. E. (2016). People and Plants. *Environment and Society*, *7*, 1–8. https://www.jstor.org/stable/26204968

Louv, R. (2010). *Last child in the Woods*. Atlantic Books.

Graham J. Mackay, James T. Neill, The effect of "green exercise" on state anxiety and the role of exercise duration, intensity, and greenness: A quasi-experimental study. *Psychology of Sport and Exercise*, Volume 11, Issue 3, 2010, 238-245. ISSN 1469-0292, https://doi.org/10.1016/j.psychsport.2010.01.002.

Greenwald, H. P., & Zajfen, V (2017). Food insecurity and food resource utilization in an urban immigrant community. *Journal of Immigrant and Minority Health*, 19(1), 179-186.

Marijke van der Veen (2014). The materiality of plants: plant–people entanglements, World Archaeology, 46:5, 799-812, DOI: 10.1080/00438243.2014.953710

Maas J, Verheij RA, de Vries S, et al (2009). Morbidity is related to a green living environment. Journal of Epidemiology & Community Health, 63, 967-973.

MM, D. (2019). Managing Cultural Diversity: INCLUSIVE AND EXCLUSIVE APPROACHES. *World Affairs: The Journal of International Issues*, *23*(4), 26–35. https://www.jstor.org/stable/48566195

Oldenburg, R. (1999). *The Great Good Place*. Marlowe.

Peters, K. Elands, B. & Buijs, A. (2010) Social interactions in urban parks: Stimulating social cohesion? *Urban Forestry & Urban Greening*, 9 (2), 93-100. ISSN 1618-8667, https://doi.org/10.1016/j.ufug.2009.11.003.

Pollan, M. (2001). *The Botany of Desire: A Plant's Eye View of the World*. New York: Random House.

Poincelot, R.P., & Flagler, J. (1994). People-Plant Relationships: Setting Research Priorities (1st ed.). CRC Press. https://doi.org/10.1201/9780203743942

Potteiger, M., & Purinton, S. (1998). *Landscape Narratives: Design Practices for Telling Stories*. John Wiley & Sons.

Ratner, S. (1984). Horace M. Kallen and Cultural Pluralism. *Modern Judaism*,

4(2), 185–200. http://www.jstor.org/stable/1396461
Readale. (2018). Social Structure and Social Interaction.
Ryan, R. 2006. The Humane Metropolis: People and Nature in the 21st-Century City. In Platt, R.H. (Ed.). *The Role of Place Attachment in Sustaining Urban Parks*. Cambridge: University of Massachusetts Press.
Seglow, J. (2003). Multiculturalism. In R. Bellamy & A. Mason (Eds.), *Political concepts* (pp. 156–168). Manchester University Press. http://www.jstor.org/stable/j.ctt155jbcx.17
Sharifi, E., & Lehmann, S. (2015). CORRELATION ANALYSIS OF SURFACE TEMPERATURE OF ROOFTOPS, STREETSCAPES AND URBAN HEAT ISLAND EFFECT: CASE STUDY OF CENTRAL SYDNEY. *Journal of Urban and Environmental Engineering*, *9*(1), 3–11. http://www.jstor.org/stable/26203432
Shumaker, S.A., and R.B. Taylor. 1983. Toward a Clarification of People-Place Relationships: A Model of Attachment to Place. In Feimer, N.R. and Geller, E S. (Eds.). *Environmental Psychology: Directions and Perspectives*. New York: Praeger.
Waliczek, T. M., Zajicek, J. M., & Lineberger, R. D. (2005). The influence of gardening activities on consumer perceptions of life satisfaction. *HortScience*, *40*(5), 1360-1365.
Westphal, L.M. (2003). Urban Greening and Social Benefits: A Study of Empowerment Outcomes. *Journal of Arboriculture* 29, 3:137-147.
Wilson, D., Wilson, A. (2013). Figs as a Global Spiritual and Material Resource for Humans. *Human Ecology* 41, 459–464. https://doi.org/10.1007/s10745-013-9582-z
Van Damme, S. (2018). In Search of Landscape as a Medium for Integration: The Potentials of Landscape Narratives in the Practice of Landscape Architecture. *Landscape Journal*, *37*(2), 101–122.
Van Den Berg AE, & Custers MHG. (2011). Gardening Promotes Neuroendocrine and Affective Restoration from Stress. *Journal of Health Psychology*. 16(1):3-11. doi:10.1177/1359105310365577
Vu, M., Raskind, I. G., Escoffery, C., Srivanjarean, Y., Jang, H. M., & Berg, C. J. (2020). Food insecurity among immigrants and refugees of diverse origins living in metropolitan Atlanta: the roles of acculturation and social connectedness. *Translational behavioral medicine*, *10*(6), 1330–1341. https://doi.org/10.1093/tbm/ibaa035
Zheng, Z. & Chou, R. (2023) The impact and future of edible landscapes on sustainable urban development: A systematic review of the literature, Urban Forestry & Urban Greening, 84. https://doi.org/10.1016/j.ufug.2023.127930.