# Transformative Urbanity:
# Inciting Gisenyi to Socio-Economic Development Through Cultural Landmarks

by

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Submitted in partial fulfilment of the requirements
for the degree of Master of Architecture

at

Dalhousie University
Halifax, Nova Scotia
June 2024

Dalhousie University is located in Mi'kma'ki,
the ancestral and unceded territory of the Mi'kmaq.
We are all Treaty people.

This thesis is dedicated to Immanuel the One who has always been by my side guiding me, teaching me, and empowering me with the desire to be the best virsion of myself.

# Contents

# Abstract

Gisenyi is the 5th largest city in Rwanda and suffers from a genocidal trauma that has rendered it incapable of urbanizing and developing. Despite its unique ecological advantages, the lack of social and cultural activities has created a dull sense of place and caused a rapid population decline. By analyzing the Rwandan culture and the national goals highlighted in the Integrated Development Program, this thesis provides cultural and urban tools rooted in nature, technology, and identity to develop a Utopian model that promotes socio-economic development. The model uses symbolically expressive landmarks with biophilic and technophilic attributes to encourage social activities, intellectual growth, and transcendental experiences that transform the self and the collective. This thesis proposes a University Campus in the guise of a regional landmark that includes a Public Market, a Genocide Memorial, and a Tech Centre individually expressing a unique cultural reflection of the Rwandan past, present, and future.

# Acknowledgements

I would like to thank my supervisor Cristina Verissimo for all the love, care, and support she put in me during this thesis which allowed me to develop my ideas without ever feeling limited or restrained. Thank you for letting me dream and be myself.

I would like to thank my advisor Michael Faciejew for the intellectual stimulation and insight he provided which opened my eyes to different ideas that enriched this project. Thank you for challenging me.

I would like to thank my mother for all the emotional support she gave me that encouraged me in hard times when I wanted to give up. Thank you for always helping me look up and reminding me who I am.

I would like to thank my father for having supported me all the years of my education and making it possible for me to reach here having never lacked anything. Thank you for taking care of me and giving me the opportunity to come this far.

I would like to thank the love of my life Hend and all my friends who stood by my side through the storm and cheered me to the finish line. Thank you for always believing in me, you mean the world to me.

Most of all, I would like to thank my God YHWH for giving me the dream and the passion to fight for what I believe. Thank you for your love that never fails and endures forever.

With a heart full of joy and love, I thank you all for this victory!

# Chapter 1: Introduction

## 1.1: The Necessity for a Better Reality

The world can be a cruel place sparing no one from the suffering realities that come from everyday life! You could argue the basis of this assertion but that would not negate the realities that many experience in the world. In many parts of the globe, people are still experiencing poverty, famine, war, homelessness, and a deteriorated life quality that impacts mental, physical, and spiritual health. Now more than ever architectural Utopias are a necessary avant-garde of change by providing tools and methods to sustain human needs for a better future. This makes Utopia a vision that offers a glimpse of an alternative reality for a better world not yet in existence and provides revolutionary minds with a goal to realize (Duncombe 2012, X).

### Building Hope for the Nation

Even though the many failed utopian attempts of the past have made it hard to reconcile the ideas of Utopianism with those of politics, notwithstanding these realities, Utopia is a political necessity (Duncombe 2012, XI) because it offers an alternative to create something better with an objective to reach (Duncombe 2012, X). In a country like Rwanda which has suffered due to political conflicts and has witnessed one of the most brutal historical events, presenting a Utopian vision can bring back hope and inspire the nation with a vision of something to achieve.


Figure 1: A comic panel depicting a “dystopian” world with Ushindi the main character of the story as he walks away in pursuit of a better and unseen future.


Figure 2: Photographs of different life conditions in rural areas in Rwanda.

## Culture of Knowledge

Thomas More was the first to introduce the term *UTOPIA* by creating a society that valued social life rooted in education, community, and collective labor (Hexter 1965, 83-84). By this standard of life, Thomas More attributed utopians with having the virtue of seeking innovative ways to create a better life for their society and their success was a result of their eagerness to learn and gain new skills (More 1901, 96). Thomas More's Utopian culture is a reference for an attitude toward knowledge that can bring change and transformation influenced by the spiritual drive to pursue and discover new ideas in search for the infinite.

## Seeking the Rwandan Utopia

Rwanda is one of the most rural countries in the world and has struggled to urbanize and develop. In modern-day Rwanda, rural communities have low education levels which leads to little economic opportunity. This has created in many parts of the country a low quality of life with neglected infrastructure, informal settlements, dull public life, and unsafe urban systems. In my observations, these underdeveloped conditions have made many Rwandan people lose hope for a better life and rather have accepted to live in their given circumstances. Figure 2 shows the current way of life in the public realm and concludes by showing a group of rural kids being shown something new. Though it is true that images speak a thousand words, I can assure you that no image could capture the brightly lit hearts of the young children who for the first time saw something that they never knew existed. Utopia is exactly this, it is the knowledge of a dim image that drives a spiritual desire to seek and discover the great beyond.

# Chapter 2: Origins

## 2.1: The Rwandan Nation

Rwanda is a country with a rich history and noble traditions. Despite all its historical and cultural beauty, the nation that is known today was founded upon a dark past that witnessed one of the most brutal and bloodiest genocides to have ever happened. Rwanda has always been a rural nation made up of three tribes with distinct social roles. In modern-day Rwanda, the cultural identity can no longer be easily defined as it has changed over time through the different events and circumstances that have mixed a multitude of cultures under the single Rwandan identity (Every Culture n.d.).

### Clans and Tribes

The origins of the Rwandan identity stem from ethnic tribes and clans that shared certain cultural traditions but were politically and socially divided due to different aspects of their everyday lives. Tribes were represented by social and labor qualities such as the Tutsi with pastoral activities, the Hutu with agricultural activities, and the Twa with craftsmanship (Every Culture n.d.). These social roles made the Tutsi a wealthier tribe due to meat and dairy trade which put them in power as the ruling monarchy despite Rwandans being a Hutu-dominant population. In fact, Tutsis were nomadic travelers who migrated and settled from the Great Lakes regions of Ethiopia whilst the Hutu and the Twa were of Bantu origins and had inhabited the areas long before (Study.com 2023). Nevertheless, for centuries the diffirent tribes coexisted in harmony without any radical desires to exterminate one another.

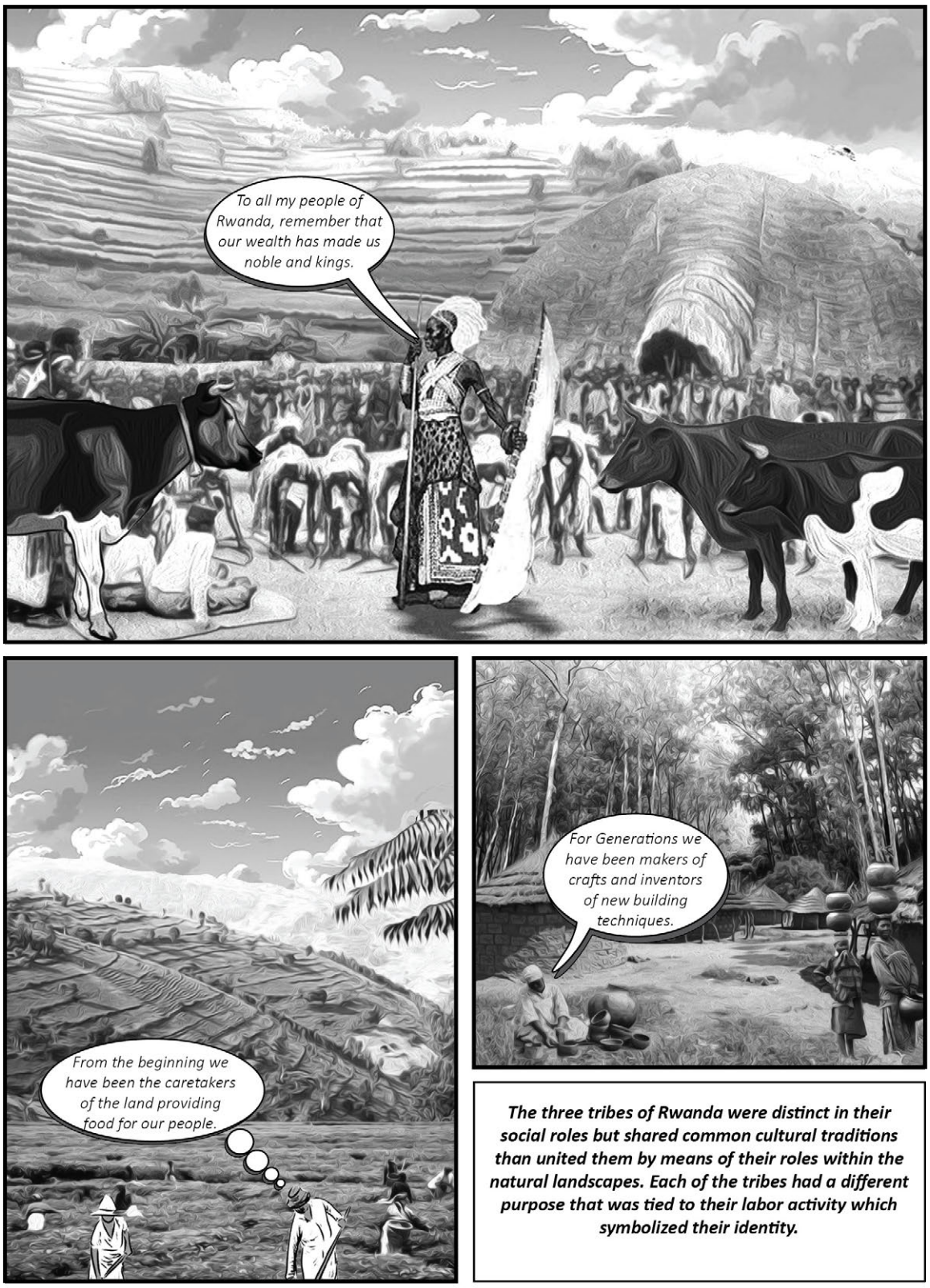



Figure 3: A comic panel depicting the different Rwandan tribes in their social and labor roles embedded in the natural landscapes.

## A Divided People

Upon the arrival of the Europeans into the country, there was a radical shift in the culture whereby the European settlers imposed their cultural identity onto the land. The European settlers built new infrastructure by trying to develop the parts of the country that they inhabited by creating new roads, institutions (Every Culture n.d.), and large vacation homes around Lake Kivu in Gisenyi. For centuries the nation had been a monarchy led by the Tutsi until colonialism delegitimized their sovereignty and put in place an all-Hutu government. This instigated the Hutu people to portray Rwanda as a Hutu-only nation and abolished all Tutsi symbols and emphasized on Hutu symbols (Every Culture n.d.). In the later half of the 20th century, the political conflict between tribes grew considerably and caused a mass displacement and migration of Rwandans to neighboring countries. Because many Rwandans were scattered across the world, those who lived outside the country retained a mixed cultural identity that was different from the wider national culture of those who remained in the country.

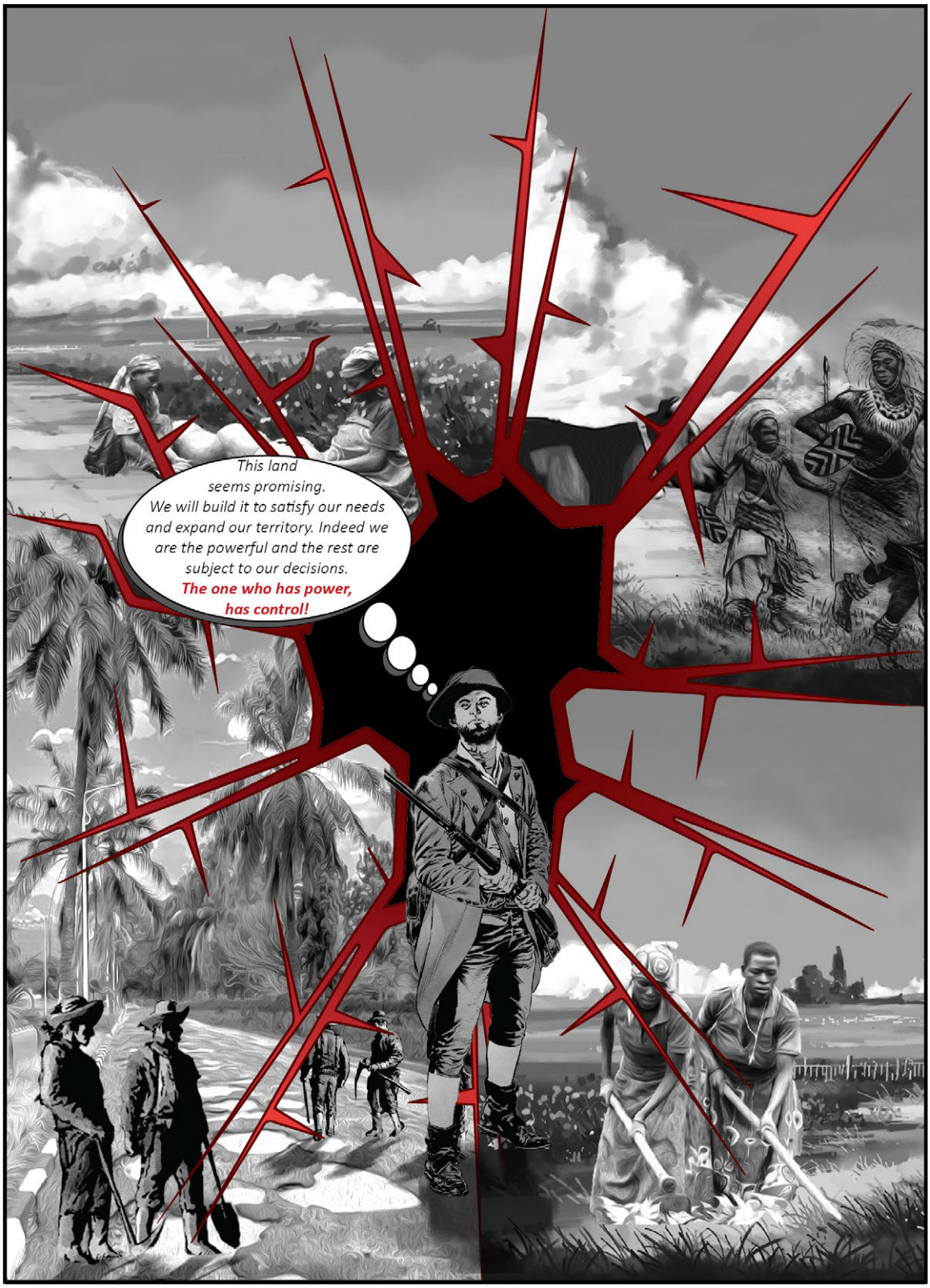



Figure 4: A comic panel depicting the influence of colonialism in Rwanda which incited development and tribal division amongst the Rwandan people.


Figure 5: A comic panel depicting Ushindi's self-discovery journey as he witnesses Hutu propaganda that begins the Rwandan genocide.

## Total Extermination

In the year 1994, Rwanda was ruled by an all-Hutu government that spread propaganda bringing about a vicious desire to rid the country of all Tutsis. This was a critical moment in the history of Rwanda as the future would be greatly shaped by the wounds inflicted upon many individuals. The genocide had an impact on both the mental and economic development of the country alongside the national identity. Infrastructure deteriorated, development staggered (Every Culture n.d.), and the wounds inflicted on many created a traumatic prison taking away all hope in many individuals' minds. Because of this people lost their sense of belonging because there was no longer a sense of safety, home, and happiness. In an explicit sense, the genocide covered homes in blood, and the stench of corpses filled the streets as dogs ate the dead human flesh. In 90 days, almost 1 million Tutsi were brutally killed making the Rwandan genocide one of the deadliest attempts of exterminating a group of people. For many the night never seemed to end, and no one could imagine the dawn of a new day shining on the Rwandan nation.


Figure 6: A comic panel depicting the brutal realities of the Rwandan genocide that killed many people and also destroyed urban infrastructure.

## The Hope of Freedom

Whilst what felt like an eternity to those who were making their way to the slaughterhouse, the Rwandan Patriotic Front (RPF), led by the current president, Paul Kagame, rallied all the scattered Tutsi exiles and through force and warfare reclaimed Rwanda as their own home (Every Culture n.d.). This ended the Genocide and the Tutsi took power over the nation starting a long and essential healing process for the country to develop and bring back a sense of place to all its traumatized inhabitants. When the RPF became the leading political party, the Hutu population was not in support of the Tutsi government and therefore maintained order through militant force and power (Every Culture n.d.). This instigated criticism of the Rwandan government for its use of power as a tool to control its opponents (Every Culture n.d.). This is in fact a result of mistrust and fear of the same thing happening again and can still be felt today. Now one thing is evident, Rwanda needed a powerful and strong leader to push the nation to a new place despite its socioeconomic and political struggles by promoting tech innovation, urbanization, and development. After the genocide, the massive number of refugees returning to Rwanda pushed the country to rapidly urbanize to meet the needs of the citizens who did not want to return to live in rural areas (Every Culture n.d.). Though the genocide destroyed Rwanda from the inside, the dark period would bring a hopeful glimpse of the future because Paul Kagame would set new goals in pursuit of a developed technocentric nation replacing its dominant rural identity. At that moment, a symbol of total power was essential to maintaining order amidst the chaos, but today knowledge is key to preserving the development goals so as to never return to the past.


Figure 7: A comic panel depicting Ushindi and a young man arriving at a Utopian City after having been set free of the past and transformed into something new through a spiritual journey.

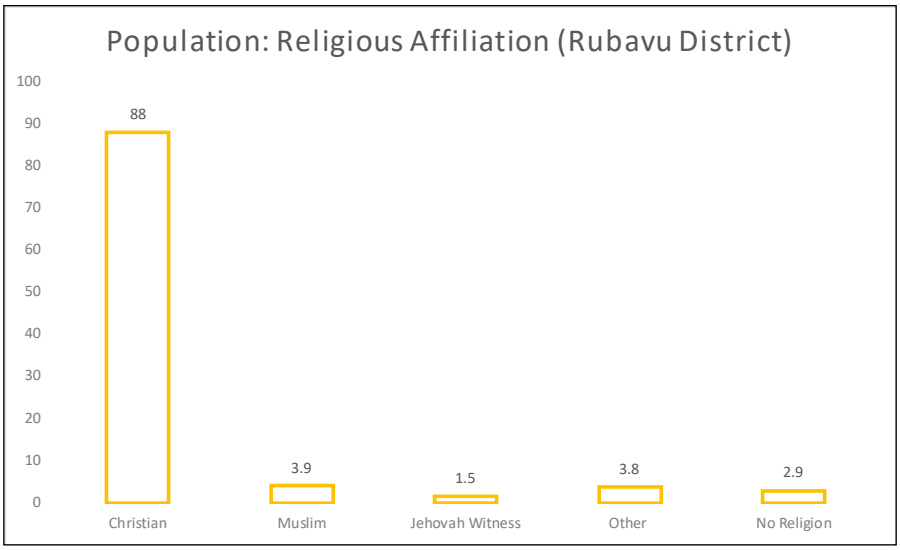
## 2.2: The Nation Today

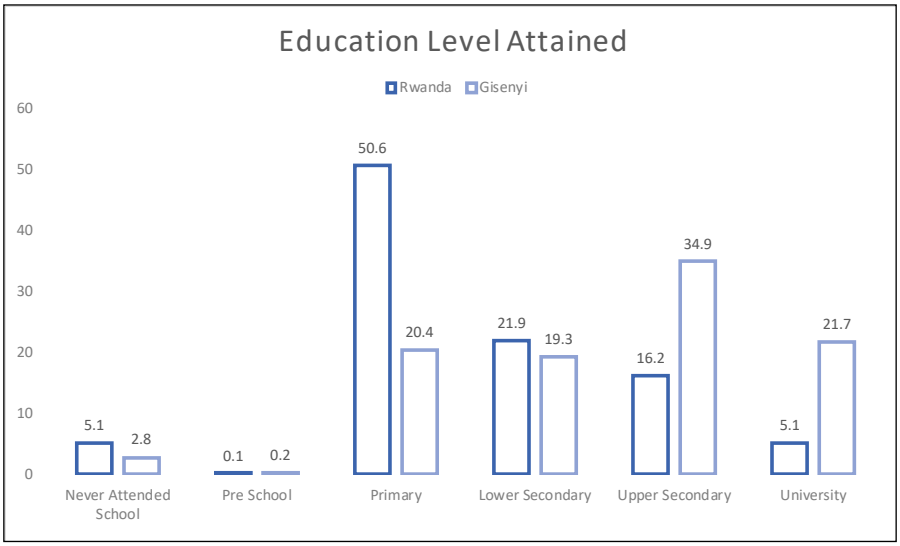
### Social Class

With the mass return of refugees from other parts of the world, some Tutsi individuals were able to maintain social connections outside of the country and were used for their economic benefits in foreign trade (Every Culture n.d.). In the past, social status was symbolized by wealth and determined through the possession of cattle, but in modern-day Rwandan society, social status is determined by education levels, labour types, the possession of consumer goods, and access to technology (Every Culture n.d.).

### Religion

In the past, the catholic church was instrumental in helping the Hutu gain power and therefore found favor among the Hutu population who are the majority in the country (Every Culture n.d.). Because of this historical relationship, Rwanda is a predominantly Christian nation with 60% of the population being Catholic and 30% Protestant (NISR 2023). However, some long-standing Rwandan traditions venerate ancestors because most believe that the spirit lives on after death (Every Culture n.d.). Life and death in Rwanda have become a part of the cultural identity whereby celebrations are held to commemorate and honor those who were killed in the genocide as a means of healing and reconciling with the nation's history (Every Culture n.d.). Despite the efforts of the Rwandan government to reconcile and unite the people, the traumas of the past still create a silent social and cultural divisions.



