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Designing for Spatial Justice:

Repurposing Armenia’s Post-Soviet Rural-Urban Region

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Abstract & Summary

This study assesses landscape changes in rural Armenia in the 30 years since the formation of the independent republic following the collapse of the Soviet Union. The research applies spatial justice theory to interpret these changes and implement the future development of a democratic landscape design process that can increase spatial justice. The Ashtarak Watershed is focused on as a case study of an Armenian Rural-Urban Region.

The work starts with the European Landscape Convention (ELC) and its implementation in Armenia. It defines landscape in the local context, surveys the historical layers of landscape development, and frames spatial justice theory from the global to local scale to define spatial injustice symptoms and apply them to the case study area. Landscape Character Assessment (LCA) is used to record and analyze the physical and cultural landscape as a basis for scenario development. The LCA process proposes agriculture, energy, tourism, and urbanization as the main drivers of future growth in the region. Three scenarios for future development were crafted for each driver and introduced to landscape connoisseurs via semi-structured interviews to gather tacit knowledge and produce a final aggregate scenario.

The final scenario was formed by landscape democracy and ecological systems thinking theories to design for spatial justice. In conclusion, this study identifies prevalent spatial injustice symptoms in the landscape and offers policy recommendations to alleviate them.
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I would like to thank everyone who has helped me in the research process in Armenia. Arthur Voskanyan and many others made this research possible through their participation and
support. My friends, Khachig, Armen, Raffi, and numerous others, had to endure my endless rants about landscape which helped flush out ideas and translate them to text. Nare and Serouj had the more difficult task of reading the text and offering critical feedback, which I am grateful for. The landscape I was lucky enough to study has had the input of numerous people over hundreds of years whom I am also thankful for. I was lucky enough to have met my better half during this process and cannot thank her enough for her support during these last few years. My parents and brother were of great help, and I would like to thank them. This research took place during turbulent times, and without the support of the people mentioned above, this work would not have been possible.
Preface

I visited Armenia for the first time in 2003. Up to that point, I lived in Los Angeles as an active member of the Armenian diaspora community. I was born in Aleppo and moved to Los Angeles at 10. Most of my cognitive years were spent in the cities of Aleppo, Latakia, and Los Angeles. After my initial trip to Armenia, I would return on numerous occasions to discover what was till then a place only available through books and other secondary sources. The initial proposal for this Ph.D. dissertation was developed between 2012 and 2015. My master’s thesis, defended in the summer of 2012, focused on post-independence landscape changes in Yerevan. After completing my degree, I moved to Aghdzk, a village on the outskirts of Mount Aragats, to direct the operations of a nature retreat. I spent most of my time between the rural-urban region of the Ashtarak watershed and Yerevan.

These years were incredibly dynamic in Armenia’s contemporary history. Nearly 20 years after Armenia’s independence, the country was transforming. Yerevan, the capital of Armenia, was quickly becoming the epicenter of the Armenian nation's economic, political, and cultural activity. People from all over the world were beginning to interact with Yerevan in a way that had not been previously possible. The increase in flight availability and reduced flight time made the country more accessible. During this period, Yerevan was building anew and adding more layers to its history, with new postmodern “Elitar” buildings towering over early Soviet neo-classical and tall prefab post-WWII buildings.

Nearly 25 years after independence, Yerevan had Northern Avenue, with newly built mixed-use developments and partially privatized parks. Simultaneously, the urban progressive class was constantly negotiating the changes in the urban landscape. Similar changes occurred in
Istanbul, Tbilisi, and Beirut, where urban renewal and revitalization projects were meeting a similar response via social movements and different forms of protest.

To make sense of it all, I began to study the balance of power relationships in the urban landscape. These inquiries naturally led me to the work of geographers (David Harvey, Edward Soja, Neil Smith, Henry Lefebvre, Elisee Recluse, and others). My quest to understand the urban landscape strayed from landscape architecture to human geography. I began to look at social movements and early 20th-century political history; I investigated the Swiss Agrarian Universities where Armenian revolutionaries were studying alongside their better-known contemporaries. For brevity, I wandered far from the urban in both time and space. Having gone down the path of political history, I developed further interest in contemporary history, political science, industrialization, post-industrialization, the Soviet Union, and the post-Soviet region. My education in landscape architecture further focused on spatiality as a lens to interpret my experience of the world. I related this all to my experience as a Western Armenian, traditionally defined as a diaspora Armenian who traces their familial roots to the historic Western Armenian Highlands (Currently in Eastern Turkey) who speak a western dialect of Armenian noticeably different from the current Eastern dialect used in Armenia. It also carries a secondary meaning at times; for example, in my case, as a Western Armenian who has spent most of his life living at the western edge of the “Western” world.

My move to Aghdzk in 2012 allowed me to direct the operations of a nature retreat founded by an Armenian diaspora family from Los Angeles. This initiative was demonstrative of the environmental consciousness forming in the diaspora concerned with Armenia’s future and the need for investments in the development of Armenia’s landscape. I spent the next year living in the small village of Aghdzk on the outskirts of Mount Aragats.
Compared to the urban, the rural landscape was alien to me. The rural was reminiscent of childhood summers in the cotton fields of my maternal grandparents’ birthplace, outside the town of Qamishli, and my paternal grandfather’s sheep farm in the city abutting the Jaghjagh river. My interest in the rural was crafted through an amalgamation of various landscapes: the modernist Mediterranean seaside orange orchards of Latakia buzzing with beehives, the apple orchards of Kessab, the rural-urban region around Los Angeles that sprawls in endless vastness, and the European countryside with well-formed, compact, and defined crop fields. For me, the rural was a distant past, a present enigma, and a blurry buffer between destinations. Hence, my understanding of the rural was limited, and a considerable amount of work would be needed to move forward.

My experience as the director of the nature retreat allowed me to interact extensively with international tourists, diaspora Armenians, and local people in the daily activities of the retreat. These multifaceted interactions with numerous people were quite interesting because I could observe how the visitors experienced Armenia’s rural landscape. Given the ecological nature of the retreat, efforts were made to grow food on-site, purchase produce locally, and hire local community members for different construction and maintenance work around the retreat. Having never been to the region before, I also had to scout the vicinity to discover outdoor activities that visitors could partake in, such as hiking trails, restaurants, and other sites of interest. This one-year commitment endured as I ended up living in Yerevan and the local region for the next five years until my move to Edinburgh to continue my doctoral studies. During my lived experience in the rural landscape of Aragatsotn, I began reading the local vernacular landscape to understand its development. After extensive interaction with both the landscape and people, I realized the rural regions outside of Yerevan have been developing in a different direction:
circular migration in the form of migrant remittance workers, small-scale production, blue-collar service employment, agricultural activities, and subsistence farming have been the primary forms of production in these regions. These led me to the following primary research questions. What symptoms of spatial (in)justice can be identified in the rural-urban region of the Ashtarak Watershed, Armenia, and how? Can we design for spatial justice in the rural-urban region, and if so, how?
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Chapter 1: Introduction

This research takes its starting point in the essay “The end of history?” by Fukuyama (1989) and studies the landscape of rural Armenia as the Soviet Union collapses, and a new post-Soviet period begins. This research study aims to identify the determinative factors of spatial justice present in the Ashtarak Watershed, a rural-urban region located 20 kilometers outside of Yerevan, the capital of Armenia. An introductory definition of spatial justice is as follows.

“In the broadest sense, spatial (in)justice refers to an intentional and focused emphasis on the spatial or geographical aspects of justice and injustice. As a starting point, this involves the fair and equitable distribution in space of socially valued resources and the opportunities to use them.” (Soja, 2009, p.2)

The following are the primary research questions that this study aims to answer.

1. What symptoms of spatial (in)justice can be identified in the rural-urban region of the Ashtarak Watershed, Armenia, and how?

2. Can we design for spatial justice in the rural-urban region, and if so, how?

This introductory chapter consists of five sections. The first section introduces the Republic of Armenia on a national scale, previous research that formed the foundation of the current study, and the research's historical and cultural context. The second section presents the theoretical background and introduces the theory of spatial justice as it relates to urban and rural landscapes. It further contextualizes the theories as they apply to Armenia. The third section proposes the research problem, introduces the European Landscape Convention (ELC), democratic landscape planning, and its advancement in the context of Armenia. The fourth section presents the research aim and theoretical approaches as they apply to the case study area. The fifth section presents the research questions and concludes the chapter.
1.1 Country Introduction

The current Republic of Armenia (Figure 1.1) is located in the Armenian Highlands of the South Caucasus. It borders Turkey to the West, Azerbaijan to the East, Georgia to the North, and Iran to the South. Armenia currently has open borders with Georgia and Iran. The borders with Azerbaijan have been closed since independence from the Soviet Union. The borders with Turkey have been closed since 1993 due to the latter’s support of Azerbaijan in the Nagorno-Karabagh war. The current area of Armenia is 29,743 square kilometers. Armenia is a mountainous landlocked country located 145 kilometers from the Black Sea and 175 kilometers from the Caspian Sea. It is 400 Kilometers in length at its central axis from Northwest to Southeast. The Altitude of Armenia ranges from 375-4095 meters above sea level, with an average altitude of 1850 meters (Fayvush & Aleksanyan, 2016). Mount Aragats is the highest peak in Armenia at 4095 meters.
Armenia’s elevation covers a vast range (Figure 1.2), allowing for seven distinct landscape types, starting from lower altitude deserts, semi-deserts, dry steppes, steppes, woodlands, sub-alpine, & alpine meadows at 3000 meters above sea level (Fayvush & Aleksanyan, 2016). It has numerous habitats, including dry mountain formations, wetlands, semi-deciduous forests, alpine forests, and numerous wild grasslands (Fayvush & Aleksanyan, 2016). It has a dense river net of 215 rivers over 10 km in length, with the Arax River being the largest in Armenia. Armenia has numerous lakes; the largest is Lake Sevan, located 1300 meters above sea level, covering an area of 1239 square kilometers; the second largest is Lake Arpi covering an area of 220 square kilometers. The climate in Armenia is highland continental with
long dry summers from June to September. The summers are hot, with temperatures between 22 & 36 Celsius. Winter temperatures range from -10 to -5 Celsius. Armenia is compact in form but offers various landscapes that can be utilized for numerous human activities.

Demographically, over 98 percent of the population is Armenian, with 1 percent Yezidi and 1 percent Russian and other minority ethnic groups. It has a total population of 3 million. There is a density of roughly 100 people per square kilometer, with almost half of the people living in the capital city of Yerevan. Armenia’s World Bank GDP Estimate for 2019 was around 13.5 billion dollars, with a per capita GDP of about $4,600. Armenia has ten provinces and ten major cities, the largest of which is Yerevan, officially categorized as a province with over 1 million inhabitants; the remaining cities have significantly lower inhabitants. The total population is evenly divided between urban and rural areas. The Economy of Armenia is heavily supported by Armenians living abroad.

The agricultural sector employs around 35 percent of the population (World Bank Group 2021). Armenia has a mining industry that produces copper, gold, zinc, lead, and other rare earth metals. The biocapacity of Armenia is currently at 0.8 global hectares per person compared to the 1.8 ecological footprint utilized per person (data.footprintnetwork.org). Armenia is highly energy-dependent and imports most of its energy from Russia in the form of nuclear and fossil fuels, with some import of fossil fuels from Iran. It produces a limited amount of hydrological energy and has the capacity for solar energy production. The economy of Armenia has shown steady growth since its independence from the Soviet Union. Armenia is a representative democratic republic. A member of the United Nations, the Eurasian Economic Union, Council of Europe, and numerous other international organizations. Armenia is a signatory to the European Landscape Convention.
1.1.1 Armenia’s Ancient Landscape

“Here, Green and round, Armenia extends to three seas. Here, to two. Here, to one, and here-not even to one. So swiftly does Armenia diminish from the first map to the last, always remaining a generally round state, that if you riffle quickly through the atlas, it’s a movie, it captures the fall of a huge round stone from the altitude of millennia. The stone disappears into the deep, diminishing to a point. But if you riffle the pages from the end to the beginning, it’s as if a small pebble has fallen into the water; and historical circles are spreading across the water, ever wider and wider” (Bitov, 1994, p.43).

Figure 1. 3 Armenia 95-66 BC (Public Commons)
Armenia’s cultural landscape goes back millennia and vastly stretches beyond the current delineated borders of Armenia, to regional cultural hubs and ancient Armenian capitals in territories outside the confines of the present republic to surrounding areas known as Historical Armenia (Novello, 1986). Armenians have continuously inhabited the regions shown in Figures 1.3 and 1.5 for millennia, with numerous populations settling in this general vicinity and further out from the region, as Figure 1.5 indicates in the next section. There are numerous historical maps of Armenia documenting the location and settlement pattern of Armenians in numerous languages, both ancient and modern (Galichian, 2004). The Urartians created the first Armenian state in 860 BC; it later expanded under Tigranes the Great to its largest area in the 1st century BC, as indicated in Figure 1.3. In 301 AD, Armenia became the first state to accept Christianity. In 405 AD Mesrop Mashtots created the Armenian alphabet and made the following his first translation.

Ճանաչել զիմաստութիւն եւ զխրատ, իմանալ զբանս հանճարոյ:
Čanačʿel zimastutʿiun yev zxrat, imanal zbans hančaroy.
To know wisdom and instruction; to perceive the words of understanding.
— Book of Proverbs, 1:2 (Kingjamesbibleonline.org, 2019)

Armenian churches and monasteries can be found throughout Historical Armenia. Novello (1986) describes the architecture of Armenian churches as a “crystallized” organization of space visible in the external joints and overall, well-defined mathematical engineering of the structure and its ability to contrast and yet become whole with the surrounding landscape. Geghard Monastery, shown in Figure 1.4, is constructed of pink Tuff stone and integrated into the surrounding cave formations. The monastery integrates gradually into the landscape, as seen in the image, as the built foreground slowly blends into the natural background.
“Therefore mathematics, absolute rationality and symbology, the expression of faith rather than logic, meet in a pregnant symbiosis of the human and divine, in the construction of man’s most important sign, the sacred building that is both a symbol of God to Armenia and of the distressing desire for “memory” of oneself, for survival” (Novello, 1986, p. 41).

Figure 1. 4 Geghard Medieval Monastery and the Surrounding Landscape.  
(Araratian and Mazelev, 1973)
1.1.2 Pre-Soviet Armenia’s Landscape

To understand the current cultural landscape, it’s essential to understand the political and economic activity in which Armenians were engaged at the turn of the century within the different provinces of the Russian empire, parts of which became current-day Armenia, and the surrounding states which at the time were part of the Russian and Ottoman Empire.

Figure 1.5 shows the areas of Historical Armenia and the surrounding areas of Armenian inhabitation; the darker pink indicates areas where Armenians were a majority. The lighter pink
indicates their presence as a prevalent minority. The red dots indicate the presence of large Armenian cities, and the triangles indicate large diaspora communities.

In 1897, an extensive General Census of the Russian Empire was conducted to designate the distribution of urban and rural populations in the different provinces of the Russian Empire. The census counted the total population of each province, the total urban population, population by religious affiliation, native language and ethnicity, occupation, and social status (Bournoutian, 2017).

The Baku province (Part of current-day Azerbaijan) had a total population of 826,716. The urban population was nearly 170,000, or 20.6 percent of the total population. Of the 170,000 urban subjects of the province, 40,074 were Russian, and 23,000 were Armenian. At the time, Baku was a cosmopolitan city populated evenly by Christians and non-Christians. Control of trade activity between Iran and Astrakhan was dominated by Slavic, Iranian, Armenian, and Jewish groups (Bournoutian, 2017). Armenians were almost evenly distributed between the urban and rural populations. Elisavetpol Province had a total population of 878,415, with an urban population of 89,259 or 10.1 percent of the total population (Bournoutian, 2017). Most of the urban population resided in Elisavetpol, Shushi, and Nukha. The Armenians formed the majority population of Shushi. They accounted for 97 percent of the population of the 5 Makhals that would later form the Nagorno-Karabakh region (Bournoutian, 2017). Armenians were also a majority in the Zangezur district (Bournoutian, 2017). It is important to point out that only 10 percent of the population of this region was urban, with the majority engaged in rural economic activity. Kars Province had a total population of 290,654, of which 37,838 were urban. Armenians comprised most of the region’s urban population, with 16,616 inhabitants; along with other Christian inhabitants, they comprised most of the urban population (Bournoutian, 2017).
This region would eventually be encompassed into the First Armenian Republic (1918-1920) and later handed over to Turkey in 1921 (Bournoutian, 2017). Kutais province had a total population of 1,058,241, with an urban population of 97,516. Armenians accounted for 1.8 percent of the population, with 18,980 residents, 14,505 residing in urban centers (Bournoutian, 2017). Tiflis province had a total population of 1,051,032, with 224,796 residing in urban centers. The main urban center of this province was Tbilisi, where Armenians formed a substantial majority (Bournoutian, 2017). At the time, Tbilisi was a cosmopolitan city and the cultural capital of the Caucuses. Yerevan province had a total population of 829,556, with an urban population of 92,323 (Bournoutian, 2017). 53,997 of the 441,000 Armenians in the province resided in urban centers. Compared to the other provinces, most Armenians in Yerevan province lived outside the urban centers and were engaged in rural economic activity.

Compared to Baku and Tbilisi, Yerevan province was predominantly undeveloped and a backwater at the edge of Empire (Bournoutian, 2017). In the pre-Soviet period, Tbilisi was the cultural hub of the Caucuses and one of the cities where Armenians formed a majority. Armenians played a substantial cultural role in the construction of Tbilisi. In comparison, Yerevan, the current capital of Armenia, at the time was a much smaller city. This is important because the roots of Armenian architecture can be traced in part to Tbilisi, which was heavily influenced by Armenian culture, along with Constantinople at that time. The two main cities in Eastern Armenia at the time were Yerevan and Gyumri. At the beginning of the 20th century, Armenia was a mainly agrarian rural society within its modern borders. At the time, many Armenians within the Russian Empire lived outside of Yerevan province in the urban centers of current day Georgia and Azerbaijan. They were engaged in urban economic activities, except for Karabagh Armenians, who also were engaged in the rural economy.
During this same period, Armenians in Anatolia were 70-80 percent peasantry. The remaining were small-scale artisans and laborers with limited financial resources. The wealthy Armenians in urban centers stood out for their economic acumen, which was over-representative of the population's political power, and at times attracted the attention of the ruling class in negative ways (Bloxham, 2005). As figure 1.6 indicates, Ottoman authorities perpetrated genocide against Armenians between 1914 and 1921, which led to the killing of over one million Armenians.

The remaining Armenians were deported from Anatolia and the Western Armenian Highlands to foreign countries creating the Armenian diaspora. In the Western Armenian Highlands, the main economic activity was farming. Most of the generated wealth was invested in the land, which the ottoman government then appropriated as the Armenians in the region were murdered, deported, or escaped to current day Armenia and other countries.
1.1.3 The Landscape of Soviet Armenia

The first republic of Armenia lasted from 1918 until 1920 and comprised a majority rural population with limited resources and a demoralized population of in-migrant genocide survivors. These genocide survivors would repair their ancient monasteries, build roads, plant trees in rivers valleys, and lay stone atop stone once more in very challenging times of starvation and disease. Armenia was incorporated into the Soviet Union in 1920. It had a total population of 720,000, which had declined by 30 percent from the seven years of war, genocide, revolution, and civil strife, which led to its return to an agrarian, peasantry-based pre-capitalist society (Suny, 1993). As figure 1.7 indicates, most of Yerevan’s streets were unpaved, and housing ranged from single-story to two-story buildings (Haroutounian, 2013).

![Figure 1.7 Pictures of Yerevan before Sovietization. Top Left: Old Yerevan Bridge. Top Right: Amiryan Street 1907, and Bottom: Arami Street (Yerevan City Museum).](image-url)
In Figure 1.7, the first image is of the Old Yerevan bridge and pre-Soviet dwellings. The Top right photo shows Amiryan street before it was paved, surrounded by orchards. The bottom picture shows Arami street with two-story buildings, the tallest at the time.

![Figure 1. 8 Pictures of Yerevan 1920s and 1930s (Yerevan City Museum)](image)

The first images in Figures 1.7, 1.8 and 1.9 depict the same area around the Old Yerevan bridge. The first image of Figure 1.8 is of the wine factory. In the first image of Figure 1.9, the Ararat Brandy Factory is visible. The bridge has been replaced with an automotive bridge. The second picture is of Tumanyan street with neoclassical era Tuff stone buildings and street trees planted on sidewalks.

![Figure 1. 9 1930s to 1950s Soviet urban aesthetics (Yerevan City Museum)](image)
After integration into the Soviet Union, the peasantry was organized. By 1975, Armenia had two-thirds of its population living in towns and cities, with only 20 percent working in the agrarian sector (Dudwick, 1997). Armenia would leave its agrarian roots of the early Soviet period and eventually transform into one of the most industrialized republics of the Soviet Union. By the 1970s and 1980s, Armenia was importing most of its agricultural needs. During this period, half a million workers accounted for two-thirds of the country’s material product, out of a population of 3.4-3.8 million (Melkonian, 2008). In the 80s, Armenia became a modern industrial state even though productivity was declining. The final blow was the 1988 Gyumri earthquake which cost thousands of lives and destroyed the main industrial city of Armenia.

In Figure 1.10, the first image is of Swan Lake Park, a modernist era park, with the neoclassical Opera House in the background. The second is the Chess House a soviet modernist building. These cultural buildings were surrounded by large newly designed green spaces, which increased the city's open space and cultural offerings considerably.
In Figure 1.1, we see Ani Plaza Hotel, with its modernist design, featuring retail and service-oriented ground floor spaces; we can also see how the new building compares to the Stalin-era buildings in scale and design language. The second image is of a seagull statue located roadside on the old highway from Yerevan to Lake Sevan; modernist sculptures of this form dotted the landscape in the Soviet Modernist period and became an expression of the most Avant-Garde architecture, sometimes in the form of bus stops (Herwig & Meades, 2015). Soviet Armenia’s landscape was a combination of picturesque landscapes, ancient monasteries, neoclassical buildings, and some features of Soviet modernist architecture. Photographs from books printed during the Soviet period provide an understanding of the landscape, but only within the frame chosen by the photographer. These usually portray pristine landscapes and architectural monuments. Alternatively, there are limited photographs of everyday landscapes that show neighborhoods, factories, and daily life, which were better understood via movies.
1.1.4 Armenia’s Post-Soviet Landscape

This section covers modern Armenia’s cultural landscapes after Armenia’s independence from the Soviet Union and its effects on the physical landscape. With the collapse of the Soviet Union in 1991, the gross domestic product (GDP) in Armenia fell by 37.5 percent between 1990-1992 (Melkonian, 2008). With the Soviet Union in hindsight, Armenia was one of the first former Soviet republics to privatize agriculture, commerce, and industry, becoming the second most privatized county in the post-Soviet space after Croatia (Chorbajian, 2008). This rampant privatization and the economic recommendations from the International Monetary Fund were responsible for growing the economy in the collapsed state. Simultaneously, the independence of Armenia also sparked the powder keg that is the Nagorno-Karabagh conflict. Further compounding the situation was the 1988 Gyumri earthquake in the industrial capital of Armenia, which claimed 20,000-40,000 lives and destroyed 40 percent of the country’s production infrastructure (Haroutounian, 2013).

By 2004, around 35 percent of Armenia’s population was in poverty, living on less than the government-set amount of 28 dollars a month for a 2,200-calorie daily diet. Even though the GDP was going up, the GINI coefficient (which measures the income equality in a country) was 0.41, indicating the presence of a large income gap (Chorbajian, 2008). This inequality was not curtailed by the government, which was partially at fault for the existence of such dire inequality. The difficult economic conditions in post-Soviet Armenia caused the emigration of over one million people, creating a “brain drain” in the capital of Yerevan (Haroutounian, 2013). Due to corruption, privatization would often lead to government-owned assets being sold for low prices. Thereafter, the new owners would strip the assets, as was common practice throughout the post-Soviet bloc (Khanjian, 2008).
During the early 1990s, agriculture accounted for around 45 percent of employment in Armenia, which had meager yields due to economies of scale, lack of mechanization, irrigation, and fertilizer (Melkonian, 2008). Khanjian sums up the economic realities of the transition period with the following: “Privatization before having competition and regulations generates monopolies and market failure” (Khanjian 2008, p. 46). Fukuyama shares similar sentiments with a bit more optimism: “Political liberalism has been following economic liberalism, more slowly than many had hoped, but with seeming inevitability” (Fukuyama 1989, p. 9).

This period from the collapse of the Soviet Union to the mid-1990s is commonly known as the “dark years,” where the country essentially went “dark” due to fuel and electricity shortages. During this time, there was a centralization of the population in Yerevan from rural areas due to the availability of resources and international aid in the capital city. At this point, the city’s infrastructure was crumbling, and trees in parks were being harvested for firewood (Haroutounian, 2013). The following period (1998 to 2011) is known as the “rabid development years”. In correlation with the market crash of 2008, Yerevan began to build anew. This was ushered in by the construction boom due to diaspora Armenians visiting and purchasing homes, along with the newly emergent wealthy members of Armenian society (Haroutounian, 2013). This “rabid” period brought about a new centerpiece downtown main street development named “Northern Avenue,” a mixed-use development like others in the region and a symbol of emerging gentrification. In comparison, rural areas outside of Yerevan would see very little investment and development during this period, even though the same pattern of privatization had taken place in the rural landscape.

In summary, the post-Soviet landscape emerged with Armenia’s industry reduced by 40 percent due to the Gyumri earthquake, the collapse of the Soviet Union, and the halting of
production by the central command economy. Further challenges included the war taking place in Nagorno-Karabakh. The combination of these factors significantly changed the landscape of Armenia, independent of any new political and economic policy changes that took place. By 2005, after 15 years of independence, Armenia’s production would once again reach the levels that existed at the end of the Soviet Union (Khanjian, 2008). By 2005 the rural landscape was home to one million people, 80 percent of whom were employed in the agricultural sector.

1.1.5 The End of History?

The collapse of the Soviet Union in the early 1990s per Fukuyama (1989) was perceived as “the end of history.” The Soviet Utopia had run its course and what was to follow was the beginning of the post-Soviet world. Liberal democracy gained momentum with the defeat of the Prussian monarchy by Napoleon in 1806 and the incorporation of liberty, equality, and fraternity as the ideals of the revolutionary French state (Fukuyama, 1989). In the following years, there was a rampant propagation of these ideas to more members of society. The ideas were also diffused spatially, as it achieved its zenith in Europe and North America as the vanguard states of liberalism.

“The state that emerges at the end of history is liberal insofar as it recognizes and protects through a system of law man’s universal right to freedom, and democratic insofar as it exists only with the consent of the governed” (Fukuyama, 1989, p 3).

The old Europe of monarchs and aristocrats and their associated privilege and duties had ended, and what followed was the beginning of republicanism. The political, financial, and social capital created up to that point would be distributed to more members through the revolutionary process, along with the task of governance. In the following century, fascism and communism would appear as the two challengers to liberal democracy. Fascism would challenge the political
fragility, materialist nature, anomie, and limited community formation present in the liberal western world by offering a strong state that would provide exclusivity to its members. This state structure would prove futile with the fall of Nazi Germany and the fact that constant expansionism through war had lost its appeal after World War II (Fukuyama, 1989). Another challenge to liberal democracy would be communism, where the means of production were commonly owned. Each person would work based on their ability and receive from society based on their need.

Communism, as envisioned by Karl Marx to a certain extent, was materialized in modern America due to the egalitarian and moderately redistributionist practices that were put into practice, along with its large public sector, which made it hard to argue for the overthrow of liberal democracy in most western countries (Fukuyama, 1989). With the advent of “the end of history,” the only two alternatives to liberal democracy and communism that remained were nationalism and religion in the form of a theocratic state, which only Islam had offered as an alternative in modern history (Fukuyama, 1989).

Nationalism in its many forms varied from simpler expressions of cultural nostalgia to racial and ethnic consciousness, leading at its extreme to systematized indoctrination of fascist formulations (Fukuyama, 1989). Unlike liberalism and communism, which can be universalized, systematic nationalism cannot be universalized, but its doctrines can be transferred from one state to another (Fukuyama, 1989). Beyond its structuralized extreme formulation, nationalism can simply be the want of negative freedom from outside influence and the need for independence within a larger system of governance or better representation within that system. Fukuyama further explains that in most cases, nationalism does not pose a threat to liberal
democratic ideology due to its compatibility within the ideological framework of the latter and usually for a lack of specific economic doctrine (Fukuyama, 1989).

These were the ideological choices available at “the end of history” per Fukuyama (1989). At this point, imperialism in Europe had mainly ended, along with the expansionist ideas of ruling another state by force and without its consent. Thus, the remnant was the common marketization that would take place between nations and overtake ideologies, such as what would become of the post-Soviet region, which Fukuyama describes as the following:

“A world dominated by economic concerns, in which there are no ideological grounds for major conflict between nations, and in which consequently, the use of military force becomes less legitimate” (Fukuyama, 1989, p.16).

This continuous marketization would eventually increase trade between nations and reduce the number of wars. Yet, it will not end all ethnic and nationalist violence, such as the war between Armenia and Azerbaijan (Fukuyama, 1989). Nevertheless, larger-scale conflicts that enlisted the participation of large state actors would decline unless, of course, they are still stuck in history (Fukuyama, 1989). The liberal democratic utopia that Fukuyama describes already displays its limitations. Dystopic contradictions are always present in any utopic formulation.

“The end of history will be a very sad time. The struggle for recognition, the willingness to risk one’s life for a purely abstract goal, the worldwide ideological struggle that called for daring, courage, imagination, and idealism, will be replaced by economic calculation, the endless solving of technical problems, and the satisfaction of sophisticated consumer demands. In the post-historical period, there will be neither art nor philosophy, just the perpetual caretaking of the museum of human history. I can feel it in myself, and see it in others around me, a powerful nostalgia for the time when history existed” (Fukuyama 1989, p.18).

At this point, per Fukuyama, “history” or the ideological battles of the 20th century had come to an end. The centrally planned state capitalism of the Soviet Union had collapsed, and the
emergent states would espouse a liberal democratic “utopia” that would continue to make headways into the foreseeable future. The establishment of a liberal democratic republic brought forth the distinctions of private producer/owner, the state agency, and the local community, which are all dimensions of democratic, economic, political, and social production that individuals participate in as inheritors of the ideals of the French revolution. The *bourgeois* with a focus on self and familial interests also occupies the role of *citizen*, with a distanced interest in public matters regulated by the state, and the *homme* who is at the same time empathetic to the welfare of all (Primdahl et al., 2018).

“The Bourgeois want freedom and independence, mainly related to production for the market; the citoyen asks for equality and fairness, secured by the state, whereas the homme seeks meaning, quality, and satisfaction as part of the brother-and sisterhood of civil society” (Primdahl et al., 2018, p.153).

This section covers the ideological choices available at “the end of history?” for Armenia to choose from. Like other post-Soviet states, Armenia had to make changes quickly in response to the changing economic and political landscape. Armenia would start liberalizing its economy and privatizing its public assets. This liberalization would take place for the foreseeable future, which this research will further articulate. Fukuyama’s framing of history up to this point and the foreseeable triumph of liberal democracy towards the future was, of course, challenged by numerous scholars who claimed that it mirrored Margaret Thatcher’s TINA (There is no alternative) outlook (Featherstone & Miles, 2018). Regardless this was the ideological direction that Armenia embarked on at the beginning of the 1990s. Utilizing spatial justice theory this research helps identify the effects of liberalization on the rural landscape of Aragatsotn watershed. The next section will introduce spatial justice theoretically.
1.2 Theoretical Background

This section introduces spatial justice theory as it relates to global production/consumption and explains how local landscapes are affected by consumerism. The second section introduces spatial justice concerns in the urban landscape along with some key ideas, authors, and examples of spatial planning shortcomings in Yerevan and other regional cities which have been negatively affected due to a lack of democratic landscape practices.

1.2.1 Spatial Justice & Global Production/Consumption

Spatial (in)justice is inherently present in cultural landscapes due to numerous inequalities produced by the production/consumption cycle. It is an indicator through which values, power, and inter-relationships can be understood across different spatial scales: global, national, regional, urban, peri-urban, rural, and natural.

“Globalization has also been associated with state restructuring and challenges to the political domination of the nation-state as the exclusive political space for defining citizenship, legal systems, and hence justice itself. Struggles for justice, more than ever before, stretch across political scales, from the global to the local” (Soja 2010, p. 22).

To understand spatial (in)justice and how it manifests at different scales of the landscape, a vertical global analysis is needed to understand the interaction and production of spatial (in)justice, as it manifests across the world and how it can be relatively mitigated on a local, horizontal, and landscape scale. In the contemporary age of globalization, an object or product is produced in numerous localities. Its total cost is derived from the overall labor expended and material costs of production. A smartphone is designed in one country, produced in another, and sold in others. Production is concentrated in countries with cheap labor and more lenient environmental and labor regulations. The higher valued stages of the production cycle, such as
design, research, and development, occur in more affluent parts of the world. The same can be said for most consumer products. Clothing designed in Paris is deconstructed and adapted to cheaper material forms. In a short while, it is mass-produced in various factories, ranging from massive warehouses the size of football fields to tin-roofed huts in developing countries (Burtynsky, 2006), with the living standards and safety of the workers varying by degree.

Simultaneously, we have the extraction of finite natural resources through mining, forest clearing, oil extraction, etc., taking place at an increasing rate, using environmentally detrimental methods to meet the needs of production/consumption. These anthropogenic activities and their associated harmful effects, in the form of pollution, climate change, war, piracy, international terrorism, oil spills, deforestation, migration, and human losses, are externalized from the production cost. These costs are not entirely paid for by companies that extract or produce the product or by the consumers in the product's purchase price. Different global populations pay for these externalities in numerous ways. Based on spatial proximity, the locals are immediately affected by externalities created in the production of the product as it takes place in their immediate landscape, often causing shorter life spans, lower quality of life, and necessitating medical treatment. These members of the production cycle pay the costs immediately or within their lifetime, while others further in proximity pay at a future point in time or bill it forward to future generations. The current production system produces a product for consumption at external costs that are unevenly distributed spatially. In time, there will be a conflict between current consumption versus future ecological issues. Current production and consumption methods incorporate an unjust spatial, time, and economic dynamic.

The lack of visibility in production has been the driving force behind globalization. Yet, there seems to be an emerging shift as people are becoming aware of the actual cost of producing
the “objects” (Baudrillard 2008) of their desire. Anything mass-produced intrinsically carries issues of injustice as it travels through space due to the inequality distributed across the global landscape. The contemporary object seems to lose its luster as the extent of the entire production cycle is revealed (Burtnsky, 2006). Such objects are embodied through material products or objectified experiences, such as travel cruises, choice of foods, and modes of transportation.

1.2.2 Spatial Justice & the Urban Landscape

Spatial and environmental justice issues manifest in the urban landscape in numerous ways. There is a direct correlation between spatial justice, i.e., access to parks, education, transportation, and housing, and how democracy is manifested (Soja, 2010). In cities where the democratic process is developed with consideration for constituents’ interests in the decision-making process, spatial justice is elevated, and citizens understand their right to the city (Harvey, 2012). As the world becomes increasingly urbanized, spatial, environmental justice, alongside ecological democracy, will play a significant role in developing the future city. Ecologically inconsiderate design alienates people and segregates communities. It’s degrading to the environment and perpetuates the very problems that it aims to fix (Hester, 2010).

As a social space, the city is created by the economic, cultural, and political values of a society at any given time. Yet, the decision-making powers that shape the city, either economic, cultural, or political, do not represent the interests of all inhabitants. Spatial justice identifies characteristics that create an unjust society and tracks how they manifest in the urban landscape. It focuses on the organization of space and how its utility and function reflect the power structures inherent in the city and social relations between different class interests (Lefebvre, 1991).
Spatial justice issues arise when the arrangement, zoning, distribution of resources, and transversal of space are applied to different members of society unequally. Achieving a balance of justice in the urban landscape is a principle that unites different city inhabitants, with consideration for fairness and human dignity (Soja, 2010). Changes are made periodically in the urban landscape in response to capital investments made by private developers, which cause internal migration, reduce open space in the city, and reduce the effectiveness of public transportation systems. Nevertheless, decision-makers and government representatives consistently overlook the injustices that develop in the city. The study of spatial justice and its adaptability in the urban city is a relatively new concept in architecture, urban planning, and landscape architecture.

Through his research on the gentrification of Istanbul, Karaman brings forth several examples pointing to the displacement of entire communities to allow for the creation of gated communities and other commercial developments (Karaman, 2010). The plan to convert Gezi Park into a shopping mall was met with strong backlash from civil society during the Occupy Gezi Park protests in 2013 (Yigit-Turan, 2018). What are the true costs of urban gentrification developments in Istanbul leading up to the Gezi Park protests? Who paid for the total cost of the gentrification process? Who profited at who's cost? Following the protests, was the urban landscape of Istanbul more just? The same spatial justice issues of gentrification that created the social unrest in Istanbul have occurred, albeit at a smaller scale in Yerevan, particularly with the construction of Northern Avenue, which displaced hundreds of residents from their homes. It is also evident by the placement of shopping booths in Mashtots Park, which was met with large grassroots demonstrations organized by environmental activists (Haroutounian, 2013). These examples clarify how spatially unjust capital investments may create profit for the few but do so
at the cost of externalities paid for by others. The scale of study when it comes to spatial justice is important because a commercial development is limited by its determined goals of profit generation for its limited investors. If carried out and regulated properly, the development may yield profit and not harm the spatial justice levels of a given landscape. Nonetheless, if it is carried out at the cost of spatial injustices, the costs may need to be paid for by society immediately, over a longer period, or at a later point in time, in different forms such as an economic decline in the urban core, reduction of green spaces, or the creation of pollution. Some externalities may not be identifiable at a particular time but may become evident later.

As a means for measuring societal interaction and its manifestations spatially, social justice is a degree of success achieved in the built environment and the different communities that create the whole of urban society (Lefebvre, 1991). The design of space that does not reflect the interests of all members of society further creates inefficiencies and detrimental externalities that are often overlooked, which eventually reduces a society’s cohesiveness (Hester, 2006). Identifying these inefficiencies is fundamental to understanding the urban and rural landscapes to create a design process that promotes justice in ecologically sustainable landscapes.

1.3 Research Problems

This section presents the condition of modern Armenia’s landscapes since independence. The first subsection explains the reasoning for its current state. The second subsection explains the importance of rural development and presents modernist landscape planning approaches. The third subsection explains the shortcoming of landscape planning in Armenia and presents the rationale for why democracy and landscape are intertwined. The final subsection presents the European Landscape Convention (ELC) and traces its implementation in Armenia.
1.3.1 Landscape Planning Shortcomings

With the collapse of the Soviet Union, the developing war in Nagorno-Karabagh, the devastating earthquake in Gyumri, and rampant emigration, Armenia faced a slew of challenges, unlike the other post-Soviet states. Armenia’s GDP began to show some gains in 1996. During these “dark years,” the remnants of Soviet-era land planning were more theoretic than actual. The unchecked land privatization in rural areas that had taken place after independence had limited success due to economies of scale and a lack of tacit farming knowledge, which had disappeared during the Soviet period as Armenia industrialized. The vast majority worked outside the agricultural sector, leaving planning policy and the rural infrastructure to slow decay.

In the following period, known as the “rabid development years,” the development of downtown Yerevan took precedence as the beneficiary of most investment capital in Armenia. Excess capital generated in Armenia and investments from outside were dedicated to developing downtown Yerevan which would soak up any excess capital available to the newly rich of Armenia and the diaspora communities visiting Armenia for the first time. These developments took place to the detriment of the green urban landscape. Building developers and the government worked in tandem to develop policies that were solely beneficial to their interests, with no regard for democratic processes or civic discourse, sparking a large wave of protests (Haroutounian, 2013). In turn, this resulted in increased costs for law enforcement and other externalities caused by the self-serving nature of these forces.

During the “rabid development” years, the rural sector did not develop as rapidly as the urban because Yerevan had not fully absorbed excess capital. This would slowly change by the late 2000s, as property values began to soar in Yerevan and capital started to look for new streams of accumulation. In the beginning, the network of wealthy locals and government would
continue privatizing and buying up underutilized lands from farmers and slowly creating orchards, large greenhouses, freshwater fish farms, and other agricultural investments in the rural landscape. They built restaurants next to natural monuments and contributed to the commodification of the landscape, with little consideration for the detrimental effects of their actions.

At the 18th ELC Meeting in Yerevan in 2016, the Armenian delegation stated the treaty would provide a solid legal and theoretical foundation. Nevertheless, there was little done beyond legislation to implement the treaty. The ELC was relegated under the jurisdiction of the Urban Development Committee. From its ratification until the ELC Meeting in 2016, not much has been done to enact practical measures guided by the treaty. This was attributed to weak government administration, lack of resources, absence of prioritization, and a high degree of personnel turnaround in government agencies. All these factors combined in numerous input ratios resulted in planning shortcomings both in the urban and the rural landscape, with detrimental effects that may be quantifiable if approached from a spatial justice perspective. Through this study, we will attempt to identify these shortcomings in the rural landscape area, using the Ashtarak watershed as a case study.

1.3.2 Towards the Country

Images of rural life in advertisements for off-road vehicles, country homes, farming, and outdoor adventure gear are present in almost all facets of urban life. The rural is constantly the desired location of escape and the utopian outside, where one can travel by sport utility vehicle, rail, or bus. The rural is hands-on, rough, untamed, unfiltered, unrefined, and not fully cataloged. The remaining enigma and the attainable undiscovered but not yet fully commodified, packaged,
branded, rebranded, outsourced, revamped, and repackaged. The rural still has space for imagination, or specifically landscapes for imaginings. It is always outside and the opposite of being in the city. It is where the landscape takes place in numerous formations. It is also where life takes place for most people in Armenia. These places sustain the capital of Yerevan, the second city of Gyumri, the third city of Vanadzor, and other regional conglomerations. That is why spatial justice needs to be addressed in rural areas beyond the urban core.

The Guggenheim Museum’s exhibition titled “Countryside, The Future” spearheaded the publication of a corresponding book, “Countryside: A Report,” by Rem Koolhaas (2020) and students from Harvard Graduate School of Design. In the introduction, Koolhaas reverts to the 1960s and 1970s when revolutionary and post-colonial leaders in the Middle East and Africa had a country orientation in their development goals. They formed specific plans to modify the rural landscape to make it conducive to revolutionary changes. Koolhaas explains that the segregation between urban and rural has become more prevalent since the 1990s. The rural is perceived as backward and outside the realm of where modern life takes place.

The collaborative research project, “Modscapes,” is a study of modernist landscapes cumulated in an exhibition titled “Enter the Modern Landscape” at the Centre for Fine Arts in Brussels (CEAA, 2019). Both exhibits collaborated with numerous universities and academics across various landscapes and regions of the world. They operated to draw attention to the rural and bring to light its significance in contemporary and future design as a response to global-scale environmental concerns of production and consumption.

Armenia experienced Soviet modernization initially with the collectivization of farming. After World War II, large infrastructure projects attempted to control nature and bend it to the will of man. In the post-Soviet independence period, the goal was to convert these larger farms to
individual ownership and small-scale subsistence farming. In both these periods, the modernization efforts were top-down with little democratic landscape planning.

The modernist attempt to make and remake the rural can manifest differently. The arrangements and utilization of landscapes are different from one case study area to the next. Yet, the elements needed to bring about change remain the same in their ability to impact the landscape.

- **Quantifying and qualifying** are efforts to measure, define boundaries, and other methods of quantifying and qualifying the landscape and its inhabitants.

- **Expert lead landscape planning** brings together experts from numerous fields to help formulate an understanding of the landscape, its opportunities, and its limitations.

- **Infrastructural alterations** are usually major changes to the natural landscape that allow exploitation for a specific purpose.

- **New economic solutions** are needed to modify current production/consumption practices in the landscape.

- **Social engineering** is necessary to modify behavior patterns and future social developments within the landscape.

- **Technological advancement** relates to advancements in products that increase production, such as machinery, communications, and logistics.

- **Settlement patterns** are necessary modifications of existing settlement patterns to adapt to specific goals.

- **Profit distribution** is the extraction of profit from the production process. It concerns the farmers/producers/marketers who bring the product to the market and the profit distribution rate for each actor.

- **Power projection** in the form of built structures, such as towers, buildings, monuments, and their associated meanings.

- **Social justice** concerns the relationship between landowners, workers, and the overall arrangement of capital within society.

- **Home** is the basic building block and place for private life and its formation, arrangement, and interaction with the outside world.
• *Agricultural practices* can be understood as the management of agricultural production and its modification to the human capital needed in production. It also concerns the improvement of human capital through training or education for these purposes.

• *Agriculture* can take on a “reformist” agenda, where privatization is the leading driver, along with low-interest, long-term interest loans that slowly convert state capital into private capital to create new landowners. A more socialist plan can concentrate on the collective ownership of land. This progressive approach in the modernist period was commonly referred to as a cooperative, such as a Zionist Kibbutz and Moshav (Modscapes 2019).

Regardless of the ownership relationships in the modernist landscape, the interrelationship in the rural-urban region remained the same. Urban, town, and rural followed a similar hierarchic pattern to keep each landscape use from encroaching upon another (Modscapes, 2019).

1.3.3 Landscape Democracy Deficit

There was minimal understanding of landscape planning in post-Soviet countries, as people were usually not trained in it from 1957 to 1990. After independence, things changed significantly in Central Europe and the Baltic states after joining the European Union. In his book “Landscape: Pattern, Perception, and Process,” Simon Bell (1999) advocates for studying landscapes that may be developing quickly or under severe development pressure. One of the landscapes he analyzes is the post-Soviet world, of which Armenia is a part. While some post-Soviet areas, such as the Baltic states, developed an attentive landscape strategy, Armenia failed to do so. Hence, a case study must be conducted in Armenia to understand the challenges that prevented such a strategy. Along with the rest of the South Caucasus, Armenia was incorporated into the Soviet Union in 1920. Geopolitically distanced and located at the edge of Europe, the Armenian experience with landscape democracy significantly differs from the Baltic and Central

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European states. This research will be taking a comparative approach with the post-Soviet states that have incorporated the ELC more thoroughly and successfully. Further, studies on spatial justice and landscape democracy are more prevalent in the global North, relating to countries and regions with rich democratic traditions. This case study is narrowly focused on a specific region with limited pockets of democratic experience.

“If we accept the most basic definition of democracy as a system where the voice of a majority contributes to the consensus in decision making, then regardless of how this is achieved, the aspiration is universal” (Makhzoumi, 2018, p. 29).

Democracy is the universal concept of progress linked to landscape, but it is often overlooked. Landscape and power are interlinked, as demonstrated throughout history with the transitions of power from the monarchy to the people, such as during the French Revolution and the birth of liberal democracy. Hence, democracy is not a destination, but it is a process and indicator through which power relationships within the landscape can be understood. The spatial injustices in the landscape are indicative of democratic deficiencies. This research aims to target these spatial injustices and create a process by which the associated ill effects can be rooted out.

The landscape is our home, where we live. Understanding the various processes that govern landscapes will allow us to understand our actions and improve our living conditions.

1.3.4 The ELC Unrealized

The ELC is a treaty that encourages the adoption of policies for landscape governance by local, regional, national, and international actors. It aims to cover all landscapes, from the ordinary to the extraordinary. Each signatory has the flexibility to define the landscape and its associated values, protection, conservation needs, along with associated management and
improvement plans. It also proposes financial and legal measures to shape landscape policy (COE, 2000).

Armenia ratified the ELC on March 9, 2004. In 2009, a decision was made by the prime minister to “create an interdepartmental commission to coordinate the implementation of the European Landscape Convention in Armenia” (Alaverdyan, 2016). Thereafter, numerous government decisions were made to implement the ELC in Armenia. In 2012, a decision was made to “approve the strategy of landscape protection, management, and planning, along with prior and mid-term activities arising from it” (Alaverdyan, 2016). Concerns about the landscape were incorporated into Armenia’s Land, Water, and Mineral Resources Code. The National Assembly enacted various laws dealing with legislation governing “Specially Protected Natural Areas,” “Cultural Monuments,” and “Historical Environments” (Alaverdyan, 2016).

In 2016, Armenia designated three state reserves, four national parks, 27 nature reserves, and 232 cultural monuments, totaling 400 hectares of land placed under special protection (Papayan, 2016). The three-state reserves are Khosrov Forest, Shikahogh, and Erebuni. The four national parks are Dilijan, Sevan, Lake Arpi, and Areviq. According to the Ministry of Nature Protection Environmental Project Implementation Unit, Armenia has 27 state sanctuaries and 232 natural monuments, constituting 13.2 percent of Armenia’s total land area. On October 5, 2016, Ruzan Alaverdyan addressed the 18th Council of Europe Meeting during a workshop on implementing the ELC treaty. Alaverdyan stated that a solid legal and theoretical base had been established for the ELC in the 12 years since its ratification. Unfortunately, per Alaverdyan, fewer practical steps had been taken toward its implementation, which she attributed to a lack of financial resources and an absence of landscape understanding among members of society (Alaverdyan, 2016). In 2016, the implementation of the ELC in Armenia was under the
jurisdiction of the Urban Development Committee, which had previously been a Ministry. Geographers Sayadyan, Vardanyan, and Avetisyan acknowledge the lack of understanding “landscape and landscape planning” as defined by the ELC. They suggest reforms that could change perceptions about the landscape, encouraging it to be viewed as a “spatial-temporal phenomenon” (Sayadyan et al., 2016). There is a need to formulate landscape definitions and delineate categories such as productive, protected, natural, and historic (Sayadyan et al., 2016). They acknowledge the need for a systemized and comprehensive tool that will aid in the management of landscapes and involve the public in a transparent government process (Sayadyan et al., 2016).

Although numerous studies have been conducted in Armenia in recent years focused on landscape, only a few of these studies are direct results of the ELC. Khoyetsyan & Khachatryan published a book in 2016 titled “Principles of Landscape Planning in Mountainous Regions” that studies the Aragatsotn province and uses it as a case study for implementing landscape assessments on a regional scale, using the ELC as its methodological basis. The study conducts a landscape assessment with all the relevant layers of geography, geology, atmospheric conditions, soil types, hydrology, and land cover (Khoyetsyan and Khachatryan, 2016). They established a land planning department at the Armenian State Pedagogical University, within the school of geography. This research project proposes to study the Ashtarak Watershed, located in the Aragatsotn province. It aims to formulate a detailed understanding of the landscape at a smaller scale, with a particular goal of designing for spatial justice.
1.4 Research Aim

As presented in sections 1.2 and 1.3, my previous research on the city of Yerevan discovered that changes in the urban landscape that were individualistic in nature created externalities with associated costs not accounted for by business developers or governing bodies. Such externalities are recognizable in reduced public health measures, increased emigration, increased auto congestion, and consistent civic disobedience, all of which have attached costs paid for by society.

After independence, Yerevan experienced rampant privatization of urban resources. Business interests were converting public courtyards, sidewalks, parks, and other forms of public land into private property. These areas were converted to restaurants, cafes, gas stations, banks, parking garages, hotels, residential buildings, and theme parks. These activities created inequality in the urban landscape for many years with no significant civic reaction until 2012, when the “Mashtots Park” movement fueled a citizen-led resistance against the privatization of public space. Subsequently, the “We Won’t Pay 150 Drams” movement emerged, a successful citywide resistance against a price hike on public transportation services. Both initiatives posed challenges against the privatization of traditionally public urban features in developed democratic societies, notably, adequate public transportation, public parks, proper urban planning, and enforcement of zoning laws. The increase in spatial injustice prompted an organic response from the concerned citizenry utilizing different civil disobedience tactics. These movements increased spatial justice levels in the urban landscape, albeit in a reactionary (radical) bottom-up manner since they were in response to changes already made by business entities.

Urbanization is the primary driver of landscape change in the contemporary world, given the fact that people are increasingly moving to cities from rural areas. Architects and urban
planners have a peculiar infatuation with city building (vertical human space production and people circulating within cities). The city operates as a natural resource sink for most products, creating externalities beyond the urban in its consumption process. The triumph of the urban becomes clear when one looks at landscape architecture. New sub-fields, such as landscape urbanism, specifically focus on urban infrastructural issues. The rural landscape becomes less attractive for architecture, as Schumacher (2016) states, “don’t waste your time in the countryside.” The rural becomes the hinterland for food production and where infrastructure is located (Internet servers, electricity production, water utilities, agriculture, etc.) (Koolhaas, 2020). Rural areas are seen as having engineering problems to be solved by engineers (Schumacher, 2016) and are not necessarily a cradle for architectural design. It is not seen as being worthy of architectural design.

In conclusion, the collapse of the Soviet central economy, the Karabakh war, the Gyumri earthquake resulted in human losses and reduced economic activity significantly; emigration nearly emptied the country of its most skilled stakeholders. During the early 90s, land privatization attempted to re-introduce an agrarian lifestyle to a primarily industrialized country. Diaspora Armenians, previously relegated outside the Iron Curtain, would slowly establish a footing in Armenia and make their way to get a glimpse of Ararat from eastern Armenia for the first time, even if their roots stemmed from the other side of the mountain. With “the end of history?” economic liberalization came before political liberalization (Fukuyama, 1989), leading to market failures (Khanjian, 2008). Privatization of land, industries, and other assets were conducted in an environment of pervasive corruption, leading to the accumulation of previously generated wealth into the hand of a few members of society. This created a polarization in the distribution of economic resources within the landscape.
Privatization and individuation of land in the rural landscape were successful. Yet, agricultural production on small-scale plots was not because Armenia’s economy had been industrialized during the Soviet period, which had caused a loss in tacit agricultural production knowledge by most members of society. The change in scale of farming operations from large-scale collective farms to individual land plot farms was unsuccessful due to economies of scale, lack of mechanization, irrigation, and fertilizer (Melkonian 2008). There were simpler reasons for this inability to transform, such as the scarcity of fuel during the “Dark Years” and the lack of reliable transportation to areas outside urban, town, and rural settlements.