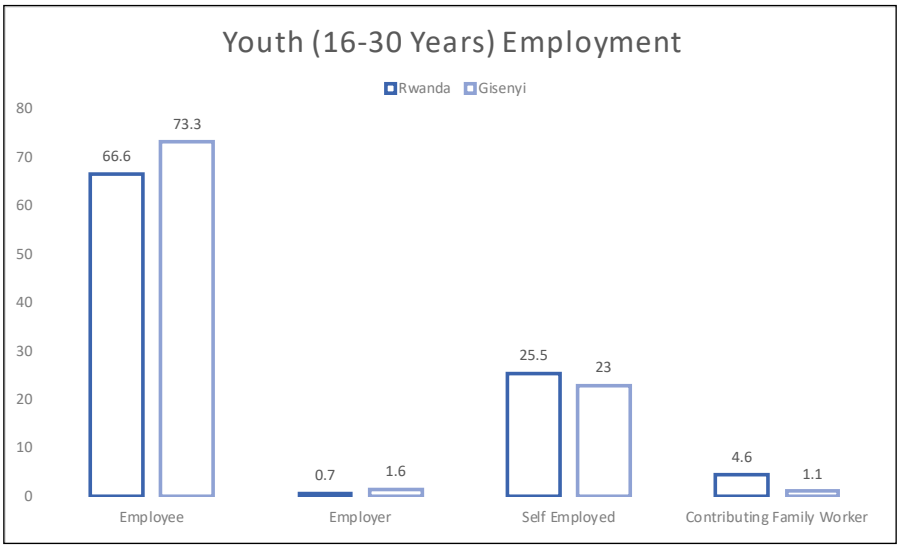
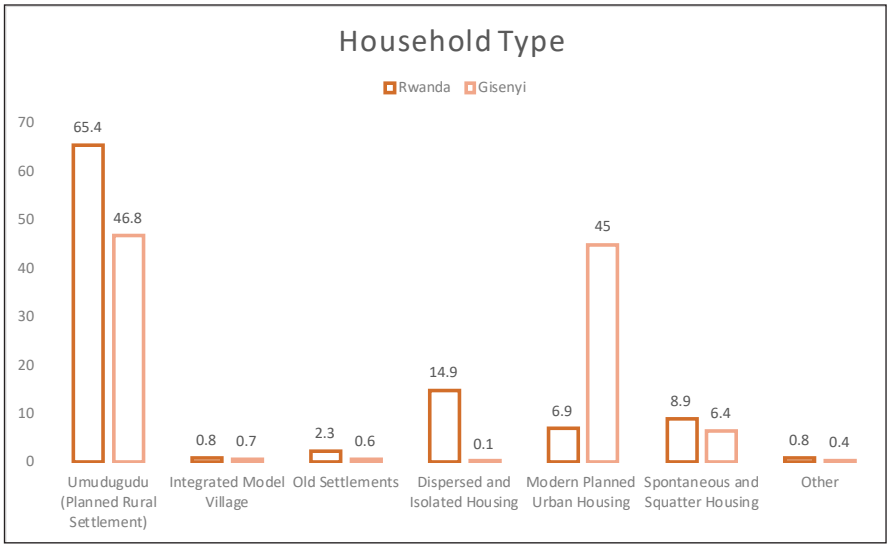
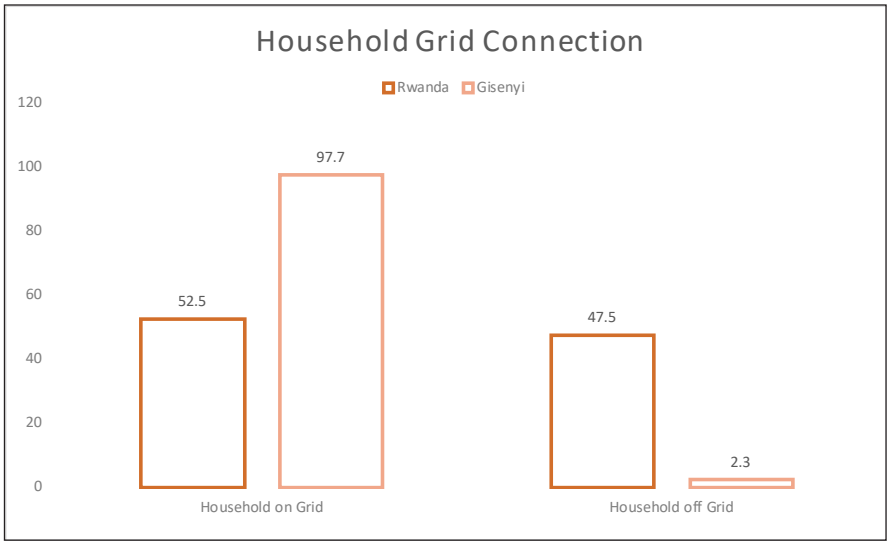




Figure 8: Data showcasing cultural qualities and the current intellectual, financial, and spiritual dispositions. (Data Source: NISR 2023)

## Infrastructure

In modern-day Rwanda, though there are urban centers, almost 70% of the country is underdeveloped, rural, and unplanned lacking the basic infrastructure necessary for economic development (Every Culture n.d.). Residential ownership in urban areas is low whilst in rural areas high because homes are self-built, with available materials locally sourced and with little to no aesthetic qualities (NISR 2023). Basic infrastructure is being readily made available, but many still live off grid in rural areas having no access to electricity, modern sanitary infrastructure, and waste management systems which pose health risks (NISR 2023). As the contemporary world has become digital, access to the internet is necessary as a means of information and knowledge transfer, but still 80% (NISR 2023) of Rwandans do not have access to the web resulting in a slow process of economic development due to scarce and lower education levels. These statistics reflect an informal urban life that is born out of a historical event where most people are unable to manage urban needs and are left to figure things out without any professional guidance.



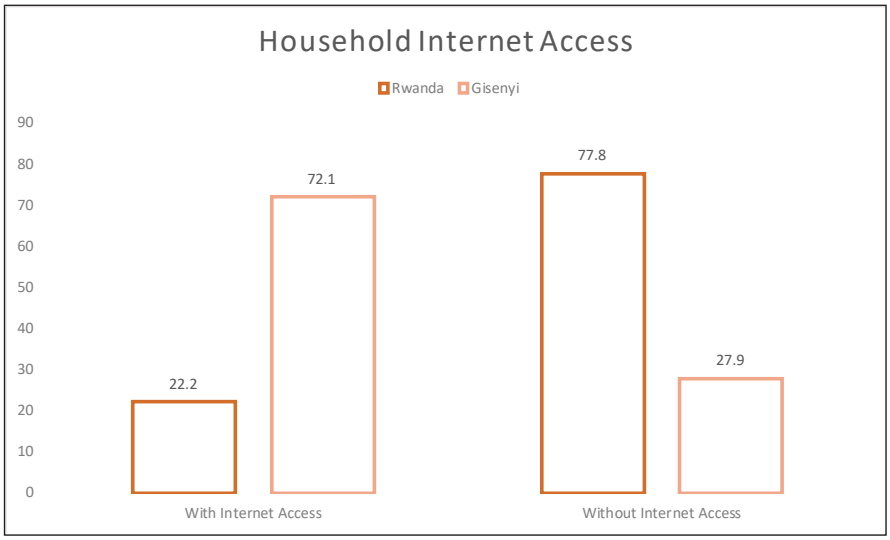




Figure 9: Data showcasing housing infrastructure qualities and the current access to essential urban amenities. (Data Source: NISR 2023)

## 2.3: A Geographic Analysis

### The Land of a Thousand Hills

The African continent is a rich place filled with an abundant array of natural resources that the rest of the world has grown economically from. In Rwanda, the economy has always revolved around an agrarian culture due to low industrialization and the limited trading opportunities from the fact that the country is inland and lacks access to the ocean (Every Culture n.d.). Despite not having coastal access, Rwanda has large land regions with an extremely dense population consisting of a wide range of geographic conditions that vary from flat safari lands to large volcanic rain forests which have also boosted the economy through tourism. In addition to these, Gisenyi is located on the lake Kivu, which is the only accessible large body of water as well as all other unique geographic areas in the country. This gives Gisenyi the potential to be a prime sought-after place to live and experience because of its unique natural ecosystem. Though the nations development has always depended on foreign aid to finance roads, water, and other essential infrastructure systems needed for an urbanized society (Every Culture n.d.), the nation has also tried to conceive ways in which it can develop without the need of foreign aid and rather through investments by citizens with means to do so.

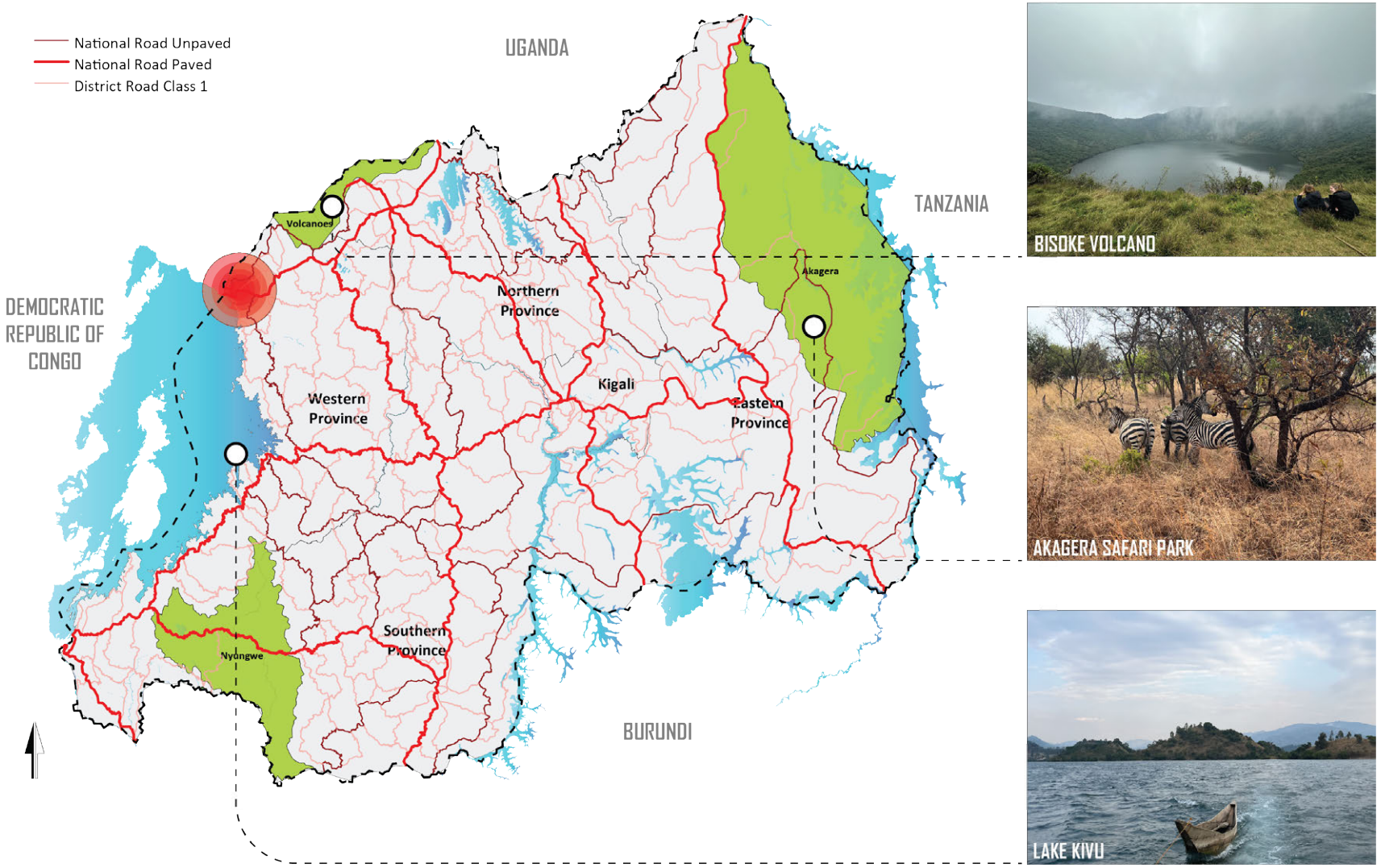



Figure 10: A map of Rwanda locating Gisenyi and the regional context of Rwandan ecological landmarks.

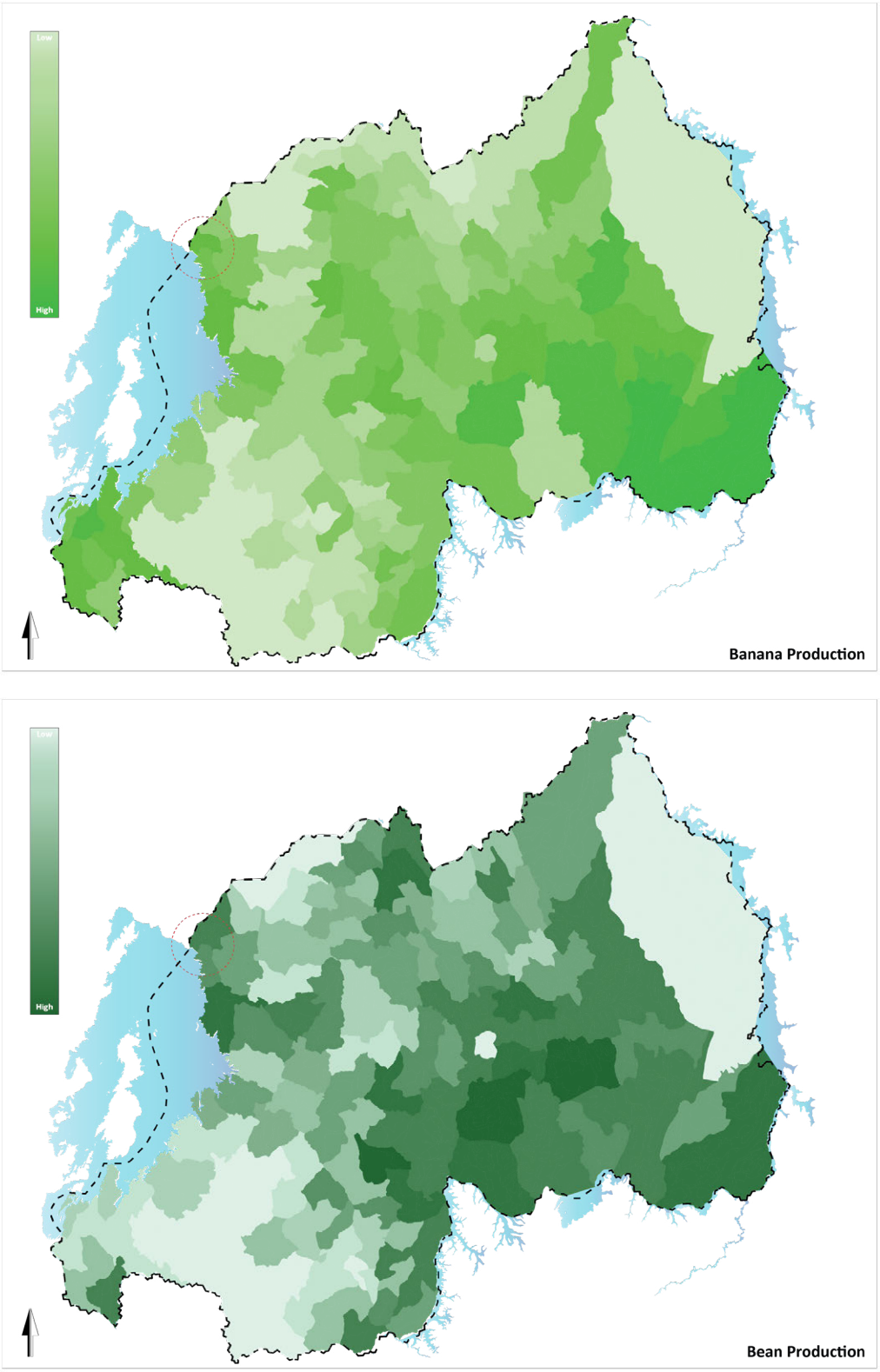
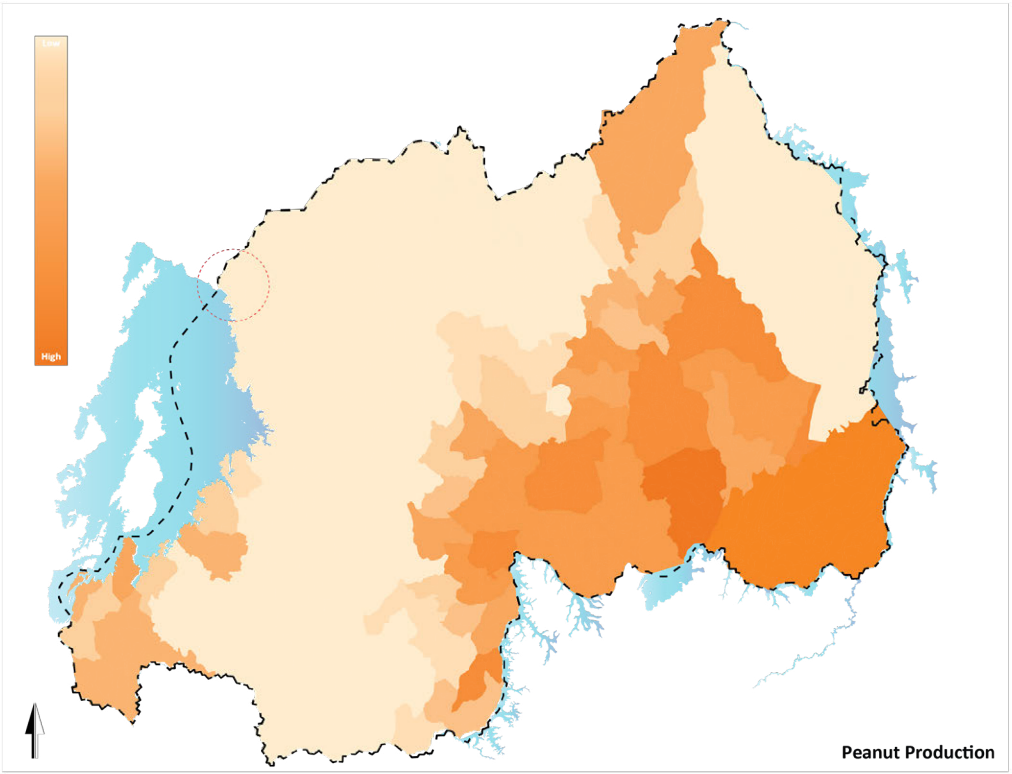



Figure 11: Maps of Rwanda and the different geographic contexts per district depicting agricultural production.



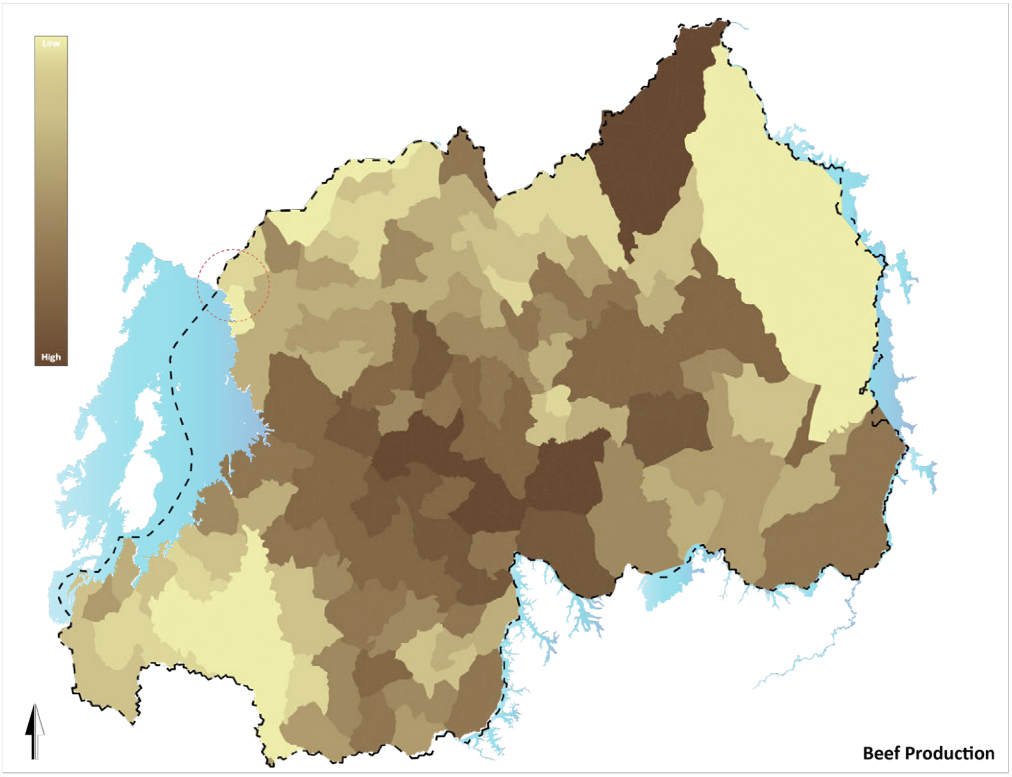
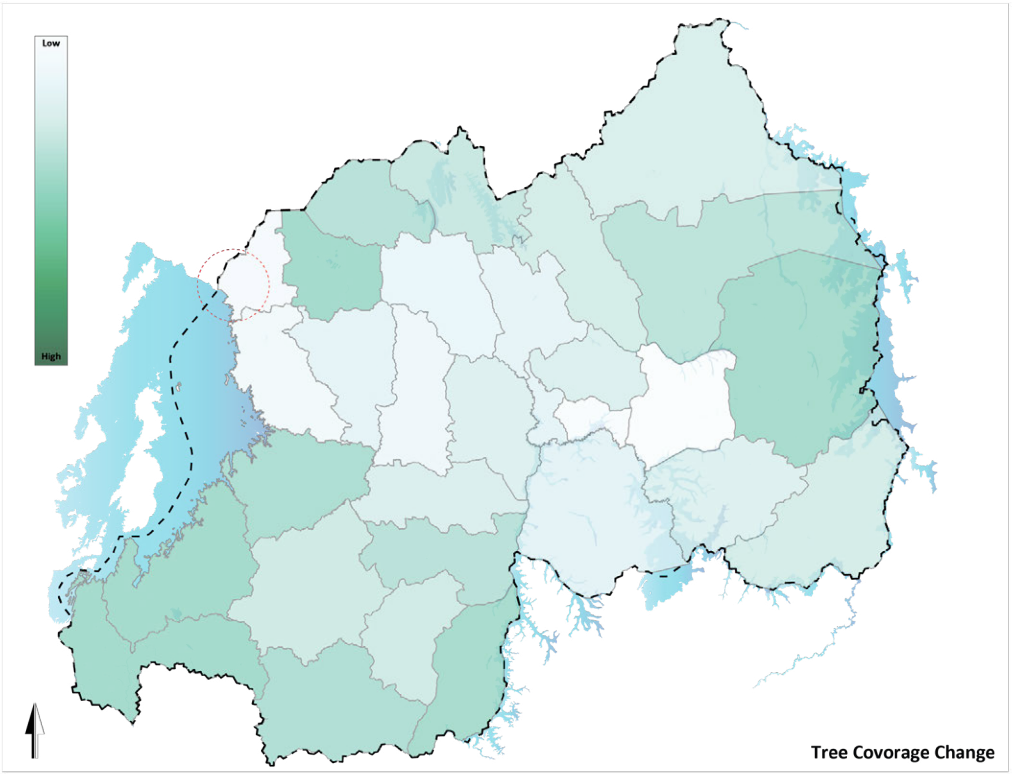




Figure 12: Maps of Rwanda and the different geographic contexts per district depicting agricultural and food production.