There was more success in the privatization and marketization of urban areas because resources were concentrated in these areas due to critical mass. The urban intellectual human capital was able to create a knowledge-based economic model and generate economic activity, leading to the successful formation of the banking, financial, service, and information technology sectors, along with small-scale industrial production and manufacturing. Institutional democracy theory assumes that a democratic urban middle class will eventually form. This new middle class came to fruition in Armenia during the “rabid development years.” Political liberalization would follow economic liberalization at a much slower rate, ending with the 2017 elections where Armenia transitioned from a semi-consolidated autocracy to a transitional/hybrid regime. Armenia’s Freedom House rating measuring political rights and civil liberties increased from 2.64 to 3.0 in 2020 (Csaky, 2020). The new middle class of Armenia concentrated in the capital of Yerevan was able to slowly increase its political and economic capital. The educated class was able to produce easily transportable goods, utilizing their digital nature and service-based local consumption features. This section summarized the first chapter and established the premise for the following research questions presented in the following section.
1.5 Research Questions

This study treats the Ashtarak watershed as an applied case study to identify and remediate spatial (in)justice concerns within the landscape. By assessing spatial justice in the case study area, we can understand the manifestation of these issues in different forms and recognize how Armenia’s post-Soviet rural-urban region can be designed to be ecologically, economically, and democratically sustainable.

The following are the primary research questions for this study:

1. What symptoms of spatial (in)justice can be identified in the rural-urban region of the Ashtarak Watershed, Armenia, and how?

2. Can we design for spatial justice in the rural-urban region, and if so, how?

Primary question (1) is mostly methodological given that the research is trying to figure out how spatial justice can be read in each landscape and what tools can be utilized to read the landscape for spatial justice. Spatial (in)justice will be interpreted in part by the primary researchers reading of the landscape while conducting the LCA through the “lens” of spatial justice theory. The spatial justice symptoms will also be identified during the interview process with landscape connoisseurs. Primary question (2) is mostly methodological as the study will try to identify the theories, tools, methods, and methodology needed to design for increasing spatial justice. It is also philosophical since designing a spatially just landscape is only partially achievable.

The secondary questions derived from the research study process are as follows.

1. How do smaller cities, towns, and rural areas outside of the capital city of Yerevan develop in the post-soviet years? Were they privy to the same economic and democratic processes that created a successful middle class that increased their economic and political capital?
2. Circular migration in the form of migrant remittance workers, small-scale production, blue-collar service employment, agricultural activities, and subsistence farming has been the primary forms of production in the case study region. What are the implications of these forms of production? Are they sustainable? What happens to rural towns and landscapes as people move to cities? What is left behind? Who is left behind, and what do they do? What are the benefits provided by the rural landscape?

3. Can the modernist planning elements be improved upon by incorporating inclusive democratic processes in the design process? Can communities participate in enacting landscape changes that are more sustainable over a longer period? Can the inclusion of democratic processes and community input reduce the design dissonance present in the landscape due to conflicting stakeholder interests?

4. How can people self-determine their economic actions within a particular landscape not fully developed by economic activity and may lack strong institutions? What would happen if purchasing power does not increase for people in a liberal democracy with free markets? Would this compromise democracy?

Secondary questions (1) are mostly substantive questions that ask how the rural-urban regions outside Yerevan have developed in the last 30 years. It is directly related to primary question number one as it attempts to find out how the landscape has changed over time and if spatial justice concerns have developed during that time.

Secondary questions (2) are mostly substantive questions that address economic activity in the region and their possible shortcomings and detrimental effects on the landscape; this question is related to the first primary research question.

Secondary question (3) is directly related to the second primary question. It is methodological since it asks how modernist elements of planning can be utilized along with democratic landscape practices to achieve a more democratically designed landscape.

Secondary question (4) is directly related to landscape democracy and its component of self-determination, co-determination, the right to argumentation/debate, and purchasing power. It is a methodological question relating to the second primary research question since this question will help create scenarios to test these components of landscape democracy.
Chapter 2: Literature Review

The first section of this chapter presents the study’s theoretical framework and the literature review, which surveys the theories, ideas, and tools used in this research project. The second section contextualizes the landscape, explains the theory of spatial justice and its relation to landscape, and presents landscape democracy as a tool for achieving spatial justice; the third section surveys spatial justice theory. The fourth section surveys landscape democracy theory and associated definitions. The fifth section presents ecological systems thinking as a lens by which to see the landscape, approach its material boundaries, and consider these when making design decisions.

2.1 Theoretical Framework

Spatial justice is not measurable at a single point without a reference to a past point. Thus, we need to study how a landscape changes over a given period to understand the changes in the landscape and if spatial justice levels were elevated or reduced during that period.

Figure 2.1 Theoretical Framework
The study uses spatial justice as the theoretical lens to read the landscape (Figure 2.1). Further, the research separates spatial justice into two components: (a) the social landscape democracy component and (b) a designing for spatial justice component rooted in the material world and ecological systems thinking. The study utilizes the European Landscape Convention (ELC) to define the landscape. The Landscape Character Assessment (LCA) tool is used to study the landscape from a spatial justice perspective. The LCA provides an opportunity to understand the territorial options and the possibility of future landscape changes.

The study utilizes the DPSIR problem structuring method to identify spatial justice concerns in the landscape and trends that can be recognized from case studies conducted in the Baltic states and beyond. Scenarios are incorporated to gather landscape data through a democratic design process. Semi-structured interviews involve the recruitment of connoisseurs to comment on predetermined scenarios to collect tacit landscape knowledge, narratives, and dialogue to inform a final scenario that combines both the knowledge and the future envisioning of the participants.

2.2 Contextualizing the Landscape

This section begins with defining landscape within the European Landscape Convention (ELC) context. To understand Armenia’s rural landscape and the application of the ELC in Armenia, the experience of the Baltic states is presented, along with relevant case studies to supplement research from the post-Soviet period. The landscape is further defined within the context of Armenia itself, borrowing from art, cinema, literature, poetry, and Armenia’s historical experience.
2.2.1 The European Landscape Convention

The European Landscape Convention (ELC) is a treaty enacted by the Council of Europe (COE) to "achieve sustainable development based on a balanced and harmonious relationship between social needs, economic activity, and the environment" (COE, 2000). The goal of the COE is to uphold human rights, democracy, and the rule of law in Europe. The COE seeks to foster unity among member states to safeguard common heritage and ideals through social and economic collaboration (COE, 2000). The ELC further states:

"Believing that the landscape is a key element of individual and social well-being and that its protection, management, and planning entail rights and responsibilities for everyone" and "Acknowledging that the quality and diversity of European landscapes constitute a common resource and that it is important to co-operate towards its protection, management, and planning." (COE, 2000).

The ELC outlines its primary goal of achieving sustainability in the landscape by using scientific and democratic tools to understand social needs and economic aspirations. It seeks out a process for the democratic governance of the landscape. This is in response to the polarized decision-making in Europe as related to the use of the landscape by private developers (Arler and Mellqvist, 2015). As Simon Bell (2018) states in his review of the book Landscape Democracy: A Path to Spatial Justice, “land belongs to somebody, but landscape belongs to everybody.”

Finn Arler and Helena Mellqvist point out the three purposes of the ELC as follows: (a) Increase public awareness about the landscape, as a backdrop to human lives and human activity, and the overall effect on the quality of life; (b) advocate for governments of different scale, be they local, regional, or national, to adopt policies that will develop the ELC through enhancement, management, and maintenance of landscape; and (c) allowing decision-making about the landscape to be more democratic (Arler and Mellqvist, 2015). The ELC brings the landscape to the forefront to address its use, maintenance, and management. It recognizes that
human activities during the process of production and consumption are the main reasons for landscape changes. It attempts to mitigate the effects of these changes by placing the responsibility for the landscape on all members of society (COE, 2000). This understanding asserts that landscapes belong to everyone, and everyone has a right to quality landscapes. Improving the quality of the landscape is a responsibility borne by everyone and not just governing bodies.

“Similarly, it is obvious that the issue of democracy, as presented in the ELC, does not concern public spaces in the landscape, but the entire landscape, all places where people live, produce, spend free time, and so on” (Castiglioni and Ferrario, 2018).

With these goals in mind, the ELC aims to define the state of landscapes in the European community and improve their conditions through democratic processes, which in turn increase democratization, human rights, and the rule of law. Members of society will further define these goals as they contribute to the process of landscape democratization. The ELC also allocates the responsibility of landscape management based on subsidiarity to those affected most by changes to the landscape (Jones and Stenseke, 2011).

2.2.2 Defining Landscape

The ELC defines “landscape” as an area perceived by people whose character results from the interaction of natural and human factors (COE, 2000). This includes all landscapes, including urban, rural, peri-urban, natural, every day, and degraded landscapes (COE, 2000). Arler and Mellqvist quote Yi-Fu Tuan to break down the landscape into two parts: space and place (Yi-Fu Tuan, 1977). Landscape as space can be described as phenomenon present in the landscape, the different elements that form the landscape, and objective identification of the various elements in space. Landscape as a place encompasses the subjective cultural values and
meanings associated with the landscape. It can be argued that it is the "sacred" or “singular,” as defined by Marcell Mauss. It is the unexchangeable and unmeasurable soul of the place, with its layers of history, the past reflected in the present, and the hopes for a better future (Mauss, 1993). "What begins as undifferentiated space becomes place as we get to know it better and endow it with value" (Yi-Fu Tuan, 1977, p. 33). Space is present upon arrival, appraisal, and when a definition is crafted. Yet, it is already a place for someone who has identified it, attached value to it, built upon it, or seen it shift in phenomena over time. Space is the relationship between matter interconnected through a web of activities and interactions. The landscape is the arrangement and framing of space, perceived by the observer or interpreter of the phenomena occurring at a specific time.

"Space, therefore, is understood as fluid, constantly changing as conditions and interactions unfold. There is no such thing as a ‘blank canvas’ or ‘emptiness’ where space is concerned – it is constantly being transformed by the activities, circumstances, and relationships which work through it. Thus, landscape – a particular expression of the notion of space – is inscribed and re-inscribed with the outcomes of human agency such as those relating to social and economic policies. The designation of green belt areas, the building of new estates, the images and effects of industrialization, the introduction of farming techniques and the building of motorways, as well as the consequences of climatic and geological changes, are all implicated in changes in landscapes" (Armstrong, 2012, p. 611).

The landscape, as the constant for human activity, has intergenerational stakeholders. Finn Arler (2001) and Simon Bell (1999) state that landscape has a time dimension of at least three generations. The past generations from whom we have inherited the landscape in its exact phenomenological composition craft the experience for its current experiencers and any future generations we are borrowing landscape from. Simultaneously, landscapes are constantly occupied by different people who are transitory across the world. In that sense, it may be argued that the current generation is to be favored over future generations, even though the world is
increasingly becoming smaller and actions in one landscape reverberate globally. Regardless, decisions take place in the present, where the agency to act is predicated on our current understandings of landscape, with consideration for the past and future in decision-making.

Landscapes can be read (Bell, 1999; Lewis, 1979), but their interpretation is restricted by the limitations of the readers’ language and vocabulary. Unlike text, which is linear and definite in its communication construct, the interpretation of landscapes is more open-ended, immersive, and immediate. Therefore, the landscape can be understood by different academic disciplines. This can be explained by the presence of landscape in literature, poetry, cinema, artifacts, archeology. There is a certain malleability in the interpretation of the landscape. The landscape reflects a phenomenon and our subjective experiential interpretation of that phenomenon (Wylie, 2019; Meining, 1979).

In conclusion, the landscape is both space and place. Landscapes are a combination of natural and human processes that have developed over time. They can be perceived subjectively, even though a form of systematic observation is possible by professionals processing the language and vocabulary needed to interpret and record what is observed for a specific purpose. Landscape can be defined as the view of an area as perceived from one specific point, such as a dune or countryside landscape, to appreciate its aesthetics. Participatory aesthetics involves experiencing the landscape in depth by traveling through it or living in it, using more than the five senses, and experiencing it for a longer period (Bell, 2009). Ecological literature places landscape on the scale between a region and an individual project site. Cultural geography provides the third definition of landscape. It is seen as a cultural artifact or where life takes place as the backdrop to everyday life (Bell, 2009).

“Thus, the landscape can be defined in terms of a combination of natural components, cultural layers, and aesthetic qualities” (Bell, 2009, p. 20).
2.2.3 The ELC and Post-Soviet Baltic Landscapes

This section discusses the experience of the Baltic states with the implementation of the ELC in researching and managing landscape changes. These states all had similar “landscapes in flux” experiences due to tremendous social, political, and economic changes in their modern history (Bell, 2014). How have post-Soviet landscapes changed in the Baltic states after independence and during the Soviet period? Are there any traditional cultural landscapes left in the Baltic states (Bell, 2014)? How can these changes be researched and studied for better landscape management?

In studies conducted in Latvia and Estonia, landscape changes are divided into three time periods: pre-Soviet, Soviet, and post-Soviet. The pre-Soviet period is characterized as empire slowly coming to an end. The Soviet period resulted from the Molotov-Ribbentrop Pact of 1940 (Bell, 2014). The post-Soviet is the period after the collapse of the Soviet Union. In the Baltic states, land privatization took place in the early 1930s as German-owned estates were broken up, and the land was distributed to farmers who comprised most of the population in rural areas. With the onset of Soviet modernization, there was a transition to collective kolkhoz and sovkhoz farming (Bell, 2014; Storie et al., 2019). These changes often came with associated human costs during the implementation process, ranging from starvation to deportation, which had a noticeable effect on the local population. Infrastructural changes included the building of housing that was more urban in nature. This concentrated numerous scattered traditional village populations in one place to work in the Sovkhoz (Bell, 2014).

The post-Soviet period introduced the privatization of land, as collective farms were restored to their original owners. In some cases, this created subsidiary farmers and land abandonment by landowners moving abroad or people who did not have farming skills (Bell,
2014; Storie et al., 2019). The dismantling of the communal farms led to mass unemployment and depopulation in rural areas (Storie et al., 2019). Landscape blight appeared as unused collective farm buildings crumbled (Bell, 2014). During this period, people also started moving to cities both in the country and abroad in search of better employment opportunities (Bell, 2014). Bell poses the following questions in the context of the ELC: What landscape should be managed and conserved in the Baltic states? What landscape is considered cultural-historic?

Most youth who grew up in the post-Soviet period have no recollection of the Soviet experience and its associated landscape. The landscape they are familiar with is the country houses they spent time in during the years following independence (Bell, 2014). Bell identified land abandonment, land rewilding, blight, and sprawl in the urban fringe “ex-urbs,” which were suburban developments that gentrified the countryside. In conclusion, Bell recognizes the new experimentation with democracy and capitalism in these post-Soviet states and their fluctuating effects on the landscape. As different ideologies attempt to occupy the landscape in patchwork formations, it leads to a loss of identity for current mobile inhabitants whose identities are compromised due to the instability of the landscape for the foreseeable future (Bell, 2014).

The Storie et al. (2019) research in the Baltic states moved beyond modernist formulations viewing the landscape as particular formations that could be arranged and utilized as necessary to a much more community-responsive model. Their research addresses the issue of place attachment in the countryside, along with conducting participatory research on the rural landscape. The study addresses challenges with residents’ preparedness for engagement in the participatory processes, which would be the opposite of the centralized plan implemented during the Soviet modernist period. The goal was to demonstrate the effectiveness of landscape-scale participatory management in numerous communities of Latvia and Estonia. It identifies the
importance of encouraging public administrators to create *horizontal governance* policies that encourage public participation to integrate local tacit knowledge into projects, empower constituents, and create transparent governance processes to generate trust (Storie et al., 2019). This would increase public confidence in new projects and the likelihood of success.

Their experience in the Baltic states presents particular challenges, given the transition of these communities from centrally planned political systems with depoliticized citizenry and distrust towards government and other community members. This lack of trust, confidence, limited political and socioeconomic knowledge, and limited economic resources in disadvantaged rural areas significantly limited the skills necessary for horizontal landscape planning (Storie et al., 2019). It is important to understand the various narratives people subscribe to in a landscape to understand their perceptions of the landscape and their associations with other community members who may have different economic, social, and political interests (Storie et al., 2019). It is important to listen to their stories and understand their perceptions (Storie et al., 2019).

“Healthy, confident, and open communities need bridging and linking social capital. Bridging social capital consists of the bonds to groups with differing interests across communities. Bonding social capital reflects the ties to close friends and family or with people of similar interests. Linking social capital is the engagement with external agencies to influence policies or draw in resources. In Estonia and Latvia, these bonds were weakened or lost as a result of the mistrust built during the Soviet era and the post-independence chaos, where some people benefitted more than others” (Storie et al., 2019 p. 3).

Trust and confidence were important elements of the interviews conducted in the Baltic states. To generate trust, researchers selected *gatekeepers* who would, in turn, utilize their existing networks for recommending other interviewees, creating a snowball effect in the process. Storie and Bell agree that the snowball method was justified given the cultural
sensitivities present in these communities (Storie et al., 2019). The Baltic states were incorporated into the Soviet Union much later than Armenia. Their geopolitical location allowed them to integrate the ELC more comprehensively and develop landscape education and research capabilities, predominantly through existing universities with established environmental planning departments.

2.2.4 Defining Armenia’s Landscape

What is landscape in the Armenian context? Armenia has always had a particular affinity for its mountainous landscape. Mount Ararat is the symbol of Armenia and is present on the Armenian coat of arms with Noah’s ark at its peak. The best way to define the landscape in Armenia is to borrow from literature, poetry, cinema, architecture, and other cultural components (Therond 2005; Doherty and Waldheim, 2016) which all inform landscape as defined by the ELC. To find contemporary landscape artists and paintings in Yerevan, one must look to “vernissage,” the outdoor art market in Martiros Saryan Park, named after the famed landscape painter.

Saryan was born in Nakhichevan-on-Don in southern Russia and spent most of his formative years outside Armenia. He moved to Armenia after 1920 and gained accolades as a landscape painter. As shown in figure 2.2, the painting titled “Armenia” depicts Mount Aragats and its foothill settlements, including the Kasagh river gorge, Ashtarak city, and its surrounding watershed. The painting reflects the changing of the seasons, as humidity decreases in the lower altitudes and grasslands begin to yellow from lack of water. It also portrays the arable land and different settlement patterns. This painting successfully renders what the typical spring to summer change in landscape looks like in the case study region. The rivers indicate abundant
snowmelt; various crops cover the landscape in different stages of growth, the higher altitude mountains are more green, blue, and light purple, indicating wild grasslands.

Gevorg Emin, a renowned poet, essayist, and translator, lived in Ashtarak during the Soviet period. He wrote extensively about the landscapes in Saryan’s paintings of the Aragats watershed. Emin’s famed poem (1968, p. 13) “Speak Carefully in Armenia” directly refers to the hills and valleys of the Aragats mountain watershed. The first verse is as follows:

Speak carefully in Armenia,
Everywhere around you are mountain tops and canyons.
Which cause a strong reverberance,
And carry your words far away…
Figure 2.3 on the following page illustrates Mount Aragats, with its multiple peaks, arrangement of foreground agricultural lands, poplar trees abutting the river canyons, and higher alpine meadows opening to the multiple summits in the background. Both paintings depict the agricultural work methods and the architecture of their respective period.
Dr. Razmik Panossian (1998) translated a portion of Emin’s poem “We” as follows:

What are we, after all,
We and our land?
Even if we try to mince the truth
We are tourists in our own land.
Guests in our own homes.
A river with only one bank,
A mountain which we only view from afar,
An unpeopled land,
A landless people.
And scattered beads which cannot be restrung.

Panossian explains that the poem is ironic because Gevorg Emin was not an Armenian from the diaspora but was born in Soviet Armenia. Nevertheless, Emin traces his home to the Western Armenian highlands beyond the Soviet borders. The question of homeland is present in the work of another engaging writer, poet, and journalist of the Soviet period who also lived in the foothills of Mount Aragats, Mushegh Galshoyan. Galshoyan expressed interest in discovering his roots in Sasun, located in the Western Armenian highlands. He audio recorded the stories of his exiled family members to document the regional Armenian dialect. These recordings would help him understand the older dialect used throughout his many books. The following is my translation of Galshoyan’s poem “Soil” (2015).

The soil is below our feet.
Not for solely trampling,
But as foundational support,
So that we may have a solid posture,
And feel our support rising towards the sky.

It was not given to us.
For satisfying our voracious hunger
For food and glory.
It was given to us to maintain,
For future generations.
The bread that the soil gives us today is ours,
Yet the soil itself is for future generations.
This poem allows us to understand the connection with the soil and the land that the Saryan landscape paintings portray. In the 1920s, the reality was that most Armenians lived an agrarian existence. This was the exact scenery Saryan would see while traveling outside of Yerevan towards Ashtarak, a provincial capital with ancient Armenian roots. The agrarian theme of working the land was also aligned with Soviet ideology, finding favor with the political bureaucracy. When studying the cultural products of the period, it is interesting to discover a strong dissonance in these diasporan, nationalist cultural figures and the elements of their work, which at times seem to have inserted ideological elements that have either changed form or been edited out after independence. This dissonance is visible in Galshoyan’s (1983) novel, “Dzori Miro.” The protagonist, Miro, was exiled from his ancestral home during the Armenian Genocide and settled in the foothills of Mount Aragats, next to the river gorge, which translates to “dzor” in Armenian. The novel’s movie adaptation was shot in these foothills, the same mountainous landscapes that Emin, Saryan, and Galshoyan were familiar with. In the movie, we can see the cultural images of genocide, diaspora, migration, settlement, and working the land, which all take place in the foreground of ancient Christian monasteries and fortresses. Yet, there are also markers of Soviet ideology mixed into the movie’s narrative that create tension between old and new.

Finally, an analysis of Armenian cultural landscapes would be incomplete without mentioning Sergei Parajanov. Parajanov was born in Tbilisi, studied in Moscow, lived in Ukraine, and spent his last years in Armenia. His renowned film “The Color of Pomegranates” was produced as a visual medium of moving images and cultural landscapes presented through a cinematic rendering of Persian miniature paintings. It is considered a masterpiece of international acclaim. The frames of the film transition among animated paintings and convey images of
cultural artifacts. The camera consistently remains still or pans slowly while the images within the frame come to life (Sufi, 2016). The film depicts the ancient monasteries that dot the Armenian landscape. Parajanov takes the viewer inside, outside, and above these ancient monuments. The shots of surrounding landscapes and agrarian scenery are placed into the frame as symbols or included in the frame as features. This is where Parajanov shines as an artist in his understanding of socialist realism and his nuanced response to it (Pfeifer, 2015).

Figure 2. 4 Scenes from Parajanov’s “The Color of Pomegranates”

Figure 2. 5 Scenes from Parajanov’s “The Color of Pomegranates”
Figure 2.4 shows pomegranates, a symbol of the Armenian people slowly being split as the tablecloth turns red in the shape of Historical Armenia, symbolizing the Genocide. The second image shows men on top of a church praying. Figure 2.5 shows knowledge being transferred from one generation to the next. Most of the scenes from Parajanov’s films are up for interpretation, hence the numerous possible interpretations for each image.

In conclusion, the most interesting aspect of the Armenian landscape is that it varies in its definition, just as the academic definition does (Therond, 2005; Doherty and Waldheim, 2016). In its fundamental definition, we can understand the landscape as “earth,” “soil,” or “land.” Galshoyan described this as the foundation for our ascent to the sky above, which needs to be preserved for future generations while providing for the needs of the current generations.

All four cultural figures were traditionally considered Eastern Armenians or Soviet Armenians; they all had an intrinsically diasporan tone in their reading and presentation of the Armenian landscape. Saryan was born in Russia, Parajanov in Georgia, and both Galshoyan and Emin were first-generation Soviet Armenian immigrants from Western Armenia who viewed their new home with diasporan eyes. Through a creative lens, they were trying to make sense of what they were seeing to present to the world their stories and the stories of the lands they were forced to leave. For Armenians, the landscape is the physical soil and earth that needs to be worked on. The ancient monasteries substantiate ancient roots, rationality, and faith. The mountainous landforms comprise the landscape, large but also in compact form. It is a crumpled piece of paper instead of a flat sheet. It includes the symbols that have been inserted into the landscape over time by generations from one century to the next. The landscape also encompasses the symbols that have been omitted, which are also integral elements. It is essential to consider what the landscape readers interpret and what they do not. These explanations are
further variated by the presence of pre-Soviet, early Soviet neo-classical, Soviet modernist, and post-Soviet architectural features that dot Armenia’s landscape. Each feature has a contextualized narrative that can be traced to its specific period. Using contemporary vocabulary, landscape architecture is called “Landschaft” architecture in Armenia, borrowing from the German definition of land that has been shaped by man (Bell, 2009).

2.3 Spatial Justice

“Human life is consequently and consequentially spatial, temporal, and social, simultaneously and interactively real and imagined. Our geographies, like our histories, take on material form as social relations become spatial but are also creatively represented in images, ideas, and imaginings” (Soja, 2010, p. 18).

The term spatial justice has its roots in geography, specifically in the subfields of cultural, urban, and critical geography. The ideas that embody spatial justice can be traced to Henry Lefebvre, David Harvey, and Edward Soja. In the last decade, spatial justice has become more prevalent in academic research and is increasingly utilized by scholars in geography and various other fields. It is implemented to solve “wicked problems” of the current epoch of the Anthropocene. Since its inception, spatial justice has been associated with social movements and social justice endeavors in the liberal democratic world.

“Achieving specifically social and economic justice has long been at the core of debates on liberal democracy…” (Soja, 2010, p. 21).

When it comes to space, it is important to point out that physicists usually consider space to have four dimensions, which combines physical space and time into spacetime. In the context of spatial justice, spacetime is important because justice and injustice embedded in space manifest at specific points in time. From this perspective, spatial justice is concerned with the
arrangement of relationships at a specific point in time and the levels of justice present within
those relationships, and historical factors that have led to that specific spatial-temporal
Philippopoulos-Mihalopoulos defines the relationship of individual bodies with others as the
following:

“A body is not just relations. Although always in assemblages with other
human/nonhuman bodies, a body remains monadic, withdrawn from the ontological
continuum, either because of its multiple simultaneous presence in various assemblages;
or because of the contourless nature of the body that is determined as much by
assemblages as by its own power; or by means of identity differentiation in the form of
haecceity which is an assemblage singularity” (p. 9).

He also goes on to explain the relationships that exist between bodies and the natural
inequality present in their expressions:

“Some bodies are stronger than others, weigh more, pull that side of the surface down
and make other, weaker bodies circulate in predetermined ways. Humans and farm
animals, a pack of wolves and an unarmed human, global warming and low-lying islands,
drought and bamboos, capitalist finance and the urban poor: Encounters between unequal
bodies in terms of power cannot be resolved through a normative flatness, but a strategic
rupture. This is the point of withdrawal as a tool for spatial justice” (Andreas
Philippopoulos-Mihalopoulos, 2015, p. 11).

Withdrawal from the assemblage of bodies is not possible since they are part of the
continuum. Rupture is possible only when the body realizes its “necessity for self-actualization,”
which takes place in relation to other bodies in the total modified continuum (Philippopoulos-
Mihalopoulos, 2015). The lawscape is everywhere, and the law is both visible and invisible in
space. It is what one wears when leaving the house; how one behaves waiting in line at the
airport; how one transitions through the customs check area, temporarily giving up certain
freedoms; how one sits in an airplane and accepts his role as a member of a temporary
assemblage traversing through the air while moving around minimally; and how one eats meals
at a specific time. Lawscape is the continuum of assemblages and the rupture that changes the continuum within a given atmospheric limit. In reading the quote, it is important to recognize the importance of power relationships present in different “bodies” in assemblage.

“Power, the power to maintain the relations of dependence and exploitation, does not keep to a defined “front” at the strategic level, like a frontier on the map or a line of trenches on the ground. Power is everywhere, it is omnipresent, assigned to Being. It is everywhere in space. It is everyday discourse and commonplace notions, as well as in police batons and armored cars. It is in object’s d’art as well as in missiles. It is the diffuse preponderance of the “visual,” as well as in institutions such as school or parliament. It is in things as well as in signs (the signs of objects and object-signs). Everywhere, and therefore nowhere…Power has extended its domain right into the interior of each individual, to the roots of consciousness, to the “topias” hidden in the folds of subjectivity” (Lefebvre, 1976 p. 86-87).

It is important to connect the ideas of spatial justice as ever-present and in flux. This depends on changing relational positioning, given the many scales of assemblage that form the continuum. Yet, it also remains physically present and mailable within the scale of concern for this research, the landscape scale where the power to effect change is most immediate. This is where all physical human activity takes place before it traverses scale from the individual body to the community and eventually to higher scales. The following sections on spatial justice will outline the trajectory of spatial justice theory, present Soja’s ideas of spatial justice, and identify the interpretations of spatial justice for various academics. The literature will transition from ontological to epistemological spatial justice theory formation, which forms the continuum that Philippopoulos-Mihalopoulos is referring to.
2.3.1 Spatial Justice Theoretical Trajectory

This section will trace the development of spatial justice as radical or critical postmodern theory. Postmodern theory positions itself against the modernist theory of the 20th century. Soja summarizes this position as follows.

“The deconstruction, and strategic reconstitution of conventional modernist epistemologies – in other words, the radical restructuring of long-established modes of knowledge formation, of how we assure that the knowledge we obtain of the world can be confidently presumed to be accurate and useful. This epistemological critique has ranged from a formidable attack on established disciplinary canons of the separate social sciences, arts, and humanities; and further, to reformulation of the basic knowledge structure of scientific socialism or Marxism as well as other fields of radical theory and practice, such as feminism, and the struggles against racism, and colonialism” (Soja, 1996, p. 3).

The critique of modernist theory by postmodern scholars has to do with modernism’s rigid epistemological formulations of “master narratives” and “totalizing discourses” (Soja, 1996). The two main camps of postmodern scholars that emerge as postmodernists are the antimodernists and anti-postmodernists. Anti-modernists reject the 20th-century modernist movement with their associated theories, of liberalism, communism, ideology, and history, along with the enlightenment project of progressive social change, and celebrate “the end of” the modernist movement of the 20th century (Soja, 1996, p.4). The anti-modernist scholars create a new theoretical narrative that dismisses all of modernism, for “premodern fundamentalism, reactionary and hyper-conservative forms of postmodern political practice” (Soja, 1996 p. 4) which contradicts the achievements made by the modernism of the 20th century (Soja, 1996).

The second camp of anti-postmodernists is interested in preserving liberal and radical modernism as progressive projects. They reduce postmodernism to anti-liberalism and radical modernism (Soja, 1996). Both reductionist stances leave no room for Marxism or progressive projects of the European enlightenment (Soja, 1996). Given these two choices, to enact radical
social change, one must look beyond this false dichotomy and utilize all tools, theories, and methods that can be utilized regardless of the grander narratives that they form parts of.

Openness to deconstruction, Marxism, post-Marxism, material, idealist, structurist, humanist, disciplined and transdisciplinary; independently or simultaneously (Soja, 1996). This radical or critical postmodernist theory is what Soja defines as Thirdspace.

Thirdspace is transdisciplinary because how space is created is historical, social, and material, which can be understood through a “critical spatial imagination” (Soja, 1996, p. 5) which needs to go beyond the anti-modernist and anti-post-modernist theoretical interpretation to a critically strategic third space of alternative future envisioning’s or more simply scenarios. The theory of Thirdspace can thus be summarized into three components.

1. The understanding of material space (Firstspace) and its formation through the study of history, sociology, architecture, and other transdisciplinary methods.

2. Interpreting changes in space (Secondspace) using critical and radical theory to go beyond anti-modernist and anti-post-modernist approaches.

3. The third is to create openings for envisioning the future (Thirdspace) that goes beyond the false dichotomy created by anti-modernists and the anti-postmodernists.

The foundation of Thirdspace Soja attributes to Henry Lefebvre, whom he credits for going beyond binary thinking of either/or decision making, for always seeking further options for interpreting and envisioning reality. He credits Lefebvre with …

“deconstruction of binary logic in thinking about space and other complexities of the modern world are his various recombinations of the center-periphery relation in such concepts as the critique of everyday life, the reproduction of the social relations of production, the bureaucratic society of controlled consumption (the forerunner of what we today call consumer society), the struggle over the right to the city and the right to be different, the urbanization of consciousness and the necessity for an urban revolution, and a more general emphasis on the dynamics of geographically uneven development from the global to the local scales” (Soja, 1996, p. 8).
From the reading of Lefebvre’s work, the production of space (Lefebvre, 1991), Firstspace as Soja defines it concentrates on the material world and epistemology of spatial forms, on things that can be mapped, quantified, measured, and approximately represented through images and or texts, numbers. Lefevre refers to these spaces as “real” perceived spaces. Secondspace is the ideas that interpret space through mental formations about space or “imaginings” about space. Lived space, per Lefebvre, is a combination of both “real” and “imagined,” with different percentages of each comprising the whole (Soja, 1996). Thirlscape uses transdisciplinary methods to combine both these forms of epistemological interpretation into a singular “real-and-imagined” place (Soja, 1996). Soja defines Lefebvre as a metaphilosopher and as a meta-Marxist, accepting the accomplishments of both philosophy and Marxism and their limitations.

In conclusion, Lefebvre saw the space of everyday life as the foundation for radical change and not necessarily the workplace. Modes of production and consumption created specific spaces that were necessary for their existence and created the spaces where life takes place in reaction to these modes of production and consumption. Lefebvre’s writing is concerned with reading this relationship and changing this relationship into a more democratic process where people have more agency in the spaces they create through their production and consumption choices. This section traces the theoretical trajectory of spatial justice from Lefebvre to Soja. Contemporary researchers influenced by Lefebvre and Soja, have utilized spatial justice theory in numerous projects across the globe, including Latin America, Europe, the Middle East, and beyond to address issues of uneven development, land use rights, the right to the city, access to education, clean food, water, health services, and all other resources unevenly distributed in space, including capital and power.
2.3.2 Seeking Spatial Justice

In “Seeking Spatial Justice,” (2010) Edward Soja traced the forces of production moving from the rural to urban and eventually abroad. His research was limited to the context of Los Angeles as the urban landscape of study, a metropolis with specific spatial dynamics and landscape characteristics. Soja inquired into the spatial dynamics of globalization and its effects on the urban landscape of Los Angeles as it responds to new demands for service-oriented labor as industrial production goes global. The Los Angeles case study found that by analyzing space, a strategy could be formed to include previously non-represented members of society in the decision-making process. Their inclusion influenced the allocation of public resources for development projects to serve the people who needed it the most.

Further, Soja identified three scales in which spatial justice takes place: (a) the rural, from which industrial production initially moves to Los Angeles, creating a migration wave in the process, (b) the urban, particularly how seeking spatial justice attempts to alleviate problems of the urban landscape as industrial production once again migrates to (c) the global scale, and service jobs replace the previously industrial jobs of Los Angeles. Nevertheless, Soja does not address what happens in the rural landscapes left behind as production moves west to Los Angeles. At these three scales, we can see production pulling labor to its destination on a national scale and labor pulling production on an international scale. By explicitly using the term "spatial justice," Soja aims to attach a spatial dynamic to justice and democracy. He moves beyond theory formation and empirical analysis with the hope of creating spatially informed tools for social and political action (Soja, 2009). He argues that thinking spatially increases our chances of identifying opportunities to increase justice and democracy.
"A new emphasis on specifically urban spatial causality has emerged to explore the generative effects of urban agglomerations not just on everyday behavior but on such processes as technological innovation, artistic creativity, economic development, social change as well as environmental degradation, social polarization, widening income gaps, international politics, and, more specifically, the production of justice and injustice" (Soja, 2009, p. 2).

Soja explores the vertical-horizontal interactions and interrelations between different actors in a spatial web of global production/consumption. To transition from spatial justice to landscape democracy, there must be a descent in scale from global to local. There must be a transition from global to local production/consumption. Thus, it is imperative to understand how life occurs in the everyday landscape. To understand spatial justice and its critique method, we must trace the roots of seeking spatial justice to Henry Lefebvre, the critique of everyday life, and the individual’s ability to critique and recreate everyday life.

“Leading us closer to the search for spatial justice is still another fundamental realization. Since we construct our multiscalar geographies, or they are constructed for us by more powerful others, it follows that we can act to change or reconfigure them to increase the positive or decrease the negative effects. These efforts to make changes in our existing spatial configurations, whether they involve redecorating our homes, fighting against racial segregation in our cities, creating policies to reduce income inequalities between the developed and developing countries, or combating global warming, do not express innocent or universally held objectives. They are the target and source of conflicting purposes, competing forces, and contentious political actions for and against the status quo. Space is not an empty void. It is always filled with politics, ideology, and other forces shaping our lives and challenging us to engage in struggles over geography” (Soja, 2010, p. 19).

Spatial justice seeks active participation because it is the only way to further democracy within a given landscape. It also encourages a profound understanding of the land, not just on a surface level but as a complete whole (Firstspace, Secondspace, Thirddspace).

“Thus, those vested with the power to produce the physical spaces we inhabit through development, investment, planning—as well as through grassroots embodied activism—are likewise vested with the power to perpetuate injustices and/or create just spaces…what a just space looks like is necessarily kept open’ but must be rooted in the active negotiation
of multiple publics, in search of productive ways to build solidarities across differences. This space—both process and product—is by definition public in the broadest sense; the opportunity to participate in inscribing its meaning is accessible to all...justice therefore is not abstract, and not solely something “handed down” or doled out by the state, it is rather a shared responsibility of engaged actors in the socio-spatial systems they inhabit and (re)produce” (Soja, 2010, p. 28).

With this understanding, Soja seeks spatial justice and helps identify the stakeholders in a landscape who may be invisible to the bureaucratic process. “The transit-dependent urban poor, those who could not afford to run a car” (Soja, 2010, p. vii), is the group that his research identifies as a conglomeration of different people who have a similar transitory need, regardless of personal identities. Soja defines this group as a set of ambiguous users of public transportation. It does not emphasize any personal “identity” and refrains from identity politics. It concentrates on the issue of traversing through space. His study addresses that issue with its framing, with full awareness of the “significant racial, class, and geographical biases embedded in all forms of public planning” (Soja, 2010, p. xiii).

The two ideas Soja advocates for moving spatial justice forward are the following: (a) an assertive spatial perspective on different fields of study, and (b) a socio-spatial dialectic explained as the spaces people inhabit that influence them and vice versa (Soja, 2010). These ideas are well-positioned in their application to landscape architecture as a design field. It is important to mention that spatial justice is defined not as a component of social justice but is in direct socio-spatial dialectic with it.

“…not only does the social comprise the spatial, it is also comprised by it. In the view taken here, everything that is social (justice included) is simultaneously and inherently spatial, just as everything spatial, at least with regard to the human world, is simultaneously and inherently socialized” (Soja, 2010, p. 5-6).
It is also important to note that Soja refers to it as spatial justice and not as territorial, landscape, economic, or other types of justice. He emphasizes the intermingled spatiality of the existing relationships in space and their ability to affect each other in their proximities, with the presence of various push/pull factors. As demonstrated by his experience, Soja is not merely interested in understanding the world but in effecting change and moving from seeing spatial justice to seeking spatial justice.

“Seeing justice spatially aims above all at enhancing our general understanding of justice as a vital attribute and aspiration in all societies. It seeks to promote more progressive and participatory forms of democratic politics and social activism, and to provide new ideas about how to mobilize and maintain cohesive coalitions and regional confederations of grassroots and justice-oriented social movements” (Soja, 2010, p. 6).

The central thesis of Soja’s book can be summarized as follows. Multi-scalar geographies where human activity takes place are inscribed with a certain level of injustice and justice at a given point in time, from the smallest organized family unit to uneven global development. The injustices present in the landscape create systematic structures that distribute advantages and disadvantages unevenly, thus affecting our lives. These shortcomings in spatial justice can be mitigated through political and social action (Soja, 2010). The end goal is not simply to be able to read spatial (in)justice as it is manifested in the landscape but to mitigate it with an appropriate response. In conclusion, it is important to stress the fact that spatial justice, for the most part, has been an appropriate answer to fractures and shortcomings within liberal democracies in established free market-oriented areas of the world.

“The socio-spatial dialectic with social process shaping spatiality at the same time spatiality shapes social processes. Stated another way, our spatiality, sociality, and historicity are mutually constitutive, with no one inherently privileged a priori” (Soja, 2010, p. 18).
This is important because social change-based ideas that work in one place might not work with the spatial dynamics of another. The solutions are different because each space and landscape has a unique and different set of historical, spatial, and experiential social arrangements. An in-depth understanding of the historical context of a landscape will help identify the spatial (in)justices that may not be obvious in uncharted landscapes.

2.3.3 Defining spatial justice

Soja defines spatial injustice as unjust geographies and the political organizations of space and boundary-making, from privileging private property to electoral gerrymandering and even colonial control and zones of influence. Unjust geographies also emerge from the system boundaries due to distributional inequalities that are both inherent and intentionally created by institutions, businesses, and individual actions. This can come in the form of environmental justice issues, where pollution-producing factories and processing facilities are located outside desirable neighborhoods and in low-income communities (Soja, 2010). Spatial injustice is also propounded by the extraction of raw resources, where one landscape is prioritized over another due to its proximity to decision-makers, investors, and consumers. This injustice also appears in the consumption of resources outside the production landscape. The pollution and associated costs are externalized from the business “model,” the “spreadsheet,” or the “supply chain.” These externalities manifest in the physical landscape, and the problem becomes someone else’s to mitigate or for future generations to inherit at a later point in time. Externalization occurs in the virtual economic space, physical space, and time space – spacetime.

David Harvey, an urban geographer, and critical theorist; is concerned with how capitalism creates unequal spaces in urban and other landscapes, with such processes as
gentrification, urban renewal, and other forms of capital expenditure. The local populace is excluded from the decision-making process and forced to come to terms with the decisions of capital. *Place justice* can be traced back to Lefebvre’s theory of “the right to the city.” It concerns the attachments to particular locations that are developed through daily living. These are connections people form with a place over time through their daily routines. People travel through space, and the social fabric knitted by these travels creates a sense of belonging and ownership with the place, leading to people feeling more secure in these places (Kearns, Meredith, and Morrissey, 2014). The idea of *rootedness* is an important dimension of existential security that can be undermined by urban renewal projects, creating social-psychological consequences or *rootshock* (Fullilove, 2016).

James Meek identifies the complete cycle of capital as it pushes and pulls communities in different directions from Somerdale to Skarbimierz. In his article, he attempts to explain the populism in Poland and the Brexit vote in the UK. He stresses the importance of not only migrant labor but of migrant capital. The result is the landscape once housing the Cadbury chocolate factory being converted to residential development and sports gyms. Meanwhile, a rural landscape in Poland opens new factories to produce Cadbury chocolate eggs, which becomes the root cause of discontent. The populist vote drastically swings to the right in both locales due to decreasing wages. The multinational corporations moving production around are mainly concerned with profit. The local populace and their quality of life and wellbeing are a mere externality. Previously, both locales had a sense of moral obligation that operated on a local scale, even if it was not fully democratic.

“Multinational manufacturers of consumer goods cut their costs to the bone, sweating their wage and pension bill, buying up robots to deliver yield to the pension funds, sovereign wealth funds, hedge funds and wealthy families that own them; but who then will be able to afford the consumer goods? Those people who work for the other guy?
But the other guy is doing the same thing. And robots don’t eat chocolate” (Meek, 2017, p. 25).

Meek thoroughly explains the different systems and feedback loops present when a company moves from one landscape to another. He outlines the multifaceted costs and benefits of these “wicked problems.” Once again, we are dealing with rootedness and rootshock but on an international scale. The interesting part of this critique of global capital comes in the form of pension fund owners, sovereign wealth funds, and hedge funds, which are not operating on a local scale. Their scale is not concerned with the local populace or any issues of their wellbeing. Morality or ecological concern is largely ignored unless it somehow affects their bottom line and must be addressed. At times, the people who buy into these funds may not be looking at the exact nature of their investing activities, which they could have a moral opposition to. Global consciousness of production-consumption and its associated visible externalities has been a recent revelation as the globalization of information becomes more accessible. Soja’s strategy for mounting a challenge to global consumption/production is through a local response, rooted in local action with international connectedness.

“A strategic community-based regionalism has entered the activists’ agenda and has facilitated coalition building and the formation of what might be described as regional confederations or networks bringing together diverse organizations that in the past would rarely work together” (Soja, 2010, p. 25).

The idea above would be implemented by landscape architects, who would attempt to design a solution to the problems identified by geographers. This resulting design would be rooted in local landscape design and would utilize democratic processes. A conference organized by the Center for Landscape and Democracy (CLAD) at the Norwegian University of Life Sciences, titled “Landscape Democracy: A Path to Spatial Justice,” took on the challenge of defining landscape democracy.
2.3.4 Reading Spatial Justice in the Landscape

A critique of ordinary landscapes is needed to understand spatial (in)justices present in a landscape. Soja and his students at UCLA identified the needs of the transport poor in Los Angeles and helped amplify the voices of the previously unrepresented. (Castiglioni and Ferrario, 2018) A geographer and architect studying the landscape of Italy asked questions concerned with going beyond the aesthetic value of “Landschaft” to utilizing experiential aesthetics (Bell, 2009) in understanding the political, economic, and social interactions in the landscape.

“By observing the landscape forms and looking for the meaning assigned to them, can we understand something about the quality of governance and the degree of democracy in the society that build up that landscape? How is the ‘success’ of a ‘community’ visible and readable in the landscape, other than through ‘scenic’ value? To what extent can we relate the landscape forms to social justice (Cosgrove 2006, cited in Castiglioni and Ferrario 2018, p. 40).

The geographic understanding of landscape, with the addition of ecological literature defining a particular scale for landscape, brings us to the human scale necessary to enact change through the democratic processes of everyday life. That scale is the landscape, or the watershed scale, between the region and site scale (Bell 2009). Human intelligence has given us the ability to read the landscape. It is important to keep in mind that the scale of a study determines the level of detail the study seeks to understand. The study will naturally only address the reading of the landscape at a particular scale, with solutions that will be possible only on that specific scale.

“Actual length only exists in terms of the scale chosen, because more of the detail of the irregularly shaped coast is measured as the scale becomes larger and so the length measurement increases, becoming close to infinite when measured at the molecular level” (Bell, 2012, p. 16).
The ordinary landscape is where life takes place. At this scale, we can determine the solutions to global ecological, political, and economic issues. Global warming is studied as a global phenomenon, but carbon emissions and other pollution are created on a local scale, along with the everyday choices in consumption/production and their associated detrimental externalities. Hence, the ordinary landscape is where climate change remediation takes place. It is where issues of sprawl and its ecological, political, and economic effects on the local, regional, national, and global scale are discussed, and a course of action is agreed upon. There may be external influences, but deliberation and action remain local.

A critique of ordinary landscapes should provide the reader of the landscape with an overall aesthetic understanding of the quality of the landscape. It should allow the reader to understand the cultural, geographic interpretation of the landscape and how resources and power are distributed, both at the individual and communal scale. In this sense, a critique will be more thorough if it implements experiential aesthetic processes over a given period; a well-prepared desk study complementing the field study will ensure that the whole landscape is experienced. This is where the LCA can be helpful in its ability to compile reading of the landscape’s aesthetic, ecological, and cultural, geographic elements into one process. The desk and field study portion create a foundation for a robust understanding of the natural and human forces at play in the landscape. The LCA can be used to read the landscape with a “spatial justice” and “landscape democracy” theoretical lens to identify these issues in the landscape during the characterization portion of the LCA. The making judgments portion of the LCA can be utilized to alleviate identified symptoms. The stakeholder input component of the LCA can be utilized to facilitate democratic landscape decision-making. The LCA can be used to read Firstspace, interpret Secondspace, and envision Thirdspace.
2.4 Landscape and Democracy

"At the most fundamental level, democracy means giving citizens possibilities to influence their own lives and condition, hopefully in constructive and well-considered directions. Democracy is in this sense, a way of life rather than, more narrowly, a way of organizing and justifying government. The concept is ambiguous though and leads us on different tracks” (Arler and Mellqvist, 2015, p. 274).

In Greek, democracy means the rule of the people (Knudtzon, 2018; Jones, 2018; Barnett and Low, 2004). Yet, different forms of democratic processes, theories, and approaches may differ from one place to the next and may work better in some contexts than others (Barnett and Low, 2004). Democracy is “the idea that political rule should, in some sense, be in the hands of ordinary people. It is also a set of processes and procedures for translating this idea into practices of institutionalized popular rule” (Barnett and Low, 2004, p. 1).

In a democratic process, decision-making must be transparent, conducted openly, and requires constituents’ consent. The mandate for representation needs to be based on the authority given by those affected by the actions of the representatives (Jones, 2018). Organizations and institutions need to be held accountable for their decisions, the shortcomings of those decisions, and their effects on their constituents (Barnett and Low, 2004).

“Democracy necessarily involves communication and contestation between citizens and power” (Jones 2018, p. 15).

2.4.1 Democratic Landscape Planning

As it pertains to landscape planning, the democratic process can be separated into three forms. Participatory democracy emphasizes direct and local power, especially when initiating landscape changes. Deliberative democracy is more traditional in nature and attempts to create a solid base of knowledge by creating a discourse between members of society. Lastly, radical democracy challenges power structures and mobilizes those without power (Knudtzon, 2018).
Liberal, republican, and radical democratic processes can facilitate decision-making in civil society. The liberal process emphasizes individual rights and freedom from state interference. The republican tradition values the right to deliberation, argumentation, and debate to reach a consensus that will direct the community with agreed-upon goals—the radical aims to challenge existing power structures (Knudtzon, 2018).

Liberal democracy (representative democracy, indirect democracy) is defined as obtaining the right decision by aggregating total votes. Representatives are chosen by constituents, who use lobbying, protesting, and other forms of influence to encourage their representatives to advocate for their political and economic interests (Knudtzon, 2018; Barnett and Low 2004). The decisions made by representatives are justified if they do not violate private property and individual rights (Knudtzon, 2018). In the liberal democratic formation, the representative is motivated to represent the interests of his constituency as effectively as possible for securing re-election. The aggregative process implies that the clearer the constituents express their position on a vote, the easier it is for the representative to honor the will of his constituents. Constituents can review voting records at the end of an electoral term when making decisions about the re-election of a representative during upcoming elections. The liberal democratic process requires the lowest level of involvement from civil society. In a liberal democracy, people are asked to cast votes at arbitrary periods for representatives they deem will serve their interests to their best abilities. Yet, in representational democracy, elected officials may decide to move forward with projects without public participation. This form works well for larger landscape territories (Knudtzon, 2018).

Participatory democracy is a democratic process rooted in the local landscape. The process is utilized to create a direct-democratic process where citizens are viewed as the holders
of tacit knowledge who may aid with developing solutions to local landscape challenges (Knudtzon, 2018). Aggregation can limit the participatory process due to the scale of participation, the landscape under consideration, and the resources required to carry out an effective participatory process. This may require community meetings, interviews, workshops, and extensive participant recruitment from all sectors of society. Thus, the participatory method works better with smaller-scale landscapes. The participatory process is focused on decision-making and less concerned with solution implementation (Knudtzon, 2018). Participatory democratic processes disseminate power relationships to more members of society. Those left out of the process may challenge any outcome through activism and protest (Knudtzon, 2018). The two associated risks of the participatory process are the following: (a) the possible creation of local elite citizens who are more affluent and whose voices are more audible and (b) the creation of local-centered “Local First” adherents who overlook national, international, and larger-scale ecological issues (Knudtzon, 2018; Jones, 2018). The participatory democratic process may legitimize decisions about the landscape, especially when participants recognize their dual role as representative stakeholders with responsibility for achieving defined goals (Arler and Mellqvist, 2015).

Successful public participation has several components that need to be in place to be effective. Power distribution needs to be distributed among all actors within a landscape. Access to information, free press, and self-expression by different actors. The ability for actors to mobilize, exert pressure, and have their voices heard. The presence of a transparent and open political system and bureaucracy. Restraining from the use of manipulation by all actors. Respect for other actors and the willingness to share power. The ability for management to adapt to actor wants, accountability for the management of affairs by all actors in the landscape (Jones, 2011).
Public participation processes may provide recommendations for public inclusion in different legislative documents. Nevertheless, in practice, they are not very effective at effecting change through democratic processes due to exclusionary biases, such as age, social class, race, and gender. (Knudtzon 2018). Other biases could include education levels, language barriers, and understanding of the topic under consideration. These biases are well-recognized in democratic theory as external exclusions. They are ways of excluding people from the decision-making process. Internal exclusions are less visible since not everyone has the same ability to influence others, even if they are granted access to decision-making processes (Ibid., 2018). The third method she defines is cognitive closure, in which the discourse is controlled to exclude certain viewpoints, arguments, and multitudes of perspectives (Ibid., 2018).

"To leave all political power in meritocratic mater with those who are regarded as best qualified to evaluate arguments be it the brightest, the most argumentative or the most informed is a recipe for corruption and lust for power" (Arler and Mellqvist, 2013, p. 279).

Jones (2011) warns of manipulations that may take place in public participation processes. He refers to Sherry Arnstein’s (1969) “ladder of citizen participation” to help identify the different typologies of participation as they range from nominal to genuine. Nonparticipation is at the lowest rung of the ladder and materializes in the two forms of Manipulation and Therapy. Tokenism is further up with Information, Consultation, and Placation as its tools. Citizen Power is at the top, with Delegated power and Citizen control as the highest forms of the participatory democratic process.

Deliberative democracy places emphasis on the right to argumentation and debate. The goal is to produce rational arguments that guide the best course of action. In this scenario, the main drivers of success are the inclusive practices that will grant access to both arguments and the rationalization process to different strata of society. The main goal is to create dialogue
around different participant positions, employ rationalization and argumentation, and create a final action path (Knudtzon, 2018). The deliberative democratic process furthers the spread of power relationships to members of society who are able and willing to argue their positions and provide well-reasoned and rational plans. Knudtzon draws from communicative planning theorists influenced by Habermas when asserting that the power relationship between parties with different positions will be unequal. When organizing their positions, interests, arguments, and rationalization processes, different actors have different resources to draw from. Some may be more educated, well-versed when arguing, and have access to more financial resources (Knudtzon, 2018).

*Radical democracy* concerns mounting a challenge to the status quo of neoliberal values. Whereas there is an imbalance of power in modern western society, attempts must be made to co-opt members of different social strata through consensus-oriented processes. The theory minimizes the fact that there may be insoluble differences among members of society (Knudtzon, 2018). Radical planning should confront existing power structures while acknowledging the existence of different incompatible viewpoints. Planning should challenge current power structures to create a new power structure. The radical democratic process emphasizes agonistic processes to make one’s positions more prevalent and accepted (Knudtzon, 2018).

In conclusion, the participatory, deliberative, and radical democratic processes can go beyond the liberal democratic process utilized in planning. Thus, the planner becomes a facilitator of the democratic process and not just a bureaucrat working for the political forces (Jones 2018). This would be applicable regardless of which democratic process is chosen and the different strategies and tactics each incorporates (Knudtzon, 2018).
Landscapes may be affected by democratic processes, but there are also material and social impacts on the landscape that have nothing to do with democratic practices or public participation in the planning process. These impacts are natural, geological forces, such as fires, earthquakes, and other non-human influenced occurrences (Jones, 2018). Other impacts are human actions, such as large infrastructural or development projects spearheaded by private owners. The local and multinational corporations aided by local government bodies may often avoid complying with public participatory processes (Jones, 2018). Jones explains that external forces beyond the scale of the landscape under consideration also influence the landscape, such as international agreements that may not be entirely subjected to democratic control (Jones, 2018).

“Alongside participation, procedures contributing to democratic decision-making include elections, consultations, markets, and informed argument. Moreover, the landscape is not formed simply by landscape policy, but also by commodity markets, globalization, and political decisions not concerned with landscape” (Jones, 2018, p. 20).

2.4.2 Democratic Institutions

Jones organizes the different institutions present in a landscape and the democratic dimensions that they correlate with, in their attempt to influence the landscape. He defines these dimensions as conservative, liberal, populist, and radical. Figure 2.8 on the following page presents the Democratic Institutional Dimension chart created by Jones (2018).
• **Bottom-up initiatives**: This radical democratic dimension includes citizens and community groups as the core actors who may be organized as a group of volunteers or different types of associations. They will usually organize grassroots initiatives through direct action or participatory planning by engaging in dialogue (Jones, 2018). The limitations of bottom-up initiatives may be the inability of leadership to identify their constituent base. Government actors with decision-making power could ignore them. Their ability to formally settle disputes may be limited (Jones, 2018).

• **Top-down consultation**: With elements of both radical and conservative democratic dimensions, this process seeks to bring together the views of different defined stakeholders (Jones, 2018). The issues with this method include the following: the selection of stakeholders, consulting stakeholders instead of citizens directly, and the potential for the process to be manipulated by special interests advocating their agendas (Jones, 2018).

• **Bureaucratic decisions**: Combining conservative and liberal democratic dimensions, decisions are made by government administrators and civil servants. The shortcomings of this dimension of decision-making will be an overbearing dependence on managerial practices and adherence to rules and regulations, which may limit the ability of actors to solve problems that cannot be systematically addressed (Jones, 2018). Administrators
may also advocate for their agendas and those of the political majority they represent, at the cost of others (Jones, 2018).

- **Elected bodies**: In the liberal democratic dimension, elected bodies include legislative bodies elected by constituents at various levels of government. These representatives, in turn, elect local or national governments. The system in design attempts to represent the majority’s will by creating policies, laws, and signing onto international treaties and agreements (Jones, 2018). An independent judiciary and court system are responsible for upholding the rule of law and ensuring that the rights of individuals, minorities, and property owners are upheld (Jones, 2018). Manipulations can appear as controlling public media, unequal access to media outlets, gerrymandering, unfair campaign financing, and ignorance of minority interests (Jones, 2018). The elective bodies may also ignore junior elected government members and lower-level governmental bodies (Jones, 2018).

- **Market forces**: Wedged between liberal and populist democratic dimensions, market forces fall into two categories. The first category represents business interests motivated by profit who work, to a certain degree, to advance the interests of the public (Jones, 2018). Consumers also influence the market by voting through their purchasing power, which is distributed unevenly (Jones, 2018). At times, businesses can act as lobbies, demanding local governments make concessions in their favor. Businesses can relocate at will. Some international businesses may harbor more power and influence than local governments, with some escaping the democratic sphere of local governance altogether (Jones, 2018).

- **Protest**: In between the populist and radical democratic dimensions, this process includes environmental and social movements that seek to address some form of discrimination or issue (Jones, 2018). They range in scale and may reach a corrective aim (Jones, 2018). Usually, authorities deem such movements illegitimate (Jones, 2018). These movements have an intent to correct some existing conditions they are protesting.

- **New public management (NPM)**: On the chart, this dimension can be summed up as neo-liberal new public management strategies that seek to improve communication between stakeholders. It is delivered as information to the public in a top-down manner, emphasizing market offerings, but focused mainly on influencing bureaucratic processes (Jones, 2018).

- **Communicative planning theory (CPT)** is focused on discourse within a liberal democratic tradition with a grassroots bottom-up approach (Jones, 2018). The public participatory and protest processes have limitations and may be manipulated by different actors for their advantage (Jones, 2018). This may sometimes lead to disappointed participants or multiple publics who may choose to employ other democratic methods to protect their rights and advance their interests.
2.4.3 Self-Determination, Co-Determination, and Debate

In its many contemporary and practical formulations, democracy has its limitations. The three sets of values for the democratic process, as defined by Arler and Mellqvist, are the following: (1) the right to *self-determination*, (2) the right to *co-determination*, and (3) *respect for argument and debate*, which together create the basis for the democratic process, regardless of the different weights placed on each, which may fluctuate given a specific cultural landscape (Arler and Mellqvist, 2015).

Self-determination: In liberal democratic formations, negative freedoms or liberties are freedom from external influences, such as freedom of religion, freedom of speech, paternalist and moralist state intervention, and a right to private property. The right to private property enhances *negative freedoms*. *It grants* a protected space where people can have a personal life, defined as the good life, free from external pressures and influence (Arler and Mellqvist, 2015, Stanford Encyclopedia of Philosophy, 2019). External pressures may emerge from businesses, other individuals, groups, religious organizations, and the state. The interference of the state in personal life or privacy in liberal-oriented democratic states is considered less democratic, than authoritarian states that respect people’s privacy (Arler and Mellqvist, 2015).

"The right to self-determination can be justified in two ways; one strategy, used primarily in liberal, liberalist, and libertarian traditions, often starts from the assumption that ideas of the good life are subjective and beyond rational assessment. Even if there is rationality involved in answering questions of the good, these questions remain secondary to the question of the right (Rawls, 1972) i.e., to questions related to the protection of liberal rights. Personal freedom, considered in Kantian terms as a transcendental value beyond specific values and goals …guides democratic institutions. The state must remain neutral in value related questions …and leave it to individuals to find answers. Democratic states ought to act along formal or procedural lines" (Arler and Mellqvist, 2015, p. 274-275).

Co-determination: Is defined as the equal right to make decisions about the public sphere of life, beyond the negative liberties. The decision-making then enters the sphere of *positive
liberties, defined as a person’s equal right to influence and participate in government processes or to have their pre-political concerns heard (Arlér and Mellqvist, 2015).

“Whereas self-determination and a free market allow people to pursue private desires, no matter what these happen to be, voting and participatory rights guarantee equal influence on public affairs, no matter what people want. Citizens are in both cases considered as sovereign consumers who select private goods in the first case and public goods in the second. In contrast, public regulations stay neutral to conceptions of the good in both cases” (Arlér and Mellqvist, 2015, p. 277).

The combination of self-determination and co-determination contributes to a successful democratic process since both make up the entirety of the landscape where life takes place. Self-determination is relative to purchasing power in free-market formulations. Whereas co-determination provides all people with an equal vote, regardless of purchasing power or net financial worth (Arlér and Mellqvist, 2015).

Respect for argument: The third requirement can be organized and administered in numerous ways. The idea is to allow space and time for debate and deliberation (Arlér and Mellqvist, 2015). Voting occurs after the deliberation process and usually decides the outcome. While not everyone may be satisfied with the outcome, the process allows the reasoning for the decision to be made clear through proper argumentation by using different moral, scientific, and other forms of argument (Ibid., 2015). Respect for argumentation allows people to express their opinions and allows for the democratic process, with less room for speculation as to why people voted for a particular outcome. When landscape issues are concerned, the good cannot be reduced to private matters because the landscape is beyond the private in the co-determination sphere. Therefore, it is important to identify landscapes with specific elements, features, and identities to value them accordingly.
“If, for example all significant landscape features such as beaches and forests become private property where access is forbidden, self-determination loses value for everybody except the owners. Likewise, if owners could destroy significant landscape features at random, everybody else with an attachment to it would suffer. Nobody can buy every single object of interest in his or her neighborhood. Restrictions are necessary to uphold self-determination for non-owners. Democracy must include management of common affairs” (Arler and Mellqvist, 2015 p.275).

Different democratic formations will place differing values on self-determination and co-determination. Liberal democratic traditions will emphasize self-determination, and conservative republican traditions will emphasize co-determination.

2.4.4 Democratic Dialectic

Participatory democracy requires more citizen involvement than representational democracy in the planning process, making it harder to implement and achieve. Yet, the results obtained increase the quality of co-determined decisions. This can lead to other forms of democracy, such as social democracy.

In representational Landscape Democracy (indirect democracy, representative democracy), citizens decide who should manage the landscape. The elected governing bodies make and enforce decisions as they pertain to landscapes. As a result, people evaluate the quality level of implementation and use their deductions to shape future voting for governmental representatives. If the quality level of enactment is satisfactory, then the mandated representatives have completed their job successfully. The final success or failure of the design falls upon the actions of elected decision-makers who were part of the design process. In this scenario, design responsibility is shared between elected representatives. The responsibility for execution is delegated to either governments or private parties.
Participatory landscape democracy occurs where involved citizens deliberate on the decision-making process and participate in the enactment partially or completely. This process is more complex to implement than representative democracy. Requires more resources and a higher level of civil consciousness with the constituents and other members of the public. It might be a lengthier process, but the result yields more cohesion among the members of society who bear the effects of the decision-making. Cooperative, participatory landscape planning models can be achieved in both participatory and representative government models. People decide how the landscape should be managed and enact those decisions. Then, people evaluate the success of the design and execution. In this scenario, the mandates are horizontally distributed. The risk of the design and execution is shared.

Jones (2018) defines the six democratic institutions as an essential factor of the democratic process. Each institution occupies a particular location at a particular point in time in the democratic dimension from which landscape change is affected. Also, each will have a different set of strategies and tactics that can be used to influence others in the democratic decision-making process. The institutions also have different compositions in different settings.

- **Market forces** may be local, regional, national, and international.

- **Protest forces** may be local, regional, national, or larger international groups. For example, climate change groups can operate internationally.

- **Bottom-up initiatives** may be locally enacted but can be motivated by larger-scale concerns, such as climate change or global warming.

- **Top-down consultations** may be national-level directives to increase productivity or develop a region. They can be motivated by international agreements, such as the ELC or national directives.

- **Elected bodies** answer to their constituents on different levels.

- **Bureaucratic agencies** will answer to the citizens to whom they render services and the elected bodies who may influence them.
Power relationships in different institutions of the democratic process are constantly in flux because the actors making up the institutions are transitional and not fully identifiable at any given point. Actors may also change their position on the democratic dimension. They may occupy the protest position at one point and then occupy another position, such as elected bodies and bureaucratic decision-makers. Market forces may exert more influence than elected bodies in certain landscapes and less in others. In landscapes where market forces wield great power, they may obtain control over elected bodies, bureaucratic decision-making, and top-down consultations. Thereby, bottom-up initiatives and protests will remain the only viable challenges to power. Market forces are motivated by profit in free markets. In the social market, they are motivated by public profit but are still limited by their scale of influence. They may not be able to enact change on large-scale infrastructural projects that market actors need to conduct their business activities. Most businesses are not interested in building the infrastructure required for their operations, such as roads, water infrastructure, and other necessities that they partially benefit from. When elected bodies are not held accountable by their constituents, or systematic government formulations make accountability difficult for constituents, they may wield control over market forces, bureaucratic decisions, and top-down consultations. Again, bottom-up initiatives and protests are left as the only efficient challenges to power. Concentrating power to the realm of top-down consultations may lead to technocratic government solutions imposed from above and not necessarily in the best interest of local landscape constituents. These constituents can only resort to bottom-up initiatives and protest to balance the power dynamics. Different institutions hold different levers of power over one another. The polarization of power in different forms at any end may increase the prevalence of spatial justice concerns in the
landscape. Thus, this power distribution will determine the level of democratic governance present in the landscape.

Self-determination and co-determination are parts of the whole landscape and need to be viewed in their relationship to landscape formations. When self-determination is over-emphasized, it can cause islands of wealth surrounded by large territories of degradation. There will be more private goods and less public goods, which may be less beneficial to the individual. You may drive an expensive car, but the roads may be derelict, necessitating monthly repairs to your car. You may have more money, but public education may be insufficient, leaving private schooling as the only option. If co-determination is over-emphasized, there may be adequate public infrastructure and community development, limiting personal wealth and the ability to choose a lifestyle that best fits individual wants and needs. This is where the right to argumentation, debate, deliberation, accountability, and auditing of decisions becomes essential to review decisions, draw conclusions, and adjust future management accordingly.

Resilience and robustness are the results of democratic processes that require constant practice. When constantly applied, scrutinized, practiced, and modified, the process will remain malleable and respond to natural and social landscape changes. It will better mirror the power relationships between the different democratic dimensions and their respected actors and institutions. But anything that requires practice will take time to master and perfect. Thus, all members of society may not have the same abilities and aptitude for practice. This needs to be considered as they relate to individuals, actors, institutions, nations, and higher forms of social organizations. It is important to emphasize substantive democracy and not procedural democracy. The main goal is the outcome of quality decision-making instead of the participatory process as an end in itself (Castiglioni and Ferrario, 2018). The emphasis on substantive
democracy also protects democracy from turning into an Ochlocracy (Hasanovic 2015; Galvez 2017).

For democratic processes to incorporate robust solutions for the landscape, a well-informed comprehension of the landscape is necessary to inform the democratic process. There needs to be an emphasis on research, especially as it relates to the ELC, landscape architecture, and its ability to provide the background materials and research necessary to facilitate debates about the landscape. There needs to be a thorough understanding of the landscape and the numerous institutions within it. Landscape architects may serve the dual role of initiator and facilitator in the democratization of the landscape. There is a greater emphasis on co-determination in the literature presented, with less emphasis on purchasing power as a component of self-determination and how it is developed, expanded, and designed.

2.5 Ecological Systems Thinking


Ecological systems thinking requires a perspective that is particular to the human condition. This perspective has been tainted by cartesian thinking since the inception of separating man from his environment. Bell suggests an integrated approach that combines humans and their surroundings into an interdependent totality (Bell, 1999). Separating man from his environment leads to the issue of constantly having to respond to the environment’s actions
by attempting to regulate it, which is countered by the environmentalist perspective of viewing human activity as a threat to the environment.

In her book “Economic Growth and Sustainability: Systems Thinking for a Complex World” (2014), Karen L. Higgins paints a picture of our current mental model of society and its limitations, which she refers to as the system boundary (mental bubble). In figure 2.7, we see the limitations of the current mental model and its arbitrary internal and external limits. Higgins’ goal is to develop a sustainable model for growth that is less immediate and more sustainable over a longer period.

In the current mental model systems diagram (Figure 2.7), we see that personal gratification is achieved by purchased goods and services, which reinforces the economy and creates global consumers. This requires the use of more energy and finite resources. Thus, population (Society) and pollution (Environment) are externalized in this current mental model. In producing and consuming, people feel a sense of security. In the current mental model diagram of linear consumption, all feedback loops turn in the same (S) direction.

![Figure 2.7 Current Mental Model System Diagram (Higgins, 2014)](image-url)
In figure 2.8 there is no externalization. The system boundary “metal bubble” is missing, and population (society) and Pollution (environment) and their components are now included in the diagram. The population is expanded to include “deaths and births per year,” “food and water consumed,” “food and water availability,” and other components affecting the population. Pollution is expanded to include “damage to the environment,” “renewable energy consumed, fossil fuel/nuclear energy consumed,” along with effects on “food-producing land and fisheries/surface water,” “aquifers” and other components.

Figure 2.8 Integrated Systems Diagram (society, economy, and the environment) (Higgins 2014)
Most resources that can be mined or extracted from the earth are finite, even if they have not been discovered yet. The Anthropocene directly impacts population growth. In the integrated systems diagram, there are further identifications of relationships, their interactions with one another, and their ability to delay and produce opposite (O) shifts in the system component direction. Yet, a unique element here is the “sustainable happiness and wellbeing” component, which is an addition to personal gratification and a replacement for personal security in the form of financial resources used for consumption.

Kate Raworth, in figure 2.9, refers to the sustainable system boundary for production/consumption as the ecological ceiling. One layer below that is the safe and just space for humanity, held up by a social foundation below which we find critical human deprivation (Raworth, 2017, p. 38). In her attempt to explain the safe and just space, Raworth suggests a shift in the goals of the current system of interactions by changing the narrative. This can be done by pursuing goals beyond GDP growth and seeing production/consumption with associated benefits, costs, and externalities. An understanding of co-created realities or the continuum needs to be
nurtured. The following needs to be implemented: (a) systems thinking; (b) distributive design that attempts to reduce inequality; and (c) regenerative design that treats environmental or ecological wellbeing as normal and not necessarily a desirable. Raworth’s final goal is to move from economic growth to economic thriving (Raworth, 2017, p. 22-26).

Beyond the ecological ceiling, we find symptoms of rampant production/consumption, which she identifies as “ozone layer depletion, climate change, ocean acidification, chemical pollution, nitrogen and phosphorus loading, freshwater withdrawals, land conversion, biodiversity loss, and air pollution” (Raworth, 2017, p. 38). Below the social foundation, we find the distributive shortcomings of production/consumption: lack of access to “water, food, health, education, income and work, peace and justice, political voice, social equity, gender equity, housing, networks, and energy” (Ibid., p. 38). In the work of Higgins and Raworth, we can recognize a message similar to the one propounded by Philippopoulos-Mihalopoulos about the continuum that required a rupture to a new way of seeing and interpreting the interactions within space. It is quite interesting to see the overlap in both of their identifications of the current mental model of society and the model that will be ecologically sustainable for current and future generations. In both models, we see the insertion of wellbeing. Wellbeing refers to all the non-quantifiable interactions in current economics. We can call them non-monetary values, with limited or no immediate exchange value.

Nevertheless, they are tangible to the private and public owners and holders of these values. For example, some well-being activities are playing the piano, going on a walk, reading, spending time with family, watching a football match, playing in a football team, and planting community gardens. These things that cannot be fully monetized are considered well-being activities, even though we know that the availability of parks, spending time outdoors, public
social interaction with others is beneficial to the well-being of the elderly and may reduce public health costs (Thompson, 2011) we still cannot fully quantify or commodify what the exact value of that interaction is. It can be considered a simple act of kindness or the gift of human interaction (Mauss, 1993). In her depiction of current day economics, Raworth states the following:

“Mainstream economics depicts the whole economy with just one, extremely limited image, the circular flow diagram. Its limitations have, furthermore, been used to reinforce a neoliberal narrative about the efficiency of the market, the incompetence of the state, the domesticity of the household and the tragedy of the commons. It is time to draw the economy anew, embedding it within society and within nature, and powered by the sun. This new depiction invites new narratives - about the power of the market, the partnership of the state, and the core role of the household and the creativity of the commons” (Raworth, 2017, p. 22).

When we dissect this statement, we realize that not all markets, governments, households, or commons are alike. Each society has a different system of interrelated arrangements of institutional actors that comprise the political landscape. For example, in the United Kingdom, taxes are higher than in the United States. Yet, public benefits or the commons are more interrelated. Thus, the UK government oversees public road building and public health, motivating the system to reduce public health costs by increasing bicycle transportation. This same motivation may be lacking in countries where the relationship between market goods and public goods is systematically arranged in different patterns. An example of increasing spatial justice can be made in the following manner, using systems thinking and ecological sustainability as the core design goal for landscape change to mitigate the access shortcomings of “transport poor” residents of a rural-urban region through investing in biking infrastructure vs. automobile road infrastructure:

1. Generally, bicycle infrastructure is cheaper to install and maintain. It requires less road work to be done. The maintenance over time is less in comparison to automobiles.
2. Bicycle commuters have better cardiovascular health, mental health, and overall wellbeing.

3. Bicycles also have a lower barrier of entry for members of society who need a mode of transportation for short commutes. In this sense, bicycle lanes increase access for more people to travel across space to reach different resources.

4. Pollution is decreased as members of society use the alternative form of transportation for short commutes. This results in reduced fossil fuel use and the side effects of health remediation caused by pollution and sedentary lifestyles.

5. The heat island effect is decreased in cities with many cars and roads to accommodate them. Overall, the city will become cooler.

6. Trees can be planted around bicycle highways, which occupy less space than traditional automobile highways. Trees soak up carbon and water runoff, serve as carbon sinks, and increase moisture levels.

With the example above, we can see how we can produce multiple benefits from single design decisions and how each design decision feeds into another system of ecological and economical operations. We can also record the following results: less initial investment, less maintenance investment over time, less spending on public health measures, more horizontal access to transportation networks, and increased physical, mental, and social wellbeing. Making a simple decision in the urban or peri-urban landscape can impact the individual, local landscape, and global scale climate concerns. It is important to register both the negative and positive freedoms. The negative freedoms, for example, are freedom from pollution and blight. The positive freedoms are access to transportation for the members of society who previously could not access resources due to spatial arrangements and the financial capital needed to purchase an automobile. It is also important to think about positive and negative freedoms for future generations and what kind of landscape they will inherit. This thinking is the material component for sustainable development and landscape design for spatial justice.
Chapter 3: Methodology

This chapter presents the methodology that are used to inform the research. The Landscape Character Assessment (LCA) is presented as a tool for recording the many physical, aesthetic, and cultural layers of the landscape (Firstspace and Secondspace). It further explains how the LCA can be utilized in democratic landscape decision-making. The Drivers-Pressure-State-Impact-Response (DPSIR) as a Problem Structuring Method (PSM) is a system thinking tool that can explain what spatial justice symptoms may be present in the study landscape and how they can be modified. Case studies are presented as a tool of landscape architecture research, and scenarios are used for making decisions about the future (Thirdspace). Interviews are presented for their use in the landscape democracy portion of the research. Thematic content analysis is presented for how the interview results are scrutinized. The final section summarizes the structure of this research as it relates to landscape architecture and presents the logic for democratic landscape decision-making.

3.1 Landscape Character Assessment

The landscape character assessment (LCA) has its roots in the United Kingdom, where it was created to study the landscapes of England and Scotland. Since its creation, the LCA has been utilized globally by numerous signatory states of the ELC to conduct landscape character assessments (Herlin, 2016). The LCA is essentially a process to study, analyze, and make decisions about landscape management. Character is defined as a familiar and unique formation of elements that distinguish a landscape, not necessarily for better or worse. The LCA is used to inform decision-making for numerous types of landscapes. They can range in scale and type, from peri-urban to remote mountain tops, lakes, or seascapes.
The assessment is used by numerous governments, organizations, utility companies, communities, private developers, and others concerned with the development, management, laws, and the creation of future vision plans for the landscape. LCA’s are usually carried out on three scales: national, regional, and local. The LCA records a base layer of information about the landscape, which can be updated over time. It helps experts and communities improve the quality of their landscapes, which acts as the backdrop to their daily activities (Tudor, 2014). The LCA provides information necessary to make landscape character visible and communicable. It provides numerous benefits, such as the following:

“The LCA can establish a robust evidence base, linked to place; provide baseline evidence at the appropriate scale to inform a range of decisions, present a holistic approach to the whole geographic area, rather than focusing on special or protected sites or features; form an agreed spatial framework of landscape character areas, or types, to which different policy options/applications and decisions can be applied; integrate socio-cultural and natural considerations (for example landscape and ecosystem services) and provide an understanding of how a place is experienced, perceived and valued by people; and identify the key characteristics that together create a sense of place and the unique character of an area” (Tudor, 2014, pgs.10-11).

The LCA is comprised of two stages. The first part is concerned with the characterization process, and the second deals with making judgments (Swanwick, 2002). The first part of the LCA assesses the physical aspects of the landscape. It analyzes the various elements that give each part of the landscape its specific physical characteristic compared to others. It is also concerned with the cultural values embedded in the landscape that attribute a specific character.

The first stage of the landscape character assessment designates the various landscape character types and areas. Landscape character types are generic and can share similarities with other types. On the other hand, landscape character areas are unique landscapes with a particular set of elements and features found only in the designated area. They usually have a name that designates their specific place in the world. The products of the first stage of an LCA will
include maps, descriptions, photographs, and sketches, along with all relevant stakeholder data collected during the LCA process.

The second stage of the LCA uses character descriptions to make judgments on landscape management. The products of the second stage of an LCA will be based on the judgments made. Some examples are the following: landscape enhancement proposals, information for planning policies, special recognition of landscape status, landscape strategies, landscape guidelines, and design development proposals (Swanwick, 2002).

The LCA has traditionally been carried out and utilized by experts to manage changes in the landscape. Initially, the LCA was conducted by professionals with no community input. In the last few years, there have been attempts to involve stakeholders in the LCA process to increase community input and create more robust studies. While the LCA attempts to record both the natural and cultural landscape objectively, it still runs the risk of not creating a value-free assessment since the LCA is conducted by individuals who decide, what to record, and how to record what is present in the landscape. A subjective interpretation may be reduced if the LCA process is well defined, yet a completely objective landscape evaluation is not achievable. The products of the first part of the LCA should present the landscape data as objectively as possible.

Characterization is identifying, describing, classifying, and mapping areas of similar character. Characteristics are all the elements or combinations that make a landscape distinctive or unique. Elements are the various aspects of the landscape that make up the parts of the whole, such as trees, shrubs, roads, homes, factories, and rock formations. Features are elements that stand out and are intriguing, such as particular rock formations, an arrangement of natural or planted shrubs, a clump of trees, the specific organization of agricultural beds, or an architecturally significant building in the landscape such as a church or historical monument.
A landscape’s character is formed by a combination of natural and cultural factors. *Natural factors* include geology, landforms, soil types, vegetation, and climate. *Cultural factors* are the historical and current influences of land use and settlement (Swanwick, 2002). *Perceptual factors* are comprised of memories, associations, and preferences. *Aesthetic factors* include sight (form, color, texture, pattern), sound, smell, and touch/feel.

*Figure 3.1 LANDMAP Landscape Character Assessment wheel (Tudor, 2014)*

The landscape wheel (Figure 3.1) is part of the LANDMAP approach to the LCA that the Welsh government uses in tandem with Geographic Information Systems (GIS) to delineate the landscape into the five spatial layers: geological landscapes, landscape habitats, visual and sensory aspects, historic landscapes, and cultural landscapes (Tudor, 2014).
Figure 3. 2 LCA Flow Chart (Swanwick 2002 Tudor 2014)
Figure 3.2 presents the procedural process for conducting an LCA; each stage presents an opportunity for stakeholder input and feedback. The first stage of the LCA begins with defining the scope, purpose, aims, scale, level of detail that the study will cover, and the scope of stakeholder input. These factors, in turn, determine the resources needed for conducting the study. The Desk study identifies natural and cultural factors that comprise the landscape using different sources of recorded human communication (maps, images, texts, videos, etc.). The field study involves a physical visit to record perceptual, aesthetic conditions, and sensitivity trends. The first stage results are the classification of the landscape, with relevant maps, descriptions, and key characteristics of landscape areas and types. The second stage informs the approach to decision-making about future landscape change.

The LCA has a procedural process that can be modified for different applications. But can it be transferred internationally to landscapes outside the UK with different natural and cultural environments? The experience of Cyprus indicates that the LCA can be transferred. Still, it may have to be modified based on the availability of data layers and differences in the physical landscape and their evolution (Griffiths, 2018).

“Whilst the method proved to be transferrable, the map layers did not, reflecting the absence of mapping of sufficient detail and quality to capture the major historical, ‘moments’ in the evolution of Cypriot landscapes, and the markedly different physical background and climate of Cyprus compared to the UK” (Griffiths, 2018, p. 9).

In the context of Israel, the following difficulties were experienced when implementing the LCA: the country had limited experience with the assessment, limited scientific experience, lack of stakeholder involvement in the process, language barriers with the LCA materials, and different local academic and cultural experiences (Trop, 2016).
From the implementation experiences of Cyprus and Israel, we can understand the challenges and limitations of the LCA during its early inception phase. In the Armenian context, an LCA has never been conducted at the watershed scale. Thus, there are no layers to work off. This research would build the first layer at the local watershed scale, with landscape terminology translated and modified to meet locally relevant descriptions. Certain landscape elements in the UK do not exist in the region of interest for this study, and vice versa. This research will formulate the necessary language for the initial LCA of the region, which can then be transferred to other regions of Armenia. It will create the first base layer of the LCA conducted for spatial justice remediation that will be transferable to other regions.

3.2 DPSIR and Wicked Problems

The Driver, Pressure, State, Impact, Response (DPSIR) is a problem Structuring Method (PSM) that is especially useful in understanding environmental issues and wicked problems present in landscapes. The DPSIR framework is used to identify and create environmental indicators that will simplify the communication of information about environmental states for decision-making purposes, policy development purposes, and policy effectiveness monitoring (Bell, 2012). It may also be effective for studying sustainability, environment, democracy, and conflict (Bell and Morse, 2007). Environmental indicators in the DPSIR framework are an important tool for understanding the ecological changes in each landscape. Indicators are effective when compared to the same indicators in other landscapes and measured over time. Many indicators can be present in each landscape and can be chosen with the consensus of a community group (Bell, 2012).
The DPSIR as a PSM is a product of systems thinking used to solve wicked problems that are usually multifaceted and complex, with no singular or optimal solution that can be tested and achieved. They are also referred to as soft problems. DPSIR formulations are multi-variable and multi-stakeholder. In contrast, tame problems have definite algorithms and formulas that can be recorded with testable and measurable solutions. These are also referred to as hard problems because they present solid solutions to identified problems (Rittel and Weber, 1973). “Wicked” Problems are societal problems that planners, as designers deal with that do not have a precisely definable problem or a precisely definable measurable result, hence being soft problems.

Problems in natural science, in comparison, are definable and are testable with finite answers. Hence, they are hard ‘tame’ problems (Rittel and Weber, 1973). Qualitative research methods are more appropriate for solving wicked problems, while quantitative methods are more appropriate for solving tame problems. Tame problems use a linear process and a defined system boundary.

The systems analysis view states that economic and social development (Drivers) exert pressures on the environment (Pressure), leading to changes (State) that may have detrimental effects (Impact) on human societies, availability of resources, ecosystems, which may elicit a response (Response) that may address impacts or create further drivers (Bell, 2012). The different components of the DPSIR framework have different indicators.

- Indicators for (driver) forces are demographic changes, economic development in relation to production/consumption, and changes in people’s lifestyles affecting the state of the environment (Gabrielsen and Bosch, 2003).

- Indicators for (pressure) forces can be pollution, emissions, natural and human resource changes, land-use changes, and requirements for natural resources, such as water needs, sediments needed for production, biomass for heating, and fossil fuels (Ibid., 2003).

- Indicators for (state) forces are evident in the physical and biological phenomena present in a landscape, such as forest quality, land quality, biological species variety, and overall quality of a landscape and its components (Ibid., 2003).
• The (impact) indicators are the effects previous forces may have had on the change in landscape use function and any health impacts they may have (Ibid., 2003).

• (Response) indicators are the responses by societal actors to mitigate changes through prevention, compensation, adaptation, regulation, efficiency production increase, and reduction of consumption (Ibid., 2003).

Response indicators can be applied to different parts of the DPSIR using different methods. It is important to keep in mind that the DPSIR approach applies to the economy, society, and environment (landscape) as a whole, with its layers and nonlinear cause-effect cycle, which may be complex given their constantly changing non-static dynamic nature (Ibid., 2003).

“The DPSIR framework, although often presented as a linear chain or circle, in fact resembles a very complex web of many interacting factors some of which may represent highly nonlinear dynamics. In many cases the change in the state of the environment or impacts has several causes, some of which may be immediate and of local origin, others may be exerting their influence on a continental or even global scale. Reductions in pressures often result from a mixture of policy responses and changes in various driving forces” (Gabrielsen and Bosch, 2003, p. 9).

The DPSIR framework attempts to define these interrelationships and link as many of the intricate web nodes to create solutions that can address the identified indicators in the different parts of the problem structure. It is also important to understand the importance of scale since policy changes may be needed above and beyond the scope of the landscape and environment being studied and its corresponding system boundary (Gregory et al., 2012).

Generally, DPSIR indicators attempt to answer a few questions. Description indicators describe what is happening in the landscape. For example, they could demonstrate land-use change from one period to the next and its effects on land cover. They usually explain the state, pressure, or impact of a process over time. Performance indicators measure the effectiveness of a response in reaching its target policy goal. These are usually linked with impact, pressure, and state indicators. Efficiency indicators demonstrate the drivers of change that effect “pressures”
(emissions, waste, pollution) which can be measured by the level of waste generated per unit of GDP in each area. *Policy effective indicators* measure the effectiveness of a policy change over time. *Total welfare indicators* attempt to answer simple questions about the betterment of environmental conditions over the span of human life (Gabrielsen and Bosch, 2003).

In conclusion, the DPSIR framework is well-suited for answering questions regarding landscape changes over a period. It is also helpful for developing future scenarios and policies to address concerns that emerge during the DPSIR implementation process. They are appropriate for solving wicked problems that may not have straightforward methods for measuring results, even though we can use descriptive, performance, efficiency, policy effectiveness, and total welfare indicators to generate measurable answers. DPSIR as a problem structuring method is subjective. Researchers as individuals or groups get to select what indicators to look for in each landscape and how to interpret changes related to indicators, such as positive or negative changes. A well-articulated indicator selection methodology and a well-devised data collection/interpretation strategy are the best safeguards from highly subjective results. The subjectivity of the DPSIR process makes it conducive for use as a lens through which to study spatial justice concerns.

### 3.3 Case Studies

Case studies are particularly useful tools for landscape architecture research. Mark Francis describes case studies as “a well-documented and systematic examination of the process, decision making and outcomes of a project that is undertaken for the purpose of informing future practice, policy, theory and/or education” (Francis, 1999). The value of case studies lies in their ability to answer big questions about a particular landscape at the intersection of design and
policy. It is useful when designing with social/cultural considerations and for testing and refining emerging ideas, concepts, and theories (Ibid., 1999). Case studies are utilized to study a specific situation, event, or complex phenomenon as it takes place in a real-world application (Yin, 2014) informed by data sources collected over a specific period (Swaffield, 2017). Case studies are a general research method that may be shaped in numerous ways, leading to selecting specific methods that will be utilized to collect, process, and analyze data (Ibid., 2017).

Case studies are considered *purposive samples*, meaning they are selective, judgmental, or subjective sampling. Research investigators decide on the case study sample, with the end conclusion providing general research results (Ibid., 2017). *Paradigmatic case studies* usually have metaphorical or prototypical values that can be generalized and may provide a new approach to landscape planning (Ibid., 2017). A paradigmatic case study becomes an established finding that may be used in the future by investigators in the field of study (Ibid., 2017). *Extreme case studies* test the limits of an idea by attempting to falsify propositions and test hypotheses (Ibid., 2017). *Critical case studies* usually place the theory at the center of the study. The goal is to allow the research to scrutinize previous theories related to their current investigation (Ibid., 2017). *Exemplar case studies* attempt to demonstrate how an established theory can be applied. They do not attempt to challenge established theories and may be biased in reaffirming the researcher’s hypothesis or preconceived position (Ibid., 2017).

Case studies can be used to answer questions that are landscape specific, exploratory, seek to develop an emerging body of theory, and that challenge or test a theoretic claim (Swaffield, 2017). *Landscape specific case studies* can be used to answer questions about a specific landscape. *Exploratory case studies* attempt to better understand less-developed relationships and patterns that may emerge in the discipline. These studies tend to be open-ended.
questions. *In-depth theory development* is concerned with developing a general contribution to the emerging theoretic body by using other case studies for comparisons (Swaffield, 2017). *Theory testing case study* research attempts to challenge theoretical assumptions and claims (Ibid., 2017).

Case studies are malleable and allow the investigator to make changes as new methods and approaches become available during the research progression. As new insights are uncovered, this malleability validates data collected for the research, regardless of when it was collected during the research process (Ibid., 2017). *Purposive case studies* allow for a particular relationship to be explored and compared to other cases. These studies can be conducted through case study comparisons and cross case-comparisons (Swaffield, 2017). *Multiple analyses* use various data collection methods, such as participant observation, document research, different forms of interviews, and other methods within a specific case study (Ibid., 2017). This strategy provides the tools needed to translate different data sets to create a robust understanding of the investigation. *Multiple perspective comparisons* apply different theories or conceptual frameworks to a complex case (Ibid, 2017), which may reveal what is happening from different theoretic perspectives. The researcher will have to make a judgment call about which method provides the best interpretation of the research (Ibid., 2017). *Embedded case studies* are used to study smaller components of a larger case study. For example, in landscape architecture, this would entail studying smaller areas that makeup parts of the larger case study area, such as towns, villages, and rural landscapes (Ibid., 2017). *Multiple case studies* compare different case studies to find general results (Ibid., 2017). *Typologies* are also a good way to gather data for a case study or as part of multiple studies, where the phenomenon is classified as different types and used for within-case and cross-case analysis (Ibid., 2017).
While case studies provide detailed explanations of a specific landscape, the results are not easily generalized and, in most conditions, cannot be easily transferred to other scenarios since each uses a different rationale and format for conducting the research (Swaffield, 2017). Case studies often cannot use cross-case statistical analysis. Thus, *analytical generalization* identifies the major findings in a particular research project (Yin, 2014). Analytical generalization is used to generalize the results of a case study to determine the established theory in the field and use it as a template that challenges the case study findings so that the theory can develop inductively as evidence accrues (Swaffield, 2017). Inductive reasoning extrapolates a generality of epistemic certainty from specific cases to build upon a specific theory and further refine it.

The limitations of case studies are numerous. They are expensive to conduct, especially if they include a field study component. The participants in case studies may not provide truthful information about projects, landscapes, and areas that developed over time. Cross-case analysis may be difficult due to the use of different research methods. Case studies may only offer solutions to single projects that are not transferable (Francis, 1999). A case study needs to be critical in understanding the specific landscape. For the case study to be complete, it needs to have a specific set of components. This includes baseline information on the location, size of the case study, and scope. There also needs to be a determination as to the role of participants involved in the case study, an explanation of the decision-making process, definitions of the research problem, strategy for a solution, goals of the project and who decides them, and the program for previous and future development and design. The necessity of a site visit is to understand and describe the case study landscape, including how it is used, maintained, managed, and perceived by both locals and researchers. The study’s time depth, scale, unique
constraints, local community impact, and professional community impact will also need to be addressed. There needs to be an understanding of the site infrastructure and its opportunities and constraints. There also needs to be an understanding of the lessons learned while conducting the case study, along with the theoretical underpinnings and outside criticism (Francis, 1999). In conclusion, the case study method is well-suited for use in landscape architecture, with numerous documented studies available in research databases that can be utilized to supplement current research being conducted.

3.4 Scenarios

The scenarios section begins with an explanation of why scenarios were selected as a method for this research and introduces PLUREL as a case study that informs the scenario modeling for the current research. The second section explains why scenario modeling is well suited for landscape research. The third section explains the scenario modeling process and the different types of scenarios in detail. The fourth section concludes by explaining scenarios as they relate to environmental strategy.

3.4.1 Scenario Modeling and Landscape Planning

As a tool for landscape planning, scenario modeling has been used extensively. The use of scenarios is very well-suited to studying built and unbuilt landscapes (Shearer, 2005). PLUREL: Peri-urban land-use relationships was a project organized to help develop sustainable land-use systems. PLUREL’s goal was to answer the following question (Nilsson et al., 2013).

“Can resilient land-use systems be developed for rural-urban regions that successfully combine compact and resource efficient settlement structures with a multifunctional green infrastructure that provides ecosystem services critical to the quality of life of their
inhabitants and which enable them to adapt to various technological, economic, social and environmental changes” (Nilsson et al., 2013, p. 5)?

To test the system’s resilience, four scenarios were developed to be presented to different stakeholders to create the necessary dialogue for identifying the development of land use plans. These scenarios would assume different futures with varying challenges that need to be addressed.

**A1: Hyper-tech**: This scenario is driven by globalization and privatization as its core dynamics. Technology rapidly develops along with the exchange of information. Energy prices decline due to advancements in energy production technology. The shock factor associated with this scenario would be the advancement in mobile work technologies, allowing people to become more work mobile. This would create “polycentric” towns and cities, with people moving from urban centers into rural areas that will slowly be urbanized.

**A2: Extreme weather**: In this scenario, people are more concerned with local identities, and globalization plays less of a role. The shock would be climate change-driven sea-level changes that would create migrant communities. These communities would put pressure on others, especially large urban centers, where people would migrate from coastal areas.

**B1: Peak oil**: In this scenario, oil prices soar as resources dwindle. People are more environmentally conscious and socially aware. Both local and international governments promote sustainability to reduce consumption. People must either work from home or move to cities from the peri-urban areas.

**B2: Social Fragmentation**: This is a scenario in which societies are fragmented. There is less trust internationally. Nationally, identity politics are at play. Older people live in the peri-urban areas, with migrant youth living in the city centers. The youth do not want to pay for the social benefits elders receive.

It is important to state that these scenarios are just examples that can be created and expanded further. The scenarios suggest the underlying logic they are testing, which is outlined below.

**A1: Network effect**: Global networks are intertwined and work together to increase production.
**A2: Disaster management:** Communal self-reliance and climate change mitigation on the national level.

**B1: Energy/climate policy focus:** Focus on eco-consciousness due to scarcity of resources.

**B2: Locality focus:** Fragmented societies, identity politics, and limited resources lead to resource distribution issues.

The underlying logic is what is being tested with the PLUREL model. The scenarios are just discussion topics that draw out more robust development directions and response actions to events that may be used if a foreseeable or unforeseeable event occurs.

“The first thing to make clear is that scenarios are not “forecasts” or “predictions.” Instead, scenarios are useful tools in asking a wider set of “what if” questions and comparing the results of policy options” (J. Ravetz et al. 2013, p. 29).

Scenarios and history can explain how the world will change over time. Yet, unlike history, which is based on factual reality, scenarios are based on assumptions (Shearer, 2005) that facts from reality may support.

### 3.4.2 Scenario Modeling Research Method

As a research method, scenario modeling has been used since World War II to inform decisions about possible futures (Shearer, 2005). Predicting the future is difficult because we have little to no knowledge about what can happen in the future. We can only make predictions and take actions in the present that may affect the future, the success of which can only be gauged later (Shearer, 2005, Taleb, 2010). More successful scenarios will define assumptions confidently and with a high degree of precision. They will also be able to distinguish between events and actions.
Events are the focus of natural scientists who study entities and their interrelationships as they react to external environmental forces using empirical scientific methods. A properly conducted experiment generates explanatory results and can provide predictions. In general, the more consistent an experiment is and the better able to provide a universal explanation, the more authority it will have (Shearer, 2005).

On the contrary, actions concern human activities and how people choose to react to their context (Ibid., 2005). Scenario modeling can help manage future uncertainties by providing a method through which alternatives based on assumptions can be compared. This will provide the users of scenario modeling with the ability to make resilient decisions (Shearer, 2005, Taleb, 2010). Herman Kahn defines the scenario as a “hypothetical sequence of events constructed to focus attention on causal processes and decision points” (Kahn and Weiner, 1967, p. 6).

Scenarios have multiple benefits when used in decision-making processes. Firstly, scenarios provide a method of approach that can help define conditions and consequences of actions. “Facts and data are, in themselves, largely meaningless unless they are placed within an intellectual and disciplinary context” (Shearer, 2005, p. 68). Second, the specific descriptive nature of scenarios makes them easily interpretable and considerable for decision-makers. The who, what, when, where, and why incorporated into scenarios help limit the abstraction of possibilities. This, in turn, provides a way forward that also addresses how the scenarios progress over time. Third, scenarios are fictional case studies that can be used as alternatives to historical case studies. Finally, scenarios can be used by stakeholder groups, land managers, and other organizations to facilitate discussions about planning options (Shearer, 2005).
3.4.3 Scenario Modeling Process

Scenarios need to have a future action component based on varying combinations of facts, judgments, and fictitious cases created at different scales and over different periods (Shearer, 2005). For scenarios to be easily understood by users, three perceptions are needed. *Exploration motivation* explains why the research study is being conducted. *Change orientation* explains how changes occur in the scenario. *Uncertainty stabilization* identifies all the elements that will not change over the study period (Ibid., 2005).

Scenarios can be defined to achieve an *alternative future (end state)* (Ibid., 2005). For example, this end state can be a robust ecologically and economically sustainable landscape. In contrast, the scenario is the process through which the end state is reached. It is important to differentiate between scenarios and alternative futures, one is process-driven, and the other is end goal-driven. More than one scenario can lead to the same end state. All future scenarios need to be realizable and not extremely utopian and fantastic in their assumptions. They need to provide feasible, reasonable, and possible alternatives and have a systematic way of categorizing their actionability. Probability determinations can be used, but they may prove faulty (Shearer, 2005).

Different actors, be they individuals, organizations, or institutions, will display different attitudes to scenarios. The *reactive attitude* looks to the past as the best situation and attempts to restore this past reality. The *inactive attitude* is present-focused and appreciates the current situation. It is past and future-neutral and resists any change in either direction. Both attitudes reduce the need for scenarios (Shearer, 2005). The reactive and inactive attitude may still benefit from scenarios since the actors involved in the study are not the only ones who can effect change. *Proactive and interactive attitudes* are based on little satisfaction with current and past affairs. There is no willingness to recreate the past or accept a future change that takes place.
without agency. This attitude believes that the future can be shaped by action in the present (Ibid., 2005). *The precative approach* diminishes the ability of actors to affect the landscape by presuming that the future cannot be shaped by individuals and organizations (Ibid., 2005); this approach assumes that stronger forces outside their control will determine future outcomes. This attitude usually tries to identify the forces that will bring about these changes and craft a strategy for avoiding pitfalls and exploiting opportunities as these forces shape the landscape (Ibid., 2005).

There are two types of scenarios: *normative* and *descriptive*. Normative (target-seeking) scenarios attempt to identify future preferable scenarios. The scenarios themselves are plans, and the goal is to identify which course of action to take (Shearer, 2005). Descriptive scenarios identify future scenarios without expressing a preference. The scenarios are alternative conditions that help inform localized decisions. The decision for action is challenged across different scenarios to create the most robust course of action that will work for all possible future scenarios (Ibid., 2005).

With scenario modeling, it is important to understand the varying degrees of agency that may be present in the decision-makers. Proactive attitude holders will usually use normative scenario studies, while precative attitude holders will usually veer towards descriptive scenario studies (Ibid., 2005). Due to their participatory nature, scenario studies could change a person’s attitude from one type to another: from precative, reactive, and inactive to proactive and interactive, or vice versa. Strategy is a responsibility that all should share in their effort to identify change and make decisions collaboratively to improve future living standards (Shearer, 2005).
3.4.4 Scenario Modeling and Environmental Strategy

Strategies that use scenario studies need to locate the scenarios in the proper realms of change. The *internal environment* takes place within an organization, with personal and other resources under the direct control of organizational management. The *Transactional environment* is outside the organization within proximity where organizations can influence events. The *contextual environment* is the broader landscape, which includes factors that are not influenced by the organization’s actions (Shearer, 2005). The strategies for scenario studies are determined by user objectives and refined to achieve set goals. In the *business model*, internal environments are controlled by managers who rarely engage with the transactional environment. To achieve more profit than the competition, they engage with the contextual environment by identifying and mitigating uncertainties (Ibid., 2005). In the *military model*, managers maintain control over the internal environment while attempting to influence the transactional environment and gathering data to identify any uncertainties in the contextual environment (Ibid., 2005). In the *visionary model*, the internal and transactional environments are disregarded, and an influence is placed on controlling the contextual environment. Through the different strategies employed by different actors, we can see that each is limited by their chosen scale of operation and environment of influence. These strategies can also be applied by the different institutional actors in the democratic landscape (Jones, 2018). Business strategies may target the contextual environment and increase their interests by doing so. The military model is willing to engage with the transactional environment to obtain a favorable outcome. The visionary model is concerned with controlling the contextual environment and leaves the goal attainment process in the hands of internal and transactional actors. Environmental contexts vary among organizations or even among actors, as their scale of influence and interest vary. Business entities may be
concerned with the market’s contextual environment, while regional governments implement strategies that include other organizations and various actors. Thus, it is important to understand the various institutional actors and their scale of influence within the overall contextual environment (Shearer, 2005).

*Uncertainty stabilization* creates a stable baseline that will continue as different scenarios are created. These stabilizations can be cultural norms, traditions, laws, and regulations that form the contextual environment. The better they are identified and addressed, the more efficiently they can be stabilized, mitigated, or modified. These stabilizers may be different for the various actors within the contextual environment. They may form part of the internal environment of some actors and part of the transactional environment for others. These customs, cultural norms, traditions, and laws are sometimes invisible to members of the contextual landscape and may not be part of the transactional environment. These laws can also differ from the more publicly accepted laws or official “de jure” vs. “de facto” laws. They can exist in a constant dialectic within the different actors and organizations in the contextual environment.

In the uncertainty stabilization process, it is important to stabilize the laws, cultural norms, and regulations by explaining the assumptions of the constants present in the scenario development timeline. This can be done by describing all the elements in the contextual environment with enough detail so they may address possible concerns decision-makers may have (Shearer, 2005). The contextual environment will also have predetermined elements, which are events that have already occurred and whose outcomes have not fully come to fruition. These pre-determined elements may need to be addressed in scenario development (Ibid., 2005). Scenarios can offer people different contingencies (Ibid., 2005). They provide a means by which people can imagine a different future and develop a new understanding of previously not visible
possibilities through the dialectic process. There are numerous ways to develop scenarios with different stakeholders within a given landscape. Interviews are one way to gather data for scenarios creation and scenario preferences. The next section will cover interviews.

3.5 Interviews

Semi-structured interviews are one of the most used forms of qualitative interviews. The main goal of these interviews is to collect information on co-produced knowledge (Kvale and Brinkmann, 2009). This type of interview is well-suited to explain why and how things change (Rubin and Rubin, 2005). It is especially effective for understanding changes and gathering tacit knowledge about the landscape. Interview questions are usually pre-prepared, well-organized, short, specific, and open-ended, with additional probing questions available to further refine interviewee answers when necessary. The interviewer usually has a presentation prepared in advance to present to the interviewees. The interviewee’s consent must be obtained to audio record the conversation; alternatively, the interviewer can take notes if the interviewee declines.

Interviews are helpful for understanding complex changes that have taken place in each landscape and for collecting feedback on future development scenarios. The structured nature of the interview questions allows for interviewees to answer the same questions, limiting the opportunities for pre-judgment by the interviewer. The data collected through semi-structured interviews are limited by the interviewer’s ability to conduct the interviews in a repetitive, consistent pattern while eliminating leading conversations or cues before the questions are posed to avoid eliciting specific answers from the interviewee.

Semi-structured interviews present limits to generalization due to their personal nature. Semi-structured interviews may also have data validity issues. It is assumed that interviewees are
truthful when providing their responses, which may have many variables such as maturity level, expertise in the field, education level, confidence in answering questions, and other factors (Kvale and Brinkmann, 2009).

In conclusion, interviews are time-consuming and resource extensive (Kvale and Brinkmann, 2009), but they help gain a complex understanding and tacit knowledge about the landscape that may only be possible through interviewing landscape connoisseurs. Interviews are particularly important in certain cultural contexts where questions and answers in the verbal form are considered more agreeable than surveys, which may have translation issues and limit answers to short responses or pre-determined answer selections. Semi-structured interviews are appropriate for understanding landscape changes in post-Soviet regions. Content Analysis is a method used to analyze human communication; the next section will cover this research method.

3.6 Content Analysis

Content analysis is used as a non-obstructive research method. It refers to studying different forms of human communication, such as paintings, digital media, text, photography, law, music, etc. (Babbie, 2004). The strategy is implemented by posing a question to a type of “communication” to generate substantiated results (Carney, 1972). Content analysis creates valid and replicable inferences between the mode of communication and the resulting data (Krippendorff, 1980). The following is an outline of the steps for conducting context analysis:

1. **Topic Selection**: The selection can be dictated by the data needed, based on the research aims.

2. **Sample Size**: An appropriate sample size is necessary to focus the research results and avoid working with unclear data sets. This also helps easily identify units of analysis.

3. **Units of Analysis**: These units are pieces of communication that will be scrutinized individually as part of a larger set of units. For example, units can be any mode of
communication, such as YouTube videos, newspaper articles, television commercials, academic journal articles, books, billboards, and any other form of communication.