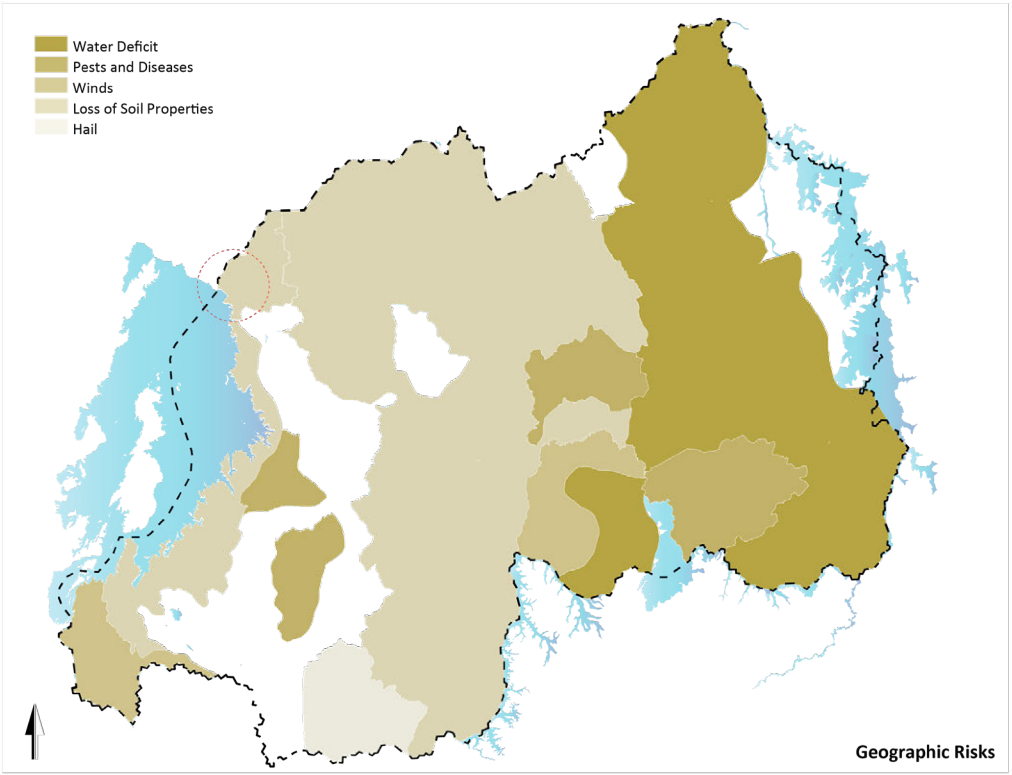




Figure 13: Maps of Rwanda and the different geographic contexts per district depicting natural conditions, and ecological challenges/risks.

## The Growing Problem of Gisenyi

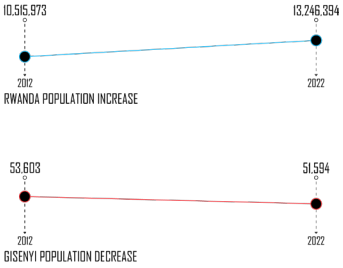



Figure 14: Graph of the population decline in Gisenyi compared to the population incline in Rwanda over a decade. (Data Source: City Population 2023)

So why would a place that has so much potential lack the ability to retain visitors and prevent the young population from leaving in pursuit of a better life quality? To put it plain and simple, Gisenyi lacks public infrastructure that promotes social, cultural, and educational opportunities that are necessary for economic and intellectual development. Currently in Gisenyi major roads are unmaintained creating inefficient and unsafe transportation systems, the few accessible public spaces are void of humans and have become wastelands catering only to motorization, institutions are in poor dull conditions, and the city overall at its best has a busy public market bringing social and economic activity, but at its worst has no cultural spaces that express the national symbols. The informal growth of Gisenyi adapted itself to meet the needs of tourism around Lake Kivu creating a barrier between the locals and visitors. To top it all off, because Gisenyi shares a national border with Goma, Congo, residential areas become underwhelming at the least and outrightly dangerous at most. As someone who has seen it firsthand, I can confidently say architecture in Gisenyi does not express anything. People have little to no experiences with the built environment in relation to its natural ecosystem, and all those who remain do so because they lack a way out rather than reasons of a profound sense of place created by urban life.

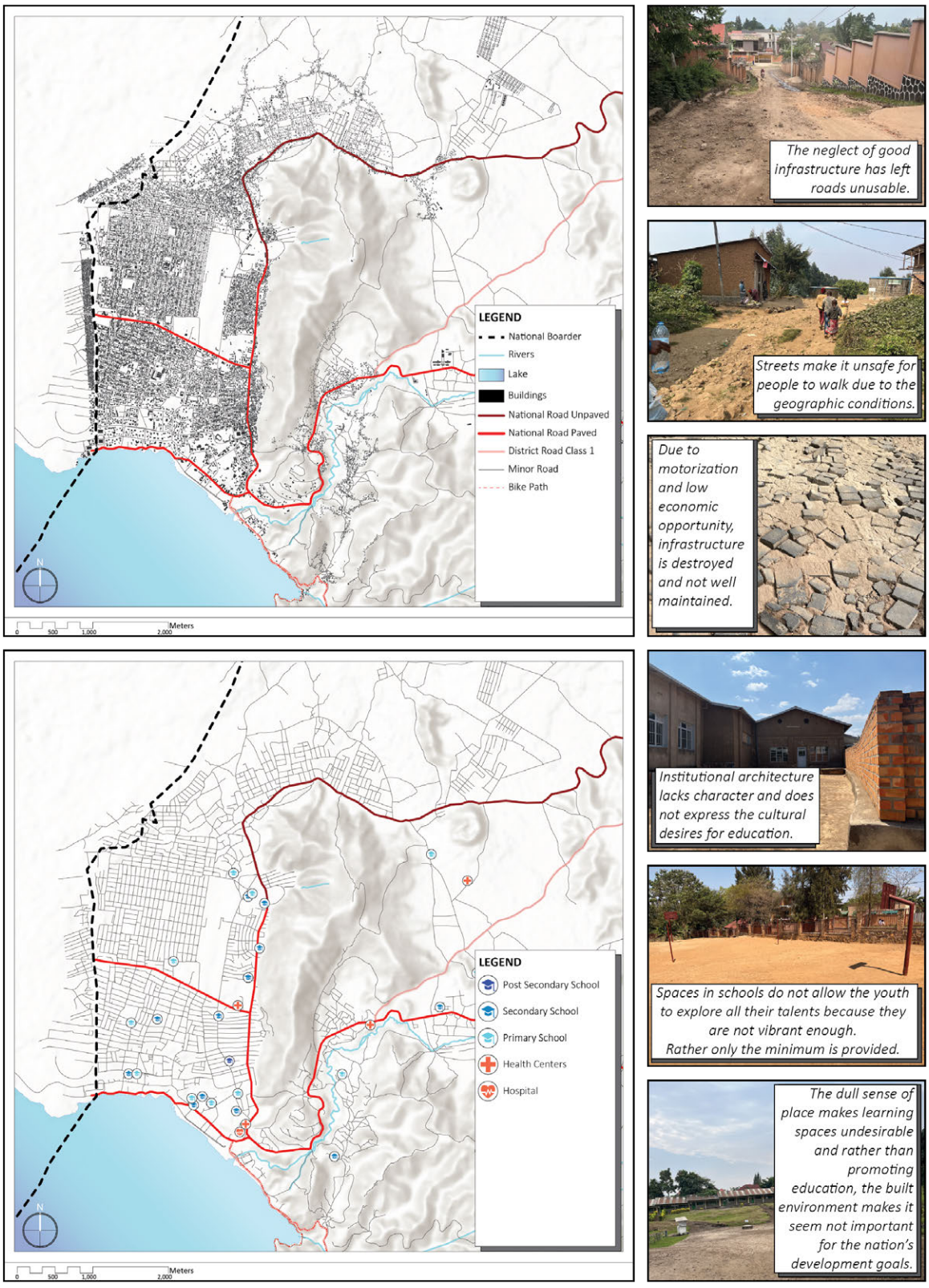



Figure 15: A comic panel depicting maps of Gisenyi with the current urban conditions, population density, and institutional programs.

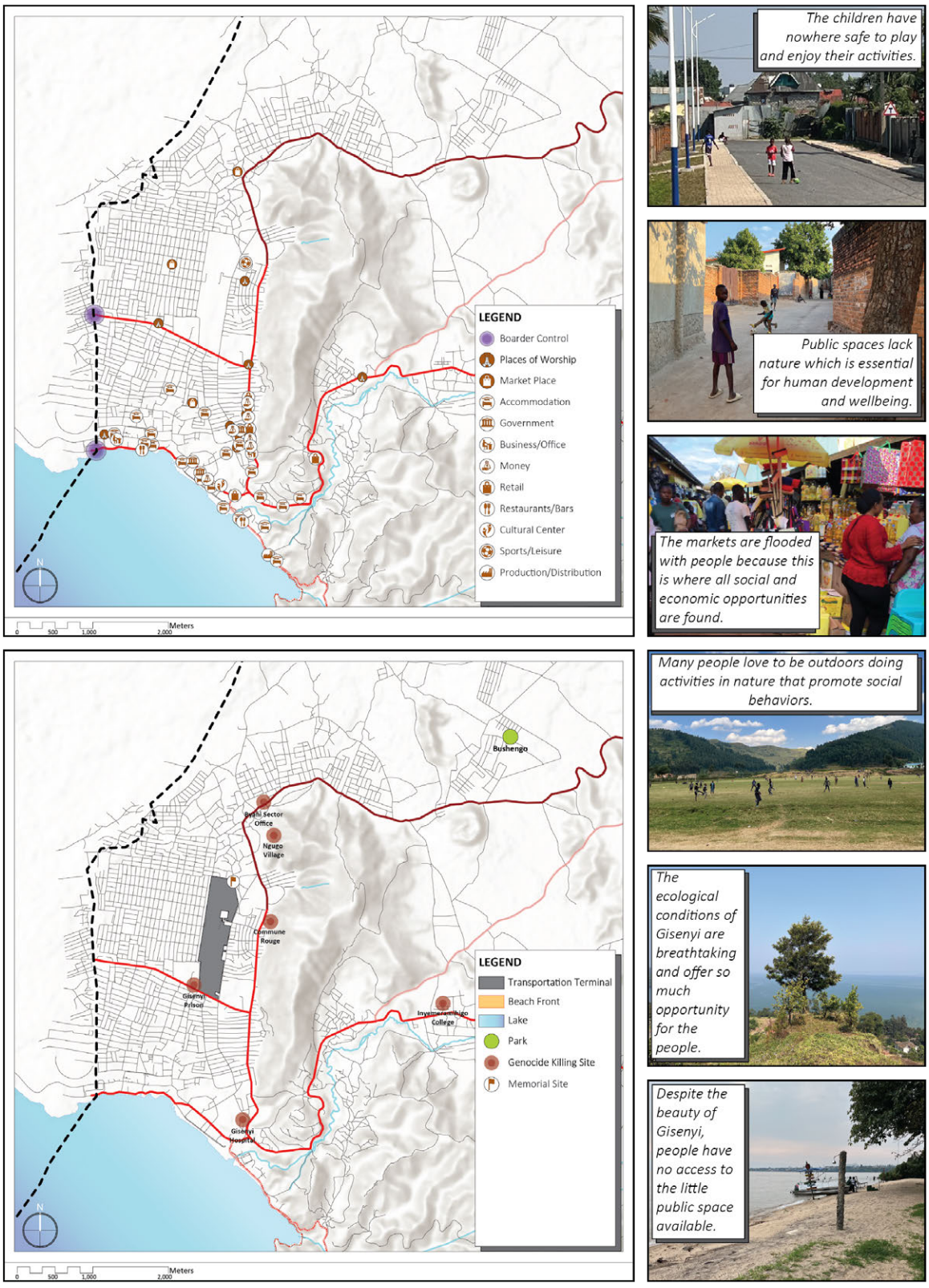



Figure 16: A comic panel depicting maps of Gisenyi highlighting public and cultural places, landmarks, and the national border control.

# Chapter 3: Identity

## 3.1: Traditions and Culture

### The Warrior Spirit

Over the last decades, Rwandan cultural traditions have morphed and changed, but in some cases, there have been efforts to restore a part of the nation's heritage alongside its pursuit of a future identity. Music and dance have always been an important artistic and cultural expression that belonged to the past but have also been instrumental in the development of the contemporary age. For example, the traditional "Intore Dance" is a dynamic and energetic dance that symbolizes a noble warrior spirit known as "The Chosen Ones" (Visit Rwanda n.d.) which expresses the Rwandan identity to be noble, courageous, powerful, and from its warrior spirit, Rwandans can overcome all challenges. The expression of this inherited cultural identity is a reminder to the people that they can rise above the current struggles that were created by the traumas of the past. Similarly, architecture should have the same expression, to be something grand, noble, and capable of going beyond the current limits that have been set in front of it such as a painful past, economic difficulty, and low education levels.

Figure 17: The "Intore" Dancers performing in traditional warrior outfits as a tourist spectacle; photograph by Charlie Hamilton James. (Davis n.d.)

## Patterns and Nature

Like music and dance, art is also a longstanding tradition of Rwandan culture that was not only about aesthetics but also pragmatic and purposeful. The “Imigongo” represents a distinctively Rwandan craft of cow dung paintings that uses earth tones and geometric patterns (Visit Rwanda n.d.) making use of nature both as a guide for beauty and a material to create useful tools that are essential for everyday life. As an example, the crafted baskets are known as peace pots for their traditional symbolism tied to gift-giving, blessing, or welcoming (Visit Rwanda n.d.) once again showcasing art also as a symbolic tool to express the cultural identity. Therefore, Rwandan craft is not only about beauty or pragmatism but rather it is also about the symbolic meaning and its power to express ideas of the culture. It is evident that arts in Rwandan culture are used to express something profound, and for this reason, architecture in Rwanda should have symbolic meaning to testify to the national identity in a similar manner being inspired by geometric patterns and nature.

Figure 18: The traditional “Imigongo” Rwandan art form made by women, with red, black, and white geometric designs painted on walls, pottery, and canvas; Photograph by Yulia Denisyuk (Denisyuk 2019)

## Social and Urban Fractal

Figure 19: An aerial view of Logone-Birni in Cameroon with its largest building in the center being the palace of the chief and depicting a fractal urban layout; Photograph courtesy Musée de l'Homme, Paris. (Eglash 1999)

Nature is one of the most influential tools used by African civilizations and was greatly influential in understanding the place of humans in the universe. Many of these civilizations were inspired by nature because cultural themes can be traced in vernacular spatial organization driven by their social concepts (Eglash 1999, 20). In Africa, traces of fractal architecture can be found all over helping to understand local cultures and their process of generating patterns (Eglash 1999, 21). The Bantu (Hutu/Twa Tribes) who originated from modern-day Cameroon were one of the first people to use fractal to organize urban infrastructure expressing social status and community roles. The city of Logone-Birni in Cameroon was built around a series of connected rectangles that vary in scale creating its fractal nature of rectangles within rectangles. This pattern was generated to adhere to the historic defense systems and the expansions of family members where the patriarch/chief would be at the center and sons would build their homes expanding outwards (Eglash 1999, 21). The choice of rectangular scaling is better understood by the spiral passage needed to reach the chief whereby each time you pass a smaller scale, politeness and formality become more and more emphasized expressing the social ranking of each space (Eglash 1999, 22). Therefore, it is possible to use fractals to organize urban spaces by ranking the social value and significance to symbolize the center as the hearth of a place.

## 3.2: A Culture in Pursuit of the Future

Figure 20: The Pillars of Namoratunga in Kenya showcasing African civilizations and their inventions to record time by mapping celestial bodies. (Chwanya 2019)

### Technology of Ancient African Civilizations

Africa has always been looked down on regarding its technological abilities, and though much of history records European technological achievements, ancient African civilizations have always been forward thinkers and aiming for more advanced futures. Ancient African cultures were discovered to have pursued knowledge in math, astronomy, tool manufacturing, architecture, engineering, and medicine. Ancient Egyptian cultures understood geometric calculations, and the Yoruba invented their own numeric systems that required much more abstraction than modern-day numerical systems (Blatch 2013). Egyptians were able to chart stellar and planetary motions to understand the passing of time and created sundial clocks to calculate time (Blatch 2013). In 300 BC, Kenyan tribes built the African Stonehenge, which was an accurate calendar and similarly in Mali, the Dogon people detailed astronomical observations with a high degree of precision to the extent that modern scholars were convinced that these were the work of aliens or unknown European travelers (Blatch 2013). Tool making in East African countries including Rwanda was far advanced that furnaces could reach 200-400 degrees Celsius hotter than Roman furnaces (Blatch 2013).

## Future Oriented Cities

As easily visible today from the pyramids in Egypt still standing tall and mighty and the 13th-century empire of Mali boasting impressive cities with grand palaces, mosques, and universities, African civilizations have always been in pursuit of greatness in architecture and engineering. Though Rwanda is considered a rural nation, the ambitions of the country to develop should not be taken lightly. Technology is the key component to achieving the desires of the nation and setting it up to become one with an outstanding quality of boasting in its social and cultural life while promoting forward thinking. It is then misleading to think that technological innovation is not part of the African cultural identity. Even though many technological innovations were not always accredited to these civilizations, people of African origins retained an identity of wealthy knowledge to create futuristic technology. This is why once again I should emphasize that “Utopianism” as a vision of a better future belongs to the African people as much as it belongs to the Europeans who conceived the term.