4. **Coding**: This is the process through which data is generated from the units of analysis and compiled into a standardized form to make it easier to analyze and refine.

5. **Manifest content**: Manifest content is easily identifiable and measures the repetition of certain words and phrases within single units and within the total units of analysis (Babbie, 2010). This type of analysis can usually be carried out with the assistance of automation. Manifest content analysis creates specific, quantifiable, and reliable data patterns with limited errors due to subjective interpretations made by the data analyst.

6. **Latent content**: Latent content requires more human agency to assign meaning, messages, and content to text and other forms of communication (Babbie, 2010). This may be automated, but it will require a more intensive process to produce the algorithms needed. If automation is used, the results still need human verification. Latent content analysis carries a certain degree of subjectivity. Nevertheless, if the rationale for how the data is interpreted is clarified, the quality of the data will increase.

7. **Code categories**: Inductive and reductive methods are used to define variables based on the content of their attributes.

8. **Record keeping**: Record keeping will be determined by the data collected. Quantitative data requires a specified difference between the units of measure. Qualitative data will also need to be organized into a clear record and may be quantified.

Content analysis is an effective method for landscape architecture research because a multifaceted approach is needed to record the landscape. Content analysis can be utilized to understand cultural landscapes by analyzing the different land laws, cultural norms, historic images, and other communications produced in each landscape. These modes of communication can be studied systematically to produce reliable qualitative and quantifiable data that goes beyond the surface-level inferences of the landscape. A subjective element is involved in content analysis (Babbie, 2004) due to interpretation which can be minimized almost completely in manifest content analysis but will be ever-present to a degree in latent content analysis. These shortcomings can be further reduced by setting up a proper research strategy with well-defined sample size, units of analysis, coding, and categorizing.

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3.7 Conclusion

To design spatially just landscapes, the current approach to landscape design must go beyond the traditional formation of regulatory bodies that approve designs commissioned by clients.

"The rather straightforward commissioner-designer or client-designer-contractor relationship common in the past has grown into complex societal tasks, combined with processes in which designers can play different roles at the same time. Ongoing technological development has opened a vast range of possibilities for design, representation, and construction but has also meant that the range of knowledge needed to solve problems has become too great for any one person to be an expert in. These are some of the reasons why landscape architects are engaging in academic research" (Bruns et al., 2017, p. 11).

Understanding how spatial justice and landscape democracy manifest in a particular landscape is the first step to implementing successful landscape design. Landscape architects, with their multifaceted understanding of society, nature, politics, and economics, are best suited to find responsible and innovative designs for the human experience within the built and natural landscape. Therefore, landscape architects are increasingly turning to research to solve complex problems. This study aims to derive applied research results that further define spatial justice issues in the rural-urban region and produce generalized design guidelines for increasing spatial justice and landscape democracy.

"Retaining the term 'applied research' is more valid as it reflects the fact that it is what we do. The difference is that, in aiming to carry out much more evidence-based design, the quality of the evidence and its applicability must transcend the specific site. While it may not be possible to generate generalized results, which may be applied absolutely universally (as do the laws of physics...), the results should be generalizable within a broad but limited set of conditions and much more so than being applicable to a single situation" (Bruns et al., 2017, p. 12-13).

Can we have generalized design guidelines motivated by general design principles and practices for spatial justice? We can argue that local materials reduce transportation costs
globally, produce local jobs, and create a unique aesthetic, making places more localized and culturally significant. Both decision-making on material and spatial justice design principles can be generalized. The design by research process will identify the available tools and technologies for designing a spatially just landscape. The relationship between research and design can be partitioned into three categories (Lenzholzer et al., 2017).

- **Research on Design**: Includes studies about design products, such as historic gardens, modernist new towns, or baroque parks.

- **Research for Design**: Covers all types of research supporting the design process and development of the design product. Examples might include natural or social science studies providing evidence to support design decisions.

- **Research through Design**: Includes all research and studies that actively employ design as a research method. This may be comparable to developing prototype solutions to problems that are tested against certain criteria and in which the active, reflective process of design plays a fundamental role.

This study will utilize all three methods, emphasizing the third, research through design. The goal is to include the input of local stakeholders in the design process utilizing the LCA which will be the main tool used to frame the research process. Case studies as a form of applied research are used to formulate research design. They may not be fully transferable between landscapes, but certain components can be transferred. The researcher can use case studies to understand what works and what does not in certain situations. “The research design is the framework that determines what data to collect, why, and how. In case study research, the choice of case or cases is the critical part of the design and is the key to creating generalizable knowledge of “strategic value” (Swaffield, 2017). When collecting empirical data through in-person measurements is not feasible, information on landscape history can be found in existing sources (Bruns et al., 2017). When access to data is limited, it is important to look beyond the traditional data sources.
Chapter 4: Methods

The first section of chapter 4 presents the research strategy, the research methodology flowchart, the overall rationale for how the research was conducted, and a brief on how the different tools and methods came together to help answer the main research questions. Section 4.2 is part one of the desk study portion of the LCA and presents the case study area of the Ashtarak watershed as a Rural-Urban Region (RUR). The subsections of 4.2 present the drivers, pressures, and state of the landscape as it relates to agriculture, energy, tourism, and urbanization. 4.3 presents the LCA methodology, including the desk study, field study, and the creation of maps that were used for the research. Section 4.4 explains the rationale for scenario creation and presents the created scenarios. Section 4.5 explains how the interviewees were selected as a part of the LCA stakeholder feedback process. Presents tacit and scenario-related questions and explains how the interview results were processed.

4.1 Research Strategy

The ELC, Spatial justice, and landscape democracy are used as a lens to read the landscape and determine future design. Jones (2018) places the ELC between bottom-up initiatives and top-down consultations, locating the ELC between the radical and conservative dimensions. It is radical in its initiative-taking and conservative in its systematic engagement process with stakeholders. As part of the fulfillment of the ELC, the Landscape Character Assessment (LCA) is the main driver for achieving the goals of this study. The LCA has a public participation stakeholder input component built into its assessment process, which allows it to be
used as the main research method driving the project. The ELC and the LCA are also useful in providing legitimacy for engagement with different actors in the landscape.

Initially, an attempt was made to capture a larger group of actors through conversation and informal interviews with different members of the public. The aim here was to understand the quality of data that may be collected. This attempt led to the discovery of limited answers and short interviews due to the limited education levels of the interviewees and their inability to comprehend the questions. Also, there was palpable tension at times because they did not understand why I was posing so many questions. There may be several reasons for this. One of which is my Armenian dialect which identified me as a Western Armenian, which may be hard for some people with limited exposure to understand. This also revealed that I am not a long-time resident of the area and not a government employee. Thus, after considering many public participation methods, I decided to conduct interviews with landscape connoisseurs (people who are familiar with the landscape) to gather information on scenario development.

The conceptual framework and research methodology presented in Figure 4.1 demonstrate the rationale for the research conducted. It begins with separating spatial justice into two components: one dealing with natural sciences and the other with social sciences. The design for spatial justice component incorporates ecological systems thinking to address spatial justice concerns dealing with the natural, material, and physical landscape. The landscape democracy portion and its research methodology are explained below.

The research methodology (Figure 4.1) begins by utilizing the European Landscape Convention as the first tool by which nation-states can enact landscape democracy practices. As a research tool, the LCA is used to achieve the goals of the ELC by defining the physical landscape and identifying the territorial options present in the landscape. This will guide the
different future development directions possible within the territorial limitations. Concurrently, these future development scenarios are influenced by the drivers, pressures, stressors, impacts, and responses (DPSIR) taking place in the case study area. Trends in political, cultural, social, technological, and global influences inform the scenarios.

**Figure 4.1 Research Methodology Flowchart**

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**Scenario Feedback**

Interviews with connoisseurs where scenarios are presented and discussed.

1) Stakeholders challenge scenarios and provide feedback.
2) Preferred scenario option chosen from the three available for each scenario.
As informed by the desk study and field study portion of the LCA, the development directions are agriculture, tourism, solar energy, and urbanization. Each development direction has three sub-scenarios that interviewees discuss, challenge, and select.

The sub scenarios have different elements of design with spatial justice ramifications in each that vary power distribution levels between the different democratic dimension actors (Jones, 2018). Hence, the sub-scenarios will essentially test for democratic dimension preferences. The feedback from the interviews and the expressed preferences of the interviewees combine to create a final normative scenario of all possible options.

This final scenario can operate as the foundation for any further iteration of the design process at a later point in time. The second aspect of the landscape democracy process traces the activities of the different democratic dimension actors in the landscape via traditional media outlets, such as online news sources, social media networks, Facebook, and YouTube are used to understand what people want from the landscape and how they will interpret future changes in the landscape.

4.2 Introduction to the Case Study Area

Figure 4. 2 Location Map of Study Area (Ashtarak Watershed)
Figure 4.2 indicates the location of the case study area of Ashtarak Watershed. The Ashtarak watershed is in the Aragatsotn province of Armenia; it is composed of the provincial capital of Ashtarak and the watershed of two mountains that drain into the Kasagh River, passing through Ashtarak and adjacent villages. Ashtarak is located 20 kilometers northwest of Yerevan. The main roads leading to the capital are cleaned regularly during the winter, and there are no challenges to getting to the capital or other nearby cities. The Ashtarak watershed settlement areas are located on a transit hub that leads to the various regions of Armenia. They are alongside the main roads leading to Tbilisi and the port cities of Georgia. It is also situated in a triangle pattern with Vagharshapat, commonly known as “Etchmiadzin,” and Yerevan, roughly 20 kilometers away from both. In scale, Ashtarak is intimate in comparison to both Etchmiadzin and Yerevan. It is also 20 kilometers from Zvartnots International Airport.

*Figure 4. 3 Rendered map of case study area at 1:50,000 scale (Google Maps)*
Ashtarak is 1,100 meters above sea level. It is rich in water resources. The population of Ashtarak was estimated to be 18,000 in 2016. The name Ashtarak translates in Armenian to fortress or tower. The city is located on both sides of the Kasagh River and has slowly developed into a satellite town of Yerevan. It is surrounded by multiple villages flanking Mount Aragats, including the village of Mughni, which is a part of the Ashtarak Municipality. Ashtarak has four districts: Old Ashtarak, Dzakhap (left bank), Gitavan, and Bagavan.

The city is home to several historic churches and architecturally significant historical buildings. Ashtarak is famous for its walnuts, grapes, apples, and dairy products. It is cooler than the capital and less congested with traffic and smog during the summer. The rural landscape comes to life during the spring with wildflowers. The imperfections of blighted buildings and landscapes temporarily disappear for a few months. The summer heat attracts tourists to visit the region’s many ravines, well known for their swimming pools, restaurants, and picnic areas. Traveling from Yerevan to Ashtarak and the villages beyond is not just a change in landscape; it is a change in time-scape. You travel back in time to industrial landscapes and further back to agrarian landscapes. A sort of time travel occurs as you move outward from the center of Yerevan. Nearly 20 kilometers away, you may find yourself in the 1990s or earlier, both in its physical and cultural expression.

The time depth of the region is 2,500 years. This is reflected in the landscape by the presence of archeological sites, churches, fortresses, monasteries, and other culturally significant elements & features. Yet, most residential settlement structures have a history of less than 150 years, except for the cave dwellings located along the tributaries to the Kasagh River. For the most part, the residential settlement pattern in the study area mainly reflects its Soviet and Post-Soviet development. The study area has pre-Soviet settlement buildings, but they form a small
part of the settlement and are not immediately visible or in decay. This is a spatial justice concern because of its significant impact on cultural heritage and historical preservation efforts.

Settlement: In Ashtarak’s urban center, Settlement patterns are commonly five-story buildings, surrounded by single- and two-story private homes and gardens with lot sizes ranging from 500-2,000 square meters in size. The settlement patterns in the villages beyond Ashtarak are mostly private homes with land sizes ranging from 500-5,000 square meters in the residential areas. Figures 4.4 and 4.5 are of two ancient monasteries that are visited heavily throughout the year and represent the region's cultural landscape.

Figure 4.4 Hovhannavank Monastery looking towards Mount Ara Ler (Wei, 2019)
Landscape and Landcover: Geologically, the landscape study area has witnessed two
time periods: the Miocene and the Quaternary period. Geographically, it is located on the central
volcanic highlands of present-day Armenia. The soil types present in the area are mountain brow,
mountain forest-auburn, mountain meadows-steppe, black mountain soil, mountain meadows,
and mountain gray/semi-desert. The vegetation cover in the study area is as follows: semi-desert
with Artemisia species plants, grass-steppes, meadow-steppes, alpine meadows and carpets, and
gypsophila communities.

Weather and Climate: The study area has a diversified climate due to the range of
altitude changes, along with microclimates created by the numerous canyons, mountain ranges,
valleys, and other geological formations. It has annual precipitation that ranges from 300 mm in
the lower valley areas to 1,000 mm in areas higher up in altitude. The region experiences four
full seasons. Spring usually begins in April, when the wild grasses are encouraged by sudden and persistent showers throughout the day. Summer is known for its dry, hot weather, slowly turning the hills and valleys into a golden color. During these seasons, the touristic sites around the river gorges are popular due to the microclimates created by the cool winds traveling through the gorges from higher altitudes. Fall usually begins in September and brings red shrubs and trees, along with cooler weather and showers later in the season. Winter begins around mid-December with snowfall and continues until the end of March when the snow begins to melt.

**PLUREL** a project focused on peri-urban changes, uses the Rural-Urban Region (RUR) to understand the relationships between the different units that make up the whole of a landscape (Ravetz et al., 2013). It defines peri urban as an area with a “discontinuous built development, containing settlements of each less than 20,000 people with an average density of at least 40 persons per average over 1km squares” (Ravetz et al., 2013, p. 19). Using the PLUREL landscape units of analysis, Ashtarak would be considered a peri-urban area and part of Yerevan’s urban fringe. The other study areas agglomerating around Ashtarak are the urban periphery and the rural hinterland. As the provincial capital and home to nearly 20,000 people, Ashtarak is a functional urban area in a mono-centric settlement pattern that is part of a larger poly-centric agglomeration pattern, with Yerevan as the central metropolis.

The **urban core** is the city center using the RUR definitions. The city center has a central area for business and cultural activities, such as universities, and various public service buildings, such as government buildings. The **inner urban** is a residential area with higher density residential, commercial, and industrial buildings and significant green spaces. **Suburban** areas are low-density residential areas with single-family housing less than 200 meters from one another. The built areas offer some economic activities dispersed throughout and some parks and
public facilities. Suburban areas are located immediately outside of the inner urban areas. *Urban fringe* is an area near an urban area with scattered built-up housing that becomes dense around transportation hubs leading to urban core areas. These areas usually have parks, natural outdoor recreation areas, and more open spaces. *Urban periphery* comprises low-density settlements of built-up areas that may include residential, industrial, and agricultural activities. These are still connected to the functional urban area. The *rural hinterlands* are scarcely settled natural, agricultural landscapes within close automobile commute distance to urban areas. The residents of urban areas can affect these rural hinterlands with their purchasing power and lifestyle choices (Ravetz et al., 2013). The case study area of Ashtarak Watershed covers approximately 315 square kilometers. The subsections that follow present the DPSIR present in the study landscape related to spatial justice as identified from the desk study portion of the LCA.

### 4.2.1 Agriculture: Drivers, Pressure, State

Agriculture accounted for 17 percent of Armenia’s GDP in 2016. The combination of agricultural processing and agriculture accounts for more than 30 percent of the GDP. The agricultural sector supports nearly 35 percent of the population. Even though 67 percent of the population live in urban areas, they still engage with the agricultural sector. Agriculture provides employment, rural income, food for consumption, and materials for processing. Nearly 40 percent of the industrial manufacturing in Armenia is of agricultural products. This sector is significantly affected by climate change (UNDP, 2013, World Bank Group, 2021).

Armenia has around 1.5 million hectares of agricultural land, of which around 500,000 hectares are arable. Around 64,000 hectares are perennial plantations, 140,000 hectares are grassland, and 700,000 hectares are pasture (UNDP, 2013). 155,000 hectares, or roughly half of
the arable land, are irrigated. 150,000 hectares of arable land is currently unused, 150,000 hectares is used for wheat growing, and 20,000 hectares are used to grow vegetables (UNDP, 2013).

The agricultural sector is comprised primarily of 340,000 small subsistence farmers with land holdings averaging 1.5 hectares, of which 1.1 hectares is arable land. Due to increases in electricity fees for pumping water, deteriorating infrastructure, and lack of investment, sown and irrigated areas in Armenia have been reduced to 154,000 hectares from the 314,000 available in 1991 (UNDP, 2013). Small-scale, private sector actors conduct almost all of Armenia’s agricultural cultivation and processing activities. The government is limited to providing seeds and concessional loans. The agricultural sector is allocated 2 percent of the government budget, which mostly funds the sector’s operation, leaving very little to be invested in development (UNDP, 2013). This percentage is quite low, considering that almost half of Armenia’s 3 million citizens work in the agricultural sector. In rural areas, such as the study area, this number can increase to above 80 percent. The United Nations Sustainable Development Partnership (UNDP, 2013) estimates that export will reach around 500 million by 2021, as much as its import projection for agricultural products. It also estimates that over 76.5 percent of the population will be working in the agricultural sector.

Climate risks and severe weather can significantly affect the livelihood of these families since most run agricultural operations on less than 1.3 hectares of land. The agricultural sector is extremely sensitive to the effects of climate change. Periods of drought have had catastrophic effects on the export and import of agricultural goods, causing a reduction in overall household income and increasing the purchase price of imported goods (UNDP, 2013). The Climate Risk Management (CRM) Report and the Technical Assistance Support Project (TASP) conclude that
climate change-related losses in Armenia amounted to around $450 million a year between 1998 and 2010. The report identified existing technologies that could mediate these losses. Nevertheless, these technologies are not implemented due to a lack of policy leadership, inefficient institutional operating processes, and low-capacity levels of instituting strategic plans (UNDP, 2013).

It has been indicated that the weather in Armenia is becoming increasingly warmer, and rainfall is decreasing in all regions. Rainfall has been decreasing in Aragatsotn province as well. Snow cover is decreasing, leading to less snowmelt during the spring. The key impacts of climate extremes in the region are hailstorms, early frost, flash floods, floods, landslides, and droughts. Armenia experienced seven droughts from 2000 to 2010. This, along with other climate change hazards such as early frost and floods in the spring, led to a 50 percent reduction in grain production, 35 percent reduction in potato production, and 65 percent reduction in vegetable production, leading to an overall 10 percent reduction in rural area employment (UNDP, 2013). Reduced precipitation and climate change overwhelmingly impact the most economically vulnerable citizens. The adaptative capacity of most of these households to climate risks is low. A bad season or two can divulge them to lower living standards, forcing them to sell off cattle and other animals. Eventually, they may have to resort to seasonal or permanent migration. Families living in poverty constitute 57 percent of Aragatsotn province, whose children are deprived of higher education and often find migration the only option (UNDP, 2013).

Land individualization was rampant in Armenia after independence. This led to 340,000 small subsistence farms, with 1.5-hectare land holdings on average. Land individualization replaced the Soviet-era Kolkhoz and Sovkhoz, which are still present in some CIS countries like
Russia and Ukraine (Lerman. 2004). In Ukraine and Russia, “non-individual” land is privately-owned and collectively cultivated. In these countries, the land was not individualized. Land-share certificates were created in the transition years, which were returned to the collective production facility in exchange for wage contracts (Ibid., 2004).

Compared to the collectivized CIS states, the individualized agricultural sector in the Transcaucasian states was more productive from 1990 to 2004 (Ibid., 2004). In the early 1990s, land individualization in Armenia was not fully considered and processed by politicians and academics. They simply emulated non-Soviet agricultural production methods. The land was privatized in Armenia, yet land markets were not fully available and needed to be further studied (Ibid., 2004). After 15 years of independence, the small-scale subsistence farmers, who sold their products at an average rate of $430 in 1998, faced issues with placing their products on the market, the low prices offered for their products, problems with transporting goods, untimely payment issues, and not being able to meet quality standards. According to Lerman, these small-scale subsistence farmers were limited by their ability to accrue products upstream and downstream due to their “smallness” at the subsistence farming scale. He suggests forming collectives to get products to the market and procure supplies (Ibid., 2004).

It is important to mention that Armenia was a predominantly industrial country during the Soviet years. After independence, the transition to individual subsistence farming was a reversal to a pre-capitalist agrarian society. Many of the challenges Lerman mentioned in 2004 are still present in the rural landscape of the Ashtarak watershed 15 years later. Subsistence farming is still a major occupation in the region. Yet, failure is high because farmers cannot survive more than one or two bad harvests. This often leads to seasonal work migration to other countries, relocation to urban regions, or living in persistent poverty. The Russian market purchases 70
percent of Armenia’s agricultural products. Agricultural exports have increased from around $82 million in 2004 to $389 million in 2015. Around 70 percent of these exports are alcoholic, non-alcoholic, and tobacco products. Sophisticated corporate enterprises usually own these companies. The European Union purchases less than 5 percent of these commodities (Christensen, 2017).

As defined in this study, the main drivers of agriculture are haphazard land individualization and subsistence farming. This sector has great potential for improvement by implementing high value crops, improving irrigation infrastructure, and increasing market options for farmers. The pressures can be summarized as climate change, lack of education, lack of production resources, lack of high value crops, and lack of investment capital. The state of the sector can be identified as mostly subsistence farming, with relatively low income generated from production. Arable lands in the study area are predominantly planted with orchards or seasonal crops at small and medium scales, with challenges remaining for irrigation and other infrastructure. Large national corporations make up most export producers, yet their numbers are limited in the study area.

4.2.2 Energy: Drivers, Pressure, State

Armenia’s energy sector is comprised of around 20 percent nuclear energy, 7 percent hydro dams, 6 percent biofuels, and the rest from natural gas and other fossil fuels (Asian Development Bank, 2019). Armenia has no fossil fuel deposits and imports all its natural gas and oil. The country has an almost 95 percent gasification rate, one of the highest in the world. 617 settlements are supplied by natural gas (Ibid., 2019). Natural gas is commonly used for automobile transportation. Armenia leads the world with 77 percent of all vehicles using natural gas.
gas (Ingram, 2014). For the most part, Armenia runs on natural gas, which is also converted into electricity at thermal plants (Mamikonyan, 2013). Solar energy has gained popularity in the last few years. Armenia has solar irradiation of 1,720 kWh per square meter on horizontal surfaces, 720 more kWh than the European average (Asian Development Bank, 2019). The study area lies mostly within the highest range of the photovoltaic power potential in Armenia (Solargis, 2020). Modified case study scale solar irradiation area maps can be found in the LCA portion of the results chapter 5.1.1; the national scale maps can be found in Appendix 2.

While natural gas is relatively inexpensive in Armenia compared to other regions in the world, it can still be a major expense for most households living in poverty. The infrastructure necessary to connect a home to the distribution network is expensive for those residents who burn biofuel. In rural areas, natural gas is used for production purposes, predominantly to heat greenhouses and operate industries such as processing facilities. Given the availability of solar irradiation in the region and the necessity for cheaper fuel sources, solar energy, replenishable biofuels, and better-insulated homes and greenhouses significantly improve the lives of the rural population because they reduce production and consumption costs. Solar technologies might have a higher initial investment cost, but the benefits over time may be well worth the investment. Further, limited biofuel resources (natural gas, oil) can be better utilized in regions with less access to solar irradiation.

Systems thinking can be used extensively in the energy development scenario to increase sustainable production and consumption of energy. When we consider the law of energy conservation from thermodynamics and its application to real-world energy production and conservation within landscape features (homes, greenhouses, barns, production features, tourist
destinations). It will require combining experimental technologies, such as passive biomass greenhouses, with mass rocket heaters, solar panels, and other technologies (UNDP, 2016).

The current drivers in this sector are the availability of inexpensive natural gas for consumption and the possibility of increasing solar energy production in Armenia as implementation costs are reduced. The main pressures in this sector are the overdependence on natural gas and lack of energy source alternatives, leading to almost complete dependence on Russia for energy, which does not have a border with Armenia. The state of the energy sector in the local landscape is stable, with natural gas as the major energy source that is widely available. An investment in solar energy would allow residents and communities to produce and consume their energy leading to higher levels of spatial justice. This, in turn, lowers dependence on foreign fuel sources and increases national scale energy independence and robustness. In the case study area, hydroelectric power is currently very limited and widely implemented nationally yet accounts for only 7 percent of energy production.

4.2.3 Urbanization: Drivers, Pressure, State

The rural landscape of Armenia was already experiencing issues with sprawl during the late Soviet period, as more affluent members of society began to build private summer homes, “dachas,” in the foothills outside of Yerevan and surrounding villages. The traditional family homes that people lived in before moving to Yerevan during the Soviet period were used for this same reason. After independence, sprawl occurred more rapidly, with major developments being implemented outside of Yerevan. Ex-burbs and other gated communities were created outside Yerevan for the newly wealthy, diaspora Armenians, expatriates, and repatriates who could afford them. This same phenomenon made its way to the Ashtarak Watershed as the city slowly
spread to the hills of Mughni village, overlooking the main highway. Eventually, this led to the incorporation of Mughni into the city of Ashtarak.

This speculative capitalism was not as successful as expected. For various reasons, diaspora Armenians did not arrive in Armenia quickly and in large numbers, which was necessary for these speculative ventures to succeed. The first Karabagh war ended, and its lingering effects partially subsided by the mid-1990s. The development of Yerevan only began in the early 2000s. Most of the available excess capital from the diaspora and the local nouveau bourgeoisie was invested in Yerevan. The new homes built in the rural landscape were usually designed as traditional regional homes with limited cultural elements and standard Soviet-era tuff block homes with metal roofs. These homes were too large for single-family use and inconvenient for multigenerational living since most younger people were moving to cities and towns from the villages. They also could not afford the upkeep on these expensive homes, even if they wanted a multigenerational home. Beyond their size, these homes were located a good distance away from public transportation, forcing people to become reliant on automobiles for commute, especially during the winter months. The shortcomings of economic speculation and over-investment have led to sprawl combined with blight in the rural landscape around towns and villages. Some of these homes are not inhabited, as evidenced by the lack of windows or roofs on the homes dotting the landscape. The urban core of Ashtarak has Soviet-era five-story buildings, surrounded by single-family residential homes in the old town district. The new town, “Shakarashen,” on the south side of the river, is laid out in a grid pattern with equally sized 600-1,200-meter lots.

The main driver of urbanization in the rural landscape was the purchase of speculative era homes by diaspora Armenians from all over the world, including refugees of the Syrian War and
other Middle Eastern countries. There is also a wave of Yerevan residents moving to rural areas and commuting to the city for work. As the province’s capital, Ashtarak has seen an increase in restaurants, cafes, and other service-oriented businesses. The main pressures in the landscape are the lack of employment, lack of affordable housing, and lack of higher education opportunities. Most of the younger generation either moves to Yerevan or further abroad. This leads to more rural flight, reinforcing blight and land abandonment in the rural landscape. The state of urbanization is negatively affected by land abandonment, blight, decaying Soviet-era production infrastructure, and lack of adequate zoning laws, which authorizes the placement of gas stations next to restaurants and other undesirable arrangements. There is a lack of urban activity in the evenings. Ashtarak’s pre-Soviet old town is present but decaying and in need of major renovation to be noticeable to anyone but astute observers. The Soviet-era buildings are in modest shape, but most can use an update. The post-Soviet era shops, signage, and other urban elements have no continuity in design language.

### 4.2.4 Tourism: Drivers, Pressure, State

According to the World Tourism Association, tourists are people who travel to a place for a period ranging from one day to one year. Tourism to Armenia has increased significantly. In 2009, nearly 587,000 people visited Armenia, compared to 1.9 million visitors in 2019. These visitors came from the following countries, Russia (610,000), Iran (115,000), and Georgia (95,000), with the remaining majority coming from other countries. One-third of these visitors were diaspora Armenian (Avetisyan, 2020). Half of the tourists came for cultural tourism, 19 percent for nature tourism, 16 percent for leisure, 13 percent for health-related reasons, business,
and adventure, and 3 percent were visiting for a longer-term. Tourism employed 12.5 percent of Armenia’s labor force in 2018 (Avetisyan, 2020).

Tourism is a major driver in the Ashtarak watershed, well known for its historical, cultural, and nature tourism. The churches and monastery fortresses dotting the landscape have become iconic aspects of Armenia’s cultural heritage. They can be viewed on postcards, numerous historical books, music videos, tourism videos, and other modes of media communication. The landscape surrounding these cultural heritage sites is as significant as the structures themselves. The natural and rural landscape attracts thousands of tourists a year. Ashtarak watershed’s proximity to Yerevan makes it an easy tourism destination for day tourists. It is an optimal location for special occasions such as weddings, baptisms, picnics, and other leisure activities. The picnic areas in the river gorges of the study area also provide recreation for thousands of visitors who wish to spend the day in the cool landscape. These picnic areas have become a unique feature of contemporary Armenian culture.

The main pressure for tourism is the negative impact it has on landscapes immediately surrounding historically significant and natural sites where tourist activities are located. The increase in tourism is adding new stress on the landscapes of the watershed, as river gorges are converted to picnic areas in naturally sensitive landscapes. These picnic areas may be beneficial for tourism and generating economic activity in the short term. Yet, most picnic areas are located downstream of dams. This must be considered for future development during water release periods if the dams were to reach capacity, even though the current lack of infrastructure limits reservoir recharge. There may be mutually exclusive resource use considerations that need further examination. The relaxed zoning laws, lack of zoning enforcement, and overlapping
jurisdictional laws between national and local governments create gray areas creating an increase of restaurants located next to culturally significant sites.

The state of the landscape is affected by blight that is a remnant of abandoned buildings or haphazard speculative development that has not concluded. This is visible on the drive up to culturally significant or natural landscapes. These ordinary roadside landscapes are dotted with unfinished buildings and Soviet-era construction in decay. The quality of the landscape between tourist attractions may be detrimental to the totality of the tourist experience. As far as aesthetics are concerned, the upkeep is visible when cultural landscapes are maintained or upgraded. At times, these improvements can lower the overall quality of the landscape and culturally significant sites. This can be in the form of information booths using plastic materials. Light fixtures that are not appropriately dated or well contrasted in design form, along with the use of flooring materials that compromise the site’s experience.

4.2.5 Spatial Justice & Wicked Problems

With the four development scenarios presented, a holistic understanding of the “wicked problems” present in the landscape is presented as a whole web of interactions. Based on the national statistical service, as of 2010, 35 percent of the population lives below the poverty line; in rural areas, the incidence of poverty is between 40 and 50 percent (UNDP, 2013). Per the World Bank Group (WBG) Asian Development Bank (ADB) climate change report, poverty affected 29% of the population in 2018. As of 2016, the service sector employs 48.8% of the population, with agriculture contributing 35.3% of employment, the unemployment rate was 18%. 55% of the GDP comes from the service sector, with agriculture accounting for 17% of GDP (World Bank Group, Asian Development Bank, 2021).
Rural poverty is an indicator of underlying systemic issues. This area is populated by people working in the agricultural sector and agricultural processing industry. Poverty can be accelerated by climate change, high energy costs in rural areas, lack of irrigation water, and other issues with agriculture infrastructure. These stressors may lead to financial failure, causing people to resort to the seasonal migratory labor cycle. Seasonal labor creates single-parent homes, low levels of education, and social health problems such as substance abuse, domestic problems, and illiteracy. People in the study area have a low threshold for failure. One bad season can cause some to migrate abroad for seasonal work (UNDP, 2013). This leads to land abandonment due to a lack of agricultural resources, machinery, education, finances, and lack of local-level infrastructure, and proper administration of resources.

The increase in tourism and profit generation from cultural, heritage, and natural landscapes are having negative effects due to the locating of restaurants and other attractions in these sensitive areas and creating conditions that lower the overall quality of the landscape. Tourism also may impact the availability of irrigation and drinking water during the summer months.

In the urban core of Ashtarak, we can see the impact of sprawl as the previous pastureland for cattle herding is taken up by developers. “Sprawling blight” is created by a lack of zoning enforcement and speculative investments in the housing market. Sprawl also affects the property values of current land/homeowners in the area. Ecologically, it requires the ownership of automobiles and the use of fossil fuel resources. Lack of employment also leads to land abandonment and migration, further draining human resources from the study area reducing demand for homes, services, and other goods.
Some of these problems are part of the production/consumption occurring within the landscape by individual actors motivated by profit and limited in their scale of operation. The aggregation of the externalities generated by individual activities gives rise to spatial justice concerns in the common landscape, reducing public profit for all other members who must pay for the externalities of the private development. Other issues such as climate change are due to global-scale production/consumption, influencing the local landscape.

The four development scenarios simultaneously aim to create “wicked solutions” to the spatial justice concerns mentioned that move beyond individual sectors to solve multiple soft problems. These solutions can be more democratic and less modernist when local landscape connoisseurs define problems and provide data to create development scenarios.

4.3 LCA Methodology

The research methodology is formulated around the LCA, which operates as the main tool for the study's framework. The interviews with landscape connoisseurs are incorporated into the LCA as input for defining the landscape and determining its future use. The following is an outline of the research methodology:

4.3.1 The LCA scope defines the study area and the scope of the study.

4.3.2 Presents the desk study portion of the LCA conducted in Edinburgh. It further explains the data mining of the digital landscape for information before the field visit and field study.

4.3.3 The field survey focuses on reading the landscape to document and map it. This is done through photography, landscape inventory, and analysis. This data informs the creation of scenarios presented to interviewees at a later point. Here, the focus was on gathering data on the state of the landscape, the value of the landscape, and the capacity of the landscape for future scenario development.

4.3.4 This section presents the LCA mapping and map production process.
4.3.1 Defining the Scope of the LCA

The project scoping process of the LCA was initiated in the winter of 2017 in Edinburgh, Scotland. The case study area of the Ashtarak watershed was established, and work was underway to define the project's purpose, scope, and scale. The desk study portion of the research was conducted continuously throughout the research period.

Dr. Bell visited the study area in the summer of 2018, at which point the scope was finalized, and the field study portion of the LCA was initiated. During his visit, we visited the study area. We met with Arthur Voskanyan, an architect by profession who works as a consultant for the city of Ashtarak to better small business economic development. Voskanyan volunteered to assist with the research and act as a gatekeeper by helping identify relevant interviewees. During Dr. Bell’s visit, we discussed the possible scenarios within the landscape’s capacity and the overall limitations of the case study, which were based on partial data collected during the desk study up to that point, as presented in section 4.2. We also visited other regions in Armenia to better understand the case study region’s development, compared to others with more robust agrarian and tourism development.

4.3.2 Desk Study

The initial desk study commenced in the fall of 2016 in Edinburgh. The study initially cast a wide net when identifying data about the landscape, landscape actors, and possible institutions that could provide references. This initial data was mind-mapped for future use and included an extensive list of media, government, non-governmental organizations, educational institutions, businesses, and other institutional actors. This desk study phase was supplemented by a site visit in the spring of 2017.
The initial desk study led to creating a 10,000-word document presented during the first-year annual review at the Edinburgh School of Architecture and Landscape Architecture (ESALA). The second major portion of the desk study commenced in Armenia from the fall of 2017 to the summer of 2018. The main goal of this phase was to collect relevant information on different natural and cultural factors of the landscape. This stage further fine-tuned the limits of the study, the landscape study area, and the institutions, people, and resources necessary for conducting fieldwork. This phase proceeded in an interwoven fashion, with the combination of desk research and fieldwork. It was helpful to define the physical landscape area while making decisions on the final scale and scope of the study.

During all phases of the desk study, internet sources were used to collect data to inform the DPSIR of the landscape and identify possible interviewees. Armenia’s online media landscape is very diverse. YouTube, Facebook, Academia.edu, ResearchGate, and other digital sources were used to discover projects in the landscape, such as the development of wineries, new farm initiatives, festivals, and other activities of interest that shape cultural landscapes. News sources on YouTube helped identify the DPSIR forces taking place in the local region’s landscape. Over 100 interviews of interest were discovered, which yielded pertinent information. For example, a YouTube video recording of a former Ministers’ visit to Ashtarak revealed that he is advocating for a bottom-up initiative with local leadership. He informed local government officials that they needed to figure out what they wanted so that he could help secure financing. He also mentioned during the interview that the most relevant solutions need to come from the local government because they are most familiar with the landscape.

Numerous visits were made to Ashtarak and the surrounding region from the summer of 2017 to 2018. These visits were conducted to obtain a thorough understanding of the different
features of the landscape. Notes were generated during the various field visits and were referenced during the desk study for final refinement. In turn, these refined notes informed the next field visit as something to build upon to understand the scope and scale of the study. I initially drove through the study area multiple times to understand where landscape changes were taking place and where the study area should be limited. This initial field reconnaissance helped prepare the initial landscape character types/areas, which were studied further during the field survey portion of the LCA.

4.3.3 Field Survey

The field survey, landscape inventory, and analysis were carried out in the fall of 2018. After that, some secondary landscape visits were made to determine specific landscape areas during the spring of 2019. Photographs of the relevant landscape types were taken in the fall of 2018 and spring of 2019. A 4x4 vehicle was used for surveying the landscape. Most photographs were taken from roads accessible by most vehicles in the spring to fall seasons. It is preferable to have a 4x4 vehicle to charter less accessible areas with lower-quality roads during the preliminary site visits. Around 600 photos were taken. These photographs were sorted by their associated type/area files. They were then geo-tagged with relevant longitude and latitude information. A Huawei Honor 7x budget smartphone was used for photography. A few photos from each landscape character type and area were selected to represent the associated landscape types/areas. Special care was taken to photograph the landscapes from easily accessible areas, the location of which can be determined by anyone with a modest understanding of landscape architecture and photography. This is useful in case a future rephotography layer is needed to track changes over time. A “field notes” form was created to document the landscape. These
landscape types/areas, relevant field notes, and desk study notes are included in Appendix 1. As the provincial center, Ashtarak was studied on a more detailed scale. The study was conducted on foot in the historic old town area due to the need to enter areas that were not accessible by automobile and to understand the city’s walkability.

4.3.4 LCA Maps

![Topographic map of Ashtarak Watershed (Google Maps)](image)

*Figure 4.6 Topographic map of Ashtarak Watershed (Google Maps)*

The case study area provides enough variation in landscape types/areas to accommodate different development scenarios. Figure 4.6 presents the topographic map layer from Google maps used as the base layer for LCA mapping. Full-page maps of the case study area are inserted.
in Appendix 1. The area maps created for the study are at 1:50,000 scale. This scale corresponds to most regional tourism maps, comparable to land ranger ordinance surveys in the UK. At this study scale, 1 kilometer will take 15 minutes of walking and less than a minute of driving.

Further, we can show main roads and features at this scale, but it does not have enough detail for walking paths. This scale is appropriate for providing an overall understanding of the development area. In Figure 4.7, 3-D Map Generator was used with Adobe Photoshop, along with images from Google Maps and Heightmap to generate the 3-D images of the watershed. The 3-D Heightmaps are not to actual vertical scale, but they effectively convey the landscape’s topography. If they were to be generated at a real vertical scale, they would be flatter. While not a conventional part of the LCA process, the decision to make these maps 3-D was taken to convey the landform easily.

*Figure 4.7 Topographic Map of the Ashtarak Watershed (base layer Google Maps)*
4.4 Scenario Creation

The scenarios presented in this section were created for future envisioning and to obtain reactions from interviewees that were used to develop a final normative scenario. The development scenarios created were supported by the LCA’s field and desk study portions, along with the identified DPSIR as indicated in section 4.2. Abridged versions of these scenarios were presented to interviewees to create dialogue about regional development. They were used to understand the challenges and opportunities available in the study landscape.

Based on landscape capacity, three descriptive scenarios were created for each sector’s development direction. The scenario assumptions are modeled on the process used by the PLUREL study presented in section 3.4.1. The underlying logic for the scenarios is explained below, and the scenarios are further expanded in the following sub-sections.

\( A1: \text{Large Scale Monocrop:} \) This scenario assumes that large-scale capital buys most of the available unutilized arable lands in the region and enacts large-scale agricultural activity. This can take form in a neoliberal market formulation. Capital will be highly concentrated—high Gini coefficient.

\( A2: \text{Cooperative Community:} \) this scenario assumes that available agricultural land is reorganized into forms of management higher than the individual farm scale and utilized for business intended purposes with coalitions created to help get goods to and from markets. Lower to Medium Gini coefficient.

\( A3: \text{Individual Small Farms:} \) In this scenario, all available land is individualized, and subsistence farms are increased to a scale appropriate for creating profit. Lower to Medium Gini coefficient.

\( E1: \text{Solar Farm:} \) Available land is purchased and converted to large solar farms. This can take form in a neoliberal market formulation. Capital will be highly concentrated. High Gini coefficient.

\( E2: \text{Solar Village:} \) Available land is purchased by community development coalitions to create solar farms for local consumption and energy independence. Lower to Medium Gini coefficient.

\( E3: \text{Individual Solar:} \) Solar panels are installed on individual dwellings, farms, and business facilities. Lower to Medium Gini coefficient.
**T1: Historical Tourism:** Tourism focuses on local historical sites of interest. Lower to Medium Gini coefficient.

**T2: Active Tourism:** Tourism focuses on active forms of tourism that need to be developed in the landscape. Lower to Medium Gini coefficient.

**T3: Cultural Tourism:** Tourism focuses on agrotourism and other individual economic activities. Lower to Medium Gini coefficient.

**U1: Sprawl:** Available lands are purchased and converted to individual homes by investors. Higher Gini coefficient.

**U2: Rural Revival:** Available lands are purchased and converted to individual farm homes. Lower to Medium Gini coefficient.

**U3: Urban core:** Developers concentrate on developing urban centers via mixed-use development. Various degrees of Gini coefficient.

The scenarios based on different economic models of production/consumption will have different spatial justice levels because we are talking in part about capital “socially valued resources” (Soja 2009, p2), who controls them, and who distributes them in space. Given this factor, economic models and their structural differences will create landscapes with different spatial justice levels based on the levels of economic activity and diversification of the means of production/consumption. This is especially important to test for in landscapes that have not been fully developed by economic activity, such as the case study area.

The Gini coefficient is one such measure, which is lower in landscapes where the means of consumption/production are more horizontally distributed along with democratic political capital, such as in European and Scandinavian countries (OECD 2021). The Gini coefficient is in response to the total economic resources available. If economic activity remains low, you can have a low Gini coefficient and a high level of spatial justice in the local landscape, yet poverty rates may still be high. Hence the need for a global understanding of consumption/production
and increasing economic activity on the local scale and gradually expanding markets, limiting economic activity to as small a scale as possible while increasing economic output and reducing carbon “tails” from the production/consumption process. Economic activity is one type of capital, yet a significant one without which other capital such as natural landscapes, pollution-free environments, and public resources such as parks and streets will be of lower quality.

The spatial democratic dialectic (SDD) is defined as the power/resource distribution that will change between the different actors and institutions in a landscape as each scenario is enacted; it also indicates public losses that all other actors and institutions may incur. It is the third component of landscape democracy, the “right to argumentation and debate” that will need to be utilized to manage landscape change.

*The scenario developed and presented in sections 4.4.1-4.4.4 were not presented to interviewees to not influence their decision-making. An abridged, simplified version was presented to elicit responses. This will be covered in more detail in the interview section 4.5 of the methods chapter.

4.4.1 Agriculture

A1: Large Scale Monocrop: In this scenario, available land is purchased by investors and used to produce a single crop. The investor contributes all financial investments and hires employees from the region for labor. Land sizes are over 10 hectares. Market forces lead the development direction, and the remaining democratic institutions follow, along with measures that may be undertaken to counter changes.

Capital ownership:
- Capital is concentrated among the shareholders of the corporation.
- The shareholders invest in the business and obtain profits.
- Shareholders assume all financial risks.
- Capital is partially mobile in proportion to investment in local infrastructure.
- Most workers are local.
Market orientation:
- National, regional, and international market orientation, due to large quantities of a single crop produced, consistent in presentation (pretty fruit) for supermarket consumption, with little blemishes.

Production and consumption:
- Production is local.
- Consumption is less local and national. It is more regional and international.
- The product will create significant environmental, material, and carbon tailings as it is stored (refrigerated), packaged, and transported to markets. The use of pesticides is necessary to guarantee product consistency.

Spatial justice concerns:
- Large land areas will be purchased, reducing the ability of others to enter the market.
- The ecological effect of mono-crop farming on the environment will be present.
- Other resources, such as irrigation water rights and energy consumption, may cause shortages for smaller actors.
- It may create a job market of low-paying jobs when mono-crop farms saturate the landscape through employment monopsony.
- It may reduce the aesthetic value of the landscape by creating barriers and large greenhouses.

Spatial Democratic Dialectic (SDD): In this scenario, the corporation and its shareholders aim to maximize profit. They are the “market force,” as defined by Jones (2018) on the democratic dimension chart. They act in their self-interest and are in a dialectic relationship with the other members. Their actions are limited by or reacted to by other institutions and actors.

SDD examples:
- Externalities, such as environmental pollution, are governed by elected bodies, inspected by bureaucratic decision-makers, and values assigned by top-down consultants. If pollution gets out of hand or workers’ rights issues arise, bottom-up initiatives and protests are options that may be employed.
- If market forces, elected bodies, and bureaucratic decision-makers combine, democracy rates will decrease, leading to protest and bottom-up initiatives.
- If market forces collaborate with bottom-up initiatives, protest actors, and top-down consultants, they may be able to influence bureaucratic decision-makers and elected bodies.
- If market forces collaborate only with top-down consultants, they may influence elected bodies, bottom-up initiatives, and protest movements.
**A2: Cooperative Community:** In this scenario, a few farmers combine capital to purchase needed equipment and materials to get their products to markets. Land sizes are over 3 hectares. Market forces are combined with bottom-up initiatives.

**Capital ownership:**
- Capital is concentrated among the shareholders of the cooperative.
- The shareholders invest in the cooperative and obtain profits.
- Cooperative shareholders assume all financial risks.
- Most of the capital and workers are local.

**Market orientation:**
- The major market is local and national. The regional and international market is for high-quality delicacies in medium-sized batches.
- The scale of production and consumption is mostly national due to the lack of mono-crop consistency.
- Some fruits will not be “supermarket” quality. The products may have more markings and be deemed “uglier.”
- The concentration of organic and high-value crops for international markets includes “organic, boutique market fruits.”

**Production and Consumption:**
- Production is local. Consumption is local and national, with some regional and international market offerings.

**Spatial justice concerns:**
- Externalities, such as environmental pollution, are governed by elected bodies and inspected by bureaucratic decision-makers and workers. The workers are interested in protecting the landscape, assuming they prefer remaining in the local landscape.
- The landscape may be aesthetically quilted.

**Spatial Democratic Dialectic:** In this scenario, market forces, protest, and bottom-up initiatives are intertwined since capital and labor are combined further.

**A3: Individual Subsistence:** This scenario is the current default mode of agricultural production.

People manage their land. Land sizes are less than 3 hectares.

**Capital ownership:**
- Capital is concentrated among individual landowners.
- All risks and profits are allocated to the individual.
Market orientation:
- Market orientation is usually local and possibly national.
- The seller usually has limited buyers and markets.
- They can either get the product to the market themselves by bringing them to the local market in Ashtarak/Yerevan. They can also sell to international exporters who usually have a purchaser’s monopsony.
- They usually will produce limited quantities that are not uniform enough for larger markets. Higher value “organic, boutique fruits” can be sold to middlemen.

Production and consumption:
- Production is local. Consumption is local, with some national aspects.
- It is highly limited in the regional and international due to scale.

Spatial justice concerns:
- Investments for increasing business might not be available, causing poverty, land abandonment, derelict landscapes, blight, and desertification.

Spatial Democratic Dialectic: Market forces determine the purchasing price in this scenario. Bottom-up initiatives and protests are used to influence decision-making and the bureaucratic processes. Top-down consulting is limited if it is available at all. The individual actor in this scenario is on his own.

4.4.2 Energy

E1: Solar Farm: In this scenario, solar farms are built to harvest energy for sale to the electric grid. Land sizes are at least 1 hectare.

Capital ownership:
- Capital is concentrated among the shareholders of the corporation.
- The shareholders invest in the business and obtain profits.
- Shareholders assume all financial risks.
- Due to large investments in production capabilities, capital is highly limited in mobility.
- Some workers may be local, but it is not a major source of employment.

Market orientation:
- Due to the attachment to the national electric grid, local, national, regional, and international.

Production and consumption:
- Production is local. Consumption occurs on all scales.
Spatial justice concerns:
- Impacts of large solar panels on the ecology of the landscape.
- There may be aesthetic impacts on high-value landscapes if not located properly.

Spatial Democratic Dialectic: Market forces are self-motivated. Other democratic institutions mitigate detrimental effects and externalities. Creates more competition in the local energy market by providing energy alternatives and limiting monopolies.

E2: Solar Village: In this scenario, solar farms are created to supply solar energy for consumption in a village or community. Solar farms are less than 1 hectare in size.

Capital ownership:
- Capital is concentrated among the shareholders of the cooperative.
- The shareholders invest in the cooperative and gain profits.
- Cooperative shareholders assume all financial risks.
- Most of the capital and workers are local.

Market orientation:
- Local consumption is the main driver. Any excess is sold to the grid.

Production and consumption:
- Production is local. Consumption is mostly local, with the excess sold to the grid.
- Local consumption reduces carbon and natural resource material trails in the form of electric transmission infrastructure (wire, pylons, converters, etc.).

Spatial justice concerns:
- Externalities, such as environmental pollution, are governed by elected bodies, inspected by bureaucratic decision-makers, and the workers are interested in protecting the landscape.
- The landscape may be aesthetically quilted. It creates more competition in the local energy market by providing energy alternatives and limiting monopolies.
- Communities become partially energy independent.

Spatial Democratic Dialectic: Market forces and other democratic dimensions are combined in this scenario. The dialectic takes on a more internal role.

E3: Individual Solar: In this scenario, solar panels are placed on individual homes and buildings, such as schools, factories, and other structures.
Capital ownership:
- Capital is concentrated among the individual owners.
- All risks and profits are individual.

Market orientation:
- Local subsistence, with excess sold to the grid.

Production and consumption:
- Production is local. Consumption is also local, with excess sold to the grid and consumed nationally. It is limited on the regional and international scale.
- The initial investment cost may be higher due to the need for more meters and small-scale production units.

Spatial justice concerns:
- There may be inequality in access to resources for acquiring solar technology.
- Creates more competition in the local energy market by limiting monopolies.
- Individual dwellings become more energy independent.

Spatial Democratic Dialectic: Individuals as bottom-up actors, top-down consultants, bureaucrats, and decision-makers need to work together to create the necessary infrastructure needed for the process to work on this scale.

4.4.3 Tourism

TI: Historical Tourism: In this scenario, tourism is based on landscape elements and features present in the case study area, such as churches, fortresses, monasteries, architecturally significant buildings, aesthetically pleasing landscapes, and archeological sites.

Capital ownership:
- Capital is disbursed throughout the landscape and owned by various democratic institutional actors.
- Capital ownership is not easily defined since capital is beyond any individual, institutional scale and forms a co-determined whole.

Market orientation:
- They have a limited market orientation. Certain features and elements of the landscape are individually owned.
- Market interests are tourist agencies, developers, and other entrepreneurs who profit from the overall landscape quality or activities within the landscape.
- The capital here is co-created. Profit extraction is individualized.
Production and consumption:
- Production is local. Consumption is local.

Spatial justice concerns:
- Low-quality landscape due to lack of management by decision-makers, bureaucratic activity, top-down consultants, bottom-up initiatives, protests, and various market forces.
- The co-determined landscape is not well managed. Landscape responsibility is disbursed across democratic dimensions, which are not particularly capable or empowered to initiate changes.
- The slow decay of landscape quality leads to blight, land abandonment, mundane landscapes, and aesthetically low-quality landscapes.

Spatial Democratic Dialectic: Market forces, such as tourist agencies and other businesses, need to engage with democratic dimension actors to maintain a high-quality landscape. If this is not done, the landscape quality will be low, and business interests may suffer. If the decision-making, bureaucratic actors, and top-down consultants are not effective, market forces may take the driver’s seat leading to the commodification of pristine landscapes. These activities occur next to historically valuable features and elements of the landscape, which may lower the quality of the landscape for everyone. If this were to occur, the extraction of profit from historical features in the landscape would be concentrated in the hands of the organization with the most access to these elements and features. This polarization of profit may be mitigated by strict zoning laws limiting economic activities to downtown and historically non-significant areas.

SDD example:
- Restaurant next to an ancient monastery, with BBQ smoke constantly entering the monastery area.
- Many shops and restaurants at the entrance of monasteries, inside pristine landscapes.
- There is also an issue of who pays to maintain the landscape at high levels of quality since the landscape is beyond the private scale.

T2: Active Tourism: In this scenario, active recreation in the form of hiking, mountain biking, horseback riding, paragliding, snow trekking, skiing, kayaking, rock climbing, and other activities are the main drivers.

Capital ownership:
- Capital is disbursed over the landscape and owned by different actors and democratic institutions over a large area span.
- Capital ownership is not easily defined since it is beyond the scale of any one individual institution and forms a co-determined whole.
Ownership can be protected by land trusts, government agencies, and private businesses. Land use laws can be in place for multiple land uses and easements owners.

Market orientation:
- National level. Regional and international are possible.

Production and consumption:
- Production and consumption are local.

Spatial justice concerns:
- Activities may degrade the quality of the landscape if they are not well-planned.
- Land use and land access rights might conflict with different user groups.
- The quality of the landscape may suffer if not well-planned, managed, and maintained.