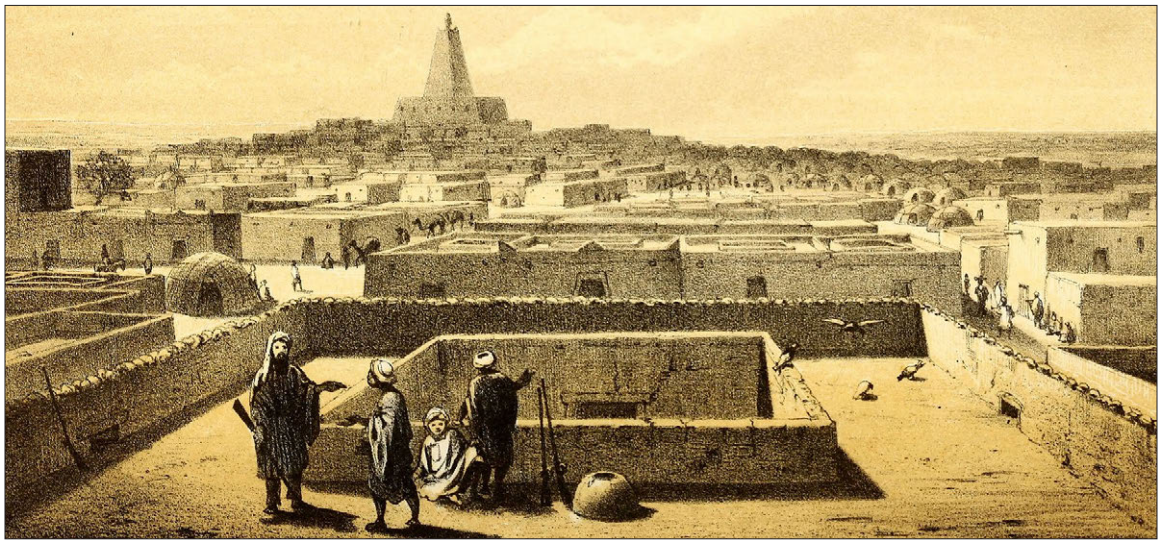


Figure 21: The City of Timbuktu in ancient Mali depicting a great and developed urban city. Drawing by Martin Bernatz. (Barth 1858)

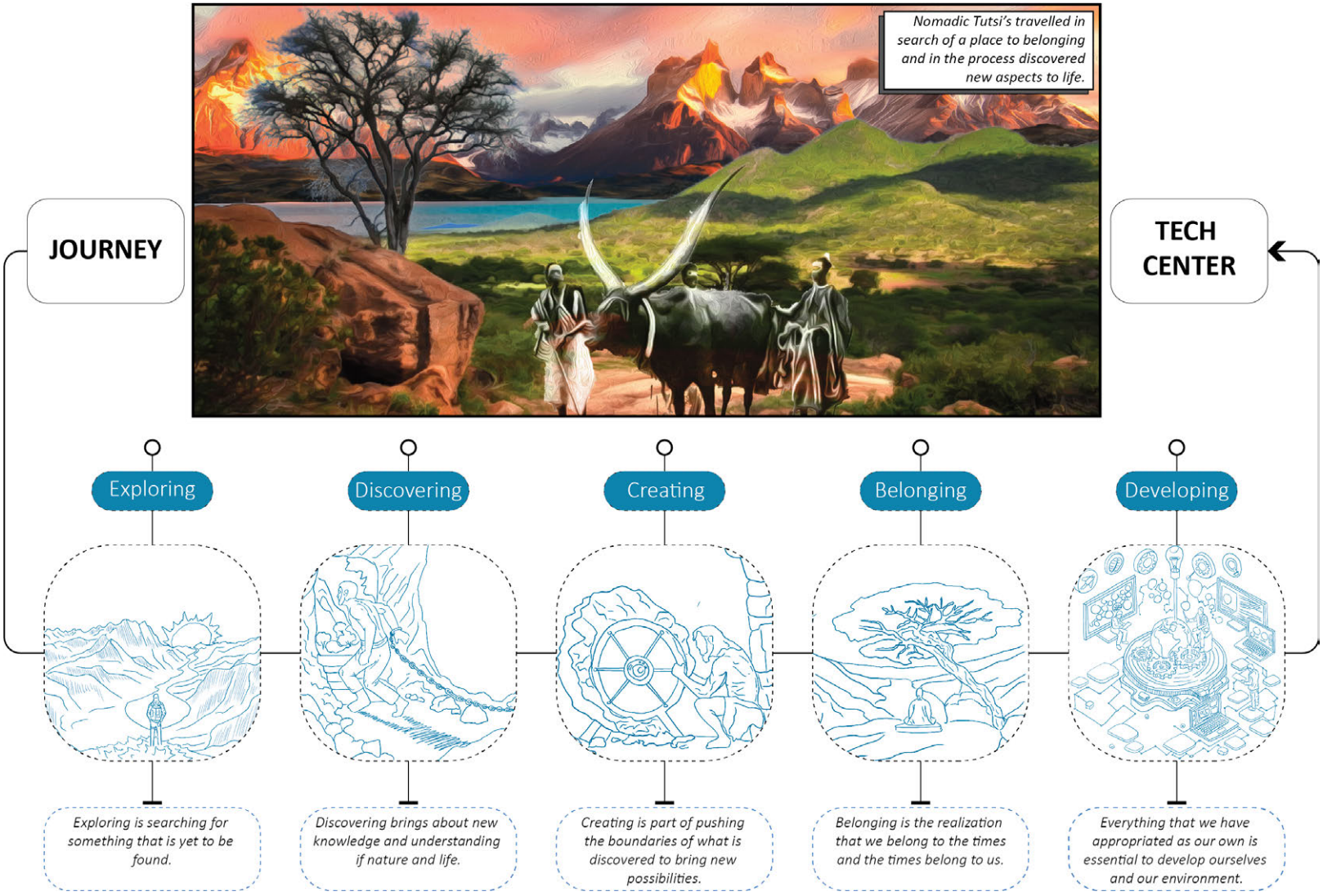



Figure 22: Diagram of the Tutsi nomadic attributes as an expression of pursuing a place beyond that which they have found and how it relates to an architectural program.

## The Colonial Effect on Rwanda

Like many places in the world, Rwanda was greatly shaped by colonialism, in some ways it was positive, and in other ways drastically negative. The pre-colonial period was dominated by agro-pastoral activities as most Rwandans were farmers, the colonial period brought a different standard of life for low-income families creating negative hygiene and environmental conditions leading most to live in unplanned settlements with no community infrastructures (Ruzima 2023). By the end of the colonial period, Rwanda was in an urban crisis which led to the introduction of rural grouped settlements which were unsuccessful because they lacked the basic infrastructure necessary for an adequate lifestyle (Ruzima 2023). In pursuit of economic transformation, the country introduced new development models to provide essential infrastructure such as roads, water, electricity, schools, health services, local markets, and different public facilities. Now, the Rwandan goal is to develop non-agricultural income-generating activities and create spaces to sustain modern life (Ruzima 2023). This portrays Rwanda as a nation seeking urban transformation to provide its citizens with economic opportunities driven by good infrastructure, social activities, and higher education levels and promote new ways of living in the contemporary technocentric age.

Figure 23: Photograph of a single-family rural home with banana planting on site but lacking necessary urban infrastructure.

## The IDP Model

The nation's objectives created the Integrated Development Program (IDP) model which considers different methods of helping rural areas develop. The IDP model promotes:

- Infrastructure Development to improve access to affordable services (Ruzima 2023).
- Post Harvest Processing and Marketing to ensure food security and promote internal agricultural trade (Ruzima 2023).
- Off-Farm Employment to diversify and modernize the Rwandan economy (Ruzima 2023).
- Resettlement of citizens from unplanned villages to multi-story planned neighborhoods (Ruzima 2023).
- Rehabilitating the Ecosystem to ensure optimal use and sustainable management of natural resources (Ruzima 2023).
- Land Productivity to increase agriculture and livestock productivity (Ruzima 2023).
- ICT promotions to provide access to information and technology through fast internet such as fiber optics and internet cafés (Ruzima 2023).
- And Leadership Development to build a large cohort of community leaders who can bring social cohesion and economic revolution (Ruzima 2023).

This model provides a toolkit for economic development driven by the agrarian and innovative Rwandan culture with the objective of becoming a global competitor within the modern world.

## IDP Architectural Translation

To better understand what the IDP could be as an architectonic urban model, the following toolkit is an architectural translation emphasizing on key elements of the different cultural categories. For example, the first category looks at nature and the ecosystem and how through biophilic principles it is possible to use the land and maximize the natural resources available while also preserving the ecosystem around. The second category looks at socio-economic and urban development whereby there is an emphasis on developing minds, new skills, and everyday infrastructure necessary for better living conditions. This toolkit expresses the IDP in an architectural sense highlighting the design principles that can be applied in the design project.

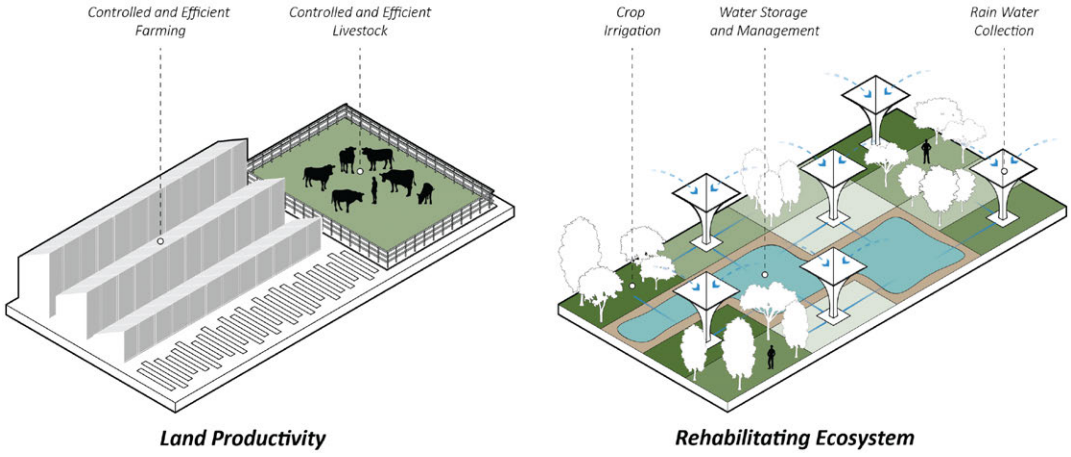



Figure 24: Architectural diagrams of category 1 IDP toolkit related to nature and environmental qualities for production and preservation.

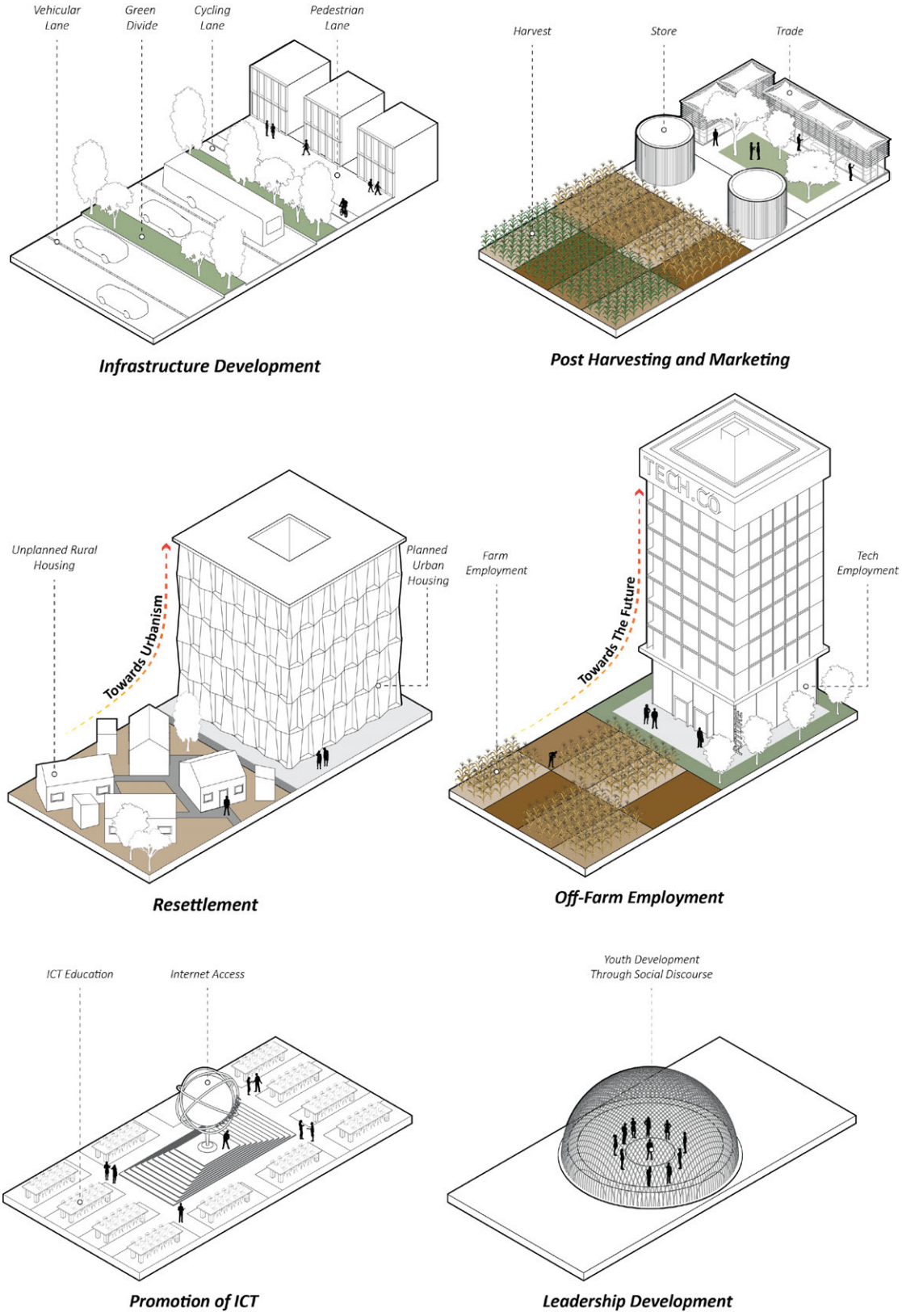



Figure 25: Architectural diagrams of category 2 IDP toolkit related to urban and socio-economic development for the infrastructure, intellect, and economy.

## The Missing Tools

Though the IDP sets up a clear model, in many cases IDP villages have not been able to create the intended results. The reason is that, alongside the economic value, the social culture is fundamental to completing the model. This is done by considering the components that are relevant to the urban character and how people inhabit and experience the city. By creating social spaces that use the IDP principles it is then important to consider the following:

- The introduction of technology as an everyday part of life.
- The expression of a city image that uses symbols.
- National landmarks designated to promote cultural activities.
- The use of nature to inspire human wellbeing in urban life.
- And lastly understand the spiritual culture needed to promote a sense of belonging.

Figure 26: An IDP model village in a rural community depicting community life, homogeneity, and planning but still lacking urban infrastructure and character. (Ruzima 2023)

## 3.3: MASS

### The Socialist Practice

MASS is one of the architectural practices that has been working to provide meaningful architectural influence in Rwanda promoting justice and human dignity. Their belief is “that architecture has a critical role to play in supporting communities to confront history, shape new narratives, collectively heal and project new possibilities for the future” (MASS Design Group n.d.-b.). The group provides purposeful, healing, and hopeful design to regenerate and sustain ecosystems creating a diverse, healthy, and productive habitat for all life. In their projects in Rwanda, you can find traces of the IDP model being implemented and integrate social qualities that architecture promotes.

### Building Leadership

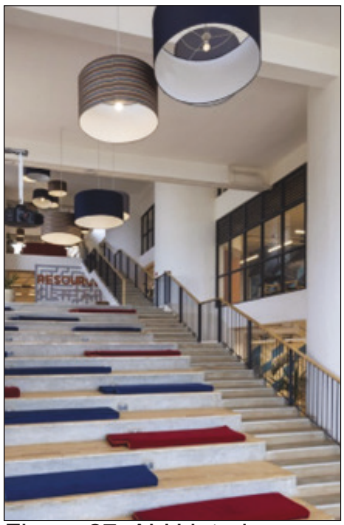


Figure 27: ALU interior spaces overlapping and intersecting to promote collective learning. Photograph by Iwan Baan (MASS Design Group n.d.-a.)

The African Leadership University (ALU) by MASS is a visionary approach to higher education building the youth to be successful leaders and better citizens of the world. The ALU founder Swaniker stated

> “Through the use of technology and access to educational content, networks and experts, today’s student with a smartphone has access to more information than a Ph.D. candidate did 30 years ago” (MASS Design Group n.d.-a.).

The building is organized around education and social spaces encouraging “a wide exchange of ideas” to inspire students and promote socialist education. This shows the importance of technology and social spaces as educational tools that can provide a vast amount of knowledge through interactions with different ideas.

## The Holistic Approach

Figure 28: The Butaro Doctors' Housing completed through a holistic design built using locally sourced materials such as volcanic rock. Photograph by Iwan Baan (MASS Design Group n.d.-c.)

The Butaro Doctors' Housing uses holistic approaches by providing community members a chance to participate in the work and learn valuable craftsman skills making the community grow in knowledge and experience encouraging better future opportunities for individuals (Abendroth and Bell 2016, 169). The project proves that architecture is not just about a final designed building, rather through the collective participation of different people, social change can occur as individuals learn from one another and gain meaningful habits to better serve their communities. Architecture can help teach people new skills and educate individuals in unique ways by carefully considering human interactions with the built environment.

## A Sense of Home

Figure 29: Rendering of Masaka Affordable Housing depicting urban housing and infrastructure development in rural areas. (MASS Design Group n.d.-d.)

The Masaka Affordable Housing proposes a new model for affordable housing design in Rwanda to address the needs of growing urban population and counteract the problems of overcrowding, informality, and sprawl (MASS Design Group n.d.-d.). The project follows the urban cultural goals of creating community life with adequate infrastructure while still preserving heritage and cultural customs. This is important because when familiar environments change, it is important to keep cultural anchors and preserve the sense of belonging.

# Chapter 4: Man, Machine, Nature, and City

## 4.1: Toolkit Transformed

Building onto the translated IDP toolkit, the urban toolkit assigns social, technophilic, biophilic, and urban attributes to express the design quality and character missing from the IDP by integrating different urban theories. The urban theories look at Biourbanism, Public Life, and Landmarks to create successful cities.

## 4.2: The Love of Nature

Humans and nature have always had a symbiotic relationship where they both need each other to survive and thrive on this planet. *Biophilic Urbanism* focuses on how natural qualities can inform the design process and contributed to positive outcomes for human life (Tabb 2021, 28). For example, by analyzing patterns in nature, fractals can be used to optimize urban organization whereby the urban systems are efficiently implemented to maximize the positive outcome in urban life. Similarly, *Biourbanism* takes principles of biophilic design to integrate ecological and natural systems into the built environment at different scales to promote an optimal relationship between nature and man-made environments. These principles allow urban environments to create restorative systems for production, transportation, and building processes while also addressing the social, environmental, and transportation dimensions (Tabb 2021, 29). This provides an ecological sensitivity that ranges from the urban scale to the detail scale as a guiding principle to create an urban proposal that is sensitive to human and environmental needs.

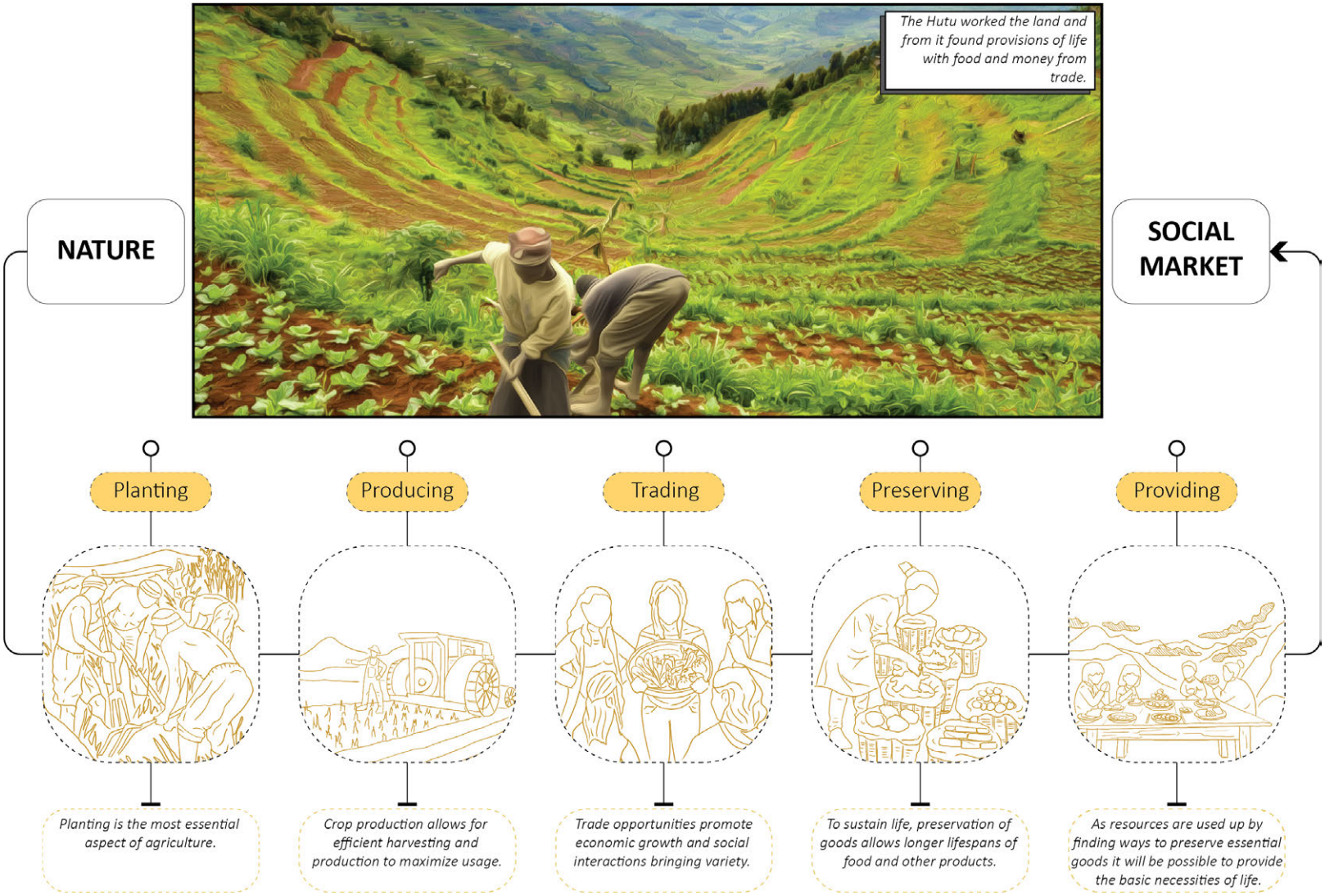



Figure 30: Diagram showcasing the Hutu agricultural attributes as an expression of their socio-economic culture to sustain the community and how it relates to an architectural program.

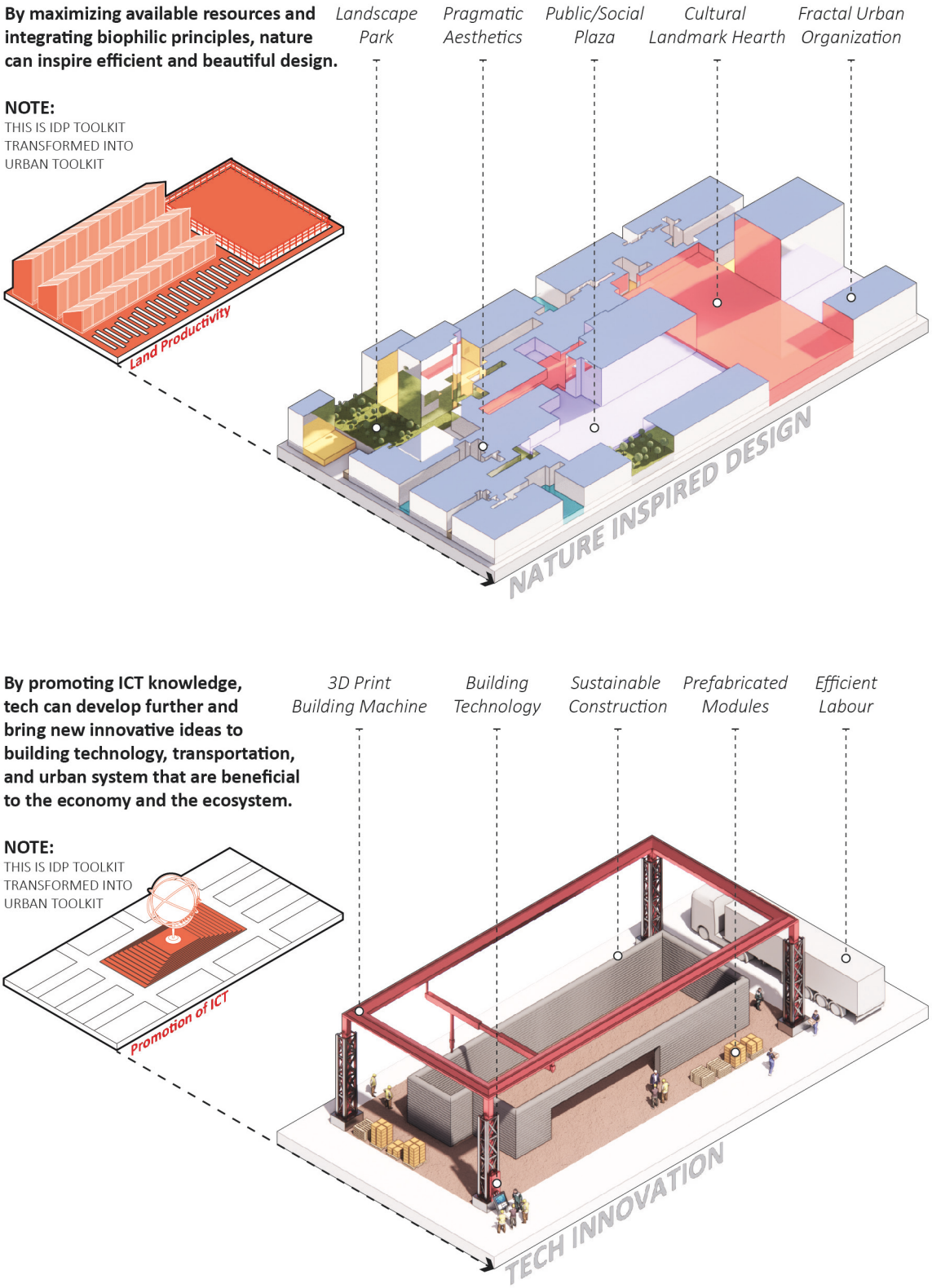



Figure 31: Architectural diagram of the IDP toolkit adapting and evolving into an urban biophilic and technocentric design tool for sustainable design.

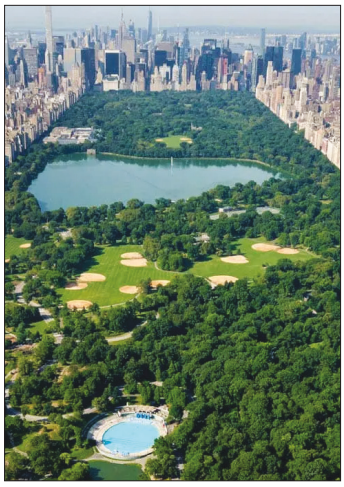


Figure 32: Aerial view of Central Park's green spaces in relation to the dense urban city of New York with public activities and an artificial biophilic lake. (Kiely 2022)

## The Biophilic Fractal

Biophilic principles can embody a fractal nature because they can be applied at a variety of scales from urban to building detail and provide different ways of solving similar or different issues (Tabb 2021, 34). Therefore, fractals can not only be used to organize the city but also as a guide for how to incorporate biophilic design aspects at different scales for different purposes.

### *Scale-L*

On a large scale, biophilic principles seek ways to preserve, prolong, and maintain the ecological conditions using reforestation, agriculture, and efficient transportation methods (Tabb 2021, 34). Urban interventions provide energy and water systems in safe and efficient ways while not adding onto air pollution (Tabb 2021, 33). For example, Central Park in New York City is not only about aesthetic experiences, but it includes sustainable and pragmatic ways of storing water and revitalizing the ecology in the context of a highly dense urban environment (Zafonte 2021).

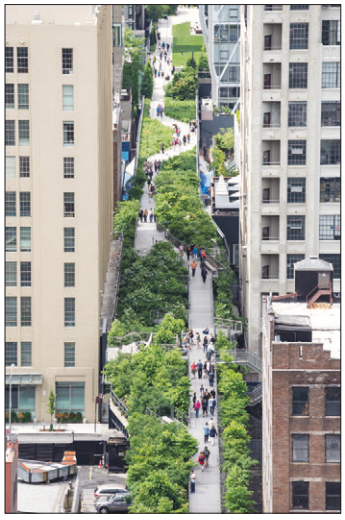


Figure 33: Aerial view of the High Line in New York depicting new pedestrian walkways above car streets in an urban environment. (Diller Scofidio + Renfro n.d.)

### *Scale-M*

The medium scales such as streets create spaces that encourage social and natural interactions and create a sense of place by providing moments of calming design with less traffic to support human engagement with nature (Tabb 2021, 32). This can be by collecting and treating stormwater, encouraging pedestrian life, and intimacy between humans and nature. The High Line by Diller, Scofidio, and Renfro, tries to bring a natural landscape at the street scale to facilitate pedestrian circulation and connection with different parts of a larger area.

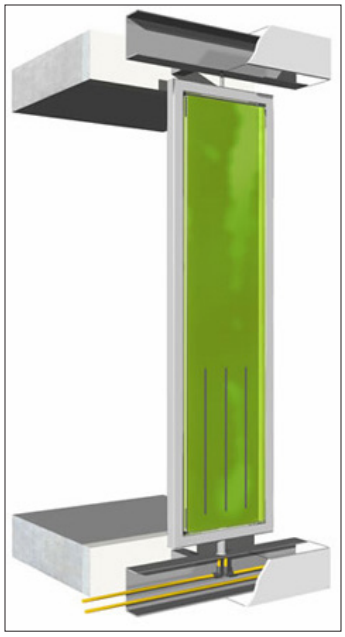


Figure 34: Diagram of the Solar Leaf Facade system depicting biophilic detail design by merging nature and building technology. (Yirka 2013)

***Scale-S***

The small scale of buildings and details apply biophilic principles in the construction process, material choices, form, systems, envelope, durability, and the connection to nature through orientation, transparency, color, renewable energy technology, interior and exterior dialogues, and the use of natural light and ventilation (Tabb 2021, 31). The Forest Valley at Jewel Changi Airport is an indoor luscious rainforest that creates a playful and dynamic relationship between technology, building, and nature (Walsh 2019). On the other hand, The BIQ House is made of an algae paneling system that generates biofuels providing heat to the building while simultaneously producing oxygen and lowering carbon dioxide (ARUP n.d.).

Figure 35: The Changi Airport Forest Valley showing the lush environment with a water collecting system creating unique and practical experiences with nature and technology. (Block 2019)

## The Social, The Natural, and The Technological

Biourbanism impacts the different dimensions of man (the social), machine (the technophilic), and nature (the biophilic).

- The social dimension creates a cluster of mixed-use programs and public gathering spaces that promote social interactions through people, safety, education, recreation, and cultural activities.
- The environmental dimension mitigates open spaces, parks, ecological corridors, and disaster prevention such as flooding.
- Finally, the transportation dimension tries to eradicate the negative impacts caused by traffic and reduce greenhouse gas emissions by introducing alternative fuels, transportation methods, and pedestrianization.

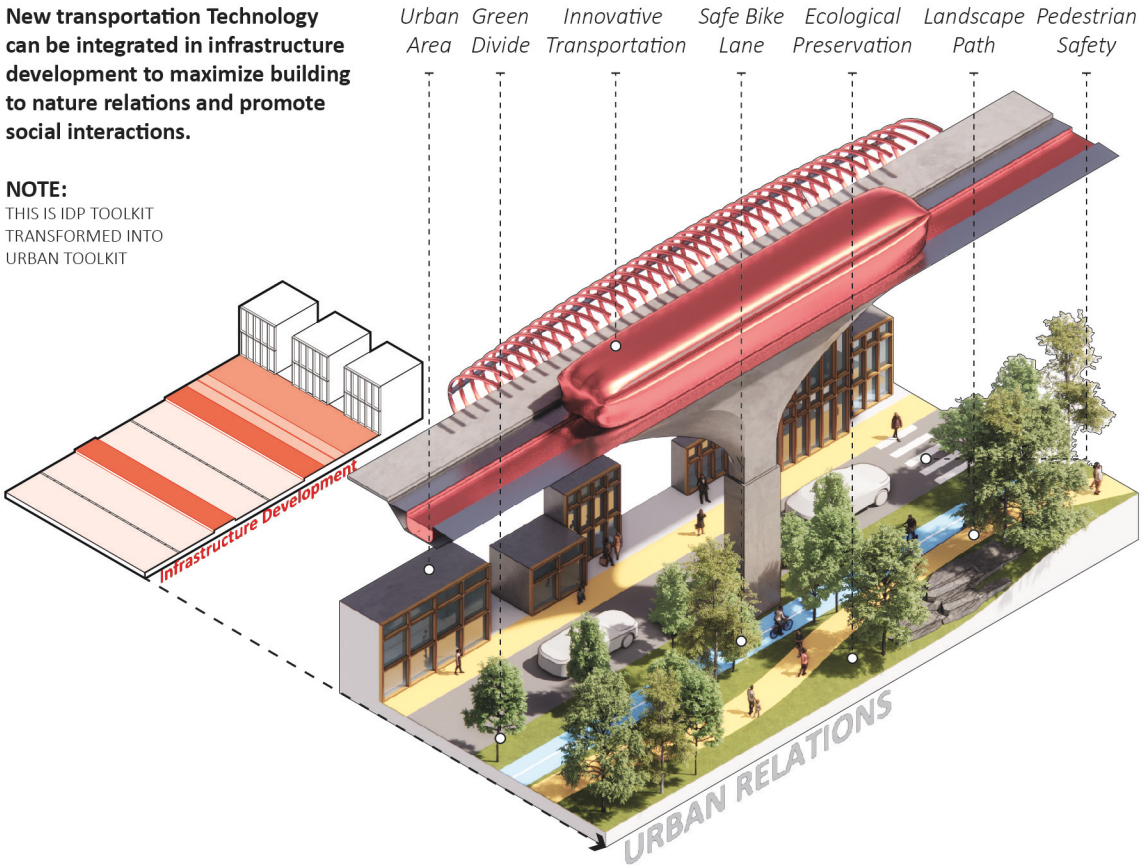



Figure 36: Architectural diagram of the IDP toolkit adapting and evolving into an urban biophilic and technocentric design tool for urban relations.

## 4.3: Urbanity

Urbanity, as defined, looks at Urban life and the “quality or state of Urbane” (Merriam-Webster 2024) meaning notably polite and polished in manner. Of course, urban life is a contrast to rural life, as one is considered well-mannered and the other rustic or uncouth. This is not always the case, but one thing is certain, urban life provides more social, cultural, economic, and intellectual opportunities. Therefore when thinking about leadership development it is important to create opportunities for different people to come together collectively and allow intellectual activity to occur where different knowledge and life experiences can be shared with public participation in the discourse. This is essential to enrich minds by being exposed to different ideas and ways of thinking allowing future leaders to understand the different cultural layers.

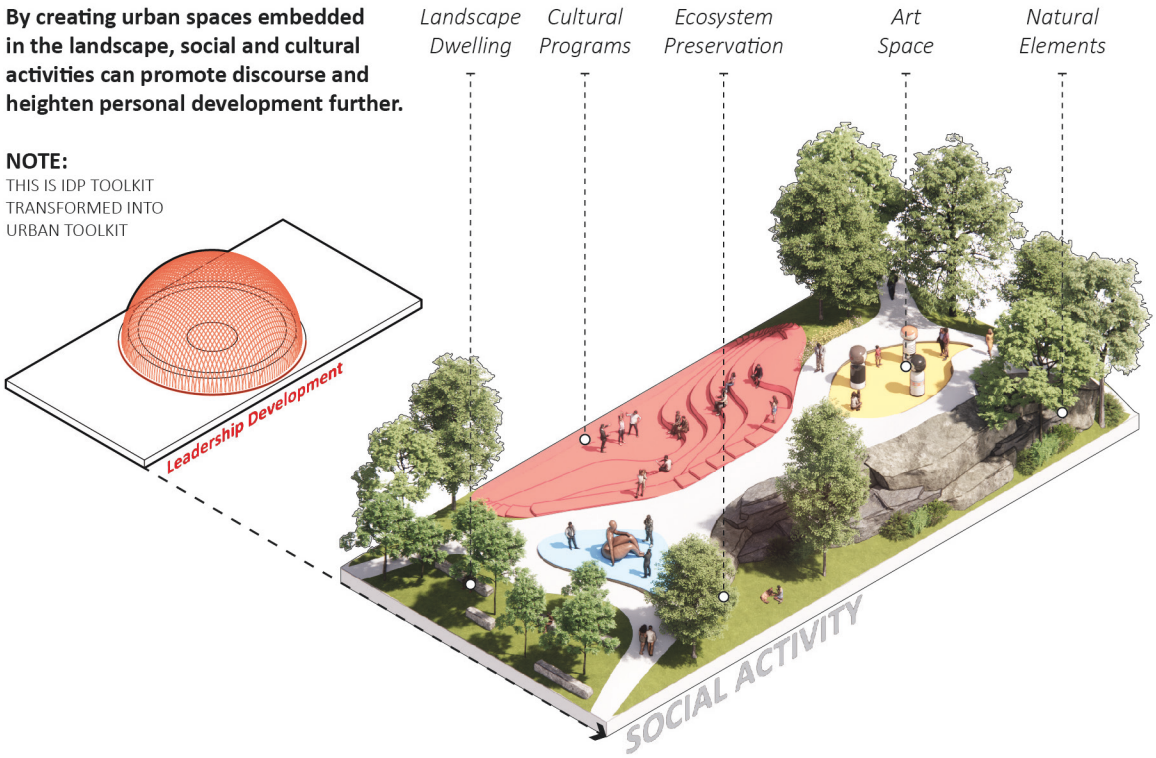



Figure 37: Architectural diagram of the IDP toolkit adapting and evolving into an urban biophilic and technocentric design tool for social spaces.

## Good Cities Shape Good Life

In the 20th-century discourse of cities for people, Jan Gehl argues that to better create cities for people, public life must first be understood. For a long time, planners have emphasized more on the built environment and as such they have neglected the life quality that takes place between buildings over time (Gehl and Svarre 2013, 2). Ancient cities grew organically based on life necessities, but today's urban cities have become overshadowed by industrialization erasing the human scale. Therefore, to create attractive cities it is essential to understand people's needs and their behaviors that constantly change. By understanding the Rwandan culture, the city organization should facilitate everyday life and public needs such as program usage and circulation means. The problem of urban cities is the impact that came with modernism and the value given to accommodating car traffic (Gehl 2010, 3). The increase of car traffic has decreased public city space and pedestrian life which are essential to provide a safe and lively city full of social and cultural opportunities urging people to move and dwell within city space (Gehl 2010, 6). This is evidence that urban systems and infrastructure shape human behavior and similarly human behavior should shape cities. Cities that value public life have become the best livable cities for people because, by increasing pedestrian areas, the quality of life in public spaces has created new urban patterns (Gehl 2010, 13).

Figure 38: A pedestrian street in Copenhagen full of people and a vibrant street life. Photo by Kirk Fisher (Cappello and Buder 2020)

Figure 39: A car-free pedestrian street in Kigali, Rwanda looming with public spaces and social activities.

## Increasing Public Life

The idea of good cities being products of decreased car traffic is not the only necessary method of creating a better city for the public. Jane Jacobs not only addresses car traffic as an issue but also how urban organization of different programs matters and can increase the variety of users at different times (Jacobs 1961, 96). Like pedestrian sidewalks, successful public spaces are constantly used by people because of the diverse programs that create a diverse number of users with varying schedules (Jacobs 1961, 97). On the other hand, unsuccessful public spaces die from low active participation because they depend on a single user type who can only be found at specific times due to a single dominant program that limits the variety of schedules (Jacobs 1961, 98). Therefore, the success of public spaces is dependent upon other surrounding programs because they can either elevate or diminish spatial use within their mutual support systems (Jacobs 1961, 98). To create vibrant public spaces, they should have a diverse surrounding so that they can achieve a natural and continuous flow of users in everyday life. This elevates social opportunities where all kinds of people can come together to share ideas and learn from one another. Therefore, by organizing different public and private programs around an urban hearth, a continuity of users can elevate the significance of a space seemingly to become an urban landmark.

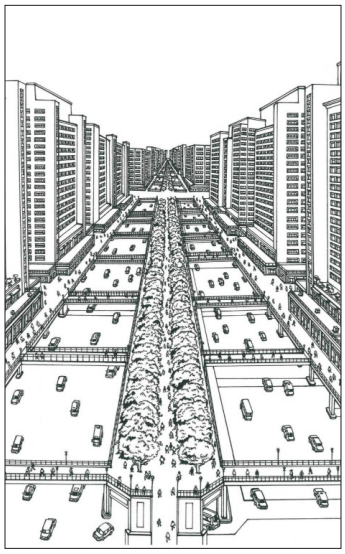


Figure 40: Drawing of La Ville Radieuse by Le Corbusier with a large highway and tall urban buildings highlighting industrial life. (Ryazanceva 2021)

## 4.4: Utopian Urban Concepts

### The Machine City

The utopian vision by Le Corbusier of “La Ville Radiuse” aimed to create a city that met the growing needs of industrialization, urbanization, and good housing for the common working man and was conceived around the 19thcentury cultural spirit of science and technology (Fishman 1982, 258). His concept intended to set society free from social classes by creating a “human city” (Fishman 1982, 230) but believed that the success of the radiant city could only be possible if the society had also been revolutionized (Fishman 1982, 233). The city was conceived around the relationship of man, machine, and nature arguing that only through structure and organization could man find freedom and live harmoniously with nature (Fishman 1982, 229). The urban plan set high-rise residential buildings at the center of the city with super-speed highways that linked all corners emphasizing a vertical and horizontal linear organization. It is then evident that though Le Corbusier intended to create a city for humans, the prevailing scale of the machine overtook the poetics of living and working outside of the machine and lost the social quality of humans.

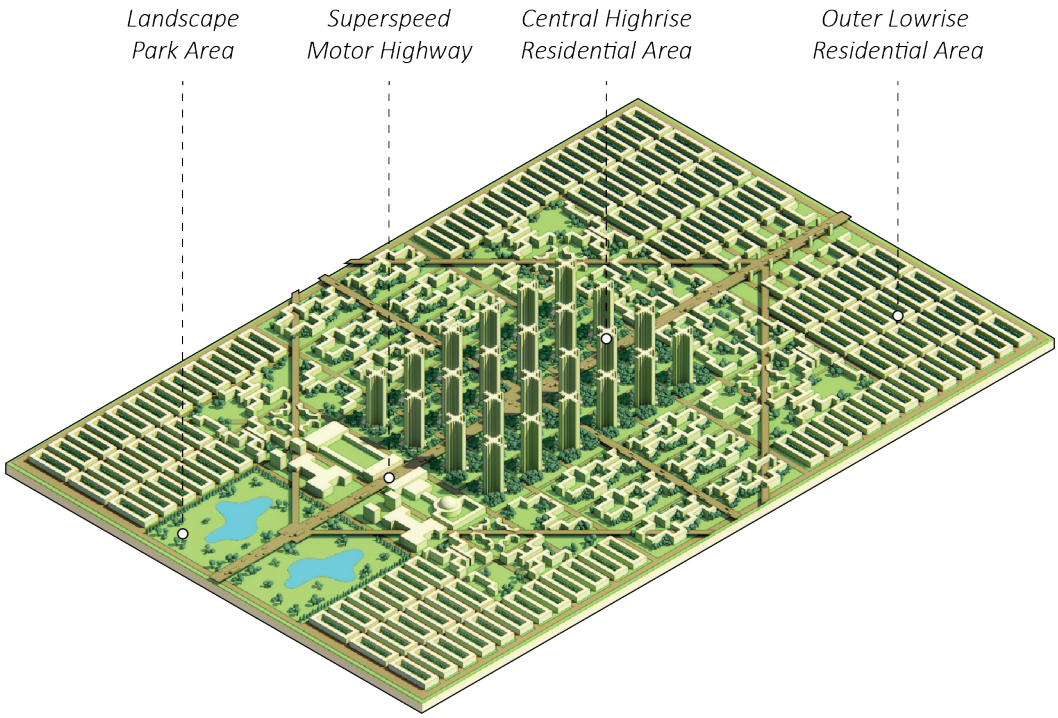
Figure 41: Inhabitants of an “Ujamaa” village building their homes with local materials and traditional forms. (Darby 2015)

## The Social City

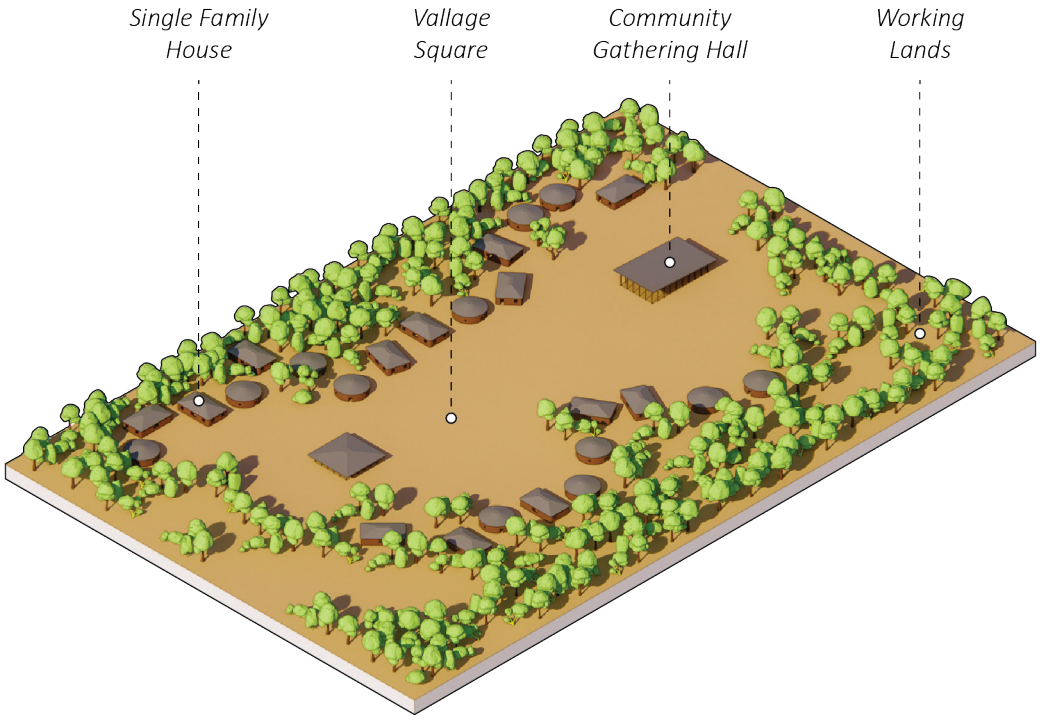
Around the same time, Tanzania was also trying to conceive its utopian vision. “Ujamma” which means familyhood was an attempt to create a socialist way of life in rural villages based on traditional community values (Ashly 2020). Many people saw the efforts of Julius Nyerere as someone who wanted to unite the people under one national identity while promoting development through ambitious socialist policies (Ashly 2020). Nyerere’s plan aimed to develop rural areas through agricultural production and providing access to education and healthcare services (Ashly 2020). In contrast to Le Corbusier’s model which steered away from its socialist motivations, the “Ujamma” model built its ideals off of Thomas More’s socialist utopia allowing for rural Tanzania to experience development which was necessary for the nation. Of course, the development of villagization was also limited because people would prefer to settle in urban centers rather than villages which limited volunteer candidates to participate in the ‘Ujamma’ settlements. Regardless of the failure or success of the plan, utopian socialism seems to be deeply embedded in African culture and traditions. Though ‘Ujamma’ pushed for development, it lacked technophilic integration which could have allowed villages to become more urban and attract citizens to live in these communities.