Spatial Democratic Dialectic: Land use easements grant rights for driving, biking, etc., across privately owned land. Market forces can cooperate with other dimensions to initiate projects and institute change. The room for dialectic is large since you will have a large group of actors that may be affected since activities take place over large areas of land.

**T3: Cultural Tourism:** In this scenario, gastro-tourism, agritourism, viniculture, local cuisine, and cultural traditions are the main drivers.

Capital ownership:
- Capital is concentrated among the shareholders of the corporation or individually owned.
- The shareholders invest in the business and obtain profits.
- Shareholders assume all financial risks.
- Capital is partially mobile due to investment infrastructure.
- Most of the workers are local.

Market orientation:
- Local and national level. Regional and international are possible.

Production and consumption:
- Production and consumption are local, national, regional, and international.

Spatial justice concerns:
- Externalities for tourism include pollution. Water rights at peak tourism can become problematic as water resources become scarce.
- Location of business ventures near historic sites and inside sensitive landscapes, such as national parks, or areas with ecologically sensitive landscape features, such as rivers and lakes.
Spatial Democratic Dialectic: Market forces are in constant dialectic with other democratic actors. If they gain an advantage through bureaucratic and legislative means, they will be met with protests or bottom-up initiatives.

4.4.4 Urbanization

U1: Sprawl: This scenario has limited building and zoning codes. Land use laws are toothless.

- Capital ownership:
  - Capital is individually or corporate-owned.

- Market orientation:
  - The market orientation is less local and mostly national, regional, and international.
  - The market is speculative in nature.

- Production and consumption:
  - Local production and consumption with materials from local, national, regional, and international sources. The materials can be eccentric and architecturally varied.

- Spatial justice concerns:
  - Sprawl may increase the need for individual automobiles.
  - The transition of agricultural land to low-density residential use.
  - Speculative development leads to unoccupied building skeletons, blight, and construction waste at the edges of towns and development areas.
  - Developments may change cultural landscapes, especially when non-local materials are used, and no zoning laws are observed, along with a lack of design parameters. Roadsides become continuous strip malls congested with stores.

Spatial Democratic Dialectic: Market forces may be challenged by bottom-up initiatives, legislative bodies, or bureaucratic actors. Top-down consultants may be effective at explaining the ramifications of design decisions.

U2: Rural Revival: This scenario has strict building codes for land use and building aesthetics.

Land sizes are larger at around 3 hectares in size. It could be of interest to mobile workers, hobby farmers, and previously urban dwellers.

- Capital ownership:
  - Capital is individually owned.
Market orientation:
• The market is local, national, regional, and international.

Production and consumption:
• Production is local with some defined vernacular features.
• Consumption is less local.

Spatial justice concerns:
• In comparison to sprawl, the land sizes are bigger. The land is more production-oriented, with lower carbon footprints from commuting.

Spatial Democratic Dialectic: Market forces will have to coordinate with the legislature, bureaucratic institutions, and other democratic actors to facilitate large land ownership trades and long-term leasing. The success of this scenario is highly dependent on the collaboration between democratic dimension actors.

U3: Urban Core: In this scenario, the effort is expended on high-density land development with five-story buildings for residential use and limited land for agricultural activity.

Capital ownership:
• Capital is individually or corporate-owned.

Market orientation:
• The market is local. There are some national features. It is less regional and international.

Production and consumption:
• Production and consumption are local.

Spatial justice concerns:
• In comparison to sprawl, there will be a reduction in the carbon footprint from commuting.
• The regional farmlands may stay intact.
• Economic levels in towns and villages improve due to opportunities of scale and critical mass development.
• It may increase access to education via new schools and other public co-produced goods and resources.
• Pollution may become a problem if the infrastructure is not updated.

Spatial Democratic Dialectic: The market forces must coordinate developments with other democratic dimension actors to create affordable market offerings at the right scale for local consumption. There are limited detrimental effect to the urban landscape or co-produced goods already in place.
4.5 Interviews

This section will introduce the interview methodology. The first section explains landscape “connoisseurs” selection. The second section presents the interview objectives and process of conducting the interviews. The third section presents the tacit questions as they were presented to interviewees. The fourth section presents the scenario questions as they were presented to interviewees. The final section explains how the interview data was processed using content analysis.

4.5.1 Interviewee Selection

Landscape connoisseurs, or knowledgeable stakeholders, have a special relationship with the specific landscape. They know the landscape in a particular way through expertise, everyday life, or a specifically developed relationship (Arler and Mellqvist, 2015). They are not required to have any training, position, or title to affirm their status as connoisseurs. They simply need to be knowledgeable about the landscape of the study. Given the limitations of the participatory process in the post-Soviet rural landscape (Storie 2019), the decision was made to approach only landscape connoisseurs who would provide a wide range of representation from all democratic institutions present in the landscape. The selected connoisseurs could provide opinions in natural science, social science, and art/humanities. In post-Soviet rural areas, a connoisseur method may be applicable based on educational levels and other social/cultural factors that limit the participation of other members of society (Storie et al., 2019).

The connoisseur method proposed by Arler and Mellqvist was not implemented entirely. The participant selection process was combined with individual interviews to gather data on initial development scenarios and supplement the final normative development scenario.
Individual interviews were organized to allow interviewees to express their ideas, opinions, and perspectives without outside influence or pressure that may be present in a group setting, such as community design workshops or community meetings.

Through individual interviews, the interviewer can establish a more intimate rapport with a direct conversation about the current state of the landscape and its future. The ability of different actors to influence each other is not always equal, and some may be more audible and pronounced in their abilities (Jones, 2018). This was observed and confirmed in some initial engagements with possible stakeholders during different community planning events the researcher participated in. The interviewees were selected and contacted over a few months with the help of the local “gatekeeper” and the researcher’s network of contacts. Some were discovered during the desk study portion of the LCA via websites, YouTube interviews, and other media outlets. Limited Initial research was conducted to obtain information on the recommended connoisseurs before selecting the interviewer. An attempt was made to select a spectrum of connoisseurs with different political associations and to select connoisseurs from different democratic institutions (Jones, 2018). The landscape connoisseurs were selected for interviews based on their ability to provide valuable information for scenario development and scenario selection. Their tacit landscape knowledge and development scenario expertise was taken into consideration. An effort was made to select a wide spectrum of connoisseurs as national and local experts. The selected interviewees would represent international organizations, non-governmental agencies, businesses, experts interested in ecology, tourism, alternative energy, agriculture, urban development, and other fields of relevance. Local connoisseurs were selected from the city and provincial administrative bodies. Farmers, business owners, residents,
community representatives, and others with tacit knowledge of the landscape were included.

Another group consisted of architects, designers, artists, and artisans.

- The researcher identified the first group based on their expertise in the development scenarios and their ability to provide knowledge about scenario development.
- The second group was identified in consultation with the “local gatekeeper.”
- The third group took on a snowball effect, as interviewed connoisseurs referred to other applicable experts.

All candidates were contacted via phone, email, and social media, including Facebook and LinkedIn. Given the democratic transitory period of the study, some were not responsive or were late in responding. Others responded, but a definite interview date and time were not selected, and they were eventually removed from the participant list. The connoisseurs who were identified and not included in the final list included the following: the head forester for Aragatsotn province, the head agriculturalist for Aragatsotn province, vintners, local chocolatiers, the Minister of Land Use, Minister of Economy, UNDP representatives, hiking group representatives, local information technology entrepreneurs, agricultural and environmental activists, and national planning office representative. Out of a possible 34 people selected, 20 participated in the interviews. 6 national, 4 hybrid (national and local), and 10 local connoisseurs. These included museum directors, mountaineers, trail builders, environmentalists, architects, product designers, landscape photographers, alternative energy non-governmental agency development directors, agricultural experts, representatives from the national cadaster’s office, landscape educators, seminarians, seasonal crop farmers, educators, and other relevant experts. Names of connoisseurs have been omitted from the paper for privacy purposes.
4.5.2 Interview Objectives and Process

Interviews were conducted to discover cultural values associated with the landscape. This opportunity was also used to gather information about landscape use in the past and to understand people’s expectations of the future landscape. The interviewer introduced the research study and identified the University of Edinburgh as the research institution. The purpose of the study was explained, and a map of the study area with associated landscape character types was presented as a reference. The interviews were conducted at the interviewee’s preferred location. Having known some of the interviewees in a professional capacity or through referrals made it easy to establish trust from the beginning and proceed with the interview process. The interviewees were asked if the interview could be audio recorded. When consent was granted, an audio recording was generated. If they declined, the researcher took notes. There was no time limit set for the interviews, but the goal was to complete the interview in less than an hour.

The interview questions were divided into two categories. The first group of questions was used to gather tacit knowledge about the landscape identified during the DPSIR portion of the desk study and the field survey portion of the LCA. These questions were not related to any specific development scenario. The open-ended questions were general and would inform the final normative scenario. They covered all possible developmental processes and technologies that could be implemented or were implemented in the landscape. The questions attempted to inform the historic, present, and future dynamics of landscape change. The interview was conducted linearly, and connoisseurs were given a choice to answer or skip questions if necessary.
The second group of questions concerned the development scenarios created and presented in section 4.4. The intent here was to create dialogue about development in the region and understand the challenges and opportunities available for each scenario.

*The scenarios developed in 4.4 earlier in the text were not presented to interviewees in their entirety to not influence decision-making and impact future envisioning of what each scenario should entail. An abridged, simplified version was presented to elicit responses found in section 4.5.4 Scenario Selection Questions.

**4.5.3 Tacit Knowledge Questions**

In the first part of the interview process, open-ended tacit knowledge-gathering questions were asked, as presented below.

*Agriculture:* Interviewees were asked about the following DPSIR, and possible trends identified during the desk and field survey portion of the LCA.

1. **Grazing:** What can you tell me about grazing practices in this region as they apply in the past, present, and future?
   a. What can you tell me about closed grazing areas?
   b. What can you tell me about communal grazing areas?
   c. What can you tell me about rough grazing areas?

2. **High-value crops:** What can you tell me about high-value crops in this region as they apply in the past, present, and future?
   a. What can you tell me about nuts, walnuts, almonds, pecans, hazelnuts, or other nuts?
   b. What can you tell me about blackberries, raspberries, and wild berries?
   c. What can you tell me about fruits, apples, peaches, grapes, pears, and vineyards?

3. **Greenhouses:** What can you tell me about greenhouses in this region as they apply in the past, present, and future?
   a. What can you tell me about passive greenhouses?
   b. What can you tell me about large greenhouses?
   c. What can you tell me about traditional greenhouses?

4. **Seasonal crops:** What can you tell me about seasonal crops in this region as they apply in the past, present, and future?

5. **Forested areas:** What can you tell me about the forested areas in this region as they apply in the past, present, and future?
   a. What can you tell me about public forests?
b. What can you tell me about private forests?
c. What can you tell me about forests for oxygen credits?
d. What can you tell me about native and climate adapt forest species?

6. Animal husbandry: What can you tell me about animal husbandry in this region as they apply in the past, present, and future?

7. Agricultural challenges: What can you tell me about agricultural challenges in this area as they apply in the past, present, and future?
   a. What can you tell me about irrigation challenges?
   b. What can you tell me about land laws?
   c. What can you tell me about land decisions?
   d. Are you getting products to local markets?
   e. Are you getting products to international markets?
   f. What can you tell me about agricultural education?

Alternative Energy: Interviewees were asked about the following DPSIR, and possible trends identified in the LCA desk and field study.

1. What can you tell me about alternative energy sources in this region pertaining to the past, present, and future?
   a. What can you tell me about solar energy and individual residences?
   b. What can you tell me about solar energy for neighborhoods?
   c. What can you tell me about biomass heaters?
   d. What can you tell me about resource-efficient light bulbs and appliances?

Tourism: Interviewees were asked about the following DPSIR, and possible trends identified in the LCA desk and field study.

1. Active tourism questions: What can you tell me about active tourism in this region as it applies to the past, present, and future?
   a. What can you tell me about off-road automotive recreation?
   b. What can you tell me about mountain biking?
   c. What can you tell me about skiing?

2. Historical, natural, and cultural tourism questions: What can you tell me about cultural tourism in this region as it applies to the past, present, and future?
   a. What can you tell me about local foods and regional gastronomical specialties?
   b. What can you tell me about viticulture and winemaking?
   c. What can you tell me about historic buildings, churches, fortresses, archeological sites, picnic areas, natural landscape features, waterfalls, and other sites of cultural value?
Urbanization: Interviewees were asked about the following DPSIR, and possible trends identified in the LCA desk and field study.

1. What can you tell me about the peri-urban landscape in the region as it applies in the past, present, and future?
   a. What can you tell me about single-family homes?
   b. What can you tell me about multistory buildings?
2. What can you tell me about the colleges and universities in this region?
3. What can you tell me about historic old town areas in this region?
4. What can you tell me about the unique settlement features in this region?
5. What can you tell me about the materials and aesthetics of this region?

4.5.4 Scenario Selection Questions

During the second part of the interviews, pre-determined scenario selection questions were asked. The three scenarios for each development direction were presented, along with the study area map. Connoisseurs were asked to challenge each scenario and pick the one they thought was the best option for future implementation. The development direction scenario descriptions presented to interviewees are as follows.

A1: Large-scale monocrop: In this scenario, available lands are purchased by investors and used to produce a single crop. The investor makes all financial investments and hires employees from the region. Land sizes in this scenario are over 10 hectares.

A2: Cooperative community: In this scenario, a few farmers choose to combine capital to purchase needed equipment and materials to get their products to the market. Land sizes are over 3 hectares.

A3: Individual subsistence: In this scenario, people manage their farmland. Land sizes are less than 3 hectares.

E1: Solar farm: In this scenario, solar farms are built to harvest energy for sale on the market. Land sizes in this scenario are at least 1 hectare.

E2: Solar village: In this scenario, solar farms are created to supply solar energy for consumption by a village or community.

E3: Individual solar: In this scenario, solar panels are placed on individual homes and buildings, such as schools, factories, and other structures.
**T1: Historic tourism:** This scenario focuses development on landscape features that are present throughout the case study area, such as churches, fortresses, monasteries, architecturally significant buildings, and archeological sites.

**T2: Active tourism:** This scenario focuses on the development of hiking, mountain biking, horseback riding, paragliding, snow trekking, skiing, kayaking, rock climbing, and other active recreation.

**T3: Cultural tourism:** This scenario focuses development on gastro-tourism, agritourism, viniculture, local cuisine, and cultural traditions.

**U1: Sprawl:** This scenario has limited building codes and toothless land-use laws.

**U2: Rural revival:** This scenario is characterized by intense building codes for both land use and building aesthetics.

**U3: Urban core:** This scenario focuses on high-density land development, with buildings as residential units and limited land for agricultural activity.

### 4.5.5 Interview Data Processing

The results from the interviews were recorded in two ways. One-third of the interviews were recorded. Note-taking allowed the interviewee to capture the communication when interviews were not recorded. After the interview, the notes were immediately reviewed and transcribed to clarify the results and fill in gaps. The interview results were then translated from Armenian to English and transcribed. Each interview was one unit of analysis. The transcripts from the interviews were content analyzed using inductive reasoning to generate code categories. These categories will be presented in the interview results chapter as thematic interview results, which provide tacit knowledge about the landscape, scenario development, and selection. Scenario selection includes the quantitative results that were recorded from interview transcripts. Off-topic responses from interviewees that did not apply to any specific development direction when provided were omitted from the interview results.
Expected Primary Interview Results:

1. Latent content analysis using inductive reasoning to produce topics of interest concerning the past, present, and future landscape changes.

2. Quantification of the topic results to determine if any topics overlapped during the interviews.

3. Scenario selection preferences from the pre-determined development scenarios.

Expected Auxiliary Interview Results:

1. Latent content analysis of the quality of the information provided by interviewees and their overall knowledge of the landscape.

2. Possible unforeseen auxiliary results.
Chapter 5: Results

This chapter is divided into five sections. The first section presents the mapped LCA data layers from the desk and field study, along with briefs on each landscape area/type. The second section presents the results of the semi-structured interviews. The third section outlines spatial justice concerns identified during the research process. The fourth section introduces the final normative scenario for the development area. The fifth section details the design for spatial justice recommendations for the case study area, bringing together the desk study, field survey, and semi-structured interview results.

5.1 Landscape Character Areas

The results presented in 5.1.1 are specifically focused on supplementing the landscape area delineation. It presents an analysis of the pertinent layers of the landscape for designating landscape areas. Section 5.1.2 presents the results of the characterization mapping portion of the field study, which incorporates both field study data and archival data from 5.1.1. The Landscape Character Areas are also Landscape Character Types (Archetypes). Their characteristics repeat in different regions of Aragatsotn province, Armenia, and the Caucasus in areas that have experienced a similar development pattern.

*In some maps, the East-South corners of the landscape character assessment maps have an area left blank. This is because the white area falls into a different province. Hence, there is a lack of landscape data for this area. For the most part, the available map data tells of the conditions that continue past this arbitrary border.*
Figure 5.1 Settlement Map of Study Area (Base Layer Google Map)

Figure 5.1 depicts the Ashtarak Watershed, with callouts for major sites of interest. Amberd Fortress stands at 2,200 meters above sea level at the northwest edge. Mount Ara stands at 2,400 meters above sea level on the northeast edge. In comparison, Ashtarak city and Ujan village, located at the southern edges of the watershed, are 1,100 meters above sea level. The purple-colored areas represent the major settlements in the study area. The roads are highlighted in orange. The thicknesses of the lines indicate their size, from smaller rural one-lane roads to two-lane interstate highways. The blue lines running north to south indicate rivers and natural water routes. The thinner blue line running midway down the map from east to west is the Arzni-Shamiram irrigation canal, built during the Soviet period and updated by the Millennium Challenge Fund in 2011. The total study area is approximately 315 square kilometers.
Figure 5.2 Ecological Landscape Framework (Modified data layer from Khoyetsyan and Khachatryan, 2016)

Figure 5.2 shows the drainage patterns indicated by the light green lines. The square green boxes in the northern corners surrounding Amberd Fortress and Mount Ara Ler indicate protected natural areas, both natural landscapes with historical-cultural elements. The third green box located to the south is a Bronze Age archeological site with unique earth formations. These protected areas have significant landscape aesthetic value visible from beyond the territorial limits. Thus, adjacent landscapes need to be planned so as not to reduce the landscape value of these areas. The patches of dark green indicate currently forested areas that are remnants of larger forests covering the surrounding areas.

Most settlements are in the southern half of the valley. We can see a clear change in altitude on the map as the landscape formation changes, creating microclimate pockets in the
river valleys below. We can also see that the Kasagh River (larger river gorge) and Amberd River (smaller river gorge) are settlement anchors. The natural mountain patterns and water flows delineate the study area and provide natural segregation to assess how the area developed over time.

Figure 5.3 Hydrology Map (Modified data layer from Khoyetsyan and Khachatryan, 2016)

Figure 5.3 depicts the surface drainage patterns of the landscape and the underground aquifer located in the middle of the map. The map presents the hydrological surface water net that extensively occupies the central portion of the study area indicated by light purple lines. The dashed black lines show the primary drainage direction of snowmelt and their intersection with groundwater recharge areas located on the southeast and central part of the map. This map helps in informing all four development directions.
Figure 5.4 represents the moisture vulnerability of the area, with dark blue for high vulnerability and light blue for low vulnerability. The low-moisture areas represented in dark blue are at risk of desertification as the temperatures increase from global climate change, affecting most of the study area's settlements. The medium blue areas are at a lower risk of desertification. Yet, these areas contain natural oak forests, which may be stressed by higher heat levels and increase the likelihood of forest fires, floods, and mudslide risks. The lighter blue areas are in semi-alpine landscapes with adequate moisture levels throughout the year; these areas may also be at risk. If global warming continues, moisture vulnerability will increase in altitude.
Figure 5.5 indicates the erosion pattern of the landscape. The dark pink shows alluvial deposits stemming from the rivers and natural drainage patterns. The sand color indicates soil movement during snow melts over a longer period. Orange points out the unstable moist soil susceptible to erosion and not adequate to hold structures. The dark brown indicates areas with high levels of erosion and possible mudslides after snowmelt. The gray areas indicate mostly stable soils. Most of the gray areas are currently used for orchards, seasonal crops, or are in a natural state as we move up in altitude. The orange areas are of special importance because some settlements are in these high erosion areas. This map is also important for agricultural production and solar energy infrastructure considerations.
Figure 5.6 Flood Vulnerability Maps (Modified data layer from Khoyetsyan and Khachatryan, 2016)

Figure 5.6 shows areas that are susceptible to flooding, with the darker pink indicating areas that are more susceptible and the lighter pink areas being less susceptible. It is important to point out that climate change may reduce the time for increasing temperature, causing flooding and mudslides as snow deposits melt faster than the usual thaw period. As presented in Figure 5.2, an oak forest remains in the Amberd Fortress/Byurakan crossroad area, which allows the harvesting of native plant species and propagation of new trees for reforestation.

These are all proactive measures to stabilize flood control and mudslide risks ecologically. These activities need to be encouraged to mitigate the mudslide risk created by climate change and provide wind protection to orchards located in the villages further down in the middle valley.
In Figure 5.7, the light green areas are meadow-steppe limestone soil. The light brown areas are brown forest limestone soil. The plum color represents the black carbonate soil. Dark pink indicates chestnut-colored soil, and light pink indicates light chestnut-colored soil. Yellow indicated alluvial soil. The dark pink stripes and patches are rocky outcrops. Light gray indicates unstable mudslide areas. Dark gray indicates typical black carbonate soil areas. The light brown areas are mostly grassland meadows. Below the plum-colored black carbonate soil areas are where most of the agricultural production takes place in the form of orchards and seasonal crops; these areas are where most settlements are located. The yellow alluvial soil areas are mostly used for seasonal crops, vegetables, and strawberry production.
In Figure 5.8, light brown indicates low surface rockiness. The medium brown has more surface rockiness, and the dark brown areas have the most surface rockiness. Gray signifies the lack of surface rockiness, and the pink areas are alluvial soil deposits. This map is important for understanding where settlements can be further expanded. It also informs decision-making for locating solar energy production since some of the rockiest surface areas are located on the south-facing sloped areas.

The map also informs agriculture alternatives in the region, indicating areas where surface rockiness is low and well suited for conversion into orchards, this map when utilized with irrigation network, altitude, and humidity level data, can inform decision making for future orchard development and for the selection of high-value crops that can be adapted to the region.
The pink areas in Figure 5.9 indicate alluvial soil deposits, while the brown areas indicate the presence of arable land. Most of the arable land areas are currently being utilized for orchards and seasonal crops; the desk study and field study confirms the availability of roughly 30 percent of land that can easily be converted to arable areas if irrigation water networks were to be improved and resources were made available to farmers via market or government offerings.

These areas are also settled extensively, except for the Mount Ara Ler apple orchards located east of the Kasagh river. The presence of the Arzni-Shamiram water canal halfway up the map running east to the west provides the irrigation water needed to make these lands arable. Surface rockiness limits the growth of these areas in certain areas. These patches of rocky areas bordering settlements are well suited for solar farms.
The areas in Figure 5.10 are as follows: Dark gray is a dry climate. Light gray is semi-arid. The red brick color shows dry areas with limited humidity. The orange signifies areas with hot temperatures and humidity. The lightest orange shows areas that are warm with high levels of humidity.

This map is important in informing agricultural development scenarios and locating orchards and other high-valued crops based on their climate needs. Thus, the agroclimatic map can also inform where solar energy facilities can be located without competing with agricultural lands. It is important to note that the field study indicates the presence of orchards on many of the red brick, light gray, and dark gray colored areas of the map which have available irrigation. This map is important for informing high-value crop planting decisions, especially for crops that may be sensitive to humidity levels.
In Figure 5.11, the dark green areas have a higher level of grass biomass than the light green areas with less. The white on the map indicates a lack of grass biomass. The grass biomass increases as altitudes and humidity levels increase, moving up the watershed.

The dark green areas are mostly used for seasonal grazing when weather permits; it is common to see cattle grazing in fall, spring, and summer as one makes their way up the mountain to Amberd and beyond the peak of Aragats. These high grass biomass areas are used by shepherds and beekeepers who set up temporary seasonal camps in these areas. Climate change and increases in temperatures can significantly decrease these areas.
In Figure 5.12, the darker yellow *shrub grasslands* are covered with Fescuta (*versicolor*, *ovina*, *valosiaca*), *Phleum pratense*, *Hordeum violaceum*, *Carex humilis*, and *Trifolium ambiguum*. The lighter yellow *grassland areas*, indicated by the number 6, are covered by Fescuta (*versicolor*, *ovina*, *valosiaca*), *Koeleria (albovii, cristana) bothriochloa isachaemum*, *Stipa capillata*, *Scabiosa*, *Veronica*, *Artemisia*, *Achillea*, and *Astagaluss*. The *forested* darker gray area, which is numbered 5, includes *Pinus (pallasiana, banksiana)* *Fraxinus excelsior (European Ash)*, *Populus tremula (European Aspin)*, *Hippophae rhamnoides (Sea-buckthorn, Salix willow)*, and *Ulmus (elm tree)*. The light gray *semi-arid landscape* areas are covered by Broamopsis riparia fibrosa, *Festuca valesiaca*, *Xeranthemum squarrosum*, *Artemesia austriaca*, *armeniaca*, and *Thymus*. 
Figure 5.13 indicates the ecological stress placed on the landscape in the study area. The burgundy-colored areas indicate a high level of stress on the landscape due to human activity. The red areas represent medium stress due to their proximity to settlement areas and utilization by human activity. The pink indicates little stress or the lack of an ecological landscape.

It is important to point out that these maps do not show smaller scale human impacts in the river gorges or immediately around culturally significant landscape elements or protected areas. They are provincial scale maps that have been modified for the watershed scale.

This map can inform decisions for agriculture, solar energy, urbanism, and tourism development. Ecologically stable landscapes are an important part of landscape heritage and an important component of the landscape experience that needs to be considered for all decision-making purposes.
Figure 5.14 Ecological Sensitivity Map (Modified data layer from Khoyetsyan and Khachatryan, 2016)

Figure 5.14 depicts the ecological sensitivity of the area, with the brown area as more sensitive and yellow as less sensitive. The white indicates built-up settlement areas.

Figure 5.15 Direct Normal Irradiation (DNI) Map (Layer data by Solargis, 2020)
Figure 5.15 exhibits Direct Normal Irradiation (DNI) levels for the study area. DNI is calculated by measuring the surface perpendicular to the sun. The dark orange areas in the southeast of the study area receive above 4.6 kWh/m² for a yearly total of 1,780 hours. The orange areas receive above 4.4 kWh/m² for a yearly total of above 1,560 hours. The yellow areas are gradually lower, ranging between 3.8–4.2 kWh/m² for a total of 1,380-1,530 yearly hours.

Figure 5.16 Photovoltaic (PV) Map (Layer data by Solargis, 2020)

Figure 5.16 is the Photovoltaic (PV) map that shows the potential for power generation using advanced solar panel systems. Its estimates consider multiple factors, such as weather and local environmental considerations. The PV potential of 4.4 kWh/m² covers almost 1/3 of the study area for a yearly total of over 1,600 kWh/m². As a reference, the city of Paris averages 1030 kWh/m² DNI and 1,123 PV per year (Solargis, 2020).

The layers presented in this section were created using maps from Khoyetsyan and Khachatryan’s book, titled “Principles of Landscape Planning in Mountainous Regions.” Their
study focused on the Aragatsotn province and presented pertinent data layers. These maps were extracted, resized, and modified to meet the current needs of the watershed scale analysis. The direct normal irradiation (DNI) and photovoltaic (PV) power potential map layers are from the World Bank solar resource maps of Armenia (Solargis, 2020). The full-scale maps are in Appendix 2. The layers presented in this sub-section were analyzed during the desk study portion and informed the field study portion of the LCA. They were referenced after field visits to delineate the LCA areas/types, presented in the next section.

In conclusion, the created and modified layers from both the desk study and field study portion of the LCA provide the comprehensive understanding needed to make larger-scale delineation decisions at the watershed scale. It is important to note that some layers are based on Soviet-era landscape assessments. Modern technologies, such as Google Maps, contain terrain maps, surface cover maps, and road maps. The height mapper maps allow the production of 3-D isometrics that instantly provide the orientation of surfaces as they relate to the equator.

While 3-D maps are rarely used to present landscape character assessment results, it is important to point out that the maps were created as traditional flat layered maps that were placed as surface layers onto the 3-D rendered model. For cartographic precision, the flat maps are easily modifiable and can also be utilized as base maps for future landscape studies. The 3-D rendering simply helps communicate landform instantly, especially as it relates to watersheds with noticeable topographic variances. The following sub-section will present the delineated landscape areas/types that combine the desk study and field survey data.
5.1.2 Landscape Character Areas

Figure 5.17 Landscape Character Areas of Ashtarak Watershed

Figure 5.17 presents the Landscape Character Area map produced through the LCA’s desk and field study portions. The delineations for landscape areas/types considered the data map figures 5.1-5.16 when relevant, along with desk and field survey data compiled to cover the natural, cultural/social, and aesthetics factors of the study area.

Natural factors: *Landform*, including topography and geomorphology. *Hydrology* includes rivers, drainage flows, water flows, and water quality. *Elements* in the landscape make up the parts of a whole, such as trees, shrubs, roads, homes, factories, rock formations. *Features* are defined as intriguing elements, such as particular rock formations, arrangement of natural or planted shrubs, a clump of trees, particular arrangement of agricultural beds or fences, and architecturally significant buildings such as a church or historic monument. *Air and climate*
include microclimates and weather patterns. *Land cover includes flora & fauna, habitats, biodiversity, land cover, vegetation cover, tree cover, and woodland areas.*

Cultural/Social factors: *Historical landscapes, Land use* such as agricultural, settlements, and their associated patterns, building designs, materials, roads, and conditions. *Enclosures* include how fields are defined and enclosed along with urban areas. *Time Depth* includes land ownership and the historical dimension of the landscape, along with its archeological significance.

Aesthetic factors: *Texture, pattern, form, sounds, smells, touch.* *Perception* includes memories about the landscape, cultural associations such as elements of art, literature, mythology, music, people, event, associations attached to the landscape, and preferences for what people want with the landscape.

A field notes sheet (Appendix 1) was created with these components and filled out for each landscape area/type visited. Afterward, these notes were compiled into an excel sheet and further refined to delineate landscape areas and types while consulting relevant desk study data, including map layers and data such as photos taken during the field surveys. Originally 29 areas/types were delineated, and after numerous refinements, these areas/types were reduced to the 17 that were adequate to cover the study area at the appropriate scale of detail.

For example, A1 is the urban core, while A2 is the urban fringe. The field surveys informed the area demarcation process and pertinent data layers such as topography, ecological sensitivity, humidity, altitude, biomass cover, settlement pattern, enclosure, landcover, and land use. Plant species identified during the field visits also informed the higher altitude landscape areas/types such as A14 and A15, as native oak forests stopped at a certain altitude, and semi-alpine plant species began to flourish, indicating a change in habitat. The areas are also
delineated by social factors as well. For example, A9 and A10 are landscape types that repeat throughout the case study area in different river gorges and settlement areas. In the case of the monasteries, they maintain a similar character as they appear in different settings, yet they are not replicable in any other character area/type; hence they are delineated as an individual area/type. A8, in comparison, is an area/type that covers a few villages with similar landcover, landform, altitude, architectural features, economic activity, orientation towards viewsheds, topography, and geomorphology. The breadbasket villages A11 are all on flat ground at 1100 meters above sea level, with similar alluvial soil composition and arable lands.

The LCA area briefs generated from this process are presented in this section, along with an explanation of the spatial justice concerns present in each. Borders delineate these areas on the map where the landscape changes significantly enough to create a divergence from the other. The areas are presented below with their associated types in parentheses.

* Appendix 1 contains supplemental descriptions and photographs of LCA areas presented in this section.
A1. Ashtarak City (provincial urban capital)

The city of Ashtarak has three main layers of interest. The pre-Soviet layer is present in the downtown area with tightly packed streets and limited automobile access. The Soviet layer is evident throughout the city in the residential buildings. The abandoned Soviet-era decaying Univermag (department store), the bus station, and abandoned research centers depict the collapse of the Soviet Union. Independence-era architecture can be identified by modifications called “Evro-remont.” The term refers to the modifications to Soviet-era buildings to accommodate retail on ground floors, with large window openings and glass facades that create mixed-use building conversions. “Evro-remont” modifications can also be applied to residential homes finished aesthetically with newer materials.

Ashtarak has a few private post-Soviet developed picnic areas in the river gorge that accommodate tourists during the spring and summer months. The city has relaxed zoning policies with mechanic shops near schools and natural gas stations next to children’s restaurants. Overall, the everyday landscape is the same as most cities outside Yerevan, consisting of aged street infrastructure, limited curb appeal, lack of maintenance, and topped street trees along main
roads. The central downtown area is slightly better maintained, with a few rebuilt museums dedicated to local authors, poets, and scientists. The city occupies the banks of the Kasagh River and has beautiful natural features and topography.

The city has significant pre-Soviet architecture and infrastructure that distinguishes it architecturally as one of the oldest continuously inhabited cities in modern Armenia. It has numerous ancient churches that have been partially preserved, and some have been renovated. The terrain and landscape are, to a certain degree, diversified. The central downtown area has interesting sites, including museums, monuments, and cafes. It also has a large central park that is mostly in disrepair except for recent tree plantings and hardscape repairs. There is an open-air modernist era movie theater and a monument dedicated to local soldiers who fought in WWII located within the park. The city can be considered walkable, particularly in the central area. If there are investments in the downtown area, it has the potential to become a great tourist destination for day visits and even weekend getaways. The population is mostly blue-collar service workers, often working in small industries or agriculture. It has a booming service industry that includes picnic areas, restaurants, cafes, horseback riding, and other active leisure. Ashtarak is intimate in scale and aesthetically pleasing compared to other regional capitals.

_Spatial Justice Concerns:_ Speculative real estate ventures have led to the construction of uninhabited homes, causing speculative blight. Speculative blight is the privatization or alienation of communal property by developers who have not expended efforts to develop the land. This may be remedied by a certain “failure to develop land tax” that would be applied accordingly to not stifle future investment by new entrants. The tax may promote enterprise while reducing the risk of blight caused by neglect and inactivity.
A2. Shakarashen Industrial Fringe (peri-urban post-industrial fringe)

This area is a representation of a typical post-industrial fringe area. The residential buildings are older, even though some have new tin roofs that shine when the sun reflects them. The residential settlement is concentrated close to the urban edge in a cluster of five-story buildings surrounded by sprawling individual homes. The vernacular landscape has unmaintained asphalt roads and sidewalks. There are also dirt roads throughout the area, with some small-scale economic activity. Overall, empty stretches of landscape induce an eerie post-apocalyptic feeling. Yet, hopes of economic activity are also present in planted seasonal crop fields, newly built homes, blossoming orchards, and burgeoning social life around residential buildings.

Spatial Justice Concerns: The Soviet-era factories are not in complete decay. Aesthetically, these buildings convey a perception of blight. Old cars, household appliances, and construction waste are dumped along the dirt trails. Some of the roofing materials used may contain asbestos. During the winter, the roads that pass through the high-density residential areas are primarily used to access the single-home developments, which causes significant damage to the road and is not repaired regularly.
A3. Ashtarak Agricultural Fringe (peri-urban agricultural fringe)

This area possesses the typical characteristics of an agricultural fringe area. Alongside the road, the area is covered with apple orchards. The orchard plots become sparser the further they are from the road. The roads are usually made from a combination of asphalt and dirt. Sparsely arranged homes and light structures are present throughout the landscape. Nearly 60 percent of the landscape is covered with fruit orchards, apple trees being the most prominent, followed by pears, peaches, apricots, and some older semi-productive grape orchards. There are roadside fruit stalls selling local produce from the nearby orchards. There is usually no enclosure, except for outcropped stones used for demarcating boundaries. The landform features low sloping hills with valleys in between, which is typical for agricultural areas around Ashtarak. Maintained orchards cover around 50 percent of the landscape. The rest is comprised of abandoned lands, natural grassland, abandoned gas stations/retail buildings, guard homes, and seasonal crops. The overall quality is fair. The trees and the watering infrastructure are aged. When present, fencing is also in derelict shape. The decorative trees along the edges of roads are unkempt and unattractive.

Spatial Justice Concerns: This area may be usurped by sprawl if it is not controlled. Roadside blight, land abandonment, and failed businesses pose challenges to the landscape.
A4. Nor Yerzenka Village (peri-urban rural fringe)

The village of Nor Yerznka is located east of the Yerevan Ashtarak Highway and north of the road from Ashtarak to Abovyan city. Most residents work in local agriculture, Ashtarak, or in Yerevan. Nor Yerznka is situated on a south-facing hillside and is organized in a modern grid pattern with single-family 1-2 story homes. The village is surrounded by well-organized orchards and seasonal crop plots in a mosaic pattern. It forms a very colorful landscape that is pleasantly visible from the roadsides. The orchards add a soft texture to the landscape that is welcoming and reminiscent of Saryan’s landscape paintings. Beyond the agricultural area, the village is surrounded by natural rocky landscapes. The Arzni-Shamiram channel runs along the north side of the village and is the main source of irrigation for agriculture. The villagers have a sense of pride in what they have created and maintained here.

Spatial Justice Concerns: Dire Road conditions leading to Mount Ara need major improvements. During the Soviet period, a water reservoir was planned for construction adjacent to the village. This plan never materialized, and the building of structures within this area may limit the future construction of this water reservoir. This village is not in Aragatsotn province but a part of Kotayk province for reasons that may have to do with gerrymandering.
A5. Mount Ara Apple Orchards (Rural Apple Orchards)

The Ara Ler (Mount Ara) apple orchards are the largest in the study area located between Nor Yerzenka and Mount Ara Ler. During the Soviet period, it was a collective privatized after independence by previous farmers who divided the rows of trees among themselves. The orchards are tightly planted with trees at the appropriate scale for handpicking using limited machinery. The main asphalt road leads up to Mount Ara Ler. People associate this area with the communal operation of the Soviet years, given that it is one of the few surviving orchards from that period. Currently, people work this land as a source of income generation and as hobby farmers who use their land as a picnic and rest area, a place away from home. The current model seems to have reached its limits of small-scale and hobby farming. The orchards can grow towards the east, but there seems to be a limiting factor in the selling price of apples. The Arzni-Shamiram irrigation channel runs the length of the orchards before it crosses the Kasagh River heading west.

_Spatial Justice Concerns:_ Conversations with orchard owners during field visits revealed a possible issue of monopsony on export. The other choices are selling in the local market and storing in the industrial refrigerator facility for a few months until the holiday season.
The foothills of Mount Ara (Ara Ler) are mostly unaltered scrub grassland meadows. They are located north of the Ara Ler apple orchards, accessible by asphalt road. The mountain is pertinent to Armenian history and mythology. It is named after the legendary Armenian hero, Ara the Handsome, who is believed to lie there. The legend holds that the mountain’s peaks depict his face, and the foothills form the rest of his body. Legend says that Ara the Handsome refused to marry the Assyrian queen Shamiram (Semiramis), who waged war on Armenia to capture him and return him to her. He is also associated with Arame of Urartu, ruler of the Urartu Biainili Kingdom during the 9th century B.C. The mountain itself is part of the backdrop to most historic heritage landscapes people visit in this region, especially the monasteries in the wedding belt along with the river villages of Mughni, Ohanavan, and Saghmosavank. The landscape currently is in a protected zone which limits economic activity and changes to the landscape.

Spatial Justice Concerns: Possible zoning loopholes may allow developers to build in this area, lowering its value for other users of the landscape and future generations.
A7. Ara’s Heart (canyon and cave)

Figure 5. Entrance to Mount Aras Canyon

Towering stone walls surround the canyon. The canyon itself hosts various picnic areas. The natural landscape contains native oak, rosehip, and grassland scrub species. The Heart of Ara is a cave located in the middle of the canyon with water running through it. As explained by local community members, the cave is a pilgrimage site for people having a hard time conceiving. They will visit the cave on foot and make a religious offering in return for their wish to be granted. They return to the cave and leave a religious relic to complete their pilgrimage if the wish is granted.

*Spatial Justice Concerns:* There are concerns with landscape preservation. The recently constructed asphalt road allows more people to reach the canyon. This may stress the natural landscape and the flora in the canyon and cave. The picnic areas already show signs of landscape degradation and littering. A management and maintenance plan needs to be implemented to ensure visitors properly utilize these areas. Tourist agencies could limit promoting the area to small groups since the landscape can’t accommodate larger groups of bussed tourists.
The wedding belt villages are Karbi, Ohanavan, Artashavan, and Saghmosavan. They are comprised of rural homes with fruit orchards either attached to the residences, in proximity, or at the village edges. Located on top of the river gorge, these villages have cooler weather in the summer when compared to the breadbasket valley villages. They each have a small downtown square with a few stores. They are best known for the historic monasteries they are built around: Saint Gevork, Hovhannavank, and Saghmosavank. They are called the “wedding belt” villages due to the many weddings, christenings, and other ceremonies they accommodate. Tourists visit throughout the year, particularly those venturing on day tours around the province.

Spatial Justice Concerns: The wedding belt villages need to enforce zoning regulations for the location of restaurants and banquet halls. Currently, developers build these facilities next to the monasteries, which lowers the quality of the cultural landscapes. Building near these attractions reduces the chances of a downtown forming, where economic activity is concentrated and evenly distributed. The current situation encourages entrepreneurs to build their restaurants and banquet halls as close as possible to cultural landscapes to attract foot traffic from tourists.
A9. Karbi River Gorge (river gorge rest areas)

Steep canyon walls surround the river gorge. The main vehicular access to the river is used as private rest areas dotted with covered picnic areas that can be rented for a fixed fee. These rest areas usually contain playgrounds and community pools. The canyon is mostly used for picnicking. It is one of many river rest belts in the Ashtarak watershed. These areas are heavily utilized during the spring, summer, and fall months. The river canyon has interesting riparian elements, such as reeds and associated flora and fauna. The rest areas are usually constructed using vernacular architecture with local and imported materials. They are in the wider areas of the river gorge, which are riparian corridors for wildlife. Beyond the immediate rest areas, the river canyon landscape is natural except for infrastructures, such as irrigation pipes, utility infrastructure, and dirt automotive maintenance roads.

Spatial Justice Concerns: Accessing the river canyon through the privatized rest belt picnic areas is an issue. There are also concerns with freshwater availability for residents due to the high demand for freshwater created during peak tourist months. Ecological degradation is of concern as well due to construction in ecologically sensitive areas.
The two monasteries are located along the western edge of the Kasagh River. They are the focal features of the landscape immediately in the foreground of Mount Ara Ler. Saghmosavank was built in the 13th century, and Hovhannavank dates to the 4th century. They are both surrounded by fortresses that are currently in ruin. The churches are operational and frequented throughout the year for pilgrimage and religious ceremonies such as weddings and christenings. Both churches provide panoramic landscape views that are mostly natural and whole. These landscapes are commonly featured in movies, music videos, and other cultural productions that depict historic, culturally significant elements and landscapes. The churches are located within the auditory range of church bells used to communicate with each other in ancient times.

*Spatial Justice Concerns:* The main issue is preserving the quality of the monasteries and the landscapes in the background that add value to the entire landscape as a significant aspect of cultural heritage. This can be done by zoning the landscapes with heritage value and limiting development in background landscapes.
This landscape area combines picturesque agricultural areas, rural villages, and roadside development. The roadside developments in this area include compressed natural gas stations, small grocery stores, greenhouses, and roadside fruit vendors. There are also utility lines, water irrigation pipes, and natural gas lines. The landscape has remnants of property walls that demark property limits. The roadsides have no formal zoning ordinances, leading to the building of service stations and other development all along the road. This is partly due to the main gas lines that run along the road, making it easier to establish greenhouses and other gas-intensive businesses along roadsides. Beyond the immediate roadside, the landscapes are picturesque. As one moves away from the village intersections, the landscape quality improves as roadside development decreases. Overall, the landscape has a vast feel and is covered by orchards and season crops surrounding small villages.

*Spatial Justice Concerns:* There are issues with blight and trash dumping at the village entrances and edges, predominantly construction waste. Also, there are some concerns with rural sprawl that may eventually degrade the quality of the landscape over time.
These villages surround different tributaries originating from Mount Aragats and ending at the Kasagh River. The Arzni-Shamiram irrigation channel runs adjacent. The settlements are a combination of productive agricultural lands and summer homes. They are at the edge of the rural fringe and rural hinterland. These areas have limited tourist offerings and cultural activity. They exude a sleepy village feeling. The orchards are newly planted in patchwork from the early to mid-2000s and indicate economic activity in its infancy. The roads need improvement, and there are trash and debris dumping sites, along with outcropped boulders and other construction waste at the entrance of villages. After the Armenian Genocide, Parpi was mostly populated by migrant orphans housed at an orphanage built to accommodate them. Currently, the economic activity in the village is mostly subsistence farming and small-scale agricultural endeavors in the form of livestock on a small scale, fruit orchards, and seasonal crops. Some men are employed as migrant workers in Russia. The villages are relatively small, and the residents partake in subsistence activities or work blue-collar jobs in Yerevan. The village of Ushi is small, with agricultural production as its main source of income. The villages are compact, and the
infrastructural quality varies from one to the next. Ushi is the least developed, as compared to other middle villages.

The villages deeper in the middle valley have more summer homes, better roads, and orchards. These areas are attractive to Yerevan residents and diaspora Armenians interested in buying country homes that are rural in feel but within a short driving distance of Yerevan. The middle valley is home to the ruins of the Saint Sarkis Monastery. If one were to create an equestrian trail from Ashtarak to Amberd Fortress, this would be an ideal in-between point per the managers of equestrian therapy centers who explained that equestrian tours had taken place before that led from Ashtarak to Mount Ara and then to Ushi. Participants would spend the night in Ushi and continue to Amberd Fortress and Tegher Monastery further west on the mountain range.

*Spatial Justice Concerns:* These villages are deep in the middle valley and are at least an hour's drive from Yerevan, especially with varying weather and road conditions. The difference between these villages and Ashtarak is quite significant. The villages seem to be 10 years behind in infrastructural development. The villages are mostly located in the central valley and may be more at risk of climate-change-associated risks such as mudslides and flash floods.
A13. Alphabet Road (grassland meadows)

This landscape begins at the lower flatlands of Mount Aragats. The area features an oft-visited art installation of the Armenian alphabet carved out of local tuff stone using traditional cross-stone methods and motifs. A few hundred meters in the background, one can see a towering cross composed of 1.5 million smaller crosses, memorializing the victims of the Armenian Genocide. The landscape consists of low rolling grasslands lined with small streams created by snowmelt pooling where cattle congregate. The area south of the main asphalt road is gently sloped. The area is covered with wild grasses, wildflowers, and native shrubs. Before the Byurakan/Amberd intersection, there is a picnic area covered with pine trees planted during the Soviet period. Dirt roads lead to less-traveled areas. There are no major settlements or dwellings around this area.

Spatial Justice Concerns: There is only the concern of land being privatized for installing different monuments that may lower the quality of the overall landscape if not regulated. Having monuments is not the issue, as much as having a conglomeration of monuments concentrated in one location.
A14. Byurakan and Amberd Fortress Intersection (scrub grassland meadows)

This area extends from the intersection of Amberd and Byurakan to the river gorge and the hiking trail leading to Amberd Fortress. A large plateau runs west from the road intersection, with rolling hills east of the road intersection. Figure 5.31 shows the beginning of a hiking trail passing through grassland meadows, leading to the river gorge, and heading to Amberd Fortress (located on the wedged plateau in the middle of the image).

The area has wild grasslands, native oak forests, pine trees, native shrubs, asphalt roads, tuff block walls, and some fencing for the enclosure. The only settlement structures are a scientific center, a hotel, and some small structures used as temporary shelter. Once the main intersection is crossed, there are no automobile roads. This area has pristine grassland landscapes leading to the river gorge which features hiking trails surrounded by natural elements and high-quality natural elements. One can hike from the intersection to Amberd through relatively undisturbed landscapes, which was the original path to Amberd before the automotive roads were built.

*Spatial Justice Concerns:* There are some issues with blight associated with low-quality landscape maintenance and management.
A15. Amberd Fortress Plateau (Aragats sub-alpine scrub landscape)

Figure 5. 32 View of Amberd and Vahramashen church

This area begins at the Amberd-Byurakan intersection and includes the Amberd national preserve. The landcover consists of natural alpine scrub and meadow landscapes that are mostly unaltered, except for roads and some utility pylons. There are rolling hills with steep hillsides and deep canyon ravines. The alpine meadows and scrub landscape are covered with the Artemisia species. No native trees are present in the plateau area. Asphalt roads are present, along with some built structures used to house utilities and animals during seasonal grazing. Overall, the landscape’s character is natural and minimally altered. Giant boulders in the ravines demonstrate the power of water from snowmelt that has moved these rocks to their location. The landscape is high quality, except for some abandoned, crumbling Soviet-era animal housing structures. Amberd, which translates to fortress in the sky, is a 10th-century fortress occupying the central plateau that surrounds the preserve. It is adjacent to Vahramashen, an 11th-century Armenian church. Archeologically significant Desert Kites (Nadel et al., 2015 & Barge et al., 2015) are located along the road in this area.

Spatial Justice Concerns: Blight from abandoned facilities in the landscape, protection of archeological sites, and the limitation of economic development within the national preserve.
A16. Byurakan Village (Mount Aragats Mountain Village)

Byurakan is a prominent village within the study area surrounded by a natural forest. It is home to the renowned Byurakan Observatory, several sanitoriums constructed during the Soviet period, campsites, and other recreational facilities. The village is densely populated. Byurakan is welcoming during the day but darker and closed off at night. Byurakan is one of the better-maintained and wealthier villages within the study area. This is evidenced by the newly built roads and drainage channels adjacent to the main road. The village also features examples of pre-Soviet streets, which provide an interesting time depth to the village. The Byurakan Observatory is often visited by tourists from Armenia and abroad. It is still operational as a science center and has recently housed cultural events, such as art festivals. The non-functional Soviet-era buildings and technological structures are used in music videos and other modes of artistic expression, adding a new layer to Armenia’s contemporary cultural landscape.

Spatial Justice Concerns: In some areas, Soviet-era resort buildings in slow decay display signs of blight that may lower the quality of the landscape. This is caused by the privatization of Soviet-era sanitoriums and undeveloped communal lands which have not been invested in.
A17. The Breadbasket Villages (Aragatsotn agricultural fringe)

The area runs along the M1 Highway from Ashtarak to Ujan village. It includes the agricultural lower flatlands of Ashtarak, Agarak, Voskevaz, and several other villages in the lower plains. The landscape combines wild scrub grasslands, seasonal crops, archeologically and geologically significant areas, rural settlements, greenhouses, factories, and commercial buildings. The area is primarily known by visitors and locals for its agrarian lifestyle. Fruit stands dot main roads with farmers selling their produce, fruit preserves, and other homemade artisanal goods. Beyond the roadside developments, the landscape opens to vast viewsheds. Storks, a historic symbol of the dispersed Armenian diaspora, can be seen during the warmer months, returning to their nests atop utility poles and homes. This area has recently started converting vineyards to strawberry fields and has seen a rise in greenhouses used for growing flowers such as roses.

Spatial Justice Concerns: The further development of commercial businesses is increasing sprawl and transforming the roadside into a continuation of stores, services, and restaurants. In the likely event that these businesses fail, it creates blight and lowers the quality of the landscape. Development should be concentrated around village intersections to enforce simple zoning ordinances. The World War I victory memorial located at the edge of Ashtarak is
not maintained regularly, causing blight and further reducing the quality of the monument. Two main food processing factories in this region are purchasers of the agricultural crop who may practice monopsony given the limited option available to farmers.

5.2 Interview Results

This section presents the results of the interview questions posed to interviewees, as outlined in the methodology chapter. The second section presents the auxiliary results and impressions from the interview process.

5.2.1 Thematic Interview Results

This section covers the main themes identified during the semi-structured interviews. They are presented here as they relate to the four development directions. The main themes identified from the interview results are presented below.

Ten respondents mentioned High-Value Crops. During the Soviet period, the region’s main crop was grapes, processed into wine and brandy. Apples, pears, peaches, apricots, and other fruit trees were also planted to a lesser extent post-World War II. The region is famous for its walnuts which are not produced on large-scale farms. Most people will have one or two trees in their backyard or front of their home along sidewalks. Given its limited supply walnut is used as a delicacy to produce local, traditional artisanal products.

“Ashtarak is famous for its walnut and apricots; grape cultivation is a part of local culture and the Voskehat grape variety. Mount Ara Ler and Nor Yerzenka are famous for apple trees. Ujan is famous for peaches. Talin is famous for cattle. The mountain villages are well known for animal husbandry, both fowl and cattle. There are greenhouses in Voskevaz, Akarag, and Ashtarak which grow berries, vegetables, and decorative flowers” (Interviewee).
“High-value crops are present in the region. Walnuts and hazelnuts are climate adapt and can be found sporadically throughout the landscape. They are usually planted along settlement areas and in river gorges. Nevertheless, they are not planted in medium and large-scale orchards. Grape orchards have been planted for over 100 years and are slowly being converted to high-value crops, such as strawberries and other berries. There are large new scale pecan fields planted outside the immediate study area. There are peach, apricot, apple, cherry, and other fruit orchards planted in the last 20 years alongside the roads and the middle valley village areas. These orchards have access to the Arzni-Shamiram irrigation water canal” (Interviewee).

There is evidence of low-value crops being converted to high-value crops on a small and medium scale. Further, small to medium-scale food processing businesses need to be developed and supported in the region to increase the value of the local products. The mountain villages are well suited for animal husbandry due to their access to rough grazing pastures further up the watershed where seasonal crops and orchards cannot be planted.