## The Necessary Balance

Though the motivations and intentions of “La Ville Radiuse” and ‘Ujamma’ were noble with each its own unique quality, they both were at different ends of the extreme. ‘La Ville Radieuse’ had become a machine that lacked a human quality because all that which was social was hidden under the automobile. By default, such an extreme makes it hard for man and machine to coexist. In contrast, the ‘Ujamma’ village focused on social relations but retained a primitive agricultural lifestyle that could never find fertile soil to meet the needs of a society in pursuit of urban development. From these models, what is clear in creating a successful utopian model is the inclusion of a social quality promoting human interaction, and a technophilic quality promoting economic opportunities that can lead to urban development without sacrificing the essential balance of man, machine, and nature.




***La Ville Radieuse***




***"Ujamaa (Brotherhood)" Villages***

Figure 42: Architectural diagram comparing the urban and social concepts between La Ville Radiuse and an "Ujamaa" village.

# Chapter 5: The Spiritual

Social and physical environments have great influence on thoughts and mental impact which stimulates the desire to learn and the capacity to store information. Architecture by imposing its rules, order, form, and scale can communicate ideas through perception and experience leaving a meaningful and spiritual impact. The idea of spirituality is crucial to provide a strong desire to learn and I dare say that learning and becoming knowledgeable is a spiritual exercise.

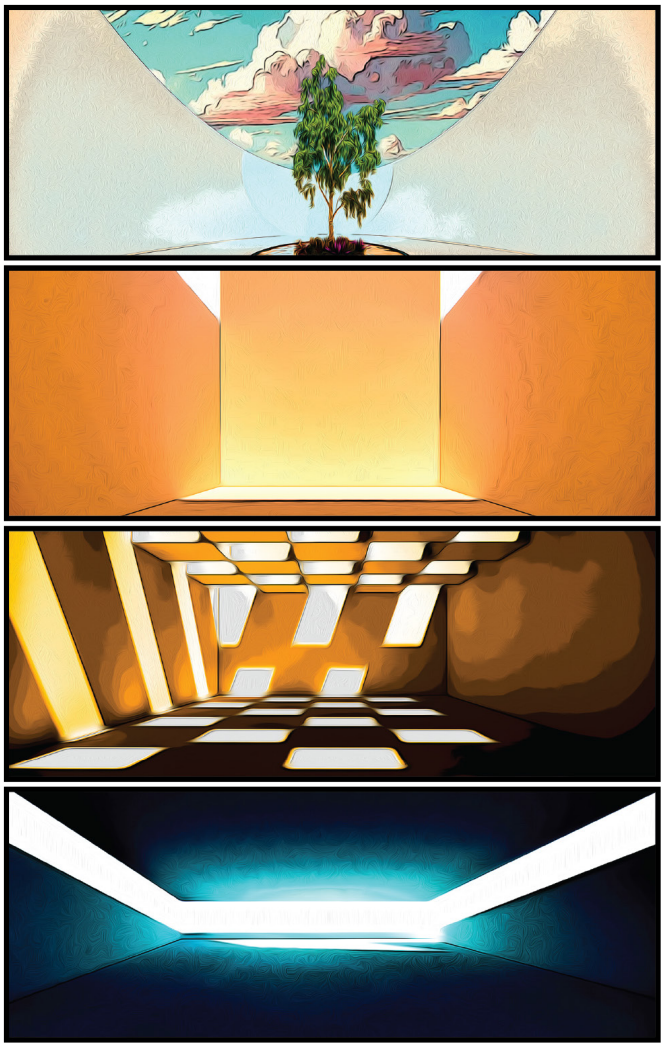


Figure 43: A comic panel depicting different spatial attributes for spiritual experiences through scale, form, light, and color.

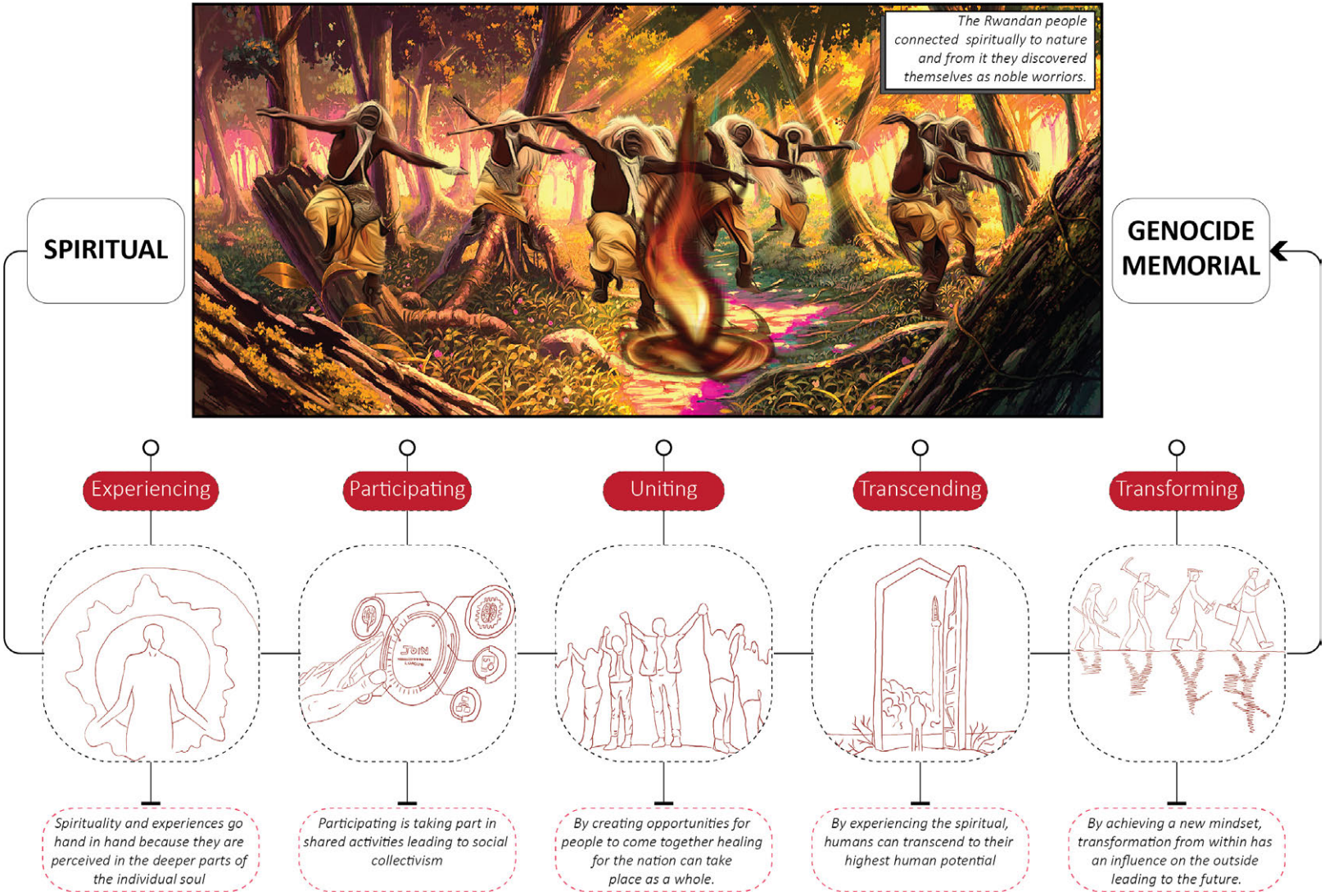



Figure 44: Diagram showcasing the Rwandan spiritual traditions as an expression of the connection to their cultural identity and how it relates to an architectural program.

## 5.1: Human Wellbeing

Biophilic design is not only important for the ecosystem, but it has a direct impact on the well-being of humans because nature promotes mental, physical, and spiritual health. The built environment influences people's behaviours, practices, emotions, and can also enhance the capacity for individualized spiritual connections (Smith 2021, 35). It is important to consider the spiritual dimension of architecture given its significant role in human wellness and its capacity to bring healing by imparting a sense of place to users and motivating them to pursue knowledge. By integrating numinous moments that evoke transcendental experiences with the fascinating, and the mysterious (Smith 2021, 36), architecture can help redefine how space is experienced by connecting to the divine through art and beauty which incite wonder, emotions, and intellectual desires (Smith 2021, 37). A neuro-phenomenological study presented by Dr. Julio Bermudez revealed that transcendental moments in architecture impact our consciousness and can lead to a focused contemplative state. By curating spaces for certain experiences, individuals can enter a state of mind that could lead them to achieve their highest potential (Smith 2021, 40). Architecture is not just about spatial poetics of built form, but rather the perception within architectural moments is what creates profound poetic and spiritual experiences allowing people to connect with their environment and their social participation.

## 5.2: Symbols and Experiences

### Spatial Expressions

One of the most common ways people connect with space for a spiritual self-reflective purpose is through experiencing and participating. The objective of art has always been to communicate ideas that words could not express through shapes, figures, gestures, and colours. The early church understood the importance of art as a communication tool that expresses symbolic qualities. Sculptures have their logic, particularly in their way of evoking symbolic meaning or use of a place (Krauss 1979, 33). When sculptures and architecture work together in a way that draws the user to participate in the experience, they belong to that moment and are immersed in the symbolic narrative making them the protagonists of the architectural space (Kitao 1974, 69). By using art form and architectural forms, spatial qualities can be elevated to extract profound spiritual perceptions.

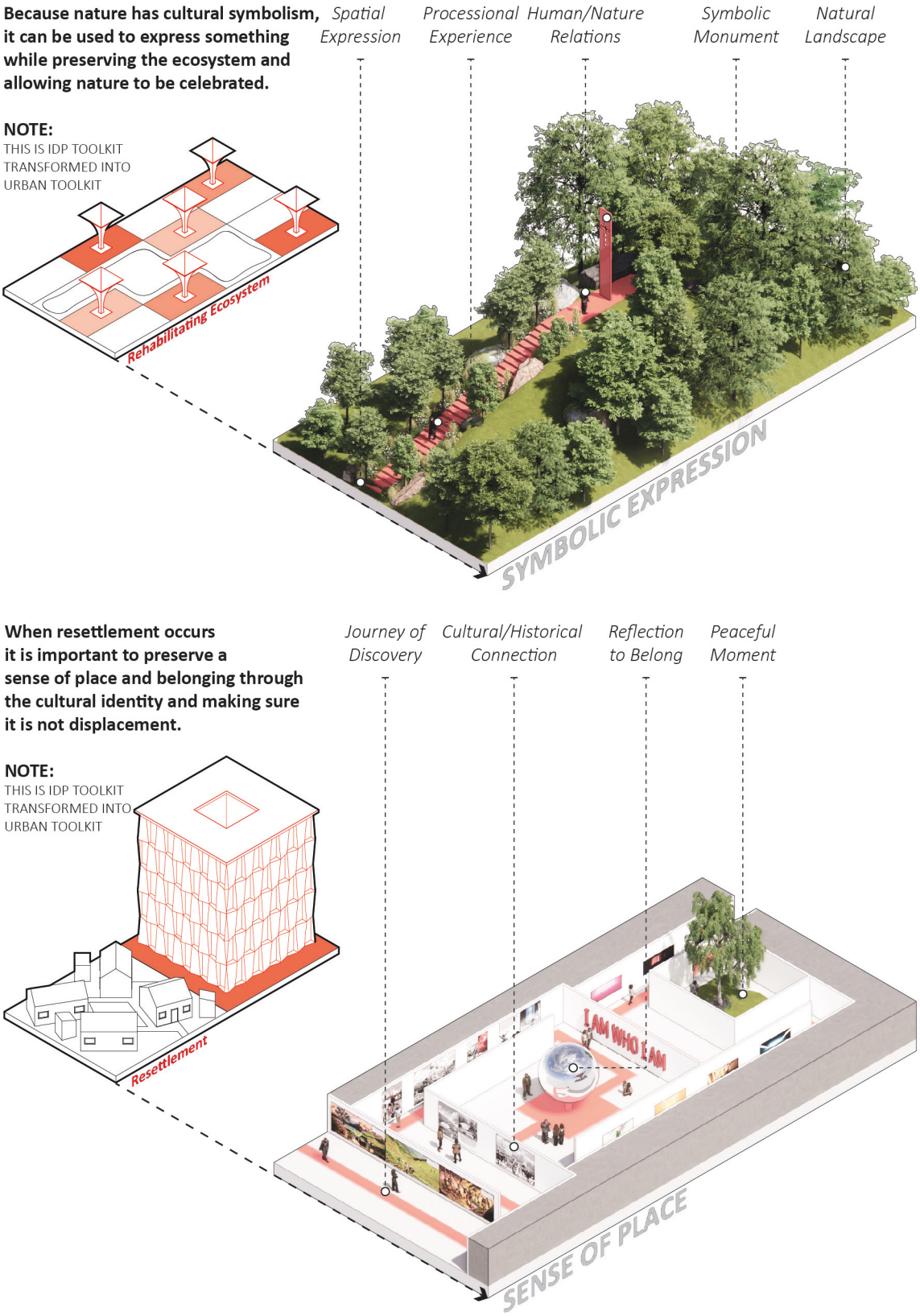



Figure 45: Architectural diagram of the IDP toolkit adapting and evolving into an urban biophilic and technocentric design tool for cultural expression and identity.

## Urban Landmarks

So how can symbolism be used in the context of an urban city to allow inhabitants to connect to their environment by spiritual experiences and appropriate new meaning to specific social and cultural spaces? City landmarks are physical representations of unique and memorable moments that heighten the symbolic meaning of historical events, culture, and traditions. Landmarks heighten the significance of their context through their clear forms, their prominent location, and the contrast to their surroundings as being uniquely distinct from the entire city in scale and in their relationship to the observer (Lynch 1960, 83). Firstly, landmarks can be visible features from many locations, and secondly can be a local contrast with their surrounding elements. They can also be conceived as a sequential series which direct the observer by using trigger cues maintaining the sense of continuity to not compromise the emotional and functional efficiency by using recognition and memorization patterns (Lynch 1960, 83).

Figure 46: The Berlin Memorial to the Murdered Jews of Europe in the urban landscape as a form of cultural expression for self-reflection. Photograph by Barbara Sax ( Cocotas 2017)

## Urban Identity

Paths, nodes, and landmarks work together to enrich and deepen the character of the city. Paths act as the principal organization system at a metropolitan scale creating interactions with junction nodes that reinforce critical moments in the overall processional experience (Lynch 1960, 84). Though the city may be one, it is a culmination of different scales overlapping together harmoniously in an interrelated manner to maintain continuity through their shifting spaces (Lynch 1960, 86). Once again to maintain the harmonious overlapping at the different scales, the use of fractal organization facilitates connections and overlaps because in their scaled qualities they are by default connected and this way different spaces can spill in and out of the urban hearth.

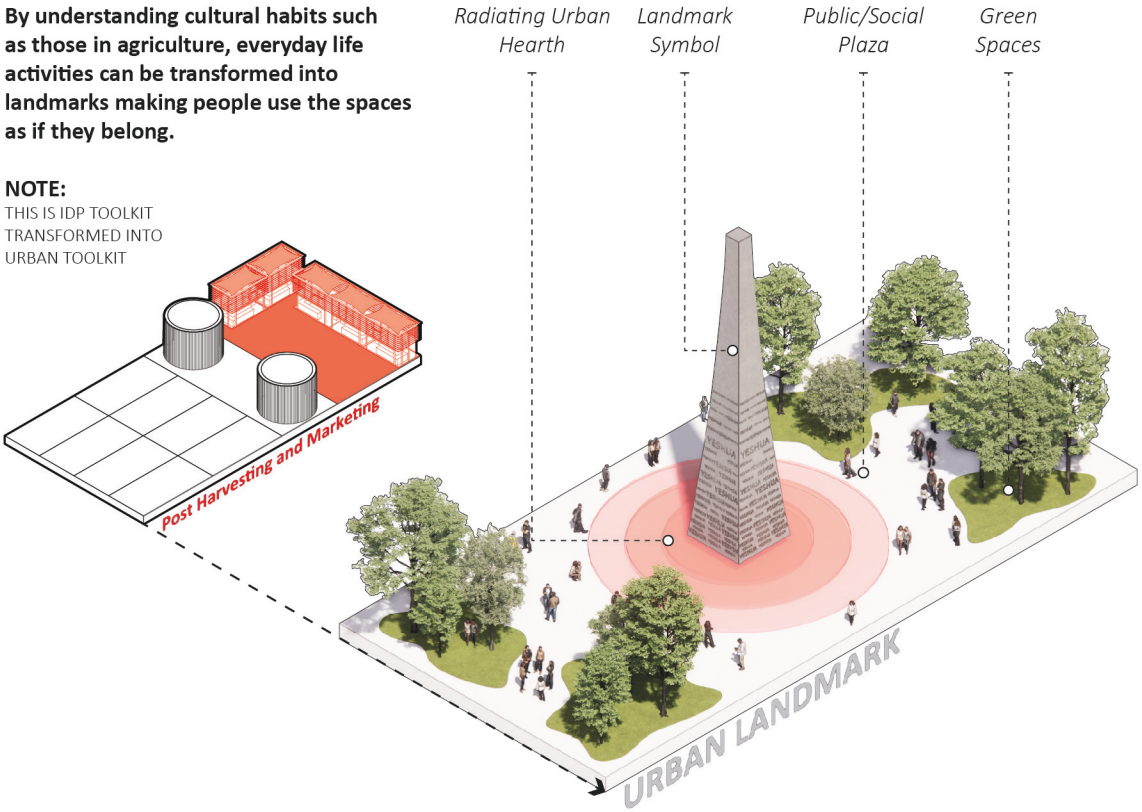



Figure 47: Architectural diagram of the IDP toolkit adapting and evolving into an urban biophilic and technocentric design tool for urban landmarks.

## A Model for the Future of Rwanda

Now looking back to the Rwandan nation, how would the different principles of nature, humans, and technology help in the discourse of development, healing, and education? When investigating the different issues that come from the genocide, the necessary change is a processional experience that leads from one mental state to another prompted by urban life. By providing an urban model that allows people to participate in the different stages that lead to transformation, architecture can shape the path and elevate the symbolic experiences needed to reach the goal. The journey starts by reconciling with the past and understanding one's identity, then by a renewed knowledge and purpose you can transform and belong to the future. By experiencing the symbolic landmarks in nature, users can be inspired to overcome the inherited trauma of the past and pursue the limitless future. Gisenyi can indeed be a unique place for the Rwandan people by offering them an array of social, cultural, educational, and ecological opportunities. By reconciling man, machine, nature, and the city, one of the most rural nations can be transformed into one of the most forward-thinking and innovative cities of the future.