Beekeeping is visible throughout the study area due to the vast grassland meadows and orchards that occupy the watershed. “Beekeeping may develop further and go well with ecological tourism” (Interviewee). The practice has been developed in the region by a limited number of beekeepers who operate on a small scale with mobile bee-keeping hives transported by Soviet-era buses or trucks to find new flowering fields. They are not considered business ventures and can be viewed as subsistence farming. The product is mostly sold on a local market scale and consumed locally. The presence of beekeeping adds an interesting element to the landscape when the hives are placed in vast grasslands during the spring and summer seasons. Further, honey-selling stands emerge on the roadside to sell the product.

Livestock had three respondents. The consensus was that livestock is no longer viable in the periphery of urban areas due to economies of scale and lack of areas for pasture. Due to sprawl, pastures are steadily decreasing, along with shepherds to employ. One interviewee suggested a cooperative solution to pool resources for the care of the animals collectively. The
pooling will secure a large enough herd to warrant the need for a shepherd. For the most part, livestock is more successful in mountain villages due to pasture availability at higher altitudes. There is a lack of transparency regarding grazing rights and pasture maintenance. Grazing in wild grasslands may lead to animals unwittingly grazing within protected areas. The temporary camps set up by the Yezidi shepherds in the alpine meadows offer a safety net for active tourists hiking in remote areas. These areas are becoming tourist destinations for those interested in these cultural activities. Overall, livestock seems to be successfully developing in the area at a slower pace. Keeping livestock becomes more profitable for small-scale subsistence farmers if the milk is processed in-house and sold as a final product, such as cheese, yogurt, and other dairy products.

*Greenhouses* had four respondents. The smaller greenhouses from the Soviet era are of lower quality and not suitable for the local climate. These greenhouses require higher operating costs. The Soviet-era glass and post-Soviet plastic greenhouses are not well-organized compared to regions in Europe that have built modern greenhouses. These greenhouses lower the aesthetic quality of the landscape, which is acceptable if they are economically sustainable. Modern greenhouses occupy nearly 5,000 meters of space. These greenhouse farmers are doing well in the lower valley breadbasket villages like Voskevaz. These contemporary greenhouses employ automated temperature and moisture level regulators. One interviewee was particularly opposed to greenhouses and preferred a permaculture approach to agriculture, where seasonal foods are consumed to preserve traditional local cultural dishes, which rely on preserved foods, herbs, and seasonal produce. Another interviewee wanted greenhouses to be in areas with less fertile soil and more access to natural gas. The interviewee would like to see greenhouses designed more efficiently by using passive heat creation sources, utilizing biomass elements in the design, and
incorporating alternative heating methods such as mass rocket stoves that store heat within the biomass walls of the greenhouse. There was also a recommendation to use green waste generated from coppicing and other locally produced sustainable fuel sources.

*Reforestation* had four mentions. During the Soviet period, the forests around Byurakan were reforested. Nevertheless, these forests were logged during the fuel shortage of the 1990s. Per one interviewee, forests protect the orchards from high winds and reduce foliage loss from winds. He advocates for a reforestation effort in the region to protect orchards. Private forests can be grown for wood production, using fast-growing species such as Paulownia trees. There are examples of this species in Armenia grown for tourism and decorative purposes. Per the interviewee, private forests are better protected because private property is less susceptible to illegal logging.

Five interviewee respondents mentioned *farm Size*. For subsistence farming and small-scale single-family production, the average land size utilized in the region is 2,000 to 3,000 square meters (.2-.3 hectares). Areas 5,000 to 10,000 square meters (.5-1 hectare) may be economically overburdening for subsistence farmers. It carries a larger risk probability regarding seasonal harvest variability and associated risks. Three interviewees agree that at least 20,000 square meters (2 hectares) are best for small-scale operations. It may expand to 50,000 square meters (5 hectares) for individual management to have a profitable operation. Per one interviewee, collectives would bring 10 farmers together to manage 500,000 square meters (50 hectares) communally. Per another interviewee, some of the largest farming operations in Armenia are 10 hectares. On an international scale, these are medium scale. One interviewee explained that he manages 4 hectares of total land in a patchwork fashion and spread across a larger area of arable land.
One interviewee mentioned monoculture and Permaculture in relation to farm-scale since larger scale farms are usually mono-crop operations. Currently, monocrop operations are the biggest drivers of agriculture in Armenia. Also known as “intensive farming,” this method requires extensive pesticides and fertilizers to produce productive yields. One interviewee advocated for permaculture farms where various plants are grown together and are mutually beneficial to one another. These plants can be grown outdoors and in greenhouses. Another interviewee also mentioned the importance of permaculture approaches to local food production by using traditional plants and maintaining seasonal crops to preserve artisanal food traditions.

Cooperative Farms had five respondents who agreed that local cooperatives with national scale networks would help get materials to and from international markets. The challenges in creating cooperatives stem from not identifying common goals and mutual profit for cooperation. The lack of social gathering spaces for farmers also poses challenges since most people usually keep to themselves. Currently, Aragatsotn only utilizes a limited percent of its privatized agricultural lands. Larger farms will lead to increased employment but less ownership. Cooperatives are an adequate alternative to subsistence farming and working for others.

Four interviewees brought up issues with Governance. One interviewee was concerned with the lack of documentation of production quality and quantity by local authorities who continuously duplicate annual yield reports from the previous year. Another interviewee was concerned with the lack of transparency regarding property lines and irrigation water distribution mechanisms.

Eight interviewees brought up water Concerns. The local subsistence farms at the urban edge of Ashtarak have difficulty watering their orchards due to the lack of irrigation water during the summer months. It was mentioned that this might be due to increased picnic activity in the
river gorge rest areas. The difficulty may also be caused by the prioritization of larger farmers, forcing local small-scale farmers to water their fields with drinking water. It is important to point out that watering is mostly conducted through trenches. This is done several times during the summer months and causes significant water waste. Interviewees also mentioned a lack of maintenance when it came to water infrastructure.

*Financing issues* had four responders. Three interviewees mentioned high maintenance costs, lack of agricultural risk mitigation, and financing as reasons why small-scale subsistence farming was becoming less desirable. There is a lack of available insurance for seasonal crop production. Coupled with water limitation issues, high costs of fertilizer and other maintenance materials, and the hazard risks of hail, drought, and other climate change issues, small-scale farming is becoming undesirable. Another interviewee mentioned the lack of favorable loans for farmers as a barrier to small-scale farming.

*Market-Related Issues* had three respondents. Currently, there are issues with getting products to the market. Most agricultural products, such as milk, are bought by a local processor at a set price, and there are no alternative purchasers. Other products, such as seasonal crops and fruits, are purchased by intermediaries who take them to the market. For this reason, farmers do not make much profit. Villages and local markets are not big enough to absorb the products, leading to the closing of local bread bakeries and other small operations. Larger wine producers buy local grapes from farmers. When there is an abundant supply due to a high yield season, prices are reduced, or product is refused. Thus, farmers are left with an oversupply, leading to land abandonment due to the lack of processing facilities or preservation technology. Smaller land yields restrict access to larger markets that prefer “pretty fruit” over “ugly fruit.” That has a
variance in size, color, or shape. Farmers’ lack of business and marketing skills limits their access to markets and puts them at the mercy of monopsonies.

Three interviewees mentioned agricultural education. The overall lack of ecological understanding needs to be remedied. Farmers have limited farming knowledge and, at times, may engage in practices that are not productive or have unexpected adverse effects. Proper agricultural education is lacking in rural areas. Education on techniques, such as pruning methods, ecological issues, soil enhancement, and maintenance, can significantly impact productivity. In the 1990s, people attempted to set up farming operations, some attempting to grow wild berries. When their business ventures failed, they abandoned the land. The thorny berry shrubs they planted grow all along the water distribution channels, causing a nuisance. There are thornless variations of those same berries, which can be grown with success due to their climate adapt nature. The most significant challenges for agriculture currently are the availability of irrigation water, land abandonment, improper education, lack of access to production materials, and inability to access markets. Thereby, the agricultural sector is faced with wicked problems that will require multifaceted solutions.

Solar Energy: Solar energy was looked upon favorably by all the interviewees. They all agreed it was desirable and feasible on all three scales. Three interviewees responded with more robust preference choices. One interviewee mentioned that solar energy would provide Armenia with energy self-sufficiency. An interviewee pointed out the importance of enacting laws that would allow communities to purchase and manage solar farms and sell excess energy to the grid. This would be beneficial for different companies because they can produce energy in one location and sell it to the grid, and then buy it for the same price at a different location.
A few kilometers outside of the study area, the city of Talin currently has a solar farm. The region is well-suited for solar energy production. The availability of inexpensive rocky land and the high solar irradiation levels make the area desirable for investment. The sector can be further developed through the training of installers, which Armenian currently has a shortage of. Efforts need to be expended on training a new generation of green-collar workers. Solar energy used for heating water and producing electricity is transcending through an initial test phase in Armenia. Banks will be willing to scale up financing operations once there is sufficient data to support their profitability. Currently, areas around Ujan are being considered for placing solar farms. These areas are also arable if irrigation infrastructure can be upgraded. In comparison to other forms of energy, solar is more sustainable. It is easier to install in remote areas, where other energy sources and infrastructure may not be available.

Ten respondents mentioned tourism. The main themes identified were the following. Based on the comments of one interviewee, historical tourism needs to incorporate the building of traditional homes around churches so there could be a holistic recreation of culturally significant landscapes. There were concerns about tourism being turned into a spectacle, where the original intent of the place becomes lost. Proper circulation plans and access to historical sites are necessary to avoid congestion. The visitation capabilities of the site need to be scaled to the carrying capacity of the landscape. There was interest expressed in rebuilding fortresses and monasteries that were in dire need of repair and preservation. The Ministry of Culture can create a management plan for existing sites that are not well-maintained. Currently, there are Bronze Age archeological sites that are not maintained. These sites can be leased to private parties who can maintain them by charging an entrance fee.
Five respondents mentioned active Tourism. Bed and breakfasts, eco-tourism, hiking, mountain biking, horseback riding, zip-lining, cross-country skiing, and other outdoor activities are well-suited if the appropriate infrastructure is developed. For example, Amberd Reserve encompasses 48 hectares, which begins at the Amberd/Byurakan intersection down the river gorge and extends to the fortress. Yet, there are no guards for the entire region nor a reserve ranger to maintain and patrol the preserve. Proper management needs to be implemented to monitor active tourism resources. For example, there can be a restaurant next to Amberd Fortress if it is built into the vernacular landscape and does not take away from the cultural heritage. Places like Amberd Fortress need to charge an entrance fee and become self-sustaining. These funds can contribute to the preservation of the fortress as a retreat. People would be able to spend a few days here, instead of merely an hour or two, to get away from the conveniences of the modern world like electricity, the Internet, etc. One interviewee mentioned the importance of having active recreation facilities that are free of charge for the public. Another interviewee preferred passive tourism, such as visiting monasteries, churches, and forests, which he saw as an opportunity to increase active tourism. Horseback riding trails exist from Ashtarak through Ushi village leading to Amberd Fortress and ending at Tegher monastery. These trails can be developed to form part of an overnight horseback riding tour.

“Tourism in the area is very popular due to the natural resources of the area but needs to be improved and cleaned up, signage, roads, sidewalks, street tree planting all need improvement. Overall cities, towns, and villages need to be maintained, not just roads to tourist destinations” (Interviewee).

Urbanization was mentioned by ten respondents who identified nine main themes of discussion. Transportation had two respondents who mentioned the need for affordable and accessible transportation between Ashtarak and Yerevan subsidized for students.
Affordable Housing was brought up by two interviewees who agree there is a lack of affordable housing in Ashtarak, leading to younger people moving away. One suggested that the government provide subsidies for new housing developments.

Higher Education was mentioned by four interviewees who explained that the fortress at the entrance of Ashtarak was built during the late Soviet period to provide vocational education in the trades, such as welding, masonry, sculpting, and other hands-on pursuits. It never materialized and, over time, was partially privatized by different community members. The privatization process is unclear and shrouded in mystery, especially since the lands and structures belonged to the city. At some point, there was a plan to relocate part of the American University of Armenia to the vicinity of Nor Yerzenka, which did not materialize.

Historic Preservation and Development Guidelines had five respondents. The first topic of concern was the pre-Soviet architecturally significant buildings and neighborhoods that were not preserved. This was also a common practice in Yerevan. “Current day Yerevan architecture looks like Giorgio de Chirico surrealist architecture images” (Interviewee). The Soviet-era architecture was also slowly disappearing from the main streets of Ashtarak, as people modified building facades, enclosures, and other barriers. This continuously takes away from the continuity of architectural language that was present. Ashtarak, Oshakan, Voskevaz, and Byurakan have historically significant pre-Soviet buildings and neighborhoods that need improvement and preservation. “These issues require bottom-up initiatives since governance belongs to everyone. Yet, government officials seemingly have little to no interest in preserving culturally significant buildings and neighborhoods” (Interviewee). The haphazard modification of existing buildings has created a fractured architectural aesthetic, with no continuity in the architectural language. One of the interviewees was concerned that constructing structures with a
temporary look often took away from the original building facade. These are the remnants of the so-called “Euro-remont,” a catch-all word for updating buildings with newer materials like PVC windows, glass facades, and modern amenities, with materials that are mostly from neighboring countries.

_Urban Core_ was mentioned by five respondents who would like to see the main parts of Ashtarak revived, including the streets with the ancient “mother irrigation channel” running through it. They would like to see the community college fortress repaired and used. These interviewees want to see the renewal of pre-Soviet era buildings. One interviewee would like to see bars and restaurants that are people-friendly and designed for social interaction. He believes small businesses need to receive government support to encourage development and entrepreneurship.

Two respondents mentioned _rural Aesthetics_. The rural area presents a utopian attraction for urbanites concerned with aesthetics.

“If we think about aesthetics, it’s a product of capital, and if we take this along with Maslow’s hierarchy of needs, we can see that in Georgian villages homes have new roofs, while Armenian villages have tethered roofs, indicating that when excess capital is available people will secure their needs based on this hierarchy, which the Armenian rural landscape has not achieved. Armenia’s rural aesthetic is a vernacular one of pure utility using available resources. In the future, we need to develop the materials that we are accustomed to, such as tuff stone, a material we have known for centuries, which has become a part of our DNA, along with wood and other local materials. But for now, the concentration is on economic development because we are so far away from aesthetics, I have not given it much thought, the main goal, for now, should be to stop migration to the urban and beyond” (Interviewee).

“Historic artisan practices need to be preserved such as metalworking, so that we can repair old structures and traditional buildings. The region has a strong agricultural root expressed in art, music, architecture, and this aesthetic is expressed in building facades and needs to be maintained” (Interviewee).

*Scenario Selection:* The different scenarios posed effectively elicited responses from interviewees. Almost all the interviewees were comfortable engaging with the scenario selection.
process. The results presented show the varying developmental challenges possible within the study area. The responses to pre-determined development scenarios are the following.

*Agriculture*: Most respondents agreed that the current subsistence scale was unfavorable at the current scale and mode of operation. The collaborative and large scale received the most support. Yet, most interviewees could not make a clear selection, with most agreeing that all scales could be viable. The smaller and medium scale could be profitable only if modifications were made to their business models. Large-scale “intensive farming” has been established as a successful business model based on the feedback of three interviewees. This leaves the small and medium scale operations needing to create successful models.

*Solar energy*: Almost every interviewee agreed it was a good idea that should be implemented on any of the three scales presented. There was no specific preference for scale if the endeavor was economically sustainable.

*Tourism*: Almost all the scenarios had positive responses, with historic tourism garnering the most responses, followed by cultural and then active.

*Urbanization*: The urban core received the most responses, followed by rural revival. One interviewee perceived sprawl as the result of people wanting individual homes within driving distance of Yerevan, which was an acceptable contemporary lifestyle choice.

### 5.2.2 Auxiliary Interview Results

The overarching finding from the scenario selection process is that for most interviewees, all future development scenarios are feasible and need further discussion and development, with a majority agreeing on the need to move away from small scale subsistence farming and the need to increase housing and economic activity in the urban core.
The interview impressions results were as follows. There is always a sense of excitement about the possibility of changes in the landscape from the interviews. Some of the interviewees found it quite interesting that someone could view the landscape differently or value the same landscape in another way. They would agree that the landscape character areas and types provided a good description of the landscape. Yet, there was always hesitation when attempting to decide on future choices. It also became evident that those interviewed would not veer from their expertise, which may prove challenging when forming collaborations across the disciplinary fields of architecture, agriculture, or any other specific field of concern. One interviewee explained how new ideas he had brought up in the past were considered unrealistic, only to be successfully enacted 20 years later by someone else in another part of Armenia. In general, the impressions of the interview process were positive. This may have had to do with the fact that the interviewer was a diasporan, generally viewed as more open to discussion and less critical of responses.

There was a general lack of commitment to a single development scenario. This could be due to time constraints of the in-person interview process, which leaves a limited amount of time for understanding detailed scenario questions that may have required a longer period to reflect on beyond the question-answer timeframe created by a semi-structured interview process. This may also indicate that most interviewees were open to developing all scenarios further hence not wanting to commit to any single one. It also can indicate that the questions and scenarios were not very clear to the interviewees.

As evident by the results from the previous section, many of the interview questions were answered by ten interviewees or fewer, and some were as low as two. This low response rate makes it hard to establish a preference for one scenario over the other. It indicates that a clear
preference cannot be established for any specific scenario with high certainty. It also indicates that the question range was too broad for the interviewees to answer since many chose to answer questions specific to their field. In conclusion, the interview results can be considered a general survey of development potential in the case study area.

**Externalized Expectations:** On many occasions, local actors would divert the question by mentioning there were experts in Yerevan working on those projects. In the study area, there is a general expectation that the solutions will come from elsewhere. The answers to problems will be delivered from the outside. They will arrive from above and will be thought of somewhere else. This pattern seems to be present in some of the connoisseurs interviewed and among other people during the research process. There is an astaticism that takes away from deliberation. All the people interviewed had the skills and expertise to create a more holistic development plan for the region. The interviews were a good starting point for testing possible future imaginings of the landscape. The final product may be the beginning of a long process that will require many iterations to clarify. This is evident from case studies in other settings, such as the UK, where LCA studies have been continuously conducted for a few decades and yielded positive results.

### 5.3 Spatial justice findings

This section presents the spatial justice findings identified during the research process. The findings are informed by the LCA desk study, the semi-structured interviews, and the observations made during the field survey and landscape character area delineation process. To reduce repetition, this section will identify the spatial justice concerns identified in the case study area and point to the sections of the dissertation that substantiate these concerns. Deeper rooted historical spatial justice concerns such as *effects of crumbling empires, genocide, colonization,*
economic collapse, dissonant heritage, and rootshock will be covered in the discussion and conclusion chapter.

**Poverty:** As the desk study portion of the LCA 4.2.1 and 4.2.5 indicate, the area population is highly engaged in agricultural activity as subsistence farmers, a significant portion of which live in poverty with associated shortcomings previously addressed in these sections.

**Seasonal migrant work:** As indicated by the desk study and interviews, subsistence farmers are forced to become migrant workers if their crop yields are low after a season or two.

**Climate change:** As indicated by the desk study portion of the LCA and some interviews, it is becoming harder to turn a profit from agriculture, some of which can be attributed to climate change associated hazards in the study area, such as flooding, mudslides, hail, lack of irrigation water recharge due to quick snowmelts, hotter summer season.

**Monopsonies and monopolies:** As indicated by the interviews, there are monopsonies and monopolies in the production/consumption of resources to and from markets. This is important because price settling may take place in both processes.

**Water concerns:** The issue of irrigation water and its management process is not clear in the study area, as indicated by numerous interviewees. Who manages irrigation water distribution, management, and maintenance? Access to common resources such as irrigation water is a spatial justice concern. The low quality of irrigation infrastructure beyond main canals was also observed during the field study portion of LCA.

**Lack of financing:** Lack of crop insurance and government subsidies was an issue that may lead to further abandonment of agricultural production and lead to agricultural blight if it is not addressed. Leading to unemployment, migration, and other concerns addressed in the previous section of the study.
Affordable housing: was mentioned by two interviewees who point to younger residents moving due to the lack of affordable housing in Ashtarak.

Historic preservation: Most Pre-Soviet era buildings are in decay and need maintenance, including monuments dedicated to events before Sovietization, such as the Battle of Sardarabad monument located on the edge of Ashtarak. This also relates to rural agricultural and cultural aesthetics and production processes, such as artisanal manufacturing, local architectural identity, and archeological sites.

Access to education: There is a barrier to access that needs to be addressed in the study area as education beyond the high school level is highly limited in the case study area.

Speculative Post-Soviet business venturers: Large-scale bottling and food processing plants have never operated at their full potential in the study area. In theory, these plants were supposed to purchase grapes and other agricultural products from neighboring village farmers and package them for export. Yet, it is often reported that they delay payments to farmers for products received. Why? The answer is the lack of rotation in capital. There are no repercussions for bad business decisions when there is a major polarization in wealth. There is no redistribution in a system where assets are not purchased on credit and need to be productive, or else they will be forfeited to another who will put them to better use. Simply, there is no circulation of resources. Resources are held and underutilized until full depreciation of value takes place. This is a spatial justice issue because capital generated in a particular place is not revolving in the landscape but is being concentrated and restricted in its flow.

Blight is present in the study area further divided into the following forms. Post-Industrial blight: This includes Soviet-era factories and facilities that are not operational and are aesthetically depreciating. They create a sense of doom and gloom in the landscape, reminiscent
of a time long gone. Yet, it also suggests an eerie sense of pending decline. Usually, these buildings have no specific quality, such as neo-classical or Soviet modernist, in their building design. At times, they may be constructed with unsafe materials such as asbestos. *Soviet-era blight:* This refers to education, research, or rest campuses that have been abandoned alongside Soviet-era buildings. *Commercial blight:* This category includes a restaurant or other retail businesses constructed after independence. These commercial ventures have not been successful and are aesthetically depreciating. *Sprawling blight:* Residential construction projects initiated around settlement areas after independence that have not been fully realized. *Roadside blight:* Temporary structures or housing that have been abandoned alongside roads and are in derelict condition. *Landscape blight:* Construction waste excavated from construction areas and dumped alongside roads leading into and out of towns and villages. It also includes trash that has been dumped alongside roads. *Agricultural blight:* blight created from agricultural land in decay, such as old orchards.

*Zoning:* Proper zoning laws and enforcement of those ordinances are important for economic development. Some of the restaurants and businesses in the study area are located next to historical monuments, churches, or within landscapes of high natural or aesthetic value. Their presence in the landscape takes away from the locations they benefit from. Thus, this lowers the value of the asset being utilized for commercialization. At times, the restaurants or “cafés” overwhelm the site's historical significance. It lowers the overall quality of the area that the entrepreneur is attempting to profit from, creating a contradiction to its interests. The issues can be in the visual impairment of the place of interest. Limiting of access through the creation of a chokepoint leading up to the place of interest. Lower air quality due to emanating cooking odors,
such as BBQ smoke and fumes, which may overwhelm the character of a place, such as a church with religious significance to visitors.

Proper zoning would allow a business area to form in village centers, which would bring the villages to life with economic and social activities in the main square. These areas are usually derelict because social, economic activities, restaurants, cafes, and other attractions are sparsely located throughout the landscape. Often, these sparsely located attractions struggle to attract patrons. If they were in properly zoned areas of villages and town centers, guests would easily locate them as they travel to destinations of interest. Most of the sites of interest in the study area are located beyond villages or towns as one travels up the two watersheds of Mount Aragats and Mount Ara. Locating and limiting restaurant development beyond a certain point outside an area would allow residential areas to develop and create a critical mass in the urban core.

Developmental aesthetics: The aesthetics of new developments are never considered an important feature. The immediate landscape and its character are not considered when permitting decisions are made. People build as they please, following safety and construction regulations but with no consideration for landscape capacity, value, or quality. Thus, one can have compressed natural gas stations next to trash dumps and next to greenhouses along main roads with orchards in the midground and pristine landscapes in the background. The settlement area landscape reflects a combination of blight and ambition in business developments that have not quite materialized. The blight may also result from former Soviet-era facilities that are not operable. The ambitious business development is evident in the housing sprawl located along the urban and peri-urban landscape outside Ashtarak. It is a landscape in halves: half-thought out, half-planned, half-built, half-realized, and half-abandoned. The purely functional vernacular features emerge as examples of interesting utilitarian aesthetics. A fence constructed of
abandoned car chassis lined next to each other. A fence made from old mattress frames and other scrap metal evidence a survival and perseverance landscape. It depicts the extraction of maximum use value from all materials. This represents the other extreme of the landscape. One interviewee suggests it is a unique phenomenon where function surpasses aesthetics as the ultimate value due to the limitation of resources.

*Lack of investment in agriculture:* As mentioned by numerous interviewees, subsistence farming is not successful in the case study area. This can be attributed to the lack of budget allocation to agriculture, 2% in 2013 (UNDP, 2013). This is very low considering that the agricultural sector supports nearly 50 percent of Armenia’s population, and in the rural regions, this percentage is much higher. Considering this to reduce spatial justice levels, much higher resources need to be invested in rural agricultural areas.

### 5.4 Final Normative Scenario

This concluding section combines the results from the LCA and semi-structured interview responses to present a final normative development scenario. This scenario considers the opportunities and limitations of the physical landscape, along with the results from the semi-structured interviews to create development scenarios to increase spatial justice levels in the study area. The development area delineation process considered the landscape capacity, value, and quality. The result is the creation of eight development areas. The following section presents these areas and their associated design development directions. The areas are not an agglomeration of the landscape character areas/types presented earlier in the results chapter. These areas simply delineate larger pooled areas for developing
recommendations across areas/types with similar development potential or proximity to each other.

The final development areas are presented in figure 5.35 and are as follows.

1. Ashtarak City includes LCA Areas/Types A1 & A2.
3. The Wedding Belt Villages include LCA Areas/Types A8, A9, A10, A11.
4. Middle Valley Villages include A11 and A12 (A11 overlaps as a landscape type).
5. Road to Amberd includes LCA Areas/Types A13, A14, A15.
6. Mountain Villages include LCA Areas/Types A16.
7. Breadbasket Villages is area A17.

Figure 5.35 Final Normative Scenario Development Areas

In comparing Figure 5.35 to Figure 5.17, we notice that certain Landscape areas/types have altered coverage areas. This is due to the land-use change that may be possible. In figure 5.35, Ashtarak grows its urban core to convert the previous industrial fringe into the urban fabric.
and limit sprawl. The Mount Ara Ler Watershed remains relatively the same. The Wedding belt villages fully absorb undeveloped agricultural lands with the rural revival development scenario and small and medium scale agricultural activity. Artashavan grows further west, absorbing some of the lands from the A13 grassland meadows. The Middle valley villages grow with agricultural activity and absorb the southern slopes of A13. The Road to Amberd is reduced as arable land is converted to agricultural use. The Mountain and Breadbasket villages also grow as they convert rocky lands around villages into arable land.

5.4.1 Ashtarak City

As the provincial capital and the central node of the study area, Ashtarak needs to become the main driver of development in the region. Located approximately 20 kilometers from Yerevan, it is often overlooked as part of a larger Rural-Urban Region (RUR). This leads to a lack of available cultural services, such as access to a quality city college or university.

The fortress at the entrance of Ashtarak is well-suited to house a community college, vocational trade school, or rural development college that will concentrate on training that can be
utilized to drive forward the sectors represented in the rural-urban region. This educational institution can concentrate on agriculture, rural development, artisanal architecture, construction methods, and small-scale artisanal manufacturing (woodworking, sculpting, landscape painting, gastronomy, food preserves, viniculture). There will be a specific focus on developing soft skills, such as research/development, marketing, business administration, management, community organizing, and tourism. This education center will aid in decentralizing resources away from Yerevan and providing access to education for students in the region. Many local students do not have the opportunity to obtain an education in Yerevan due to time and economic restrictions. Further, university towns are known to have a pull effect on development, creating the critical mass needed to sustain urban cultural and economic life.

Figure 5. 37 Pre-Soviet Grain Mill next to the river
Figure 5. 38 19th Century reconstructed residence (Currently the Broshyan home museum)

Figure 5. 39 Pre-Soviet pedestrian street with “mother” water channel
Figures 5.37-5.40 show the pre-Soviet architecture, one of the three distinct layers of urban development present in Ashtarak. These three layers are most evident in the old town city district, where the mother channel streets are hidden behind contemporary main streets. In this area, there are numerous sites of historical significance. Nevertheless, some of these sites are not easily found and require the guidance of residents who may not be aware of their significance. There is a lack of landscape planning, which seems to be replaced by an “anything goes” approach to development. Significant sites of cultural significance are often overshadowed or understated in the landscape. These areas need to be studied carefully, inventoried, and developed. These areas will create a new landscape of interest for residents and tourists while preserving the city’s historical heritage.
Currently, Ashtarak has many Soviet-era developments and buildings, such as the Univermag Soviet modernist department store. The bus station and various other facilities have been privatized and remain undeveloped. These areas are in a state of decay and contribute to blight. The parking lots are often converted into car washes, gas stations, and other service offering facilities. These ventures contribute to the decay of aesthetic quality in the landscape while simultaneously offering an opportunity for small business ventures. A Georgist policy for unimproved land tax, or a variation thereof, can mobilize these types of frozen assets into some form of productivity. Georgist economic theory states that investors benefit from the economic activity in an area by buying property and holding it for an extended period to sell it later when economic activity created by others has increased the value of their property, this, in turn, reduces property available for productive use by other actors in the landscape, causing an increase in ground rents for the other members of society (George, 1886).

Further, there are a few limited examples of Soviet modernist buildings that can be preserved for their architectural significance. Some of these buildings have been haphazardly modified, causing a recognizable loss in their architectural quality. The residential buildings from the Soviet period are also in decline and need maintenance, along with sidewalks and other pedestrian infrastructure. Affordable housing can be provided either by constructing new buildings in the urban core or changing land ownership laws to allow people to purchase current speculative investment homes by multiple owners.

The hillside homes at the city’s urban edge were built after independence and are usually at a scale too big for one family. A single-family usually cannot afford to purchase and complete the construction of these homes. If they could split these larger homes into sub-divisions, the homes would be much more affordable and would increase density at the urban edge. This would
further increase the demand for public transportation and other services. There are examples of this type of homeownership in Edinburgh, where different portions of what used to be a single home have been converted to multiple occupancy. If this is done well, it will absorb the frozen capital created by these speculative developments, which has caused speculative blight in the landscape. Why build anew when current assets are not being fully utilized? As a development scenario, rural revival is not feasible in Ashtarak because the city has already sprawled, based on the commentary of several interviewees. Thus, increasing density and activating frozen capital must be prioritized. Areas at the edge of the urban periphery currently occupied by post-industrial blight can also be converted to new housing areas, green belts, and large parks. The rural-urban fringe can also be converted into rural revival scenario homes. Agricultural lands near the vicinity of irrigation infrastructure need to be maintained as such.

Figure 5. 41 “Arevik” picnic area and swimming pool entrance
The river gorge operates as a picnic area and rest belt for local, regional, and other visitors. In Figure 5.41, we can see that the structures, landscaping materials, roads, and retaining walls are of high quality and utilize vernacular materials. This indicates that the capacity for landscape design development is possible and scalable. This area can become a destination or starting point for tours of the old town. Ashtarak is a good option to become the base camp for regional tourism. To do this, it must bring to surface that which is currently unnoticed and in decay. It must find means and methods to improve these hidden assets. The pre-Soviet buildings, neighborhood revitalization, and the repurposing of Soviet modernist buildings can significantly increase the landscape's quality. Thus, it can address many of the spatial justice concerns present in Ashtarak, such as affordable housing, lack of access to education, and unequal distribution of economic resources.

5.4.2 Mount Ara Watershed

Mount Ara must be viewed as one developmental region. Each landscape area within the region needs to be developed while considering the effects that it may have on other landscape areas in the region, starting with Nor Yerznka village and leading to the Heart of Ara. Nor Yerznka is well-suited for solar energy on a small and medium scale. Having close access to the irrigation channel, the development in this area should concentrate on agriculture at the small and medium scale. As a development scenario, rural revival is well-suited for this village. The main road to Mount Ara that runs through the village needs to be repaired, making it the main access road to the apple orchards and the mountain. This can increase gastro tourism and cultural tourism in Nor Yerznka and create a better distribution of revenue generated from tourism activity in the watershed. North of Nor Yerznka, the landscape has a time dimension that would
The apple orchards have great potential for improvement. For example, the area can use a small rest area for tourists and locals tending to their orchards. There can be a small apple store, café, and even a picnic area with a “pick your own event” venue for educating children about farming operations. Generally, the area around the Mont Ara Ler apple orchards needs better maintenance of buildings and infrastructure.

The Mount Ara rocky plains approach immediately at the south of the apple orchards and north of Nor Yerznka are a transition area. They are aesthetically appealing and have lichen attached to the boulders dotting this landscape. Shepherds and sheep are present, and the area is predominantly used for grazing. Their presence adds to the quality of the landscape. This area is on a slight slope east of the river gorge and north of Nor Yerzenka village. This area needs to be left in its natural state. The empty grasslands east of the apple orchards are well-suited for planting more orchards at the medium and large scale.

The skirts of Mount Ara are a sensitive, high aesthetic landscape value area that should be left intact and protected. The Heart of Ara is ecologically sensitive and attractive for active tourists who partake in hiking, biking, and other active recreation. This area is better suited for smaller groups looking for remote destinations. The previous dirt road made it difficult for people to access this area and limited its exposure, allowing the area to remain in its natural state. With increased visitation, there is a risk of people harming the plants in the cave. If too many developments are made to the area, the entire vicinity can lose its character. The area currently has a shrine cave, a tourist booth leading up to the cave, a guard’s house, and a small picnic area to the right of the entrance to the canyon’s heart. The building of structures should be limited to its current level.
5.4.3 Wedding Belt Villages

The wedding belt includes the villages beginning from Mughni in the south to Saghmosavan in the north. These villages are of the same quality and host three churches: Saint Gevork Church, Hovhannavank Monastery, and Saghmosavank Monastery. The area mostly has rural homes with adjacent land plots. These villages are well-suited for rural revival, especially around the edges where sprawl has not taken over agricultural land. Solar power can be installed on a small and medium scale. The villages can also concentrate on producing high-value specialty crops and orchards. The downtown areas of these villages could be economically revitalized if economic activity were to be exclusively zoned, helping to create the critical mass needed to sustain these smaller communities. The monasteries themselves have fortress walls that need repair to preserve the region’s cultural heritage. The monasteries are in areas where they provide views of pristine landscapes. The quality of these landscapes needs to be of high aesthetic quality, along with the landscapes of the viewsheds they look onto. Limiting development in these viewsheds will preserve their quality and increase their value. These villages would do well by establishing cooperatives to get products from and to markets, given their many small and medium scale orchards.

5.4.4 Middle Valley Villages

The middle valley villages are the least developed regional villages, with significantly lower quality roads and infrastructure. The orchards in this area were planted less than 20 years ago, as evident in the photography from the field surveys indicating the success that can be built upon for future agricultural activity in these villages, aided by easily accessible irrigation water from the Arzni-Shamiram channel that runs in the proximity of these villages. These villages can
increase their orchards by at least 30 percent, based on an analysis of the LCA maps. Animal farming in these areas can also be increased due to pasture availability in close vicinity. Seasonal crops can also be grown in these villages because of the availability of vast flat areas with alluvial soil. Rural revival and medium-scale agricultural development are the scenarios that will be most successful in these areas. Sprawl is a threat to arable land as these villages are known for summer homes and scattered residential development patterns. If residential development continues, it needs to be concentrated to absorb land within the village center. Zoning laws need to be enforced to limit sprawl. Small and medium-scale solar energy development is the preferred development scenario. Tourism activities in these villages are limited, considering that they have less cultural and active tourism potential. This may be improved if the ancient churches in these areas are repaired, and tourism programming is enacted. These villages have areas susceptible to flooding and mudslides, as indicated by the maps collected during the desk study portion of the LCA. Reforestation is also possible around this area due to the high soil quality and moisture levels present in microclimate patches.

5.4.5 Road to Amberd Fortress

The road to Amberd Fortress is predominantly a pristine grassland meadow. This area is mostly utilized for grazing and by beekeepers. The landscape can be programmed for hiking, off-grid camping, horseback riding, mountain biking, and cross-country skiing. Because the spring snowmelt drains into the underground aquifer, it is important not to develop this area for any other activity. The main development scenarios here are passive tourism with some low-impact active tourism. Based on the map data, solar panels would not be advisable due to the high humidity levels of the soil, possible flood risks, and lower solar irradiation levels.
Reforestation efforts may be successful in the naturally existing forested area and at the edges of villages located south of the main road. These efforts can increase economic activities in the local villages if backyard nurseries are created to grow “endemic and climate-adapt species” for reforestation efforts.

The Byurakan-Amberd intersection begins with the hiking trail that leads to Amberd via the historic foot route. This area can be better managed to increase landscape quality. Any structures above this intersection should be limited so as not to take away from economic activity concentrated closer to established villages. Active tourism can be developed in this area, including mountain biking, hiking, horseback riding, and cross-country/downhill skiing. The H20 road eventually leads to higher alpine meadows and the Aragats Alpine State Sanctuary. This presents an opportunity for activities such as mountain biking, downhill free skiing, and other sports that can take advantage of the terrain. New land use and access laws may be necessary if such developments are realized. Grazing takes place in this area and needs to be monitored so that landscape quality is not degraded, and animals do not graze in protected areas with sensitive ecologies. Amberd Fortress and the surrounding landscape are currently a state preserve. Any development in this area needs to consider aesthetics. If executed properly, a historical reconstruction of the fortress and surrounding ancient townscape can be an interesting addition to the landscape. It could act as another anchor for tourism development in the region. The main spatial justice concerns in this area are touristic facility sprawl, particularly the locating of restaurants and hotels near cultural heritage sites. Amberd Fortress could also be a destination for equestrian tourism if a trail were developed from Ashtarak to Tegher monastery.
5.4.6 Mountain Villages

The mountain villages are adjacent to the Amberd River. Byurakan is the most developed of these villages. It has layers of pre-Soviet architecture, Soviet-era retreats, campsites, a cosmic ray station, and the Byurakan Observatory. Byurakan presents a unique small-town experience.

![Byurakan Observatory (Wei, 2019)](image)

This village is well-suited for rural and active tourism and other downhill landscape activities that take advantage of the terrain. Sci-fi can play a significant role in developing tourism here. Solar farms on all scales are possible in these villages, especially at the southern edges of the villages. They can enhance the futuristic sci-fi experience of the area. Tegher Monastery (Figure 5.43) is at the top of the western wing of the Amberd River settlement area. The monastery may be fully restored to its original monastic state.
Figure 5. 43 Tegher Monastery (Areshian, 2007)

Figure 5. 44 “Crystals of Refrain” Land Art Installation (Haroutounian 2013)
The remaining villages are well-suited for active recreation, given their access to interesting terrain. The undeveloped river gorges provide access to hiking and other recreational activities. These villages are better suited for animal husbandry and seasonal crop farming. Orchards are less common due to the higher altitude. The river gorges contain rock door caves once used as dwellings, but today mostly house bats and are explored sparsely by visitors. Aghtsk village houses the Arshakid Mausoleum dating back to the 4th century, an archeological site of significant cultural heritage.

The village also houses a land art installation by Eames Demetrios called “Crystals of Refrain,” (Figure 5.44) adding a contemporary layer of interest to the landscape. This site is one part of a nonlinear story with markers or land art installations located throughout the world, providing equal access to the story for all visitors regardless of their geographic limitations. These locations and markers allow those who find them to explore the remaining story digitally.

These village settlements are usually a 30-minute drive from Ashtarak. It takes around an hour by car to get to Yerevan. Bus transportation usually takes over an hour from the most remote edge of the inhabited study area. These villages, located on the edges of river gorges, have unique features. If planned properly, they can easily become destinations for all-day activities and weekend destinations for active and passive tourism. Even though they are limited in agricultural activity, the villages need to concentrate on rural revival development with smaller-scale farms, agrotourism, and active and passive tourism that takes advantage of the high-quality landscapes and terrain.
5.4.7 Breadbasket Villages

The villages south of the main road leading to Gyumri have Soviet and post-Soviet era vineyards, strawberry farms, greenhouse production, and seasonal crops. They are well-suited for agrotourism. These villages have pre-Soviet and early Soviet-era buildings that need repair to become tourist attractions. The landscape quality is not particularly interesting, as most of the area is covered with agriculture and blight. The main intersection at Voskevaz village may be an interesting tourist stop. This intersection also has a road leading north to Byurakan Observatory. The area between Voskevaz and the intersection with Aghtsk also features an archeological site and interesting rock formations that may work well for rock climbing. The villages in these areas also have some fish farming activities since the rivers that flow through these areas create wetland conditions ideal for the limited farming of rainbow trout.

The main problem in this area is that irrigation channels are in dire condition. Most landowners are not farmers and do not farm their land. Some people rent their land to others to farm, some live outside of the village, and their land is untouched or utilized by neighboring farmers. There are few examples of successful medium or large-scale farming operations in this region except for national scale wineries. Some large orchards have been newly planted, but their total yield is unclear because they have yet to enter the market with products.

There are greenhouses of various sizes and scales concentrated mainly in the village of Voskevaz. The technological efficiency of these greenhouses ranges from inefficient, older glass warehouses to newer, technologically advanced greenhouses. These structures dot the landscape near the main roads to access the exposed natural gas pipe network running through the countryside. Greenhouses are a more recent phenomenon in the region. Based on the comments of one interviewee, it seems they offer a successful revenue model. As far as land use is
concerned, the plot sizes are small and not large enough for commercial agriculture. They also are not always on even land. Small, medium, and large-scale businesses are all appropriate for agricultural production. Development in this area needs to be agriculture-based, with solar energy as the second driver followed by agrotourism; rural revival is well suited for this area.

5.5 Spatial Justice Design Recommendations

The recommendations in this section consider data gathered from the desk study, the field survey characterization process, informal interviews during the field survey portion of the LCA, and from the connoisseurs interviewed. It considers the structural limitation of the landscape both physically (topography, irrigation infrastructure, altitude, etc.) and social (governance ability, economic development at the current time, financing that may be possible due to the network effect of diaspora communities, etc.). It also considers positive developments and trends in the study landscape and current development models from similar case studies.

5.5.1 The Industry of Spatial Justice

In the case study region, there are numerous small and medium-scale manufacturers with the ability to produce goods for the local and national markets. Yet, these manufacturers are limited in their marketing and business development skills. Hence, there is a need to develop coalition-building in local areas further to help individuals and organizations leverage assets in physical forms, such as machinery, and expertise in applying different materials for the development of integrated products. This integration is also necessary to develop products that compete with imports and larger competitors. These smaller manufacturers currently have inherited machinery from the Soviet period or purchased new machinery, such as plasma cutters.
Nevertheless, their current output is limited by locally available materials and the lack of quality design. Goods are often not attractive and well-packaged in comparison to imported goods. Bringing together welders, machinists, plasma cutter operators, woodworkers, cabinet makers, and other artisans in one location could integrate their operations into the creation of new products and services. The fortress at the entrance of Ashtarak is the ideal location to serve this purpose, which can become part of the artisan design studio. Successful smaller businesses in the local landscape will spread economic resources laterally.

The industry of spatial justice in the case study area is inherently small and medium scale. The main goal to have products for consumption leave as small of a carbon footprint as possible. Of course, this may be scaled up or down using collective/collaboration strategies with other regional producers. Nevertheless, the idea is to add as much production value in the local landscape as possible and to keep the material sourcing local in order to decrease the carbon footprint and limit “externalities.” This idea refers to Karen Higgins’ book (2015) “Economic Growth and Sustainability: Systems Thinking for a Complex World.” It puts into practice habits that make it harder to externalize things we do not want to deal with in the current “time” or “place.” The localization of production makes associated waste more visible; it is brought into the local production-consumption discourse where it must be addressed. This may be in the form of pollution, social consequences of consumption/production, or other issues created by global production, which has recently become more visible. For example, Revolution Bicycles is a bicycle company that buys bicycle frames abroad but assembles them in Edinburgh. The company provides a competitive market product that competes with other national and regional manufacturers. The idea is not purely localization here, but it is making a case for gradual
localization that makes economic sense. It allows for a full understanding of the costs of production and consumption. The externalities of production are now local to a certain extent.

5.5.2 The Coalition of Spatial Justice

To go beyond the “fortress under threat” and the present frigidity in the landscape, coalitions must be created that can align around common goals. The coalitions will have to be scaled beyond the local since the local market is too small to absorb and provide materials and goods not available in the local or national market. The local market is also too small to advocate on its behalf in government on the local, regional, and national scale. In a small country like Armenia, where capital is limited, working with the government to enact laws and regulations that support small and medium-sized endeavors is necessary to generate positive results. The coalition can also create capital that will provide economies of scale to compete with monopolies/monopsonies that hinder smaller actors from entering any market by price-fixing. Further cooperation between small and medium-sized industrial producers will also give them better leverage for negotiations with local political forces and market forces for resources such as water rights, utilities, and other community shared resources as indicated by interviewees, such as irrigation water shortage in peak seasons, lack of irrigation infrastructure.

1. These coalitions can be in the form of collaborative farm operators that try to get products to the market.
2. These can be coalitions that try to get alternative energy products to the market.
3. These can be coalitions that try to build socially accessible housing developments.
4. These can be coalitions that try to protect landscapes on many scales.
5. These can be coalitions that try to develop tourism in Armenia.
6. These coalitions can apply for loans collectively.
7. These coalitions can pool and coordinate resources for production.
8. These coalitions can develop small-scale regional tourism and create B&B networks.
While some of these organizations may already exist, they must be enhanced and supported to increase their effectiveness. There are many examples of successful rural business endeavors in Armenia, but they are ineffective at transferring their knowledge and experience to others. If coalitions were effectively implemented on a regional and national level, they would significantly change the rural landscape. Coalitions can take the shape of a bureau, lobby groups, trade groups, etc., to get products to and from markets. It can be a true coalition of artisans working together to achieve goals defined by all with ownership of each production part belonging to each entity. It can also be a corporation where people bring their assets together and receive shares in a company managed by a board; this model can also issue shares to non-workers such as outside investors. It can also take the form of a cooperative where all materials are assets are brought together in exchange for shares and where ownership belongs to the workers.

5.5.3 The Financing of Spatial Justice

Local financing is usually difficult in the case study area due to the lack of marketable capital. Real estate outside Yerevan does not offer high liquidity value as an asset. Other assets, such as automobiles, are usually depreciated and do not offer any real asset value for banks to consider. A good business plan is the best asset a bank can have in deciding to issue a loan to a developer in the region. This is where a coalition may be helpful. The coalition can leverage its larger-scale ability to aid in generating proper business plans and providing additional assets as guarantees. An opportunity exists for banks that operate internationally in diaspora communities to provide loans for development in Armenia, based on assets located outside of Armenia. Loans guaranteed by such assets may be made available to small and medium-sized actors at lower
interest rates. This would require extensive coordination between diaspora organizations and local partners/actors. This plan may only be realized if substantive structural democratic processes are enacted to draw capital for investment. This model will require significant dialogue and cooperation between diaspora and local actors to ensure success.

5.5.4 The Aesthetics of Spatial Justice

The aesthetics of spatial justice must incorporate local cultural elements founded on the materiality of the locality. Based on the comments of two interviewees, these elements are cultural heritage locality and pure utilitarianism. There are limited examples of vernacular architecture in the study area that reflect cultural heritage because the local has been influenced by many different regions where Armenians have lived. Yet, as one interviewee mentioned, the local architecture of this region can be found in the “Armenian Quarter” of Tbilisi, which had a large Armenian population at the turn of the century. Another interviewee said this architecture could be found in Western Armenia. The fact remains that there is an architectural style that is regional and particular to the study area. Examples of this architecture are present in Ashtarak in century-old buildings that have been preserved and many museums located inside and outside Armenia, such as the Armenian history museum in Boston, which has models of old Armenian dwellings from the region.

Yerevan also has interesting architecture that corresponds to the architectural features of the study area. Sources depict this type of architecture that needs to be revived and modernized to preserve the cultural heritage that hardships have erased over time. At the same time, the goal is not to create a permanent “renaissance village,” where cultural heritage is given foreground and becomes a cliché repetition with a lack of innovation. Cultural production must be viewed as
a living thing and not a museum piece that is permanently on display. In this sense, it needs to be utilitarian in its application. Soviet modernist and neo-classical buildings in the area add an interesting layer to the landscape. Yet, these structures are often modified inappropriately or left to decay. This is where the issue of landscapes of abandonment and dereliction needs to be discussed. This discussion will spur action to mitigate these conditions. The local vernacular is always preferable for sustainability, whether revitalizing heritage landscapes or sustainable futures. Local materials intrinsically increase cultural heritage as artisans are trained to use local materials such as Tuff which preserves century-old architectural practices while reducing the carbon footprint of materials that need to be imported from other places.

### 5.5.5 Powering Spatial Justice

Based on the solar irradiation and biomass maps provided earlier in the chapter and interviewee feedback, the preferred energy source in the case study is solar and possibly biomass. These technologies need to be implemented and utilized efficiently. Currently, the main fuel in the region is natural gas which does not allow for new energy entrants into the market due to its vast availability. This is the current default energy source in the locality due to a well-developed delivery network.

Natural gas is used to heat buildings, convert to electricity, and power personal and industrial activities. Natural gas prices form a considerable part of monthly household expenses during the winter months, especially in rural areas where heating costs are higher due to the low quality of homes and other structures. Woodburning stoves may be used in dwellings and greenhouses in the form of quality Russian stoves or mass rocket heaters. In the case of mass rocket heaters, the calories of wood or biomass pellets are fully burned due to higher burn
temperatures in the chamber and the full extraction of heat from transfer through biomass that lines the exhaust tubes leading out of the structure. Suppose cold air is brought in from outside the structure. In that case, air circulation is reduced within the structure due to the vacuum effect of the intake inside the chamber and the use of the oxygen available in the chamber. Rocket mass heaters pair well with passive biomass greenhouses that use hay in their north-facing walls to trap heat created during the day. These heaters can also be fueled by natural gas when biomass is unavailable. An interviewee had a wood-burning stove industrially produced in his greenhouse, but it was imported from abroad. It would not be affordable to most of the local populace. Reducing the use of natural gas by such methods will increase the energy supply to other global regions that do not have access to wood, biomass, or solar fuel alternatives.

The solar option works best in schools, offices, and businesses that operate during the day when solar power is abundant. It can be used for heating and as a power source. The main cost of solar is not in the materials needed to generate power but in storing it. Most residential electrical power use occurs in the evening when solar power is unavailable. Integrating solar farms with national infrastructure is possible per an expert on alternative energy and profitable with purchase price guarantees available through legislation. Solar energy also increases spatial justice levels because it makes communities’ energy independent and further increases their ownership of the production/consumption cycle in an ecologically sustainable manner.

5.5.6 Empowering Spatial Justice

A community education center or college needs to be developed in the region to solve the wicked problems present in the landscape and bring together underutilized resources. Based on
the field study results, some qualified individuals can provide this type of education, mostly in architecture, construction, small-scale industrial production, agriculture, business, and languages.

"Here again, there is evidence of the organic nature of the work of the Community Development Centers. It responded to immediate and local issues as they arose, with 'home-grown' tutors offering support and transferring knowledge and skills to members of their community … This organic approach contrasts with a top-down model which might seek to regenerate communities through the imposition of projects and goals for which communities have little ownership and allegiance" (Armstrong, 2012).

Based on her research, top-down models of community regeneration fail due to their limited understanding of local problems and possible solutions, lack of a quick response, short-term goals, and institutionalized application (Armstrong, 2012). She argues that organic community development programs are effective because people have a sense of ownership in their future. Community-based development can be a part of community-based design, where people program their roles within the landscape and the role of the landscape itself. Top-down models have limits when implementing new technologies not developed in the local region. For example, you can have 3-D printer centers built, but there will be limited people who know how to use them.

In conclusion, 3-D printers, sharing designs, paying for stencils, data files, design elements, and intellectual property is the future of spatial justice production. The future includes gastronomy, agriculture, permaculture, alternative transportation, architecture, engineering, light industry, artificial intelligence, information technology, and business development. The rural design school of the future needs to bring together the knowledge needed for small and medium-scale entrepreneurship development, with an orientation toward spatially just design.
5.5.7 Tactical Ruralism and Democratic Landscapes

Temporal installations as an expression of democratic landscapes. The democratic process does not only occur through voting, participatory processes, or direct involvement in the political process. Sometimes people indicate their needs and concerns through actions in the landscape, utilizing different communication mediums. A researcher can record and analyze this through direct observation, YouTube videos, Facebook, Instagram, and other media outlets. If a critical reader of the landscape identifies it, it can be used as a starting point for understanding what or who instigated change within the landscape. This process can be tracked in the future once the initiation point is identified.

HAYP (2017, Gargarian et al. 2017) CETI Lab is an example of such democratic expression. Essentially, a pop-up gallery reinvigorated an interest in the Byurakan Astrophysical Observatory and the Herouni Radio-Optic Telescope Center. Thus, this pop-up gallery can be considered a form of tactical urbanism, even though it is in a rural environment. The gallery is staged within the landscape, and the art pieces are temporarily installed onto the staged landscape. The Pop-up galleries' temporal nature allows the gallery to move in and out of different locations. This process creates the “hype” that they intend to produce by inviting people to experience the landscape anew.