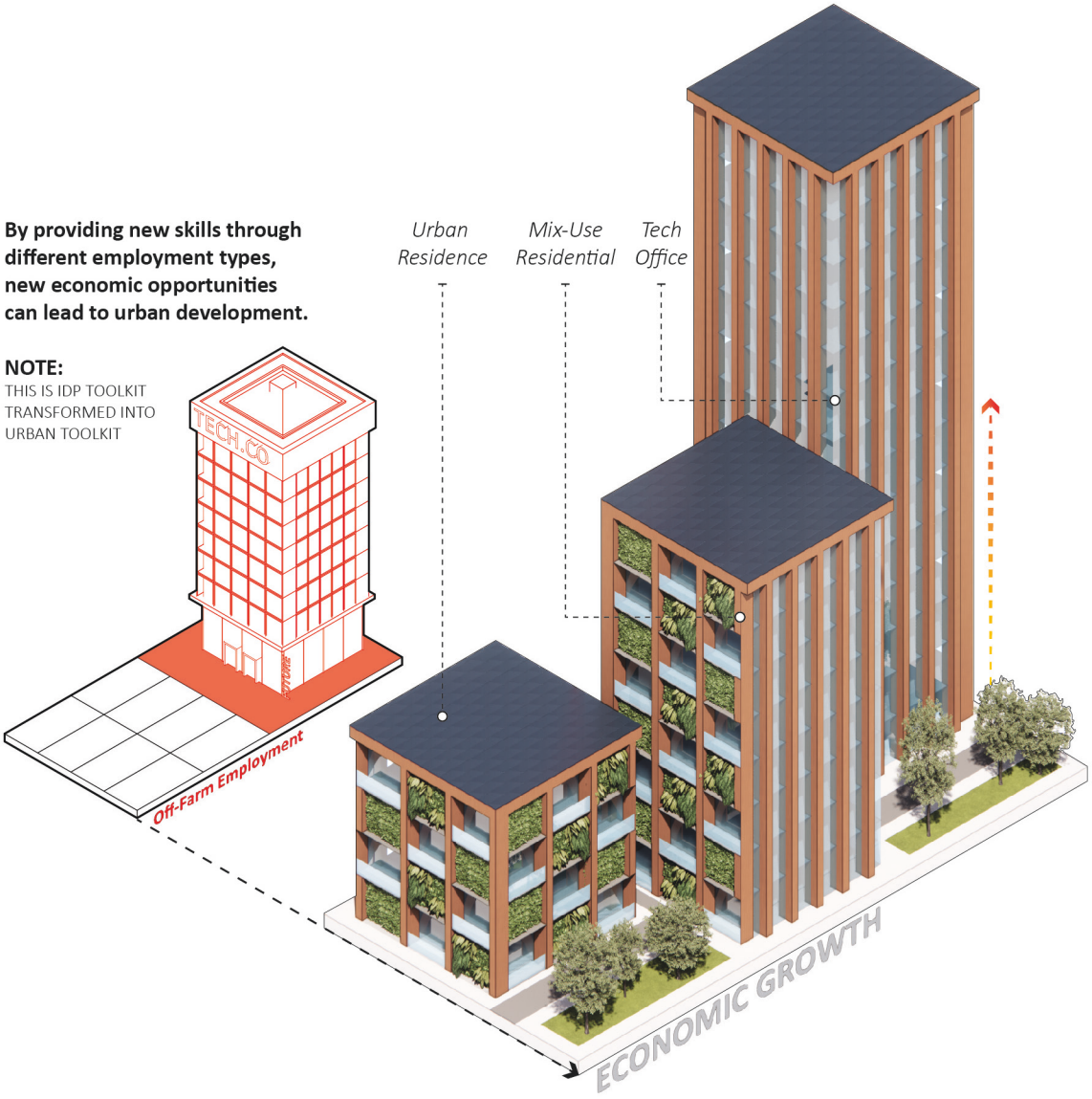



Figure 48: Architectural diagram of the IDP toolkit adapting and evolving into an urban biophilic and technocentric design tool for socio-economic development.

# Chapter 6: Ushindi

## 6.1: A Masterplan for a Future Campus

When looking back at African civilizations and how nature was influential in shaping environments, it is evident that spatial organization was influenced by social symbols and significance that express specific qualities of the culture. To retain a similar attitude of this tradition, the masterplan proposal incorporates a fractal nature within it which begins from a central hearth and like a seed it grows by spilling out into the existing urban fabric. The fractal grows by increasing central hearths at different scales and through rotational gestures and intersections, the fractal expands with moments where connections occur between various scales.

### The Potentiality of a Site

Currently, Gisenyi has an airstrip situated in the center of the city which takes a large portion of land full of unexploited opportunity. The site has the potential to be a fertile place to plant the seed of the utopian vision. The scale of the site creates an urban barrier between different parts of the city due to it not being accessible to the public and therefore in the hopes of creating a regional landmark, the proposal can break the barrier and create an attractive anchor for all who come near. By taking the role of a University campus, many different programs could intertwine and as the campus grows, new programs are added, and the introduction of different landmarks within the campus can promote new social and cultural activities.

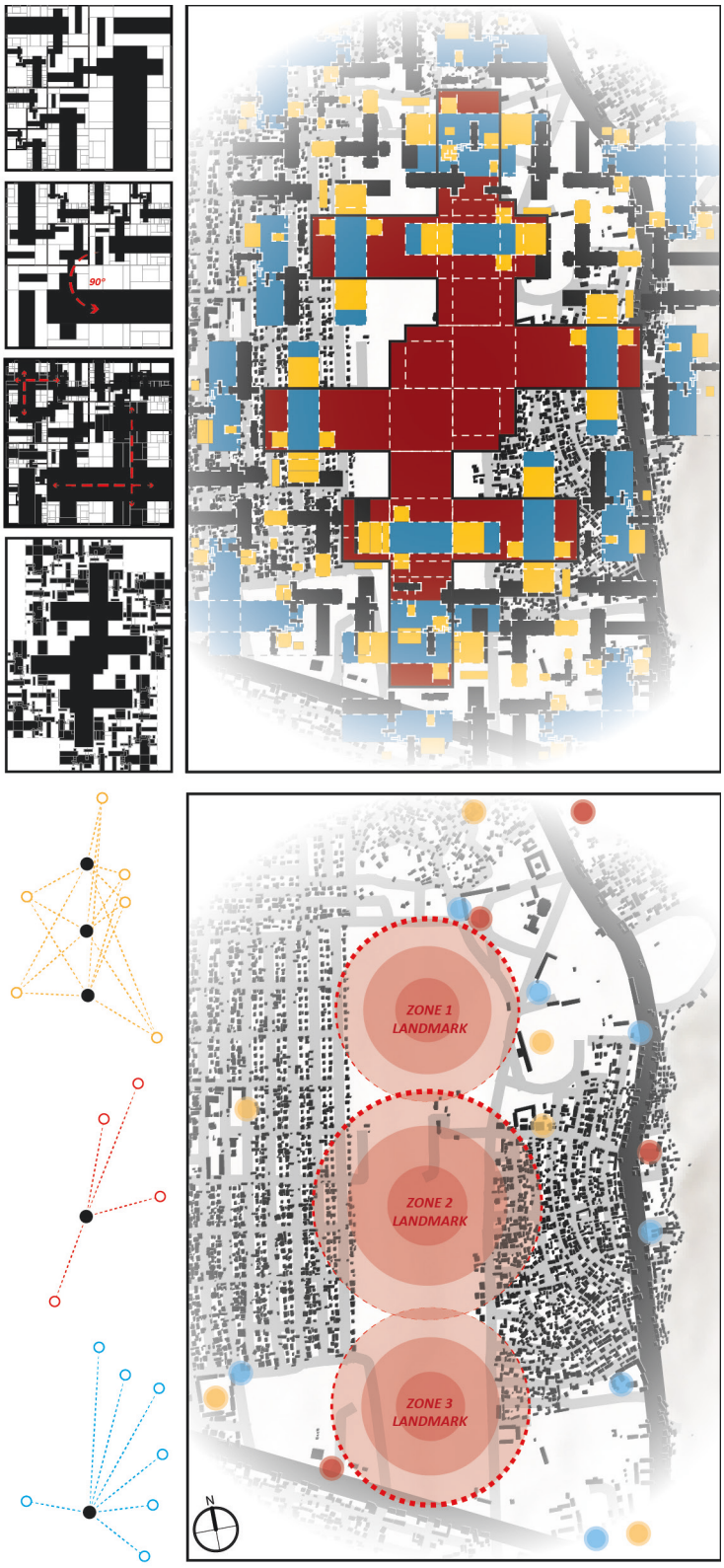
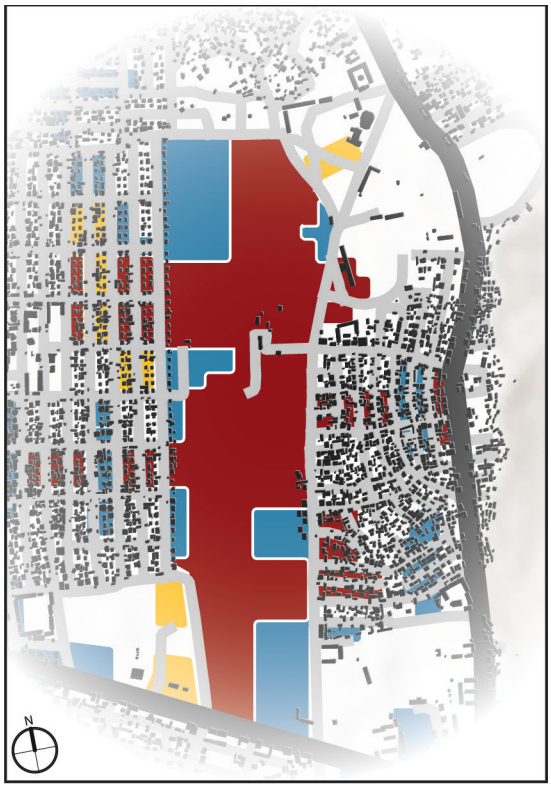



Figure 49: Diagrams of fractal patterns and urban analysis to integrate the new urban DNA with the existing urban conditions.

## Transforming with the Fractal DNA

By superimposing the fractal pattern extracted from the existing conditions, the fractal brings an opportunity for the city to transform over time subtly and organically. This takes away the idea that the new city is alien to its origins, and rather it grows from its foundations by using nature which has always been part of the Rwandan identity where the new reclaims Gisenyi as a Rwandan place by slowly erasing the colonial grid system. Over time, the current informal city is completely transformed through development within the fractal DNA as it takes over and merges with the existing urban context. The fractal DNA is propagated by the university's cultural landmarks which symbolize the nation's past, present, and future. By introducing the landmarks at different phases of the campus's development, the Utopian vision of the University incites social and economic development within the city at first and eventually throughout the nation.



Using the fractal pattern to create a central hearth, the nature of the fractal spills out towards the current urban context and by overlaying it with the existing urban conditions it creates new possibilities while preserving the existing fabric. The fractal works its way like a seed that grows slowly from one point eventually becoming woven into the existing context.


As the fractal nature takes over the existing urban fabric, it begins to influence the city's development which started from the landmark zone. The spill out nature starts to reshape the surrounding context transforming the old into the new.

Figure 50: Diagrams of a fractal pattern superimposed and adapted to the existing urban conditions creating a new urban system from the existing one.


Figure 51: A comic panel depicting the master plan vision of Ushindi Unversity as part of the Utopian objective of the future.

## 6.2: The Cultural Landmarks

### The University Market

The University Market is the first landmark to be introduced by the university campus as a place where cultural and social activities are integrated to promote economic opportunities. The market provides spaces and programs for students and locals to interact and learn from one another as part of the educational goals of the University. The students learn traditional farming practices from the locals, while the locals learn new innovative ways of farming from the students. The market is then the place where ideas are shared and by being the first spill-out program of the university it interacts with the public realm connecting it to the fractal's hearth and starting the chain of influence on the existing urban condition.

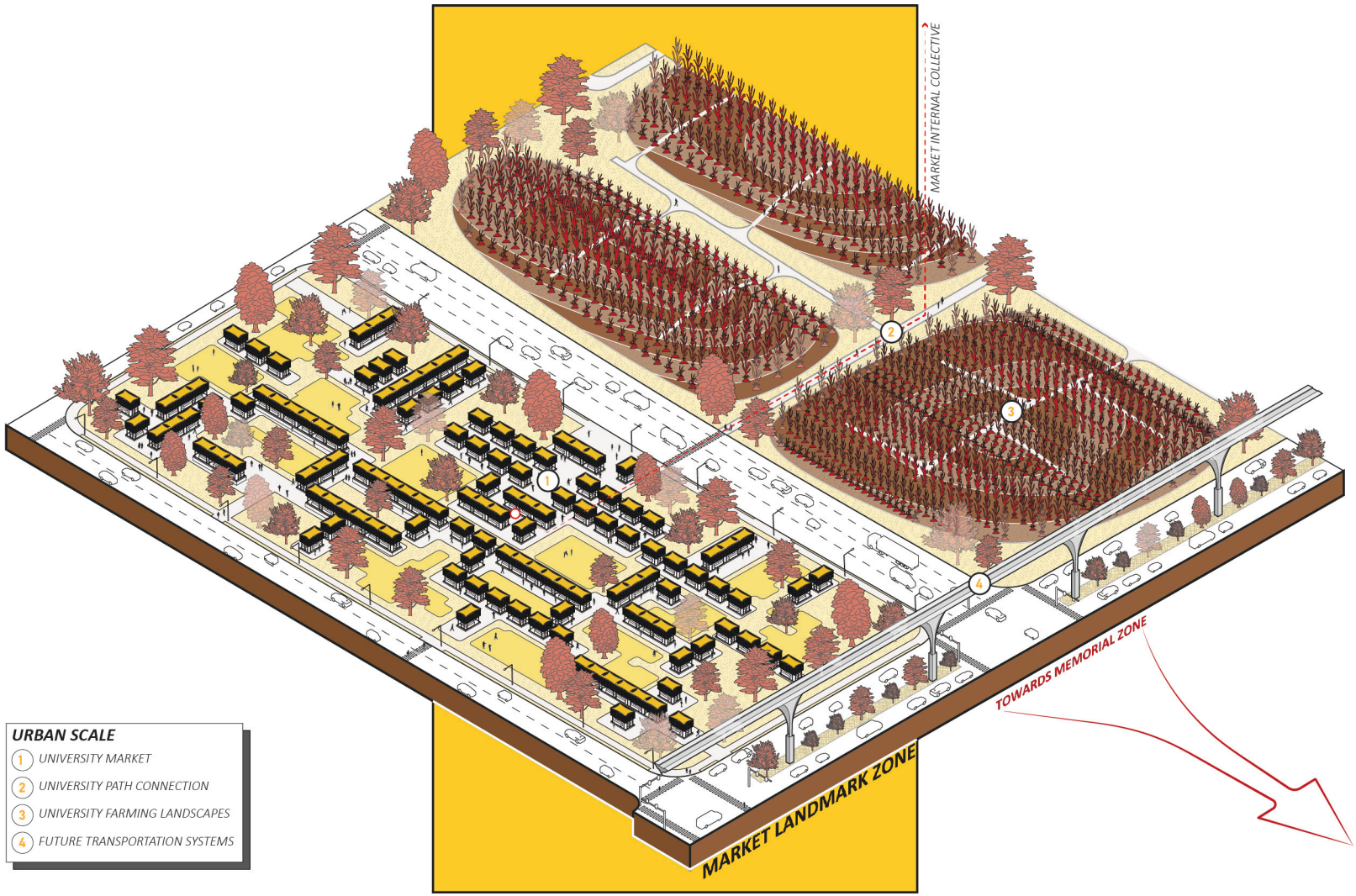



Figure 52: Diagram of an urban scale axonometric of the Market Landmark Zone in relation to cultural activities and infrastructure development.

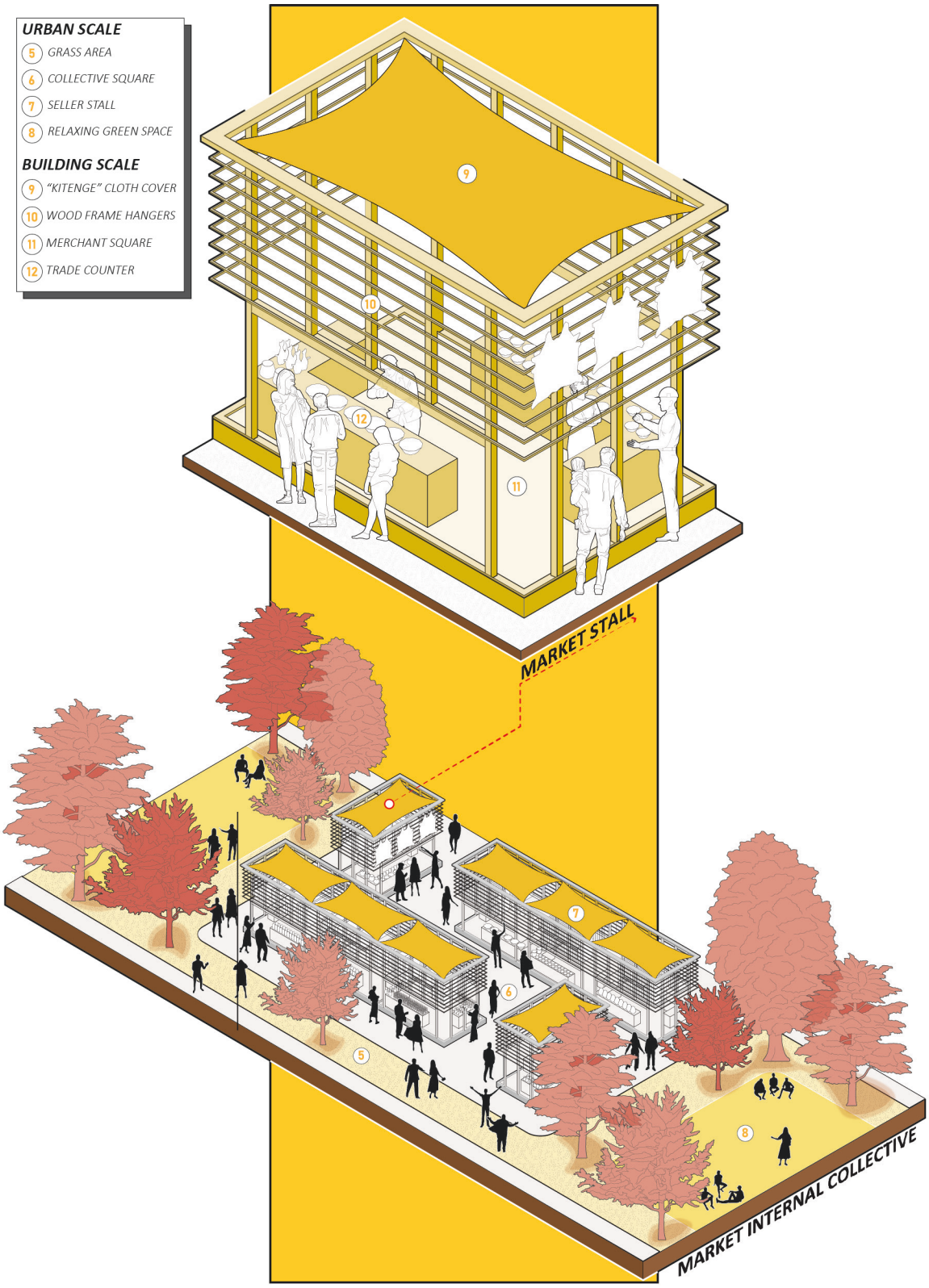



Figure 53: Axonometric diagram of the building scale for the Market Landmark spaces, experiences, landscape, and modular construction.


Figure 54: Left side section of the Market Landmark showing the connection to the university farming landscapes and urban threshold.

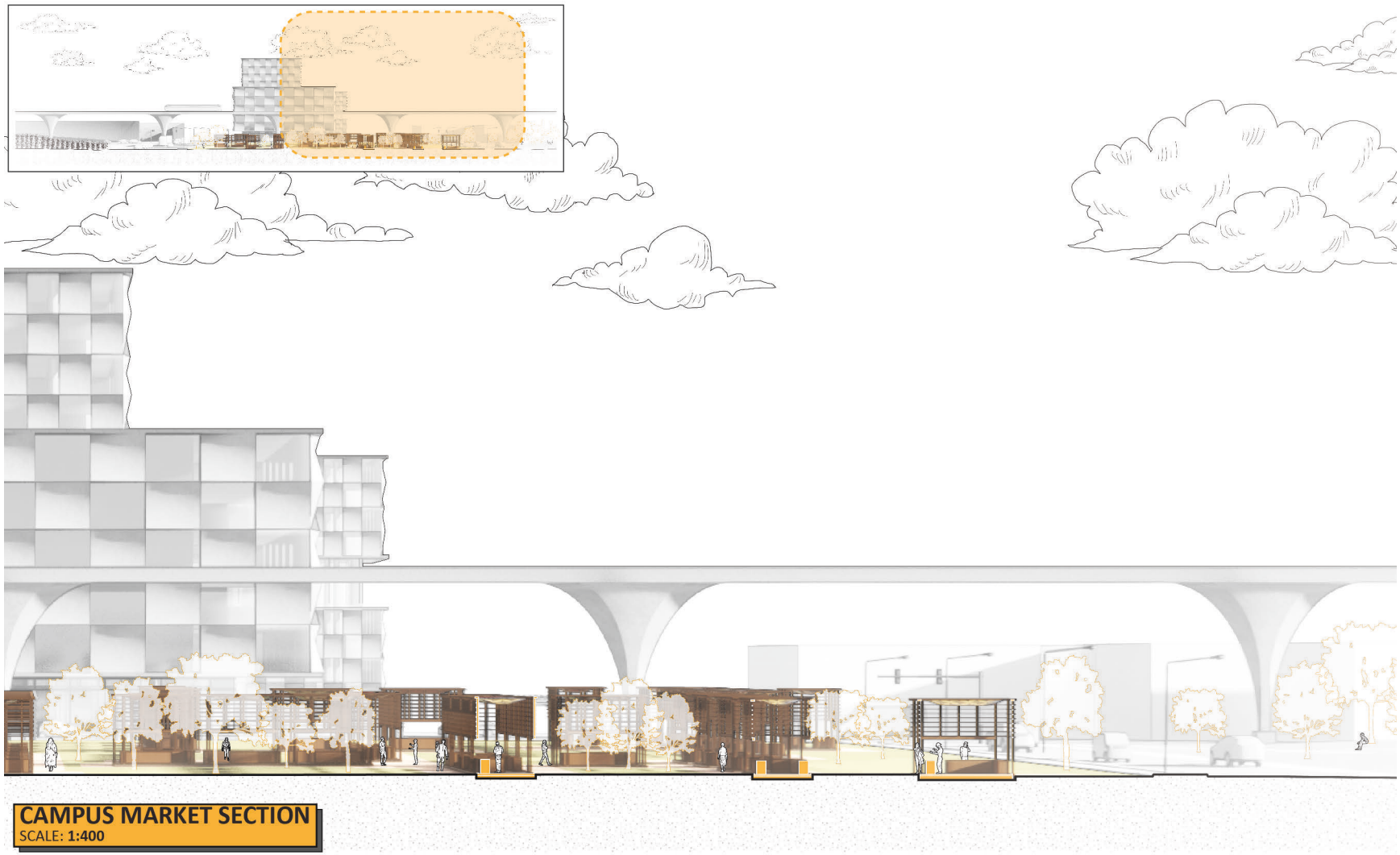



Figure 55: Right side section of the Market Landmark showing the connection to the adjacent landscapes and public spaces.