The pop-up gallery may move to another location, but its impact is engrained into the mental, digital, and to a limited extent, physical landscape. The mental landscape of the attendees has been reframed. Perception of the landscape and its elements, features, and significance has changed. The meaning of the landscape has changed. In the case of the Byurakan Astrophysical Observatory, its historically relevant narrative changes into one incorporating new perspectives of future possibilities, re-imaginings, and expectations. In essence, the will of the initiator is in
framing the perception of the landscape anew. The act itself is democratic since it is initiated from the bottom up. Its implementation, acceptance, and reverberations through the future can be measured by future analysis of the shift in perceptions about a place.

Democratic landscapes express initiative and the will to visualize and organize reality anew. Thus, one can see that changes in landscape perception are always bottom-up. They are always initiated by a change agent and can keep expanding if they absorb others into their framing of the landscape. Hence, they are democratic in their ability to frame the landscape by narrowing or expanding the frame as more people participate in the narration of the landscape or altogether change the frame itself. The process once initiated is in motion, and its ability to manifest is limited by physical material and intellectual limitations, which only increases as more people correlate together in designing the landscape. The initiative’s success can be identified by the number of supporters and participants it manages to attract. Initiatives that are well thought out by individuals and community members will garnish more democratic support and, hence, be more successful. This event was identified during the desk study portion of the LCA and can be seen as a form of tactical ruralism borrowing from tactical urbanism (Oureilidou 2018).

5.5.8 Ecological Systems Thinking

Full integration of the four development directions and their associated scenarios is necessary. Agriculture, alternative energy, tourism, and urban improvements need to come together to create the necessary system that will propel the region forward. Local farmers may produce all the necessary herbs and produce to expand gastronomy in the region and Yerevan. Nevertheless, they may not have the marketing skills to get their products to Yerevan and beyond. For example, one interviewee produces various types of products that he sells at his
nephew’s retail store in Ashtarak. Most of the products he grows are herbs and vegetables not commonly used in local cuisine. They may be used in other ethnic dishes, but currently, there is limited demand for his products.

This is where marketing would come in. If a local cooking show was created to demonstrate certain dishes, then a market could form for those goods. For example, if the show were about making pizza and pasta using green basil as a key ingredient, a market would form for green basil. Per the interviewee, farmers need to incentivize working together instead of competing for resources such as grants. Local farmers need to be encouraged to work with farmers in other regions, who may be more successful at marketing and integrating agriculture into their agritourism business schemes. The need to compete for grants limits their collaboration efforts. Thus, one farmer receives a grant, expends the funds, and is left needing a new source of income once the funding agency has written off the grant as a success. Once again, the farmer must apply for a new grant, sell the remaining capital, or forfeit the operation since the capital provided was a one-time investment. In this scenario, the farmer must apply for new grants or employ a consultant to apply on their behalf.

With these examples, we can determine that the systems thinking approach are not present. If the grants provided create a network of interregional farmers, this could get products to the market. This collaboration would allow farmers to leverage their strengths as a collective in hiring marketers, logisticians, and conducting expert training programs. They would be able to pool resources to purchase machinery, rent land, and have co-ownership abilities. They could advocate for land and water rights more effectively. The local growers cannot compete with large importers who set prices by importing large amounts of goods and flooding the market (no price protection for local producers). As a collective, they have more power to defend against
such practices. In this scenario, the cooperative would compete against monopoly or monopsony business interests that currently dictate prices. These interests would have a harder time price-fixing if farmers had an alternative way to reach regional or national markets. This would lead to higher levels of spatial justice in the landscape since monopoly and monopsony control would be reduced or eliminated, giving people different avenues for selling their goods.

Agrotourism in the region would improve if services were rendered using locally grown and sourced foods marketed and certified in this manner. The story of how the food got to the plate needs to be told. The local food process is inherently more spatially just since the food has a minimal carbon footprint. If the food were also grown using local manure and materials, we could see how far we could take this model. If the agricultural lands are improved, the landscape image will eventually shift from blight and neglect to one that is attractive to residents and visitors. It would decrease the presence of dust during high winds, lower heat island effects, create humidity in the landscape, and mediate the effects of global climate change. Spatial justice levels will increase for humans and create better ecological conditions for flora and fauna. This would consciously or subconsciously influence the overall well-being of the residents, as the landscape affects their mental and physical health. The new agricultural lands will possibly require additional labor, meaning migrant workers may be able to stay in the local landscape and tend to their familial needs. This will, in turn, reduce the stress placed on single-parent households and children. The symptoms of poverty and migrant labor, which have always been present in this region, have taken a toll on the mental well-being of the population. These people constantly say goodbye to family members whose homes are left empty for months or years.

Is this not spatial injustice? Can this be remedied by investing in people and places that need it most? Due to their versatility, education levels, alternatives in employment, and
proximity to opportunities, urbanites may be able to mount a challenge to the status quo and ask for changes in laws and regulations. The people in the rural areas suffer the effects of spatial injustice silently and for longer periods. The rural and peri-urban suffers in silence.
Chapter 6: Discussion

The first section of this chapter presents the Democratic Dimensions Actors (Jones, 2018) of the case study area and discusses their historical background and investment rationale. It outlines the economic, political, and social relationships present in the landscape and the dynamics of the actors in relation to each other. The second section differentiates between substantive and procedural democracy, explaining the benefits gained from substantive democracy. The third section explains the process of reading the landscape utilizing theories related to spatial justice and landscape democracy to discuss and summarize the generalizable research data results.

6.1 Democratic Dimension Actors

To increase spatial justice, it is important to identify the actors invested in the rural landscape, who occupy local, national, and international scales by their spatial arrangement. Spatial justice transcends beyond the local to understand spatial positioning in relation to one another, in constant contact, with unequal gravitational tension, separate, and in orbit to each other (Philippopoulos-Mihalopoulos, 2015).

Drawing from Jones’ Democratic Dimension Diagram, we can organize the different actors into a set of groups depending on their spatial proximity to the study area landscape. This section will identify the actors in the landscape. For this study, an investor is anyone interested in the local landscape.

These investors are presented below.

1. Diaspora from North America
2. Diaspora from the European Union
3. Diaspora from Russia and the Eurasian Union
4. Diaspora from the Middle East
5. Diaspora from South America, Australia, and other parts of the world
The traditional diasporans from North America currently in the region are investing in summer homes and small to medium scale business ventures. The towns and villages in the study area provide a good alternative to Yerevan and are more economical. Creating credit for expats/repats to purchase homes would increase purchases significantly since most diasporans cannot obtain a home loan in Armenia. Diasporans may spend anywhere from a month to a year in these purchased properties. They may purchase shells of homes that have been built but not completed during the post-Soviet speculative real estate period. They may also purchase land and build anew. Nonetheless, these activities create construction work for residents and present economic opportunities for local suppliers and merchants.

Most diasporan Armenians are at retirement when they make these investments. Usually, they have Armenian permanent residence permits or dual citizenship. Regardless, they can participate in local-scale governance after a certain period. The diasporans from the European Union reflect their North American contemporaries. They belong to the pre-Soviet diaspora communities, commonly referred to as the traditional diaspora. Their ancestors escaped or were displaced by the Armenian Genocide to various parts of the world. These traditional diasporans are often living in Armenia for the first time since their historical roots can be traced to Western Armenia/Western Armenian Highlands. Thus, they are not repatriating and not exactly expatriates. They are truly diasporans since they were born outside their ancestral home.

The diaspora communities from the European Union and Eurasian Union have a second dynamic: post-Soviet diaspora investors. These investors are usually younger and have been living abroad for roughly 25-40 years. They spend their time in between the region and
other home. The investment patterns of behavior mirror those of the traditional diaspora, with the key difference that they invest more in business on small and medium scales. These diasporans live near Armenia and have more social anchors. They are more goal-oriented and less sentimental; they view their investment less as charity and expect a higher return on their investment. Thus, they are investor managers, not necessarily investor consumers.

A third group is the Middle Eastern Armenian diaspora, considered part of the traditional diaspora who either fled war to arrive in the region, moved from the Middle East during the last 30 years, or wants a bastion in Armenia. This group may not have large amounts of capital compared to other diaspora communities. Nevertheless, they are interested in realizing business or income models that work in Armenia. Their material expectations are less at times, and they acclimate well to the traditional, rural Armenian culture, especially if they come from a rural setting. Those from urban areas of the Middle East are attracted to the area for the same reasons as their North American, European, and Eurasian counterparts. The Middle Eastern diasporans are business competent and fiscally responsible with their investments, even if sentimentalism plays a significant role in their investment in the local landscape. They usually have a better understanding of market conditions, limits, needs, and wants. This community usually invests in small and medium-sized businesses and manages their operations directly. They are aligned with Armenia’s political, bureaucratic culture, which often mirrors their experiences in their countries of departure. These diasporans acclimate culturally after an initial period.

Collectively, the diaspora investors are quite successful. Their business literacy allows them to go beyond the local landscape for information and material exchange. They are innovators in the regional landscape of intellectual and material production. The challenges they face in the local landscape may include a lack of trained workers, unclear supply chains, inadequate utilities,
and other materials needed for production. Even though these challenges exist, the diasporan “movers and shakers” have managed to increase production effectiveness in the local landscape.

In a way, they have created mini-training programs for local development in their fields, especially in the region’s small-scale industry, tourism, agrotourism, and agriculture. Some of the business activities that diasporans are engaged in are listed below:

- **Light industry**: Machinists, automotive mechanics, industrial mechanics, architects, engineers, construction workers, production of goods such as chocolate, fruit preserves, etc., on a small to medium business scale.

- **Tourism**: Tour guide, tour bus driver, restaurant/café operator, souvenir production, and gastronomy.

- **Agricultural**: Winemaking at all three scales: small, medium, and large. Small scale fruit orchards beyond the sustenance farming scale, medium scale orchards, and facilitating large scale orchard development.

The diasporan “movers and shakers” have a loose network of contacts. The post-Soviet and traditional diasporas usually operate as one group supporting each other in their business endeavors. They use collective power to obtain representation within the local government (mostly indirect but often effective). The post-Soviet diasporans are more directly integrated within the local government. Generally, these diasporans share common bonds in developing the local landscape into a more thriving business environment. The local government is effective at integrating the demands of these groups. Since capital is highly limited in the local market, the influx of capital from outside is allowed without any barriers from local actors. These types of investments better the landscape for all actors in the landscape in most cases.

*Inter-Armenia investors* are either (a) large capital investors who operate large factories and vast resources or (b) smaller investors from regions that find the conditions in the current landscape to be more favorable for their business endeavors. The larger investors are usually established regionally and nationally. They may operate medium to large-sized orchards,
greenhouses, milk production facilities, wineries, rock quarries, aggregate mining, and animal husbandry facilities. They usually have the power to set prices via monopolies or monopsonies. The smaller-sized investors from the inter-Armenia group are established economically within the regional business landscape. They usually operate daily goods and services, such as gas stations, grocery stores, bakeries, retail stores, consumer product distribution sites, car washes, restaurants, banquet halls, and other small to medium-scale operations. The inter-Armenia group is the most integrated with the political-cultural landscape of the region. The smaller and medium-sized business operators are further integrated into the regional political landscape due to their doing business and residing within the region. j

Foreign capital investors are usually citizens or corporations from other countries who bought land in the region to invest in orchards, cattle, cattle processing, building development, solar energy, utilities, and other ventures. They are usually incorporated as a business and have a local representative that handles their business dealings. The larger-sized interests are utilities with a monopoly share on the market, as they do in many other countries, making it difficult for other interests to enter the market. Electricity, gas, home telephone, internet access, mobile telephone, and all other utilities are fixed options, and there is no real need for improvement since there are no alternatives. New entrants usually do not enter due to the market’s small size unless they leapfrog in technology at the right scale to make their products more affordable to consumers.

6.2 Procedural and Substantive Democracy Dialectic

There is a disconnect between the individual, the public, and the local government representatives. The individual is supposed to occupy the three roles of the “bourgeois, citizen,
and homme.” Yet, an individual may not be up for fulfilling all three roles. To an extent, the local government is limited in its ability to represent the people's will. It is not viewed as an administrative body, as its role is more executive and ceremonial.

The administration is left to lower-middle management, who often scramble to do their best with limited results. The pay for most administrative positions is low, leading to low motivation levels in employees working at government institutions. There is a general lack of personal authority in the community, which is compensated for by over assertiveness, aggression, and other communicational shortcomings. The word “Ishkhanutyun” translates to “nobility” and is important because it is the main word addressing the government. The government is not seen as administrators but as deliberators and delegators. Given the small, intimate scale of the local political landscape, the institutional democratic dimensions may become intertwined. This may lead to the weakening of the democratic process and the creation of hybrid democratic institutional formations. The “old guard” is one such formation.

The fact that government representatives are intertwined with direct business interests in the region limits the level of trust between government administrators and citizens. There is a constant tension created because leadership may have to conceal its business dealings and nepotism from the public discourse, which is difficult given the small and intimate scale of the physical and social landscape. This culture is reinforced through strong inter-communal connections. Even when political change occurs, the spatial justice levels may not increase over time. Power shifts from one interest group to another, but the game's rules remain the same. There can be progress in spatial justice levels if new possessors of capital are created during these exchanges. Yet, this is rare and relegates most of the society to spectator status. Capital changes hands along with associated resources, but the democratic landscape remains at previous
developmental levels. Capital, whether it is social, cultural, or economic, may be exchanged for political capital or vice versa. In turn, citizens must be co-opted as part of the process, retreat into their own personal sphere of control, concentrate on personal profit, respond through community organizing and other bottom-up initiatives (rare in rural settings), or exit the social or physical landscape via internal or external exile.

Internal exile is the closing in on the self and occupying the role of the bourgeoisie or the homme but abandoning the role of citizen. In the rural setting, the best-case scenario would lead to developing a personal business and enjoying an individually satisfactory life. Yet, in the lower formulations, it can lead to substance abuse, unemployment, poverty, depression, and other behavioral issues that reflect onto society.

External exile is the literal act of leaving the landscape. It is exiting the scene and vetoing voting privileges. External exile occurs when people move to other cities or countries. For example, people may move to a similar landscape in a nearby country and take up a similar job. Yet, they are satisfied because they now only occupy the role of the bourgeoisie and the homme. They are no longer responsible for being citizens.

In the local cultural landscape, there is always a state of external reinforcement of value that reinstates the person’s sense of self. There is a hierarchy that dictates standing. After that, standing dictates the value of opinions and the ability to make changes. The external reinforcement of value also creates a lack of entrepreneurship since the person is constantly looking for external forces to approve ideas, plans, and goals. This is necessary for them to move forward, and it proves to be difficult. This relationship can be summed up by the fact that the government’s executive, judiciary, and legislative wings are still called the “Ishkhanutyun” or the principality/nobility, placing the citizens on the opposite pole of that construct.
In this scenario, the loss of the crown equates to a loss of land, capital, and power. In the current regional scale, coming to power provides the ability to convert land and other resources to personal capital and reinforces the need to keep power at all costs. The loss of power will create a situation where previously instituted administrative government decisions will be up for debate and re-examined for validity. The capital extracted from this process is usually converted into consumables or real estate with no secondary market value, usually in large residences, automobiles, and other exotic products.

The main issue with this model is that amassed capital is frozen with no possibility for return. It is consumed into some form of gaudy capital expenditure. The asset is of no real public use; it will simply wither away over time, leaving the possessor with no new capital for its maintenance. In this scenario, the person or group is usually ostracized from society, and his “honor” is diminished. He may keep what he has amassed and is temporarily banished from reconsideration for public positions. If he has invested his capital into income-generating business endeavors, they may continue to generate income, yet the venture will have fewer patrons from society. Given the small market size for goods and services, it will likely fail over time. Large-scale economic investments may also face a similar fate. A company owned by a wealthy government official may overinvest in the bottling/food packaging plant he created. Over time, the dearth of markets has led to a lack of resources to pay farmers for raw materials and agricultural goods. This type of scenario again is frozen capital. Capital in the form of machinery and building assets that does not work at full capacity and may have been too large in scale for available markets. Being “too big to succeed” is more common in the region than too big to fail. In essence, the representational democratic process works with some shortcomings as outlined, but substantial democracy needs improvement.
There is also an issue of false dichotomies created by the different participants. One of these is the false dichotomy created between local actors and newcomers. The nativist vs. progressivist dichotomy is in place. The newcomers look at the landscape with an “orientalist” gaze (Said, 2006). On the other hand, the locals have created a countering “outsider” gaze that is applied to anyone who is not “them” and play the role of “fortress under siege” in turn, this creates a false dichotomy. It establishes two false narratives that create segregation, posing further challenges to realizing substantial democratic landscape change. Given this false dichotomy, both camps are asked to join the other camp to generate acceptance. The locals play the role of local landscape inhabitants whom outside actors threaten. They create a fortress of cultural dogma that cannot be challenged to fortify their position.

Conversely, the “orientalist” gaze helps further reinstate this dogma by positioning itself immediately outside the defined dogma borders, even if certain elements of the dogma are acceptable to the new entrants. In a sense, the common overlapping features agreeable for both parties can be completely reduced since they do not meet the complete acceptable parameters of either camp. These commonalities may constitute most of all issues under consideration, with disagreements being less in total percentage. As presented in section 2.2.4, Armenia’s cultural landscape has been created by people such as Gevorg Emin, Mushegh Galshoyan, Sergei Parajanov, Martiros Saryan, who are all “diasporan” and “local,” they are both “eastern” and “western” Armenian because the Armenian national experience is rooted in genocide, exile, and diaspora. Also, as indicated in population data presented in chapter one, the roots of modern Armenia’s population in parts stems from genocide survivors.

The lack of a substantive democratic landscape process becomes pronounced because there is no discussion on defining and articulating what the “fortress” consists of and what lies
outside it. Also, no questions are being asked as to who created the “fortress” in the first place and what it symbolizes to both parties. In a way, one group constantly remains in the “fortress” and the other outside. This is a concern since the fortress cannot survive without outside resources, and the outside cannot survive without the protection of the fortress. In the local landscape, the fortress under siege is upheld by local owners of capital in either political, social, or economic terms to varying degrees. This false dichotomy is constantly present and inhibits healthy decision-making and growth in the landscape. The external investors whose capital has been generated outside of Armenia are not necessarily competing with the old guard for the distribution of existing capital. Their main goal is to invest in the local landscape and extract a return from newly created economic activity with as little government involvement as possible. Since their capital comes from abroad, they are protective of it and want to ensure it is not squandered by bureaucratic mismanagement. Their main interest is to pay for services directly correlated with their needs. In business development ventures, they are most successful in working with local and national government agencies that usually support these groups.

It is important to point out that these “differences” are mostly due to the multicultural realities of the 12 million Armenians worldwide. Nearly 9 million live outside the current day republic. These diasporans are inherently a diverse group, all having varied life experiences compared to the locals who share a common experience originating in the Soviet and post-Soviet Armenian experience. It is also important to understand that the diaspora is in flux. The traditional Armenian communities created in the Middle East are slowly disappearing. In the past 30 years, this phenomenon can be seen in such countries as Iraq, Egypt, Lebanon, and Syria. Due to war and other disturbances in the adoptive countries, these communities have dwindled. These traditional diasporan communities have relocated to Armenia, Europe, or further west. This is
important because most of the traditional diaspora is now living in liberal western countries. There are 2 million diasporan Armenians living in Russia who culturally are more liberal than Armenia and the Middle East. These shifts influence the rural landscape of the Ashtarak watershed because the shifting dynamics influence democratic decision-making processes in the local landscape.

In conclusion, procedural democracy may produce desirable outcomes for some actors in the local landscape. Yet, these will be shortsighted and short-lived. They will erode the physical, social, and cultural landscape in the long term. It will alienate citizens into internal or external exile. That is why substantive democracy is important. Democracy should emphasize argumentation and debate to achieve results representing the will of all members of society when it comes to landscape change. Spatial Justice symptoms created by procedural democratic shortcomings will also be better mitigated by a more substantive democratic landscape decision-making process.

“Participatory, dialogue-based approaches mean that values and meanings attached to landscapes by different groups need to be negotiated between competing interests. Justifications for participation include reinforcing local identity, democratization, legitimacy, information exchange, tackling conflicts, and social justice.”

(Jones, 2011, p. 28)

6.3 Critical Reflection

The case study area is a representational microcosm of the democratic landscape development potential for any region in Armenia. To an extent, the procedure for identifying the democratic dimension actors will remain the same, even if the actors are arranged differently (Jones, 2018). The landscape itself will vary, but the process used to read the landscape to identify spatial justice levels will remain the same. In the following section, I will concentrate on reading the landscape for spatial justice issues identified in the case study area. I will focus on
how these deductions can be transferred to other landscapes in Armenia or similarly scaled physical and cultural landscapes.

For this purpose, the spatial-temporal orientation of the case study area is the starting point to reading the landscape for spatial justice. The following historic spatial justice symptoms were identified in the case study landscape: effects of crumbling empires, genocide, colonization, economic collapse, dissonant heritage, and rootshock created by the pull and push factors of each. We can see how the urban diasporas of regions that once housed Armenian populations at the turn of the century are mostly diminished, while the agrarian population is concentrated in the current republic of Armenia. This occurs again after independence when the urban population of Armenia migrates again due to post-Soviet collapse, causing a significant “brain drain” during the process. Essentially, there is continuous segregation of the urban and rural populations in the cultural landscape. This leads to the existing false dichotomy previously mentioned in the last section. This is becoming a prominent part of the discourse regarding national identity formation in a mostly diasporan nation.

The literature review identifies global production/consumption related spatial justice symptoms, such as the effects of climate change on the local landscape in the form of reduced resilience for subsistence farmers. Warming temperatures or condensed snowmelt periods may lead to flooding and mudslides in the local region, with associated costs and externalities. These symptoms can be mediated on the local scale. The effects of hail, early frost, and the loss of seasonal crops are significant enough to cause land abandonment and labor migration.

Post-Soviet spatial justice symptoms can be explained by the distribution of resources after independence when the material resources in the landscape were privatized within a short period (Melkonian, 2008, Khanjian, 2008). This phenomenon is unique to the post-Soviet region.
There is a sudden shift from publicly owned modes of production and ownership of assets to the privatization of state assets and private modes of production, leading to the creation of the oligarch class (Boghossian, 2019). In comparison, the distribution of wealth in western liberal democracies occurs over a longer period and with less volatility in the transfer of assets from one party to the next. In the case of post-Soviet Armenia, there was a complete collapse of the Soviet economy, the liberation war in Nagorno-Karabagh, and the deterioration of industrial capacity following the Gyumri Earthquake. These are all significant factors that contributed to the stagnancy of the Armenian economy until the mid-1990s.

The privatization of assets and land in the rural landscape initially failed to materialize into a productive mode of production. Further, there was a lack of infrastructural maintenance and no communication with other regions or countries in the early period after independence. It is important to point out that this period marked the beginning of globalization. Industrial production began to move abroad from developed countries, but not having yet reached the post-Soviet world. The case study area for most of the 1990s goes through a process of asset privatization and distribution. This leads to the further privatization of homes, lands, and other assets. Thus, the previously public assets are transferred in varying degrees to individuals. For most of the 1990s, these assets were mostly used for subsistence purposes, sold outright, or were in slow decay.

In the early 2000s, the economy began to pick up due to the creation of capital from the sale and transfer of these distributed frozen assets and the influx of capital from abroad. At this point, major infrastructure had no investment and was in decay, causing local and international investors to purchase utilities and other assets to generate a return on investment. The small and medium-scale assets, such as bus stations, Soviet-era factories, and department stores, could not
generate a profit, so they were privatized and left to decay and contribute to blight in the landscape. All assets that could be absorbed by excess capital generated within or outside Armenia to produce a return on investment were utilized for this purpose. This is evidenced in the landscape by the homes built in the 2000s with the hope of turning a profit from sales to local or diaspora Armenians. It is further proven by the establishment of orchards, small-scale industries, and service industries within the local landscape. For the most part, assets in the early to mid-2000s were still not fully profitable in the case study area because most investments of excess local and diaspora capital were going to Yerevan, leading to speculative blight in the case study area. These landscape changes can be attributed to a lack of clear landscape management policy in Armenia since the ELC had not been ratified until 2004 (Alaverdyan, 2016).

By the mid-2000s, Armenia’s economy had recovered from the global market crash. Globalization further shrunk time and space, reducing flight times to Armenia, and faint signs of economic progress within the post-Soviet region began to form. At this point, the traditional diaspora dispersed globally had easier access to Armenia. The new post-Soviet diaspora was at least 20 years old. This phase ushered in a new wave of development in the local landscape by revitalizing previously frozen assets. It brought the entry of new actors to the local landscape who invested in the region on a small and medium scale by purchasing homes, land, and other assets that would be utilized economically after the initial capital investment. This phase continues until today. Large-scale business investments also continued, with international capital directed to utilities, wineries, airports, etc. The investment by international development agencies in rural development, such as the Millennium Challenge Fund, created infrastructure revitalization projects such as the Arzni-Shamiram Channel. It financed the construction of rural
road infrastructure, which created opportunities for new businesses such as fruit orchards on small and medium scales.

The *spatial-temporal orientation* presented in this section defines the social (historical, geo-political) and natural (earthquake) forces that shaped the landscape over time. It delineated the roots of democratic dimension actors who invested in the local landscape. These actors have a particular interest in ensuring the productivity of the landscape. In conclusion, privatization in a short period led to spatial justice symptoms regarding capital polarization due to distributional shortcomings in the early 1990s and the creation of unproductive asset ownership (Khanjian, 2008). Asset ownership became profitable in the mid-2000s after large investments were made to utilities, factories, transport infrastructure, and airports. These larger investments and international infrastructure development projects allowed new small and medium-sized entrants to the local landscape. These entrants needed roads, utilities, water, and other public assets and services to produce goods. Thus, the number of democratic dimension actors in the landscape expanded and necessitated substantive democracy. If substantive democracy were not achieved due to lack of practice, procedural democracy would need to improve to accommodate substantive democratic processes. Otherwise, spatial injustice symptoms would increase again and cause other symptoms, such as actors existing in the landscape through disinvestment, internal and external exile, bottom-up initiatives, economic depression, stagnation, decay, and a failed state.

*Technological determinism* is directly connected with landscape democracy. This is where democracy is not a destination or a statement of achievement upon arrival, but the endless practice of ownership, production, consumption, and interrelationships between multiple actors with private and public interests. If the number of investors in a landscape grew at a given rate
over time and in a productive manner, it would diversify power distribution levels within the landscape, making them inherently democratic due to the diversification of capital holders along with the means of production/consumption. For example, the difference could be between a resource-rich landscape exporting a single product, such as rare earth metals, vs. a landscape producing products and services such as internet technology, organic agriculture, tourism, solar energy, and education. In the first scenario, it is easier to polarize resources with fewer hands and distribute them to others because the means of production are limited and the capital necessary to extract resources is prohibitive to most actors. In an economy where production is diversified, capital is also diversified since production takes place with the involvement of more individual actors on a small and medium scale. Regardless of how diversified the means of production are, capital will inherently tend to trickle up unless there is some form of capital redistribution mechanism (Boghossian, 2019). International actors are not required to participate because they operate at a scale beyond the national, where local landscape governing laws are enacted (Meek 2017).

This leads to the final issue of the distribution of purchasing power since self-determination is relative to purchasing power in free-market formulations (Arler and Mellqvist, 2015) of liberal democracy. If the means of production are diversified, then purchasing power is also diversified. Conversely, if the means of production are limited, then the limited capital holders will decide to distribute purchasing power to other actors within the democratic dimension. Essentially, this allows them to exercise more influence on other actors within the landscape. It moves the democratic dimension from a substantial process to a procedural one.

Thus, landscape democracy theories, the LCA as a tool for landscape inventory, and analysis can identify spatial injustice issues within the landscape at a given point in time (spatial-
temporal orientation). The landscape is viewed through the lens of spatial justice when reading the landscape. As a tool, the LCA can foster landscape democracy through public participation. It is well-suited to identify the symptoms of spatial justice and alleviate these symptoms through the democratic design of the landscape.

The spatial-temporal orientation identifies spatial justice symptoms created by the Armenian genocide at the turn of the century. Armenians were dispersed across the world while suffering major losses in the form of human, economic, social, and political capital. In the regional urban centers, metropolitan urban populations moved further abroad and rural populations concentrated in present-day Armenia. This set the foundation for the false dichotomy present after independence in the local landscape.

The post-Soviet independence period created spatial justice issues by privatizing and distributing previously public assets. This led to wealth polarization that was partially redistributed over time. The redistribution, along with new investments and infrastructure improvements, reduced some of the spatial justice symptoms created during the 1990s and presented an opportunity for new entrants to establish themselves in the local landscape via small and medium-sized ventures. These new entrants engaged in a democratic landscape dialectic that was mostly substantive, considering the constraints of the procedural democratic practices in the local landscape.
Chapter 7: Conclusion

The first section of the conclusion chapter summarizes the research findings and offers a design process for spatial justice. The second section identifies the contribution to knowledge the study makes to the field of landscape architecture. The third section reflects upon the study’s limitations. The final section presents future research as it relates to spatial justice.

7.1 Designing for Spatial Justice

This section summarizes the research findings to create general guidelines for spatial justice design. It combines landscape democracy and ecological systems thinking to inform design decisions that impact the physical and cultural landscape. By consulting the literature review, we can see that spatial justice is not measurable at a single point without reference to a past point. We need to study how a landscape changes over time to understand what factors caused the changes and if the spatial justice level was elevated or reduced during the given period. When we identify spatial justice levels in the landscape, we must identify it at a particular point in its movement through time as it becomes more just or unjust. Since it is constantly changing and adapting, identification at an exact point simplifies it so that it can stop in time. Thus, at this point, we can explain it to find a remedy if one is available. This point in time can be termed the spatial-temporal orientation of Spatial justice.

Spatial Justice symptoms occur when landscapes’ social and natural systems boundaries are stressed, leading to eventual failure. When we decide to make design modifications to a landscape, we take the current, future, or past points as the equilibrium. The “system balance” point may be identified or approximated. Thus, the input will create movements that may have butterfly effects, especially since we are dealing with living systems (both social and natural).
This is where spatial justice symptoms can be mediated. The changes can be social, political, or climate change remediation.

Spatial justice can be divided into two system components related to human actions and their effects on natural and societal systems. Natural systems are geology, ecology, and other self-regulating systems over a longer period. Any major shifts in natural systems caused by human activity will create a certain degree of injustice because the system constantly attempts to self-balance. These injustices may take place on various scales, displaying various symptoms. Some examples are oil tanker spills, CO2 emissions causing climate change in local climates, food waste and landfills, the damming of rivers, and other externalities of extraction, transportation, production, consumption. These symptoms may appear immediately or over a longer period. Societal systems are governed by cultural, regional, national, or international laws. Any shifts in the state of equilibrium will create spatial justice symptoms that may throw off the equilibrium of the local landscape. The human system is not self-balancing and will lead to shocks to society, the natural environment, or both. Either one can happen first, or they can happen together. For example, an oil tanker spill affects a local fisherman’s ability to sell locally harvested products, leading to protest, social instability, and a government response requiring the expenditure of resources to alleviate symptoms.

Symptoms of spatial injustice can be remedied in the urban landscape through various public participation/dialogue methods and bottom-up initiatives. This may pose a greater challenge in the peri-urban or rural areas. In urban areas, a progressive, educated class usually understands the causes of social and spatial justice and mobilizes itself to further interests. This progressive class is not present in rural areas, and the spatial density dynamic and population restraints make it difficult to organize around a set of ideas and goals. The symptoms of spatial
justice in a rural area may also be less visible symptoms of unemployment, poverty, substance abuse, seasonal migration, and various social problems.

Spatial justice is not static because the landscape is not static. It is taking place continuously and dynamically in spacetime. Because there are numerous actors in the landscape with various competing interests, the available resources are limited and not evenly distributed at any given point in time. The landscape has a defined number of elements based on the advancement of technology and infrastructural development (materialist interpretation of history). The landscape history and state of advancement in human development can be defined in each landscape. All landscapes have a maximum extraction value before the quality in physical form is degraded, which will eventually lead to the failure of social or natural systems. This may be immediate or long-term, depending on spatial injustice rates. Of course, the landscape may be enhanced at the expense of other members of society. Yet, this will cause a spatial justice symptom at some point in the future, based on rates of power polarization among the different democratic dimension actors. Landscapes are constantly in flux (Bell, 2009, 2014). Managing the fluctuations over time will minimize the detrimental effects that cause spatial justice symptoms. This is the goal of “thinking globally and acting locally.” Life takes place in the immediate landscape; thinking globally naturally dictates the need to act locally.

Spatial justice is not static. It is not a guaranteed outcome in the form of a product. It is in perpetual movement. Borrowing from chaos theory (Gleick 1998), we do not know how the next branch will grow. If we can predict it based on observations, we can limit the area from where it can grow and remove the branches that we do not want to grow. The idea is to make interventions that are affective and effective. We can also plant changes that may have unpredictable growth patterns.
“Until now almost all designed human construction and planned changes to the landscape have been based on Euclidian geometry (such as the pyramids of Ancient Egypt). This has tended to oversimplify what nature had already provided. Fractal geometry can be used to understand more fully the structure of the world and to extend the creative possibilities to designers” (Bell 1999, p.20).

This can be done through a democratic landscape planning process, using scenarios that can inform future scenarios but cannot predict the future. All they can do is help create more robustness in preparing for “black swan” events (Taleb, 2010). The second goal is to create remedies for spatial justice symptoms that have been identified. Thirdly, the mission is to create a more spatially just landscape from the outset.

Ecological systems thinking provides the mental model perspective required to move beyond consumer culture in alleviating spatial justice symptoms created by global-scale production/consumption. Landscape democracy provides the mental model perspective that aids with decision-making, guiding production and consumption of resources, and distributing resources to different actors present in the landscape. Together, they create new boundaries that are ecologically and socially sustainable. The LCA acts as a tool to read the natural and social systems present in each landscape and for the creation of scenarios that can be deliberated on throughout the democratic process.

7.2 Contribution to Knowledge

This section presents the key findings identified during the research process and answers the research questions presented in chapter 1; it further identifies the contribution to knowledge that this research makes to the field.

There was a dearth of available sources to help determine the success of the modernist “land individualization” changes implemented immediately after independence. There was a lack
of sources analyzing the rural infrastructural development undertaken during the “Millennium Challenge” fund years and how effective these changes were in the study area. Overall, the research answers whether the rural landscape in the case study areas has democratized during the last thirty years. The research also explains if the capacity for further democratization is possible in the case study area and whether democratization is necessary for future successful development.

This research expands on the understanding of how the ELC can be transferred to the rural regions of Armenia. The case study area is a representative sample of other regions with similar landscape characteristics and societal composition. The study region, located at the edge of the European continent, can serve as a transferable case study for similar post-Soviet Eurasian landscapes, which can be found in Armenia, Transcaucasia, and the Northern Caucasus. This research utilizes the LCA to carry out the feasibility of ELC reforms and implementation of landscape democratic processes. There is some research on implementing the ELC with a community feedback component; this study will further supplement that research database.

This research adds an implementation of spatial justice theory to the post-Soviet rural-urban region of Armenia. This research further defines spatial justice in this landscape using theories from spatial justice and landscape democracy literature. The research defines a “designing for spatial justice process,” considering ecological sustainability and wellbeing as the goal of ecological systems thinking and its relation to spatial justice. The study attempts to expand the knowledge base of designing for spatial justice to implement proactive design guidelines that can identify spatial injustice in each landscape and offer a process through which a spatially just landscape can be created.
This study emphasizes the importance of rural development in Armenia’s post-Soviet landscape. This is where personal capital, corporate capital, expatriates, repatriates, diaspora, exiles, remote workers, migrant workers, refugees, and other actors are mobile and partake in the democratic landscape process in more than one landscape. The research tests landscape democracy in a setting with limited democratic history. Conversely, other case studies focus on areas where the democratic tradition has been established over a longer period.

7.3 Study Limitations

The research process had a few limitations. The most significant limitation was the scale of the study. The case study area covers around 315 square kilometers. This poses a challenge to decision-making on what information to include and what to leave out of the landscape characterization process. Thus, it was important to limit the data to information that would help identify spatial justice symptoms in the landscape or information that could aid future scenario development. For this reason, the LCA study emphasized landscape value, character, and capacity for the specific purpose of future landscape planning and design. Each landscape area defined could use an LCA at a smaller scale to fully develop each area properly, which will be left to future research and implementation.

The desk study portion of the LCA was quite extensive in trying to understand the physical changes of the landscape, historical changes in the landscape, and scenario development possibilities. Bringing these elements together to solve wicked problems was a challenge, but it was a good starting point for creating a base layer for further work. Historical sources were hard to find, and internet sources were limited. It was a challenge identifying where I could find landscape data regarding interviewees and other connoisseurs of the study region. A better
understanding of eastern Armenian would have helped with literature. Thankfully many Russian sources had been translated, providing land use data from other regions and census data from the turn of the century. If they had not been translated, I would not be able to easily access these documents due to my lack of Russian language skills.

The timing of my research was also limited by political changes in Armenia. Most of my field studies and interviews occurred in a transitory government period when the “Velvet Revolution” occurred. This made it difficult to secure interviews with connoisseurs who were busy with other tasks. As a result, I did not have the opportunity to interview a few people who responded to my initial request a few months late. The data collected during the interviews was sufficient to conduct an LCA and scenario development at the watershed scale. Yet the large land area that the research attempted to cover and the numerous development sectors it attempted to cover led to interview questions having a limited range of respondents, which limited a clear preferred choice for specific development scenarios.

In the future, it would be more effective to concentrate on one landscape character area, using one scenario and trying to utilize as many actors in the landscape that are developing that specific field, such as greenhouse producers and small and medium-scale farmers, to understand each development scenario with its full capabilities and challenges. In conclusion, the main challenge was the scale of the study in relation to time and space. This dissertation had to set limits for detail at a scale feasible with the limited number of resources available.

7.4 Future Research

With its focus on the rural-urban region, this research was a first for Armenia. It is the starting point for a landscape characterization process that can be conducted for the whole
country. Armenia’s landscape is very diverse, and each region has immense potential for
development. Armenia is a global biological hotspot (a large variety of flora and fauna that only
exist in this region, that is threatened by human disturbance) of immense value that needs to be
studied, managed, and developed for current and future generations. This will take a considerable
amount of effort, resources, coordination, and an overhaul of current institutions to achieve
tangible results. I will try to identify a path forward based on my analysis of the institutions
present in Armenia that can partake in this effort.

The American University of Armenia, as a research university, has available resources to
undertake further research that could mirror a similar research model. The Acopian Center for
the Environment, the Turpanjian Rural Development Program, the Turpanjian Center for Policy
Analysis, the Paul Avedisian Center for Business and Research Development (CBRD), and the
engineering research center can contribute to the development challenges present in the rural
landscape of Armenia, as identified by this study. The Turpanjian Rural Development Program
can take on a central role in coordinating these efforts. Other Armenian state universities are also
well-suited to further contribute to the development of the rural regions. The Pedagogical
University currently has a budding land planning department, led by two of the interviewees.
This department can make significant strides in rural development, especially if it could further
coordinate its efforts with the Agrarian University, Yerevan’s botanical garden, the National
Academy of Sciences, and the Center for Noosphere Studies.

Armenia has all the institutions to further the work started in this study. It is a matter of
translating key literature on landscape and organizing the necessary resources to tackle the
wicked problems in Armenia’s rural-urban regions. In contemporary Armenian studies,
landscape architecture is viewed within a narrow context, mostly confined to park, residential, or
commercial landscape improvements. This limitation needs to be addressed so that landscape research can move forward in the study of rural-urban regions. The Yerevan botanical garden can use a major upgrade since most of its territory is currently barren. If planted with high-value crops such as orchard trees, grapes, and other crops, it will provide a wealth of information for education and development purposes. The study and propagation of native species would also aid in establishing seedbanks that will create the stock of plant material needed to carry out reforestation efforts. Thus, the botanical garden can become part of the living development process that needs to occur to alleviate the symptoms of spatial justice, such as reforestation for increased protection from floods and mudslides. To repurpose the post-Soviet rural-urban region, these institutions will have to identify the changes needed and create the resources needed for positive change.

In the last few years, spatial justice has become more prominent in environmental design universities, with numerous universities dedicating research efforts to furthering the study. Universities in the UK, USA, and Europe are now specifically focusing on systems thinking, systemic design, landscape democracy, and spatial justice. Landscape architecture departments emphasize the equitable design of the landscape to create inherently more equitable landscapes. Well-being has become a key field of study in identifying nonquantifiable or monetizable aspects of human interaction with the landscape. For future research, identifying these non-monetizable aspects of human interaction needs to be further understood as they relate to spatial justice and landscape change.

The world is also changing in a new direction, with digital landscapes competing with physical landscapes for attention. Issues such as advertising that were once an issue of spatial justice in the built landscape, materializing in billboards and banners, are gradually moving to
the digital. The physical landscape in the future will continue to compete with the digital landscape for people’s attention as the creation of digital content increases. It is a question of how these changes will affect physical landscapes limited in their compositions by physical materiality. It remains to be seen how these changes will affect mental models for living. Landscape architecture research with a particular focus on spatial justice will have to answer these questions in due time.
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Appendix 1: LCA Field Survey Additional Documents

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Ph.D. in Landscape Architecture
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A. LCA Filed Survey Form 2018 Fall

Title of Character Area: [Blank]
Character Type: [Blank]
Location: [Blank]

Landform/Topography: (Dominant, Secondary, Minor)
Flat, Plain, Dry Valley, Undulating, Rolling Lowland, Deep Gorge, Rolling, Plateau, Broad Valley, Steep.
Notes on Landform:

Land cover types and landscape elements: (Dominant, Secondary, Minor)
Farming: Walls, Fences, hedges, fields, arable, improved pasture, rough Grazing, Orchard.
Landcover: Designed Parkland, scrub, marsh, peat bog, moor/heath, rough grassland, water meadow, grassland, species-rich grassland.
Woodland Trees: Deciduous woodland, coniferous plantation, mixed woodland, shelterbelt, hedge trees, orchard, clumps, isolated trees.
Hydrology: River, stream, reservoir, dry valley, pond, lake, drainage ditch.
Communications: Highway, paved road, track, footpath, lane, railway, pylons, masts.
Notes on Landcover: (time depth of buildings, farms, Flora Fauna)

Aesthetics: Scale (Intimate, small, medium, large) Texture (smooth, textured, rough, very rough) Color (monochrome, muted, colorful, garish) Complexity (uniform, simple, diverse, complex) Remoteness (wild, remote, vacant, active) Unity (unified, interrupted, fragmented, chaotic) Form (straight, angular, curved, sinuous) Enclosure (Expansive, open, enclosed, constrained)

Perception: Security (Intimate, comfortable, safe, unsettled, threatening) Stimulus (monotonous, bland, interesting, challenging, inspiring) Tranquility (inaccessible, remote, vacant, peaceful, busy) Pleasure (unpleasant, pleasant, attractive, beautiful) Sound (Natural, Pleasant, Noisy, Unpleasant), Smells (pleasant, not pleasant, not significant). Touch/ Feel?

Comments: (Views on recent development, visions for the future, and other specialist knowledge or information).
B. LCA FIELD STUDY MAP A

Topographic Google map layer used as the base map for the case study area
C. LCA FIELD STUDY MAP B

Terrain Google map layer used as the base map for the case study area
D. Vernacular Architecture & Landscape Photos from Field Study

19th Century home entrance in Ashtarak made of Tuff stone and wood (Haroutounian, Spring 2019)

Retaining walls made with vernacular materials running from the old bridge to old town areas (Haroutounian, Fall 2018)
Vernacular revival architecture of a modern constructed residential home built post-2000s (Haroutounian, Spring 2019)

Contemporary House using vernacular materials and craftsmanship
E. Landscape Character Assessment (LCA) Landscape Character Areas Filed Notes

1. Ashtarak City (Provincial peri-urban capital)
2. Shakarashen Industrial Fringe (Peri-urban post-industrial fringe)
3. Ashtarak agricultural fringe (Peri-urban agricultural fringe)
4. Nor Yerzenka village (Peri-urban rural fringe)
5. Mount Ara Ler Apple Orchards (Rural Apple Orchards)
6. The Skirts of Ara (Foothills of Mount Ara Ler).
7. Ara’s Heart (Canyon and cave)
8. The Wedding Belt (River Canyon Villages)
9. Karbi River gorge (River gorge rest areas)
10. Hovhannavank and Saghmosavank (Significant Heritage Landscapes)
11. Mughni to Ushi Roadside Orchards (Aragatsotn Rural Roads)
12. Parpi, Karbi, Ushi, and surrounding villages (Middle Valley Villages)
13. Alphabet Road (Grassland meadows)
14. Byurakan & Amberd Intersection (Scrub grassland meadows)
15. Road to Amberd (Aragats sub-alpine scrub landscape)
16. Byurakan Village (Aragats Mountain Village)
17. The Breadbasket Villages (Aragatsotn agricultural fringe)
1. Ashtarak City (Provincial peri-urban capital)

River George looking north. Spitakavor Church is present in the middle of the picture (Haroutounian, Fall 2018)

Typical residential street at the urban edge of Ashtarak leading to the Maghni neighborhood (Haroutounian, Fall 2018)

Typical Soviet-era residential buildings, photo taken from the gardens of Saint Mariane Church (Haroutounian, Spring 2019)
Location and Context: Ashtarak city is located 20 km from Yerevan.

Key Characteristics: The city is located on both banks of the Kasakh River canyon. The older town is located on the northwest bank, with the newer developments along the southeast bank. It has three layers of visible settlement architecture: Pre-Soviet, Soviet, and Post-Soviet.

Landform: The city is surrounded by hillsides running down to the Kasagh River, a river canyon in the middle of the city, and some flatlands in the city center with more sloped hillsides surrounding the central area.

Landcover: The landcover is mostly urban residential housing in the form of rural individual country homes and or high-density Soviet-era residential neighborhoods of 4-5 story buildings.

Perception: Picturesque city with layers of cultural, historic, archeological, geological, ecological, and environmental interest. The city has many layers of aesthetic interest as well for both residents and visitors. It is safe during the day. The lack of street lighting at night makes it less interesting for recreation at night.

Landscape Quality: The overall quality of the city can use maintenance and management since most roads, sidewalks, and buildings need maintenance. The old town area is in very bad shape and needs major maintenance to preserve its historic-cultural value. The natural landscape also needs better maintenance since trees and other natural areas at times are unkempt.

Landscape Value: Residential urban city and rural suburb to Yerevan, along with the regional center and market for agricultural products and processing.

Landscape Capacity: Residential and further urbanization.

Development Scenarios: Developing urban core, old town area, and central market area.

Settlement: Increasing affordable housing in the urban core area and reducing empty houses in the suburban single home neighborhoods.

Agriculture: Individual subsistence.


Tourism: Historical, cultural, and active tourism are all possible.
2. Shakarashen Industrial Fringe (Peri-urban post-industrial fringe)

Location and Context: This area is located immediately at the entrance of Ashtarak from the Yerevan highway approach and can be seen on the western hills before entry behind apple orchards.

Key Characteristics: Typical post-industrial fringe area. The buildings are aged to an extent with some having newer tin roofs that shine when reflecting the sun.

Landform: Rolling hills with 5-10% slope throughout with long valleys in between that are flat enough for agricultural use. The top 10 cm of the soil seems to have the ability to be converted to agricultural use in some areas, mostly scrub rocky clay-like soil throughout.

Landcover: The elements in this landscape area include derelict factories, pylons, irrigation, and drinking water infrastructure, 5 story residential buildings, a playground, and sports fields next to a residential area. Natural scrub landscape. It has a dry scrub landscape with what looks like succulents, lichen on rocks, wild rose bushes, steppe. No wild trees. Some 2m tall shrubs. Rough grassland.

The settlement is concentrated closer to the urban edge in a cluster of 5 story buildings around the industrial fringe area. There are some sparingly placed single-story individual homes in the intended urban edge development area. The land in this area is reserved for residential expansion in some parts. The other area seems to be just left wild and unmaintained.

Perception: The area overall feels safe, and one can use it for hiking, biking, and other pass-through outdoor activities. It has nice rolling hills that can be climbed to view the landscape from above. The loose zoning of the landscape along with the lack of trash clearing and maintenance lower the overall quality of the landscape and it is perceived in a lower light due to these issues. The area overall feels dry and is covered with rough scrub or wild grasslands.

Landscape Character: Typical peri-urban fringe landscape for a medium-sized city such as Ashtarak.
Landscape Quality: The landform is bland. The natural land cover is bland. The built form is bland as well. Some photos show roofing material that looks like it may contain asbestos. It has a post-industrial feel to it, and there is a lack of maintenance on the buildings which creates blight in the landscape. Construction waste and abandoned vehicles and other trash have been dumped in this area.

Landscape Value: There are no major archeological sites or historic sites in this area, except for one possible rock formation tower that was possibly used for hunting (Interviewee), which may be part of the Kites formations located on Aragats mountain. communication, or as some sort of ancient observation point.

The time depth is only 70-years old as far as built structures are concerned. Low landscape Value in the current state.

Landscape Capacity: The landscape has the capacity for residential development, energy infrastructure development, and possibly agriculture. It is currently used for seasonal crops in some parts and rough pasture for the remaining areas.

The 5 story residential buildings have a playground in the vicinity that is in acceptable condition, yet there are safety concerns that need to be addressed. These homes are also very removed from the rest of the city and the roads leading to these homes are usually in derelict condition and the people in the area must walk to get to the main highway to use public transport.

Development Scenarios: The overall development scenario for this area can combine rural revival for housing and agriculture with solar energy and active recreation trails, with solar energy infrastructure as a part of the landscape. A combination of rural revival with the futuristic progressive images of the solar panels in the background.

Settlement: This area can be developed in the future into a rural revival scenario since it has the available agricultural lands nearby and there are some examples of rural revival in the area. The 5 story building clusters also can utilize community farms if they were designed into the surrounding area and help increase income for residents.

Agriculture: Rural revival examples are present here and most of the current arable lands are farmed by residents in the single-family and 5 story residential buildings and or residents within a 2-kilometer distance from agricultural lands.

Solar Energy: The area contains electric utility infrastructure making it ideal for large-scale solar farms, especially since the landscape does not have significant scenic value. The solar panels would be an interesting backdrop to the rural revival in the area as they would be shielded by hills from the highway.

Tourism: The area may have an opportunity for active tourism. There are currently dirt trails that lead to the other parts of Ashtarak. If they were cleaned up and modified with some trees adjacent to the roads it would provide a great opportunity for a mountain biking or hiking route that would loop around the city.
3. Ashtarak agricultural fringe (Peri-Urban agricultural fringe)

Typical peri-urban agricultural fringe landscape, with outcropped rocks used as land plot edges. Image shows abandoned agricultural land in the foreground and recently planted orchards in the background (Haroutounian, Fall 2018)

Typical peri-urban agricultural fringe landscape, with rough grazing present. Various species orchards planted in the foreground and background (Haroutounian, Fall 2018)

Typical peri-urban agricultural fringe landscape, with foreground and midground showing newer fenced orchard and residential home adjacent (not in photo) Background shows newer orchards planted by others (Haroutounian, Fall 2018)
Location and Context: This area surrounds the highway as you approach Ashtarak from Yerevan on both sides of the road. It has apple orchards that were planted during the Soviet era with topsoil that was imported from the reservoir area adjacent to Nor Yerzenka that was never completed.

Key Characteristics: Area is covered along the road with apple orchards. The orchard plots become more sparsely planted the further they go back from the road. The area usually has a combination of asphalt and dirt roads, along with sparsely arranged homes and light structures throughout the landscape.

Landform: Mostly flat with some areas having a slope of less than 5% slope. The area is surrounded by small hills, that create small agricultural planting areas in between them. The overall pattern is well organized and dense orchards closer to the main highway with patch orchards and rough grassland in between as you move further away from the main road.

Landcover: The elements in this landscape area include pylons, irrigation, and drinking water infrastructure. Exposed overhead gas pipelines are running adjacent to asphalt roads to houses, light structures used for seasonal inhabitation during planting season, and pylons. 60 percent of the landscape area is covered with fruit orchards, with apple being the most prominent, followed by pear, peach, apricot, and some older grape orchards. There are fruit sale stalls along the main road selling local produce from the orchards. There is usually no enclosure except for outcropped stones to mark off plot boundaries.

Perception: The area feels safe. There are people sparsely populating the landscape tending to orchards, animals, and seasonal crops. The area overall is pleasant. Some orchards show signs of age and are abandoned. The soil has become compacted from not being turned and possibly animal herding. The area is great to drive through during most seasons, except winter. It has great landscapes. Golden brown in the summer with reds and oranges as you approach fall and green with wildflowers in the spring and early summer.

Landscape Character: Typical peri-urban agricultural fringe landscape for a medium-sized city.
Landscape Quality: The landform is typical for agricultural areas around Ashtarak. The quality of the landscape is maintained orchards for 50 percent of the landscape, there are abandoned gas stations, guard homes, and orchards that lower the overall quality of the landscape. The overall quality is fair. The trees look a bit aged along with the watering infrastructure, the fencing when present is also limited. The decorative trees around the edge of the road are usually unkempt and unattractive. There is construction waste trash roadside, along with agricultural equipment and tools.

Landscape Value: High agricultural value. The orchards are a part of the local agrarian heritage. They provide a nice green edge to the city; they are the first major orchards people will see coming out of Yerevan signifying the turn to the rural landscape. The time-depth beyond this is only 70-years old, as far as built structures are concerned. Low landscape value in the current state.

Landscape Capacity: The landscape has the capacity for growing the orchards at its perimeters and clearing the grasslands. Mostly agricultural capacity. The landscape area is typical small-scale and medium-scale agricultural land in patchwork form. Its character shows investment in new orchards and ample areas are present that are aged orchards that can be updated or combined. Rough grass areas can also be converted into orchard areas as well. The main concern here is irrigation water access for new agricultural development.

Development Scenarios: A farming collective of some sort needs to be further refined or established. The area has potential for medium-scale and large-scale farming if land plots were combined. It can be a part of a larger 4x4 off-road trail network or mountain biking loop. It has some recreational value. This area needs to be improved and enlarged, as it is an important part of Ashtarak’s agrarian heritage. It has roughly 50 percent room for growth enlargement.

Settlement: Rural revival may be possible in this area since the utility infrastructure is mostly in place. The land plots would need to be maintained at larger scales in order not to create a suburban sprawl effect.

Agriculture: Medium and large orchards can be established in this area due to the availability of large swaths of unutilized land and rough grassland.

Solar Energy: The area may accommodate solar energy even though it would not be the first pick for solar farms.

Tourism: The orchards could be developed for fruit picking and agritourism. The area can also be developed for light off-roading and mountain biking.
4. Nor Yerzenka village (Peri-urban rural fringe)

Location and Context: The village is located to the east of the Yerevan Ashtarak Highway and North of the Ashtarak Abovyan Road.
Key Characteristics: Peri-rural village, suburban to an extent. Situated on a sloping hillside, with well-defined, well-organized, productive, small, and medium-sized orchards and agricultural lands. The village has a grid pattern and is more modern in its layout. Most houses are single-family and 1-2 story.

Landform: Rolling hills with slopes of 5-15%. The village is in a valley between the hills leading to Ara Ler and the road leading to Ashtarak and Abovyan. The landscape is slightly sloped allowing for agricultural activity around the village. The river crosses the west edge of the village.

Landcover: Modern village residential area laid out in a grid pattern with asphalt roads. At the edges of the orchards, there is rough grazing and interesting rock formations. The landscape is a scrub landscape. The roads are mostly asphalt which needs repair. The Arzni-Shamiram channel runs along the north side of the river and is the main source of irrigation for agriculture.

Perception: The village is alive and well-populated. It has some roads and infrastructure that need repair, but overall has an acceptable level of maintenance. The orchards add lots of colors, in spring, fall, and summer. The winter season is very earthy, white, and gray like the rest of the landscape. Overall, a very colorful landscape to look at from the roads that are above leading to the village. The orchards provide a soft texture to the landscape that is welcoming. The village population is very proud of their village and is very united in their pride. Most local people had good things to say about the villagers from this village.

Landscape Character: It can be considered as a typical successful small/medium scale landscape. Efforts can be made to bring it closer to Ashtarak physically, growing residential to the west, and agriculture to the east. For being so close to Ashtarak, the village still feels very remote.

Landscape Quality: Landscape quality is good and visual impressions are of high quality. The landscape is whole in its patchiness and complete in its presentation. The ecological condition is acceptable yet can be improved alongside roads and residential areas.

Landscape Value: Picturesque agricultural rural landscape is the true value of the landscape here; the landscape can be further developed for agricultural purposes. Residential development should be limited to the village core and offshoot areas that are planned.

Landscape Capacity: Landscape capacity would be mostly for agricultural use at small and medium scales.

Development Scenarios: The village has a favorable access road to Ara Ler orchards and Ara Ler if repaired currently people prefer to get to Ara Ler via Karbi village river gorge. If the road were repaired, access to the village and the areas beyond would be much easier for both locals and tourist groups. The landscape above the village especially as we get to the skirts of Ara Ler and the Heart of Ara is quite sensitive to large groups of people and will have to be managed properly to accommodate larger tourist groups.
Settlement: The current combination of concentrated housing with agricultural areas around is successful, creating a further core in the village is a possibility.

Agriculture: Medium and large orchards can be established in this area due to the availability of large swaths of unutilized land and rough grassland. There is also irrigation water and the irrigation channel near the village agricultural lands. All three scenarios for agricultural development may be possible in this area.

Solar Energy: The area may accommodate solar energy at an individual and local utility-scale, larger solar installations may lower the picturesque village landscape that is found in traditional Armenian paintings depicting rural villages.

Tourism: This village has a great opportunity for agritourism since it is located at the foothill entrance of Ara Ler (Mount Ara). To make this possible, the roads in the village would have to be significantly repaired. The village can act as a rest area for tourists visiting Ara Ler.
5. Mount Ara Ler Apple Orchards (Rural Apple Orchards)

Orchard road leading north to Ara Ler. Wild grasses with newly planted apple orchards in the background (Haroutounian, Fall 2018)

Close up of newly planted apple orchards on road leading to Ara Ler (Haroutounian, Fall 2018)

Seasonal guardhouse and apple collection area (Haroutounian, Fall 2018)
Location and Context: The Ara Ler (Mount Ara) apple orchards are the largest apple orchards in the watershed study area. They are located between Nor Yerzenka village and Ara Ler. They were a collective orchard during the Soviet period and have since been privatized.

Key Characteristics: Apple orchards that are tightly planted with trees at the scale appropriate for hand picking of fruit using limited machinery. There are asphalt roads around the orchards and the main road leading up to Ara Ler.

Landform: Gradually sloping plateau adjacent to Kasakh River. Mostly flat with 5-10% grades throughout.

Landcover: The area is mostly covered with apple orchards and some other seasonal fruit, most of the prunus family. The roads are mostly asphalt. The Arzni-Shamiram channel runs south and north along with the orchards. There are some fruit processing factories and a fruit storage warehouse. There are utility poles along the main roads. The orchards themselves provide a sense of enclosure from the sun, but they are not enclosed with fencing of any sort.

Perception: This area was a community farming endeavor during its Soviet past. Now, it has been privatized by the individuals who worked the farm, and each person owns a different amount of the orchard, 1,000 meters in size and more. Road conditions need some improvement. Access to this area is currently through Karbi village and Yerzenka. The trees are a bit aged and reaching maturity in some areas. Very attractive color throughout the three seasons, excluding winter.

Landscape Character: Closely quilted orchards and agricultural lands. Closely gridded homes with a main rural dwelling area and loose housing further out. Overall, complete in its presentation and character. It can be considered a typical successful small/medium scale landscape. Efforts can be made to bring it closer to Ashtarak physically, growing residential to the west, and agriculture to the east. For being so close to Ashtarak, the village still feels very remote.
Landscape Quality: The orchards are very tightly packed, mostly for handpicking the apples. They are watered by open channels and the trees are not very well maintained. Overall, the quality of the orchards looks aged. The area overall can use better edge conditions between elements. The wild grassland around orchards can be converted to agricultural use with some investment.

Landscape Value: The drive through this area is beautiful and there are nice orchard scents in the air. The landscape has aesthetic value in the form of the foreground orchards to Ara Ler. The orchards are also visible from the churches and monasteries across the river.

Landscape Capacity: Capacity here is mainly for fruit orchards. The area is at a higher altitude and can accommodate fruits that like cooler winters and hot dry summers.

Development Scenarios: The main development scenario in this area is the clearing of the roadside conditions, creating better market access for agrarians, and increasing the overall size of arable land that is used for orchards.

Settlement: Currently, no natural gas infrastructure limiting housing development. Also, the landscape value may be compromised in the case of housing development.

Agriculture: Medium to large scale fruit orchards would be the idea in this area and a good place for large scale fruit orchards, due to the availability of water and good quality soils.

Solar Energy: Possible on small scale only for individual solar for fruit processing plants, tourist centers, and small business operations. A larger solar project would compromise the landscape value of the area.

Tourism: This area may accommodate agritourism in the form of apple pickings, outdoor picnic areas for tourists, and other apple product production processes. This area has lots of potentials to further improve. It can use a small rest area that is used by both tourists and locals tending to their orchards. Maybe a small apple store, café, or something of that sort, that has a few restrooms, a snack bar, a place to buy fruits, fruit preserves, and the like.
6. The Skirts of Ara (Foothills of Mount Ara)

Location and Context: The Ara Ler (Mount Ara) foothills are the unaltered scrub grassland meadows leading to the peak of Ara Ler. They are located north of the Ara Ler apple orchards, with one main road leading to them.

Key Characteristics: These natural scrub grassland meadows are mostly unaltered except for roads and the presence of light structures and a few areas where the soil has been altered.

Landform: Gradually sloping foothills. 5-45% slope with a gradual increase until the canyon entrance leading to the Heart of Ara.

Landcover: The landcover consists of natural sub-alpine grasses and shrubs, including some rosehip. Some scrub landscapes as well with the presence of stones, boulders, and more scrub.
landscape plants. Asphalt road leading to the canyon entrance and some secondary dirt roads throughout the area.

Perception: The hill is a part of Armenian history and mythology. It is where Ara the Handsome lies forever. People see this place as a holy site.

Landscape Character: Currently a natural sub-alpine grassland and scrub landscape that is mostly intact.

Landscape Quality: Almost natural landscape quality that has some altered areas that may be mitigated.

Landscape Value: The mountain itself is the backdrop to most of the historic heritage landscapes people visit in this region, especially the churches in the wedding belt along the river villages of Mughni, Ohanavan, and Saghmosavank. The mountain is also the main backdrop when you drive north to the Lori region. Its skirts are an important part of the landscape in this region and can be said to make it the special landscape that it is. The hills are in most viewsheds and provide a great backdrop for residents and visitors alike. Heritage landscape status needs to be attached to landscape. No commercial or permeant development of any sort is allowed.

Landscape Capacity: Ecological value only.

Development Scenarios: The main development scenario is for tourism and outdoor recreation. The area needs to be protected and assigned specific landscape heritage values.

Settlement: None, not appropriate for any sort of development.

Agriculture: None, not appropriate for any sort of economic activity.

Solar Energy: None, installing solar panels would reduce landscape value.

Tourism: Management plan to maintain landscape quality for visitors, users, and future generations.
7. Ara’s Heart (Canyon and cave)

A mosaic of photos from inside the cave, images show gifts left behind by pilgrims. Plants grow along the cracks of the cave as groundwater seeps through. Candles are placed here as well by people visiting the cave (Haroutounian, Fall 2018)

Entrance to canyon area. Native Oak’s on the hillside, unique rock formations midground (Haroutounian, Fall 2018)
Location and Context: The Heart of Ara is the cave within the canyon of Ara Ler (Mount Ara).

Key Characteristics: The canyon is located within the center of tall walls that surround the canyon, within the canyon, there are picnic areas and a cave that is used for pilgrimage. The natural landscape contains native oaks, rosehip, and other sub-alpine scrub species.

Landform: Canyon enclosed on all sides by towering walls, with a cave in the center of the canyon that has water flowing through it.

Landcover: The landcover consists of natural sub-alpine grasses, shrubs, and trees, including some rosehip and native oaks. There is one asphalt road that leads to the cave entrance and some picnic areas.
Perception: As explained by the local community, the cave in the middle of the canyon is used as a pilgrimage site for people who are having a hard time conceiving. They will visit the cave and make an offering in return for their wish, and if the wish is granted, they return to the cave and leave behind a religious relic to complete their pilgrimage.

Landscape Character: The canyon itself is very secluded and serene. The weathering on the canyon walls has a very deep timeline and overall has a very strong effect on the person experiencing the landscape.

Landscape Quality: The landscape is mostly in natural form, excluding a guard station, asphalt road, and the picnic area which is of very low quality and unmaintained.

Landscape Value: The canyon and canyon walls are one of the most interesting landforms in the watershed study area with unique geology that is not visible in any other landscape area of study. They possess a singular unique value.

Landscape Capacity: Ecological value only.

Development Scenarios: The main development scenario is for tourism and outdoor recreation. The area needs to be protected and assigned specific landscape heritage values.

Settlement: None, not appropriate for any sort of development.

Agriculture: None, not appropriate for any sort of economic activity.

Solar Energy: None, installing solar panels would reduce landscape value.

Tourism: Management plan to maintain landscape quality for visitors, users, and future generations.
8. The Wedding Belt (River Canyon Villages)

Saint Gevork Monastery of Mughni on road leading from Ashtarak to Wedding belt villages (Haroutounian, Fall 2018)

Roadside view of wedding belt villages, with Mount Ara Ler in the background (Haroutounian, Fall 2018)

Water fountain sculpture located in the village center exposed natural gas pipes, and Walnut trees (Haroutounian, Fall 2018)
Location and Context: These few villages all lie to the west of the Kasagh River and the north of the Yerevan/Gyumri highway. In between the highway leading to Aparan and eventually to Georgia. These villages include Mughni, Karbi, Ohanavan, and Saghmosavan.

Key Characteristics: These villages are comprised of rural homes with fruit orchards either attached to residences, in proximity, or at village edges. These villagers being on top of the river gorge are cooler in the summer compared to the lower valley villages. They each have a small downtown square with a few stores a water fountain and bus stops. The villages are mostly known for their proximity to the main churches that they are built around. Saint Gevork Monastery of Mughni, Hovhannavank of Ohanavan, and Saghmosavank are located in Saghmosavan.

Landform: The landform begins here at the edge of the river gorge and extends west until it meets the Aparan to Yerevan North-South Highway. The villages are mostly flat and slightly 5% sloped land.

Landcover: These villages are settled quite extensively by rural homes between 600-3,000 square meters in size, with most villages engaged in agricultural activities with fruit orchards being the prominent activity. There are patches of wild grass in between village edges. The villages are mostly populated by residents with some of the homes being used as summer homes for Yerevan residents and or diasporans.

Perception: The landscape of the villages and surrounding areas change seasonally, and the churches and river gorges are used extensively for day trips and weekend trips. The area due to its topographic changes and view vistas that extend in all directions offers a very picturesque image that most visitors cannot find in other parts of Armenia.

Landscape Character: The landscape character is typical mountain orchard villages with a rural feel. The homes in the village offer more variety in materials build and quality, and they are
usually enclosed with decorative stone, paint, and different roofing. They usually have walled entrances that are also designed for aesthetic purposes. The roads are in good condition.

Landscape Quality: The landscape quality is mostly intact in these villages, the edge conditions between, homes, roads, orchards, and other landscape elements are not very strong, at times with people abandon old car frames outside of their homes or immediately outside the village. There are some signs of blight in the form of outcropped stones and boulders in between village edges. In comparison to other landscape areas, the character of these village landscapes is in better shape.

Landscape Value: These village landscapes are typical for rural villages in the area and are productive rural orchard villages and inhabit a particular place in the cultural landscape.

Landscape Capacity: The landscape is limited by the river gorge edge and the Aparan to Yerevan Road. The edge closest to the river is populated densely with residential buildings yet can house more in the village edges that are currently unutilized. The vast agricultural lands in between the villages running towards the Aparan to Yerevan Road can be developed more extensively for agricultural purposes.

Settlement: Rural revival is the best scenario for this Landscape type.

Agriculture: Small and medium-sized orchards and food processing centers.

Solar Energy: Small and community level solar.

Tourism: Active tourism and bed and breakfasts can also be developed in this region. Mountain biking, rock climbing, and trails down to the river and through the river can be created. The character of the central squares of the villages needs to be reinforced through zoning and economic activity encouragement.
9. Karbi River Gorge (River gorge rest areas)

The swimming pool was built for tourism and picnic areas on the north side of the ravine (Haroutounian, Fall 2018)

River flow during spring, retaining walls made of local stone and ornamental trees are planted in picnic areas (Haroutounian, Fall 2018)

The road leading into the ravine (Haroutounian, Fall 2018)
Location and Context: The Karbi River canyon is at the edge of Karbi village road that leads down to the Kasagh River and beyond to the Ara Ler Apple orchards to the east, Ara Ler to the north, and Nor Yerzenka to the southeast.

Key Characteristics: The river gorge is in a canyon surrounded by steep canyon walls. The main vehicular access areas to the river are utilized as private rest areas with individual covered picnic areas that can be rented for a fixed fee. These rest areas usually contain playground and community pool areas as well.

Landform: River canyon enclosed on all sides by towering walls. The river areas are usually wider in the areas where roads are constructed and less wide as you move away from the main vehicular entries. The landform allows for cool air from the Aparan forest, located at a higher altitude to come down through the canyon. The walls also shade out the sun from the river canyon; the two previous factors along with the presence of water create a very cool microclimate.

Landcover: The landcover contains natural trees and shrubs that are endemic to the area. There is also a good presence of riparian plant species and habitat throughout the river canyon, with more concentrated along the wider areas located next to roads. The area alongside roads is built up with some energy infrastructure buildings, and private picnic rest areas which include covered picnic areas, restaurants, community playgrounds, and swimming pools.

Perception: The canyon is mostly perceived by residents as a rest belt that people will use for picnicking, organizing BBQs, and celebrating family events. It is one of the river rest belt areas of Aragatsotn and during the spring, summer, and fall months it is heavily utilized by both local, national, and small groups of international tourists. Universities, businesses, schools, and other organizations along with families will organize their annual picnics or outings in this area and similar areas in the region.

Landscape Character: The river canyon has interesting natural elements including riparian elements consisting of reeds and associated flora and fauna. The rest areas are usually constructed using vernacular architecture using local materials and imported materials.

Landscape Quality: The natural landscape has been altered significantly along roadsides to create wider flat areas for rest belt development. The landscape quality beyond the rest belts is overall more intact except for irrigation pumps, irrigation pipes, and other utility infrastructure located along the river.

Landscape Value: The river channel currently provides mostly passive recreation value for a large portion of local and regional level users. It has an opportunity to provide active recreation as well if the infrastructure in the form of trails was developed for hiking, biking, rock climbing, and other active recreation activities.

Landscape Capacity: For recreational purposes, the landscape is at full capacity. For active recreation, it may be developed further.
Development Scenarios: The main development scenario is to make sure that the rest belts provide access to active recreators that need to access trails that are located beyond their rest belts. Also, a sustainability plan may need to be developed to increase ecologically sustainable development in this area.

Settlement: The area is built up to the maximum that the landscape will tolerate and cannot be developed further.

Agriculture: N/A

Solar Energy: N/A

Tourism: Passive tourism is fully developed. May be developed further for active tourism.
10. Hovhannavank & Saghmosavank (Significant Heritage Landscapes)

*Hovhannavank Monastery with Mount Ara Ler in the background (Haroutounian, Fall 2018)*

*View of the ravine from Hovhannavank Monastery (Haroutounian, Fall 2018)*

*Cross stone and historic tombs next to church within monastery (Haroutounian, Fall 2018)*
Location and Context: The two church monasteries are located along the eastern edge of the Kasagh River. Immediately in the foreground of Ara Ler (Mount Ara).

Key Characteristics: Both the monasteries are both significant for their structures and their ability to be a focal feature of the landscape they inhabit. Saghmosavank was built in the 13th century and Hovhannavank was founded in the 4th century. They both are surrounded by fortresses that are currently in ruin.

Landform: The landscapes are located on top of the deep river gorge, in flat areas.

Landcover: Historic culturally significant buildings with ancient graveyards adjacent, village houses outside the fortress walls. Wild grasses and native shrubs cover most of the landscape.

Perception: The monasteries here are the central element that ties the landscape together. They complete the landscape and instantly conjure up images of the traditional Armenian landscape paintings found in most homes. The landscapes areas where the monasteries are physically located and the landscapes in the background create one whole landscape.

Landscape Character: The character of the landscape is of significant cultural heritage value; its character overall is intact with a time depth that goes back a few hundred years.

Landscape Quality: The quality of the landscape around the monastery buildings is at times reduced with the addition of entrances to adjacent properties, contemporary use of construction material which takes away from its ancient feel. Also, in some areas, there are barren areas within the wild grasses from people walking back and forth.

Landscape Value: Significant landscape heritage value for both locals and tourists to the area.

Landscape Capacity: None beyond current.

Development Scenarios: The main development scenario is the historic preservation and repairing of the fortress walls that are around the monasteries currently in ruin.

Settlement: There are numerous homes around the monasteries and the immediate homes around the monasteries usually set up booths outside their homes to sell souvenirs, edible homemade goods, fruit preserves, and other goods. These homes are contemporary in aesthetics.

Agriculture: Some smaller orchards around the monasteries.

Solar Energy: N/A

Tourism: There is a significant opportunity for tourism development. This would require improving automotive circulation to the monasteries. Also, rebuilding the fortresses around the monasteries would improve their overall quality and historic value. There are experts at the architectural museum that can help make this a reality. Two of them were informally interviewed during this research study.
11. Mughni to Ushi Roadside Orchards (Aragatsotn Rural Roads)

Greenhouses located next to main roads access natural gas infrastructure easily (Haroutounian, Fall 2018)

Mount Ara Ler from min highway leading from Yerevan to Aparan, Wedding belt village pastures in the foreground (Haroutounian, Fall 2018)

Wedding belt village settlement as viewed from Yerevan to Aparan road (Haroutounian, Fall 2018)

Location and Context: This is a stretch of the M3 Highway leading from the Yerevan, Gyumri Highway intersection towards Ushi, Aparan, Vanadzor, and eventually to Georgia.
Key Characteristics: This landscape type is a combination of picturesque agricultural landscapes, rural villages, and roadside development. The roadside developments in this portion include compressed natural gas stations, small grocery stores, greenhouses, roadside fruit vendors, along with utility lines, water irrigation pipes, natural gas lines. The landscape in some patches also has remnants of property walls that demark property lines.

Landform: The landform slopes up as you approach from the south with a slight slope as you travel north, gradually increasing. On both sides of the road is agricultural land that is mostly flat with a 5% slope.

Landcover: The landcover along the road is usually automotive service structures and small service and retail buildings. The rest of the landcover is wild grassland pastures, agricultural mediums, large orchards, and villages with rural houses with adjacent orchards surrounding the residential village core.

Perception: The roadside condition has no formal zoning in place, leading to service stations and other development all along the road. This might have to do with the fact that the main gas lines run along the roads making it easier to establish greenhouses and other gas-intensive businesses along the road. The condition of the roads is overall picturesque beyond the immediate roadside.

Landscape Character: The character is choppy, with roadside services and shops littered throughout the landscape. The quality of landscape around the main roads is low.

Landscape Quality: The roadside development extends linearly along the road, lowering the overall quality of the landscapes slowly bringing villages closer in a sprawl-like fashion.

Landscape Value: The landscape value currently is due to its proximity to the road for business developers. Further back from the road, the main value is for agriculture and rural residences.

Landscape Capacity: The capacity for agriculture is present along with alternative energy and rural residences. The capacity for agriculture is the most significant.

Development Scenarios: The main development scenario can be agriculture at all three scenario scales. There is also some opportunity for solar development.

Settlement: The land is fertile in this area and has plenty of access to irrigation water. It would not be the best option to increase settlement in this area.

Agriculture: Access to irrigation water, fertile soil, access to main roads, and south-facing slightly sloped lands makes this area very suitable for agriculture on all three scales.

Solar Energy: Possible for rural homes and villages.

Tourism: Possible opportunities for orchard visits, fruit picking, and fruit sales along the road. Mostly used as a pass-through area with scenic value.
12. Parpi, Karbi, Ushi, and surrounding villages (Middle Valley Villages)

Residential homes with larger orchards at the edge of the village (Haroutounian, Fall 2018)

Smaller orchards and residential in the background as you get close to the village center (Haroutounian, Fall 2018)

Fall color wild shrubs roadside at the entrance to the village (Haroutounian, Fall 2018)
Location and Context: These three villages, along with adjacent villages, make up the gradually sloping inner valley villages of Aragats mountain’s southern watershed. They are located west of the M3 Highway.

Key Characteristics: These villages are adjacent to tributaries of the Kasakh River. Most of these villages have single-family homes with attached orchards with orchards surrounding the village areas. Some of the homes are summer homes in these villages as well. There is a large irrigation channel that runs above to the north of these villages.

Landform: Slightly sloping large extensive valleys with some villages located in more surrounded intimate valleys, river tributaries along all villages.

Landcover: Rural homes and orchards mostly, some rough grazing.

Perception: These villages are a combination of productive agricultural villages and summer homes. They are at the edge of the rural fringe and the rural hinterland. They do not have many tourist offerings and are quiet in cultural activity. They are also quiet with very little physical movement when observing from afar. They have a sleepy village feel, with limited infrastructure.

Landscape Character: The landscape character is rural orchards one to ten thousand meters in size, along with residential rural homes located on an average of one thousand meter lots in the village central area, and larger orchards below a few hectares in size immediately surrounding villages. Character is of average quality, with road infrastructure needing repair, and street lighting. Houses are typical rural houses made of tuff blocks, which have stucco finishing, tin, or metal roofs, with large iron doors and maybe some architectural elements such as balconies with arches.

Landscape Quality: The orchards all seem to be newer planted orchards of 20-year-old trees. The orchards provide a patchwork quality to the landscape and indicate economic activity in its infancy. The roads need improvement, and there is trash, debris, open trash dumping areas, along with outcropped boulders and other construction waste at the entrances of villages. Some villages have unoccupied homes with no windows, speculatively built homes that are empty.

Landscape Value: Agrarian fruit orchards in quaint rural hinterland edge villages where some people choose to spend their summer and winter holidays. The landscape’s value is in its ability to be colorful in spring and represents the typical orchard villages in Armenian paintings. Most of the value is in agriculture. The villages beyond this have no historically significant buildings except for Ushi which has an ancient church Saint Sargis Monastery and the Ushi Fortress to its north.

Landscape Capacity: Has potential for increasing fruit orchards especially due to access to irrigation water in proximity, along with forestry efforts especially as they can link to forest edges to the North of the villages. Could accommodate more summer homes but should be concentrated in built-up village areas or will run the risk of becoming rural hinterland sprawl.
Development Scenarios: The main opportunities are for medium and large-scale solar, orchards, and rural revival. Nothing significant for tourism, except for some active tourism possibilities and the historic monastery along with its adjacent fortress. The presence of the main water canal makes these villages along with adjacent lands well suited for agricultural development.

Settlement: The area could be settled further but would have to follow the rural revival scenario to keep character and landscape orchard patchwork. Currently, village centers are not interesting.

Agriculture: The presence of the main water canal makes these villages along with adjacent lands well suited for agricultural development at medium and large scales.

Solar Energy: Possible at small, medium scale, and large scale. South-facing hillsides.

Tourism: Could develop horseback riding further due to the hippotherapy center. Historic tourism could be developed as a part of the active tourism component due to the Saint Sarkis monastery currently being in ruin and need of repair. Also, there are some opportunities for bed and breakfasts, restaurants.
13. Alphabet Road (Grassland meadows)

Armenian Alphabet land art installation at the entrance of alphabet road (Haroutounian, Fall 2018)

Planted forest and picnic area along the road (Haroutounian, Fall 2018)

Soviet-era tree planted picnic area with “protect the environment” sign made of tuff stone (Haroutounian, Fall 2018)
Location and Context: The road forks from the M3 highway between Ashtarak and Aparan. The road travels northwest through vast open grassland meadows and scrub landscapes from the M3 Highway to the Amberd and Byurakan intersection.

Key Characteristics: The entrance to this landscape area begins with an art installation of the Armenian alphabet. The Armenian Alphabet has been carved out of local tuff stone at the entrance of this intersection using traditional cross-stone methods and motifs. Beyond the initial touristic area, the landscape consists of low rolling grasslands along with pools of water where cattle congregate. Halfway up the road, there is a planted picnic area with pine trees. As the Amberd intersection gets close, the presence of native oaks can be seen to the north of the road which are amber in color during the fall season.

Landform: Gentle rolling hills throughout this area. There are areas where water draining from higher up the mountain runs down through small streams and creates pools of water all along this area. The lower south of the road portion of the area is mostly flat and gently sloped.

Landcover: The area is covered with wild grasses mostly and wildflowers, wild oaks, and native shrubs, some areas are covered with planted pine trees for the creation of rest areas. There is one asphalt road in this area and some compacted dirt roads to less-traveled areas. There are no major settlements in this area or dwellings.

Perception: This area is very open in its presentation and offers a great 360-degree view from anywhere in this area, the mountain being in one direction and wide-open fields in others. There are often beekeepers in this area, and or shepherds tending to their sheep or cattle. The feeling is wide open for most of the area, and it elicits exploration. The planted picnic area provides a sense of enclosure and limited protection from the sun and wind. The presence of wild apple trees in this area also makes it a welcoming rest stop. The Stone that has been used to create a ‘protect nature’ sign elicits the presence of maintenance and or management of the site. Overall, the area is very serene and safe. A great staging area for the rest of the landscapes that follow as you move up the mountain.

Landscape Character: Typical of grassland meadows in this mountain range area. Famous for its rolling hills, picnic areas, and seasonal beekeepers. It is known as the main entrance road to Amberd and beyond to Mount Aragats. It is also famous for its numerous land art installations. The alphabet cross-stones, and the famous large cross made with many smaller crosses memorializing the victims of the Armenian genocide.

Landscape Quality: Very high-quality landscapes with limited disturbances cover most of this area. The edge condition of the alphabet cross-stone area is of lower quality and there is an incomplete feel to the actual site. It needs further improvements to have a finished complete look. The presence of other monuments beyond the genocide memorial and the alphabet cross-stones may possess a risk to the overall quality of the landscape as the area begins to have too many monuments that take away from the wholeness of the natural landscape.

Landscape Value: High cultural value of hillside landscape is represented in famous Armenian art depicting natural landscapes and rural painting backdrops. The seasonal color changes in the landscape provide a sense of death, rebirth, and hope that is also present in the people’s
perception of the landscape. The cultural association beyond this can be its representation natural landscape where one can find shepherds tending to sheep and find buses or trucks with beekeepers nearby selling honey.

Landscape Capacity: For recreational purposes, the landscape can be modified further, especially for active tourism and other outdoor low-impact development. It may also be possible to increase the forested area that is covered with native oaks.

Development Scenarios: The main development scenario is the increase of naturally forested areas and active recreation.

Settlement: No major infrastructure in place and higher altitudes may not make it suitable for settlement. Very low settlement value.

Agriculture: Seasonal honey keeping, rough grazing, and seasonal crop and orchards at the southern edge bordering villages.

Solar Energy: N/A due to the high aesthetic quality of the landscape and lack of grid connection.

Tourism: Active tourism is the main development scenario possible in this area. With the creation of off-road driving, biking, and hiking trails, along with campsites, and picnic areas.
14. Byurakan & Amberd Intersection (Scrub grassland meadows)

Native Oak Forest at the crossroad leading from Alphabet Road to Amberd and Byurakan village. (Haroutounian, Fall 2018)

The natural forested area leading to Amberd/Byurakan Fork from Alphabet monument (Haroutounian, Fall 2018)

Amberd fortress and church are in the middle of the photograph, scrub landscape in the foreground (Haroutounian, Fall 2018)
Location and Context: This area includes extends from the intersection of the Amberd and Byurakan road to the river gorge and the hiking trail that leads to Amberd Fortress.

Key Characteristics: A large plateau running west from the road intersection with rolling hills east of the road intersection. Grassland meadows with some scrub landscape leading to the river gorge and beyond to Amberd Fortress through the river gorge.

Landform: Mostly flat plateau with some rolling hills to the east of the road.

Landcover: Mostly wild grassland, native oak forest, pine trees, native shrubs including rosehip, pine trees, asphalt roads, tuff block walls, and some fencing for the enclosure. Very limited settlement along intersection, with some seasonal structures throughout landscape used for temporary shelter.

Perception: Overall, the area feels safe, secluded, and appealing once off the main intersection road. Numerous landscape changes in a short span of space make for an interesting adventure launch pad area a middle mountain base camp that is reinforced by the presence of scientific centers and hotels near restaurants.

Landscape Character: The area has an overall unkempt look as there is chain-link fencing, crumbling block walls, numerous signs, along utility pylons along the main intersection. Beyond the immediate intersection, the landscape becomes more pristine and unaltered except for some tuff-made dwellings that are used to house animals temporarily by shepherds during the rough grazing season.

Landscape Quality: Pristine grassland landscapes along with river gorge hiking trails are of very high quality.

Landscape Value: Scenic beauty along with passive and active recreation, rough grazing, ecological value to flora and fauna.

Landscape Capacity: Light trial modifications for hiking, camping, and walking trails.

Development Scenarios: A launchpad for active sports.

Settlement: N/A

Agriculture: Possible reforestation efforts along edges of forested areas.

Solar Energy: N/A

Tourism: Active tourism on a limited small scale.
15. Amberd Fortress Plateau (Aragats sub-alpine scrub landscape)

*Alpine scrub plantation leading to Amberd Fortress (Haroutounian, Fall 2018)*

**Location and Context:** This area begins stretch from the Amberd Byurakan intersection to Amberd national preserve.

**Key Characteristics:** Natural alpine scrub and meadow landscapes with a handful of built structures. Mostly unaltered landscapes with exception of roads and some utility pylons.

**Landform:** Rolling hills with steep hillsides and deep canyon ravines.

**Landcover:** Alpine meadows and scrub landscape with the presence of Artemisia species landscapes. No native trees are located throughout. Asphalt roads along with a handful of built structures are used to house utilities and animals during seasonal rough grazing.

**Perception:** Large, open areas and deep ravines are mostly unvisited by visitors to the area. The area feels like a drive-through area, for the most part, feels secluded overall and enclosed at some points when entering ravines.

**Landscape Character:** Overall, the character is natural minimally altered landscapes, with giant boulders in ravines that show the power of water and snowmelt that has moved these boulders down.

**Landscape Quality:** Overall high quality except for some abandoned crumbling Soviet-era animal housing structures.

**Landscape Value:** Ecological services for humans and other species, seasonal rough grazing, cultural value of unique landscape formation, tourism value. There are also recently discovered archeologically significant rock formations named “Land Kites” in this area.

**Landscape Capacity:** The landscape capacity for most development scenarios is limited, some active tourism may be possible.
Development Scenarios: The main development scenario is the possibility of hiking trails and other active recreation possibilities.

Settlement: N/A

Agriculture: N/A

Solar Energy: N/A

Tourism: May be developed further for active tourism.
16. Byurakan Village (Aragats Mountain Village)

Newly paved and updated road in Byurakan with surface drains adjacent (Haroutounian, Fall 2018)

Poplar trees planted in yards, roadside, and along waterways, can be found in landscape paintings as well (Haroutounian, Fall 2018)

Seasonal crop fields and mixed orchards south of Byurakan lead to the main Ashtarak Gyumri Road (Haroutounian, Fall 2018)
Location and Context: Byurakan is located on the foothills of Aragats mountain. It is a mountain village situated adjacent to a river canyon.

Key Characteristics: Byurakan is a main village of the study region, it houses the Byurakan Observatory, numerous sanitoriums with limited function from the soviet period, along with campsites and other recreational facilities due to its proximity to the Byurakan forest. It also has significant archeological sites. Densely populated village with pre-Soviet era architecture.

Landform: Gradually sloping plateau next to the river gorge.

Landcover: The village is surrounded by natural forests and is covered with densely packed residential rural homes, surrounded by campsites, sanitoriums, and urban orchards.

Perception: Overall, during the day, the village is inviting and pleasant to pass through. At night, it is darker and closed off.

Landscape Character: Byurakan is the most maintained and one of the wealthier villages in the study area. This is evident by the newly updated roads and irrigation channels constructed adjacent to the roads. It also has examples of streets that are pre-soviet era which provides the village with an interesting time depth.

Landscape Quality: The quality of the landscape is overall acceptable, yet it can be improved by placing attention on the aesthetics of roads, barriers condition such as fencings, block walls. Removing blight and trash including construction waste from the village landscape would improve the landscape significantly.

Landscape Value: Residential, summer homes, tourism, forest for ecological services, agricultural value.

Landscape Capacity: Residential, tourism, active and passive tourism, agricultural improvements.

Development Scenarios: Passive and active tourism. agriculture, solar energy, all possible.

Settlement: The residential areas can be significantly improved in quality yet due to limited density issues may not be able to sustain a development scenario except for rural revival.

Agriculture: Rural revival and possibly medium-scale outsider village residential core area.

Solar Energy: Individual solar and community solar is possible.

Tourism: Passive and active tourism is possible.
17. The Breadbasket Villages (Aragatstn agricultural fringe)

Typical Season crop field in flat valley areas (Haroutounian, Fall 2018)

Rural home with an orchard in the middle of the photo surrounded by grassland meadows and scrap landscape (Haroutounian, Fall 2018)

Scrap and grassland meadows in lower valley areas (Haroutounian, Fall 2018)
Location and Context: The area runs along the M1 from Ashtarak to Ujan village and covers the agricultural and archeological lands along the main highway. It includes the agricultural lower flatlands of Ashtarak, Agarak, Voskevaz, and other villages in the plain area.

Landform: Mostly flat with some small hills throughout in small patches.

Landcover: Wild scrub grassland, seasonal crop, archeological and geologically significant areas around hills. Settlement in the form of rural residential, greenhouses, factories, utility pylons, roads other commercial buildings.

Perception: The area is a mostly agrarian flat land and is known as such by most visitors and locals. Along the main roads, there are fruit stands and farmers are usually selling their products along with fruit preserves and other homemade goods. Overall, the area has a hearty agrarian feel once beyond main road areas it is vast open, and quiet mostly. Storks can be seen in the summer and fall nesting on top of utility poles.

Landscape Character: The character of the landscape reflects its agrarian use with small and medium-sized seasonal crop plots next to each other, dotted with some guardhouses, greenhouses, factories, roadside shops, and service stations, memorials. All are surrounded by wild grasslands.

Landscape Quality: The patchwork of land use reduces the overall quality of the landscape since there is no consistency in land utilization, along with blight conditions throughout the landscape, especially along main roads. Memorials in areas not maintained regularly again show signs of blight.

Landscape Value: Agrarian is the main value of the landscape for most of the area.

Landscape Capacity: Agrarian and solar in hillsides and tourism.

Development Scenarios: The main development scenario is agriculture and solar.

Settlement: Possible rural revival.

Agriculture: Small, medium, and large scale possible.

Solar Energy: Individual solar, community solar, and large solar are all possible in agrarian adjacent lands.

Tourism: Agricultural tourism is possible especially in viniculture due to the large number of wineries and food processing plants in the area.
Appendix 2: LCA Desk Study Maps & Archival Photos

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May 2021
A. National Scale Supporting Maps

The map was referenced to interpret the landcover in the study area, to name character areas, also was used to inform development directions (http://maps.unomaha.edu/)
The map was referenced to inform development directions and to inform plant community borders, and where agricultural activity is no longer viable. Was also used to inform landscape area/type borders and in naming areas such as “alpine meadow grasslands, or alpine scrub” (http://maps.unomaha.edu/)
Geographic Regions: The map indicates that the study area is mostly located on Central volcanic highlands (http://maps.unomaha.edu/)
Key Soil Types: The map was referenced to inform development directions for the study area. (http://maps.unomaha.edu/)
Geological Map of Armenia: Informed landscape character assessment which has geological data as a layer for the desk study portion. The study area mostly formed during the Miocene period (American University of Armenia)
Annual Precipitation: Informed development directions of the case study area (American University of Armenia)
Forests Map: Indicates the presence of a small patch of forest in the study area, also shows the main river net. Informed development directions (American University of Armenia)
Direct Normal Irradiation: The map was modified, and a scaled overlay was placed on top of the study area to inform solar energy development scenarios. Dark orange indicated 4.6-4.8 kWh per square meter, with a yearly total of 1680-1753 kWh per square meter, based on daily/yearly average sums from 1999-2015. Link to full-size legible maps (https://globalsolaratlas.info/download/armenia)
Global Horizontal Irradiation: The map was modified and a scaled overlay was placed on top of the study area to inform solar energy development scenarios. Orange indicated 4.4-4.6 kWh per square meter, with a yearly total of 1607-1680 kWh per square meter, based on daily/yearly average sums from 1999-2015. Link to full-size legible maps (https://globalsolaratlas.info/download/armenia)
Photovoltaic Power Potential: The map was modified, and a scaled overlay was placed on top of the study area to inform solar energy development scenarios. Dark orange indicated 4.2-4.4 kWh per square meter, with a yearly total of 1534-1607 kWh per square meter, based on daily/yearly average sums from 1999-2015. Link to full-size legible maps (https://globalsolaratlas.info/download/armenia)
B. Provincial Scale Supporting Maps

*Aragatsotn Province Sites of Interest Location Map: Red box indicates the case study area of Ashtarak Watershed (T.Acentral.com)*

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Sites of Interest Watershed Scale Zoom: Red box indicates the case study area (TAcentral.com)
Settlement Map of Aragatsotn: The online version of the maps is interactive and provides data on each settlement area, was used to inform the LCA (http://www.virtualarmenia.am)

Stress on Ecology Map: Dark red indicates high stress, red medium stress, pink indicates light stress. The bar scale on the bottom right is in Kilometers (Khoyetsyan and Khachatryan 2016)
Ecological Sensitivity Map: Brown indicates highly sensitive, yellow indicates medium sensitivity, light yellow indicates light sensitivity. The bar scale on the bottom right is in Kilometers (Khoyetsyan and Khachatryan 2016)

Erosion Map: 1 sporadic low, 2 mostly low eroded, 3 low eroded, 4 low and moderate, 5 low and sporadic moderate, 6 sporadic moderate, 7 mostly moderate, 8 complete moderate, 9 mostly moderate and high, 10 moderate and high, 11 medium and high, 12 Alluvial deposits, 13 No erosion (Khoyetsyan and Khachatryan 2016)
Land Cover Map: The map was modified and overlaid to the case study area and was utilized to delineate landscape areas and inform development directions. Legend, as it pertains to the case study area, has been translated on the case study scale map in the main text (Khoyetsyan and Khachatryan 2016)

Arable Land Map: Brown indicates arable land, pink indicated alluvial soils, used for LCA area delineation and development directions. Scale in Kilometers (Khoyetsyan and Khachatryan 2016)
Grassland Biomass Map: Shades of green indicate the corresponding amount of grass coverage density per hectar. Scale in Kilometers (Khoyetsyan and Khachatryan 2016)

Land Use, Improvement, and Protection Map: lightest brown indicates usable land, brown indicates the need for improvement. Dark Brown indicates the need for protection (Khoyetsyan and Khachatryan 2016)
**Ecological Framework Map and Protected Areas Map:** Square green areas are protected areas. Dark green is forested areas, green are areas that should be protected. Map scale in kilometers. Used to inform LCA areas. (Khoyetsyan and Khachatryan 2016)

**Landslide Map:** Purple indicates level 1 landslide area, pink indicates level 2, light pink indicates level 3, beige indicates stable areas (Khoyetsyan and Khachatryan 2016)
Rock Quarries Map: Indicates rock and aggregate quarries in the province (Khoyetsyan and Khachatryan 2016)

Moisture sensitivity Map: Dark blue indicates highly sensitive to moisture loss, blue indicates medium sensitivity, and light blue indicates low sensitivity (Khoyetsyan and Khachatryan 2016)
Natural Soil Disturbance Map: Dark blue indicates strong disturbance of soil, blue indicates medium, and light blue indicates low disturbance (Khoyetsyan and Khachatryan 2016)

Soil Types Map: Map used to create case study scale map with pertinent layers translated into main text (Khoyetsyan & Khachatryan 2016)
Surface Rockiness Map: Gray indicates lack of surface rockiness, sand color indicates low rockiness, light brown indicates medium rockiness, dark brown indicates high rockiness, pink indicates alluvial soil (Khoyetsyan & Khachatryan 2016)

Hydrology: Map reduced and layered at case study scale with appropriate details provided in the main text (Khoyetsyan & Khachatryan 2016)
C. Historic Photos of Ashtarak Watershed

Ashtarak 1938 (Kasparyan, Armenian History Museum)

House in Ashtarak 1938 (Kasparyan, Armenian History Museum)
Road to the Saint Kevork Church and Mughni (Kasparyan, Armenian History Museum)

Road to the Old Bridge 1938 (Kasparyan, Armenian History Museum)
Orchard Road 1938 (Kasparyan, Armenian History Museum)

Women Harvesting Grape 1940 (Kasparyan, Armenian History Museum)
Men Making Wine 1938 (Kasparyan, Armenian History Museum)

Grape-stomping, Clay Wine Jugs 1938 (Kasparyan, Armenian History Museum)
Underground Bread Oven 1938 (Kasparyan, Armenian History Museum)

Women making flour 1934 (Sover, Armenian History Museum)
19th Century Buildings in Ashtarak, Demolished in the 1960s
19th Century Homes in Ashtarak

19th Century Home in Ashtarak

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Saint Mariana Church 1938 (Kasparyan, Armenian History Museum)
House Entrance 1938 (Kasparyan, Armenian History Museum)
D. Historic Photos of Ashtarak Watershed Modernist Period

Radio physics and Electric Energy Institute 1972

Soviet Academy of Sciences Building Built-in 1960s
Located in Ashtarak Science City District
Sasunik Area Buildings (Bedrosyan, Tamanyan Museum)

Soviet Modernist Era Apartment Buildings with Modified Balconies
Ashtarak Soviet Modernist Hotel (Tamanyan Museum)

Ashtarak Town Square & City Hall
Growth Plan of Ashtarak City: Top Left is up to 1948. Top Right is of 1948, as the city grows towards the south of the Kasagh river. 1960 on the bottom left shows growth further south and to the west of the old town area central Ashtarak area of 1948. 1974-2000 plan shows the city encompassing neighboring lands (Tamanyan Museum)
Appendix 3: Interview Transcript Sample

Semi-Structured Interview

Sample transcript

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May 2021
A. Interview Sample Transcript

Settlement: Per the interviewee affordable housing for new families needs to be created in Ashtarak’s city center. The current housing price is too expensive for newlywed couples to afford forcing them to move to Yerevan to find jobs and more affordable housing options. The city needs restaurants, bars, but they need to have a level of class where people can go that has an ethical level to them. There also needs to be money for transportation to the city, and small business development. The cultural minister needs to move to the fortress at the entrance of Ashtarak, or a part of the architectural school, sculpting school, and similar types of activities. My friend jokes that we have tuff stone, and we use it to make bricks, if the Europeans had the same stone, they would work wonders with it.

There are the old pre-soviet buildings in Ashtarak that are falling apart, and one knows who owns them, the city owns them but really, they say they don’t, and they’re just falling apart. The problem is no one takes responsibility for affecting change or solving the issues at hand. If you ask a mayor why the snow hasn’t been cleared up, he’ll answer with “just wait, it will leave on its own just the way it came” and this is the attitude of authorities, it’s a cultural issue. The Syrians came they bought old buildings and opened a restaurant, that brings me joy when I pass by to know that they saved that building and now it’s a living part of Ashtarak culture.

As far as growth I think Ashtarak should not touch any other city. It needs to be stand-alone and it needs new housing that needs to be less than 5 stories, I think 3 stories is the best. People are getting married, and they don’t have a place to live. I think the state needs to subsidies or make it easier for people to build housing in Ashtarak.

Tourism: Per the interviewee. The churches can be renovated to bring back their ancient feel, in specific Amberd can be renovated into a full fortress that can house visitors overnight and provide a stay in an ancient setting with no electricity and the comforts of modernity, a religious retreat, or a monastic experience. There are lots of archeological sites in Ashtarak. Bronze age and other era burial sites, they’re not well taken care of, the cultural ministry should come up with a management plan and rent it to private entities that will take care of it and in return develop a tourist sight around it. There’s more to Ashtarak and the region than churches, picnic areas, and cafes.

The Amberd reserve is 48 hectares in size. The reserve starts at the Amberd/ Byurakan crossroads and goes down to the river gorge and follows the hiking trail to Amberd with the hills on both sides as part of the reserve. There are currently no guards or forest rangers that manage the site. There should be a staff, a guard, a caretaker, and a guide but there isn’t. There are cross-stones in the gorge, but you must walk to it, there’s no car access, but the landscape and the hike are great. Amberd fortress needs to be restored. The fortress with its 3 stories needs to be repaired, the inside can be a museum, with interactive elements that tell the story of the time, how the kings lived, where the guards stood, what they wore, how they lived. There were lots of homes on-site as well in close vicinity, some of these need to be rebuilt and turned into guest homes, so people can live how people lived in the 5th century for a few days, and can get an experience of how life was back then including food, drink, etc. There also must be a spiritual life to it all, they need to experience how that fortress and church functioned, so they can leave
the site comprehending the whole experience of the site. They need to see what table the royalty ate from, where they slept, a fully immersive experience. So we can take this fortress and compare it to other fortresses of the period and bring it all together to create an image of Armenian life of the time, we may for example borrow elements from the Ani fortress, from Bert, which are from the same period as Amberd. The old entrance to Amberd is from the hiking trail, so you can use horses to come up that way too, and why not this can also be a great tourism business. There is also a road from Tegher to Amberd. These trips also give people an experience of how people traveled in the 15th century before the advent of modern transportation. The hiking trails can also be used for mountain biking.

The monasteries in the region can also be repaired, and other fortresses such as the Ushi fortress which has a fully ready architectural reconstruction plan and is a fantastic site. All these cultural sites need programming, we can’t just repair them and leave them like that, we need to have cultural programming for these sites. A nice eco-tourism path can be drawn that connects all these elements through interesting landscapes. You can also do zipline from Amberd through the river gorge. There are ziplines in Davtashen, Yerevan, and in Apaga Resort, so Apaga resort is far from Yenokavan, Amberd is closer it would attract more visitors.

I also think a restaurant would be nice located in the vicinity of Amberd Fortress, but it needs to match the aesthetics of the place and have a unique design that has its local motives, and not the same table covers, and motives from traditional Armenian restaurants that you can find everywhere. Along with the restaurant you can have a modern hotel that is aesthetically blended into the landscape.

The goal is to go beyond looking at cultural sites as expenses and look at it as self-sustaining. The site must fund itself through methods such as these. Amberd should not be free, it should charge visitors a fee and use that fee to manage the site, so that we can build the entrance to the fortress, we can understand how people moved to their homes, to the church using the old streets. We may find donors as well to help fund this. The problem is right now that there’s nothing to do at Amberd except see the fortress and the church, which is a one to two-hour trip. But we need people to stay, we need them to spend time here, so we need active recreation and places for people to stay.

Agriculture: Agriculture in Ashtarak is not as successful as it once was due to farming lands being further away from the city’s urban core and being too small to make sense for farming for people that were living in the city or the close vicinity of the city. He also talked about his own experience with raising cattle and how it was not profitable since the grazing grounds were too far from Ashtarak city center to allow for profitable cattle keeping. In the higher grasslands, you can only do seasonal animal keeping, so you can only do it in the spring and summer when there is grass, it doesn’t make sense to produce milk using the feed in the winter. For the rest of the middle villages and below it can be profitable especially if you have over a few animals and you process the milk yourself into yogurt, cheese, butter, and other dairy products.

I had 5 cows, the other person had 3 cows, but we never interacted with each other, but if we collaborated, we could get a shepherd together, we can get a barn together, so we can have our animals sent up for rough grazing in the spring and summer and bring them back for the fall and
winter and keep them together. Now people can’t afford shepherds and they let the animals roam free which leads to animals eating neighboring farm products and arguments taking place. Now everyone is selling their animals, and it’s concentrating in the hands of a few owners, who are dictating the market price, making it impossible for the remaining small farmers to succeed, on the other hand, if there was a cooperative, then it could compete with the larger farmers.

Same with seasonal crops and orchards, if everyone sells their small plots of land then larger organizations are going to buy them and employ everyone. The solution would be to get 5 people together and have them all contribute to drip irrigation for example and have everyone work together to make products that make sense that we all agree on and we share the profit based on contribution, that’s how I see the future, but it may not be realistic. The 100-hectare owner employs everyone else, where else would they get the labor, and where else will the people work. The collective is one step above subsistence farming, so if managed properly it will give me more time to do other things than to tend to my farm all day. When I had 4 cows, 35 sheep, ducks, and an orchard, I ran around all day and made little profit, and it drove me crazy.

As far as greenhouses are concerned, I don’t think they’re a good idea here, we have good soil and should use it for apples, peach, grape, and other orchards. I think greenhouses are better suited in areas with bad soil quality. I also was considering making walnut oil. We don’t really process food in this region. The region’s processed foods are fruit soujoukh, cheres, and arani. We need small business ventures, not Armenia wine, it needs to be small quantities, products on a family scale. 150 bottles of wine per family for example, but it’s clear no one is going to get rich in a short period, but we need to start somewhere with humble expectations. What we need is people to motivate people and set an example. There’s a new bakery down the street and they make good bread, and I buy from them because it’s a part of my dream, so I want to support it and make it succeed.

Alternative Energy: There is electricity in Amberd, but we can easily get solar energy. So I can use the cow waste to create natural gas, but you can’t do that with 5 cows, I need 500 cows so that is why there needs to be a cooperative. I also think small electricity generators can be installed in the irrigation channels to power homes.

Additional Notes: Irrigation is lacking, I was paying 20,000 to water my land, and I had to water 3 times a year, plus fertilizers and pesticides and other operating expenses can get to be quite expensive, and if it hails, you’re done for. So, should the state not protect the farmer somehow? A 7,000-meter orchard for example needs insurance, the state needs to insure it for the first 10 years, even if it’s subsidized at 50 percent. People want to work but they need security, so insurance is the main concern for keeping people farming. You have force majors that are out of the farmer’s control, weather changes, climate issues, infestation. The risk is too high for people to manage that is why people abandon agricultural lands. You can see cows grazing where 100-hectare soviet farms use to be. We used to grow grapes now we keep animals instead on those lands.

Irrigation water is in terrible shape in Ashtarak, the mother channel that runs through Ashtarak was built by the Urartu. The rest of the irrigation water infrastructure was built by the Soviet Union which ended 30 years ago, and the system was probably installed 30 years before that;
after independence little was spent on maintenance, and now I have to pay 20,000 per hectare to
water my land, and I want to know why, and the service is not worth that much, so people steal
each other’s water, no one knows who controls the water. The state owes the infrastructure, but
they lease it to companies or local actors who manage them, it’s an unclear issue. There is no
issue with selling agricultural produce, the trucks park in front of orchards load all the produce,
and export it, but that’s a negotiation issue, but I don’t think the state should control the price,
the market needs to do that.

Ahstarak’s people are nice, they’re very hospitable, and the people are noble.
Soujoukh, Alani, Cheer, Chamich that’s what we’re known for.

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