## Form and Urban Relations

The market is made of stall spaces, plazas, and green spaces all around evoking a sense of light, modular, and adaptable construction methods. This makes the construction process of the stalls efficient, easy, and rapid involving students and locals working together to build them. The “Kitenge”, a traditional Rwandan cloth pattern, is used as a solar shading element that can be added and removed allowing flexibility and individuality to each stall while the wood strapping acts as hanger spaces for vendors to display and place their merchandise. The market expresses ideas of the past by emphasizing traditional practices relating to agriculture, trade, preservation, and provision similar to how Rwandan people coexisted and built their wealth in the past. The market becomes the starting point of the transformative journey by bringing education to the public and the public to education through social means and cultural activities.


Figure 56: A comic panel depicting the Market Landmark and the relationship between the public realm and the University campus.


Figure 57: A comic panel depicting the Market Landmark and the social interactions as well as the urban interactions.

## The Genocide Memorial

As the University expansion starts to reach the southern parts of the site, the second phase of the campus's development introduces a second cultural landmark, namely the Genocide Memorial. The memorial is created to address the social issues of the present inflicted by the traumas of the genocide with the hope of promoting individual and collective healing which are essential to incite the development of the future.

## Memorial Form and Urban Relations

The memorial is situated at the center of the campus and hidden by a green buffer zone creating calm and relaxing spaces. The building form is monumental, and geometricly linear creating a sense of tomb-like structures. Through its large and austere forms, the architectural qualities express symbols of life and death, and by using its relationship to the water landscape, it expresses symbols of rebirth. This is also emphasized by having portions of the building below ground and other parts coming above ground. The memorial is split into different portions to create a procession journey that takes the user through different indoor and outdoor spaces providing different emotional experiences.

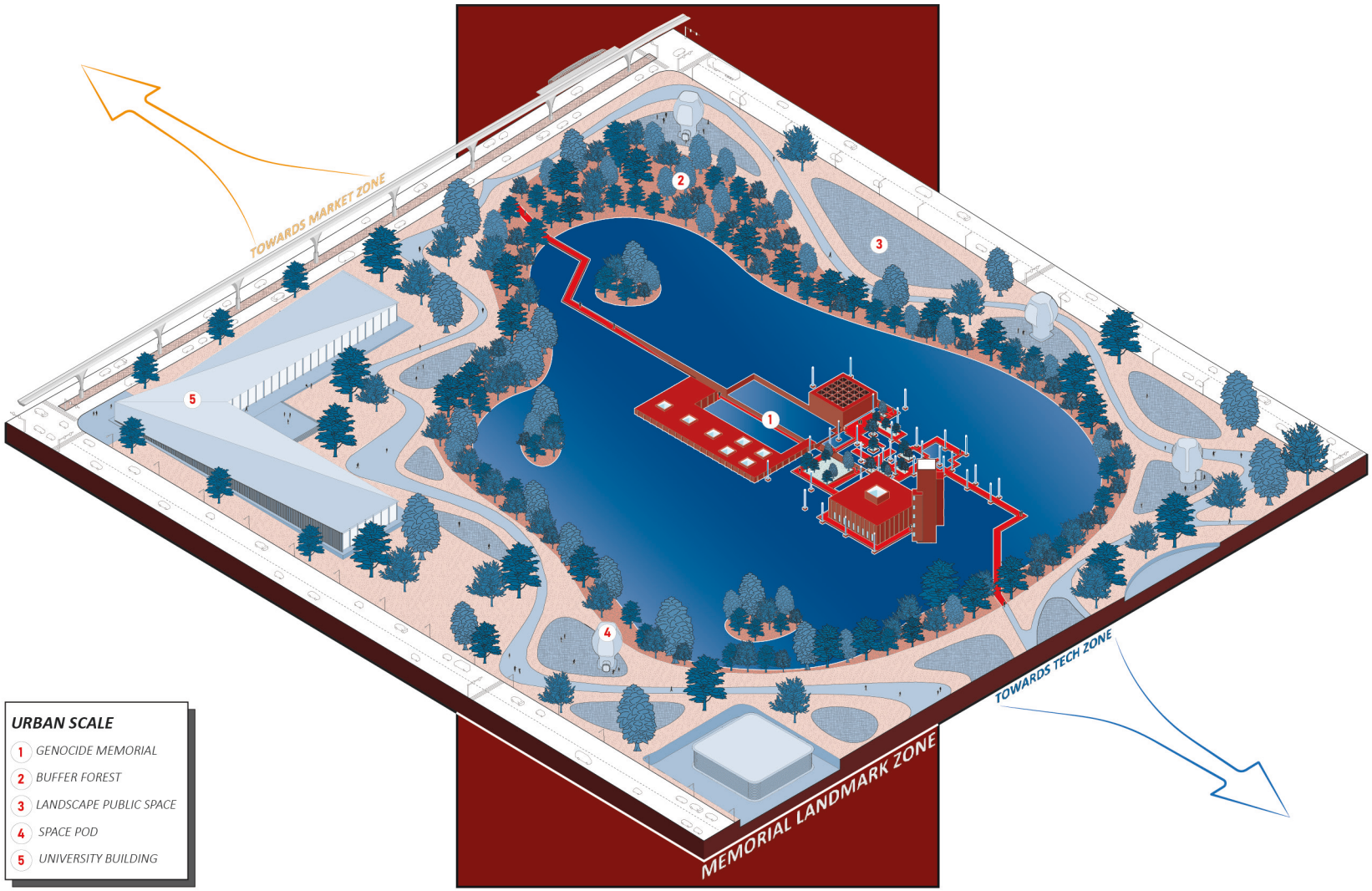



Figure 58: Diagram of an urban scale axonometric of the Memorial Landmark Zone in relation to the natural landscape around it and its location in comparison to the other landmarks zones.

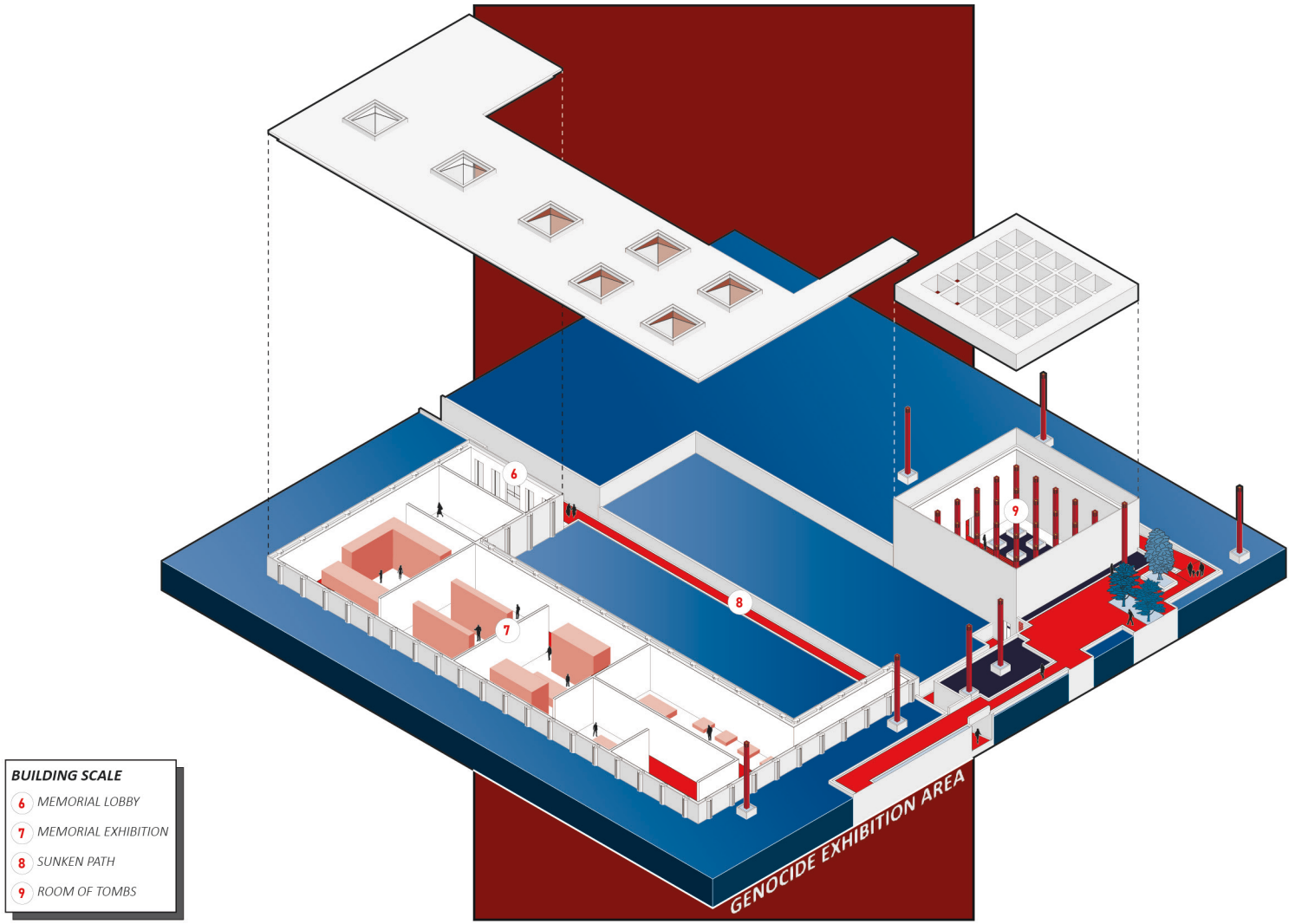



Figure 59: Blown-up axonometric diagram of the building scale for the Memorial Landmark spaces that are used for the Genocide exhibition and education.

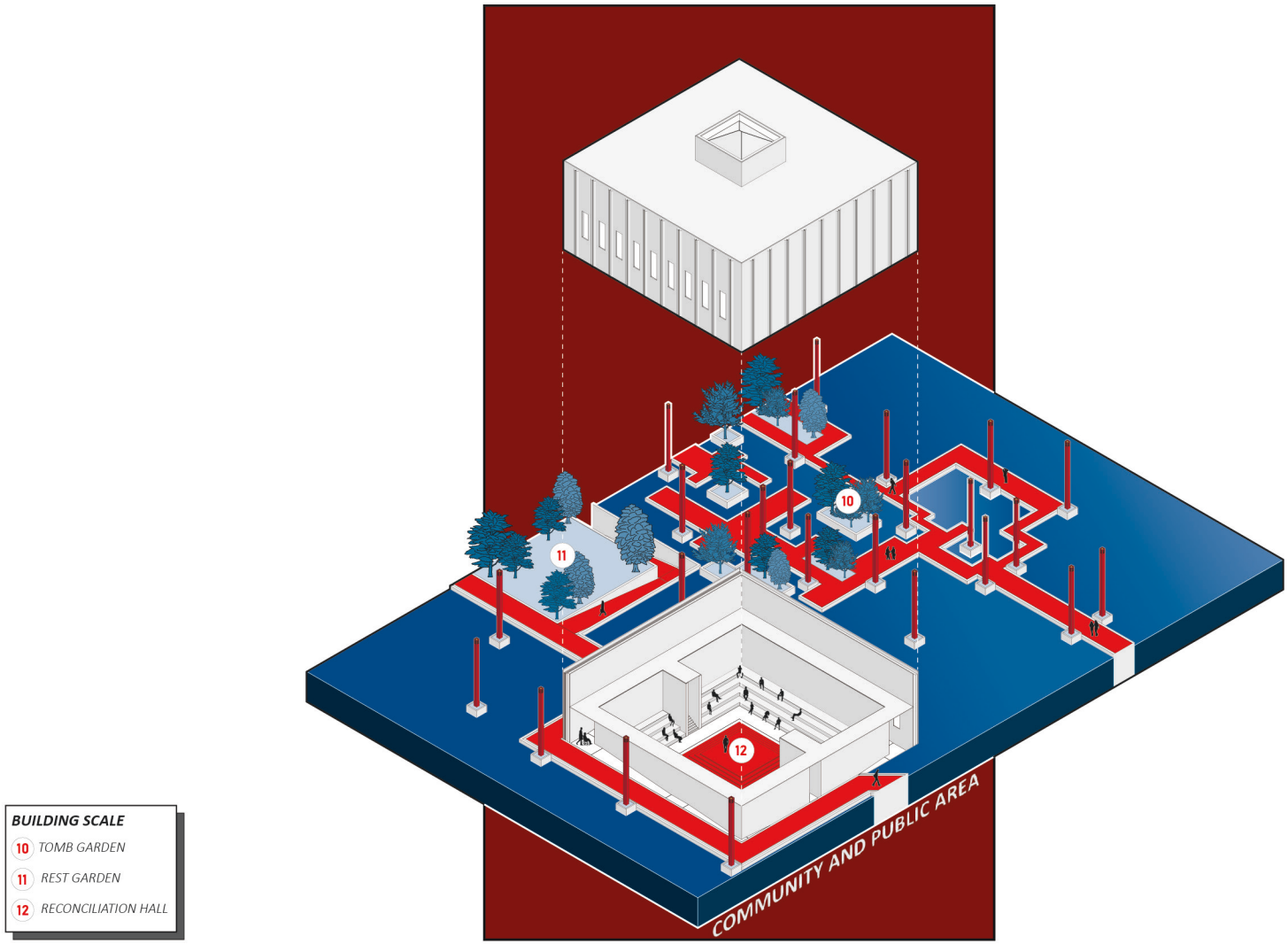



Figure 60: Blown-up axonometric diagram of the building scale for the Memorial Landmark's indoor and outdoor spaces that are used for community gatherings and public activity.

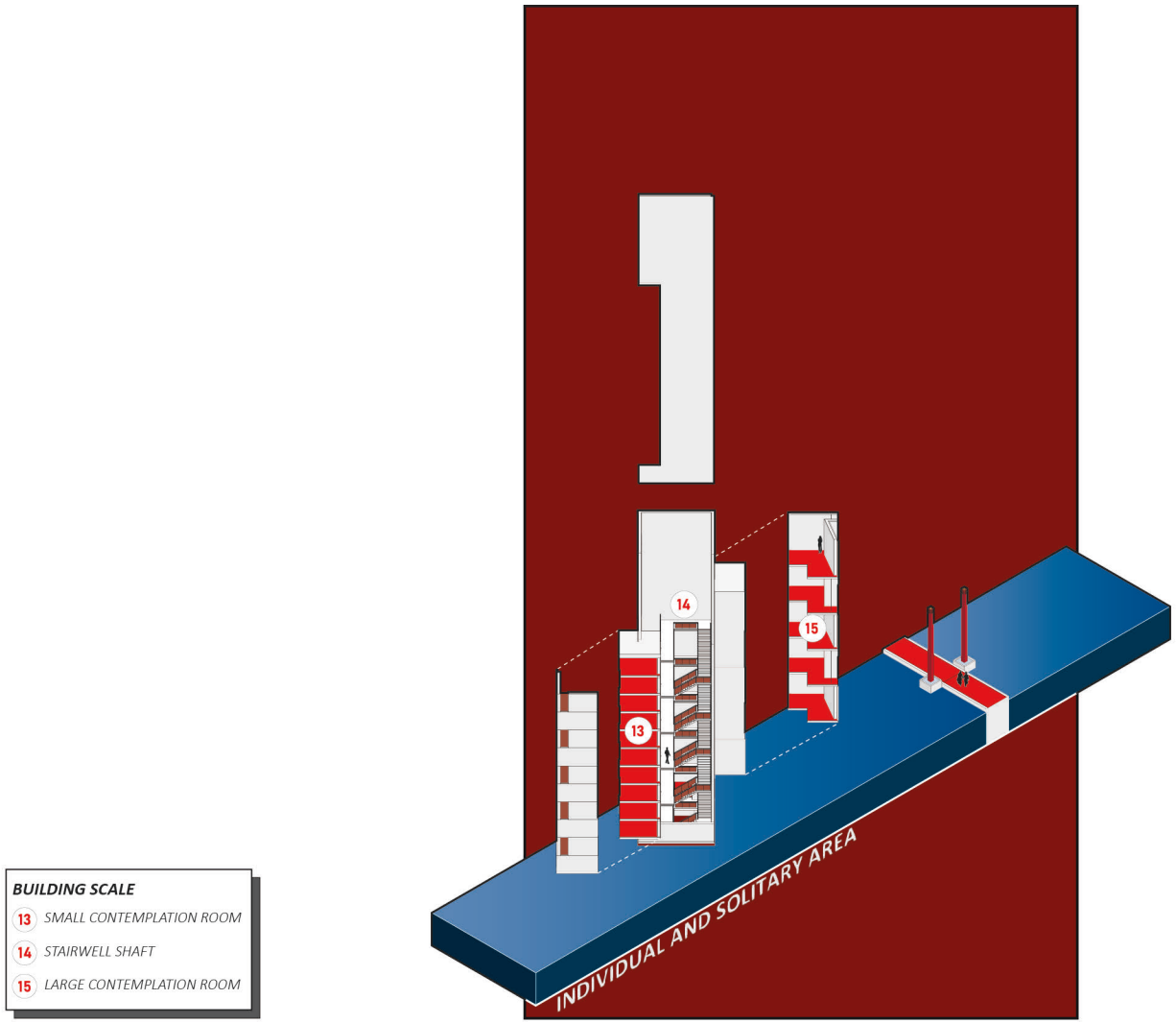



Figure 61: Blown-up axonometric diagram of the building scale for the Memorial Landmark's contemplation tower used for solitary experiences.

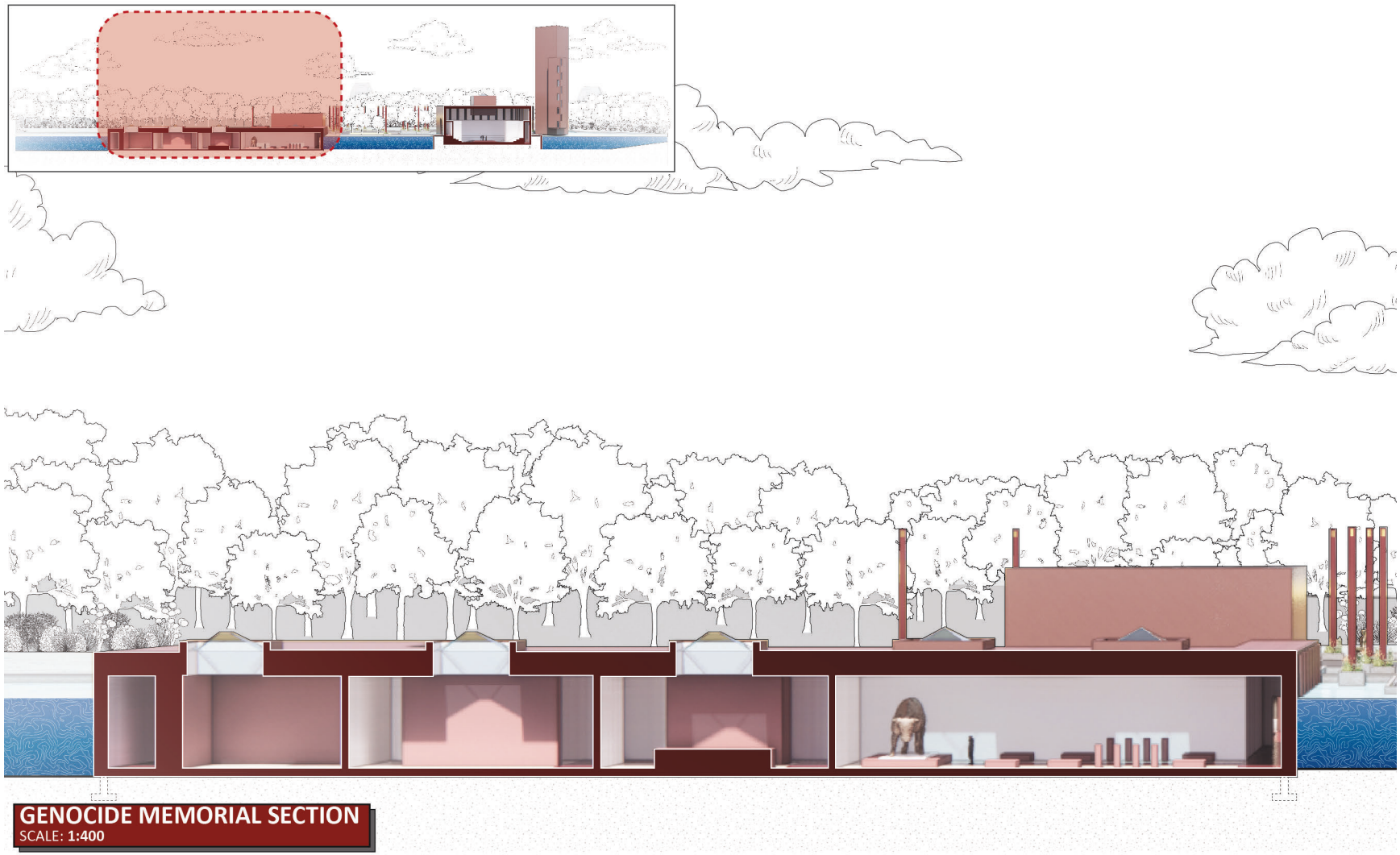



Figure 62: Left side section of the Memorial Landmark showing the exhibition spaces and the building sunken in the ground and surrounded by water.

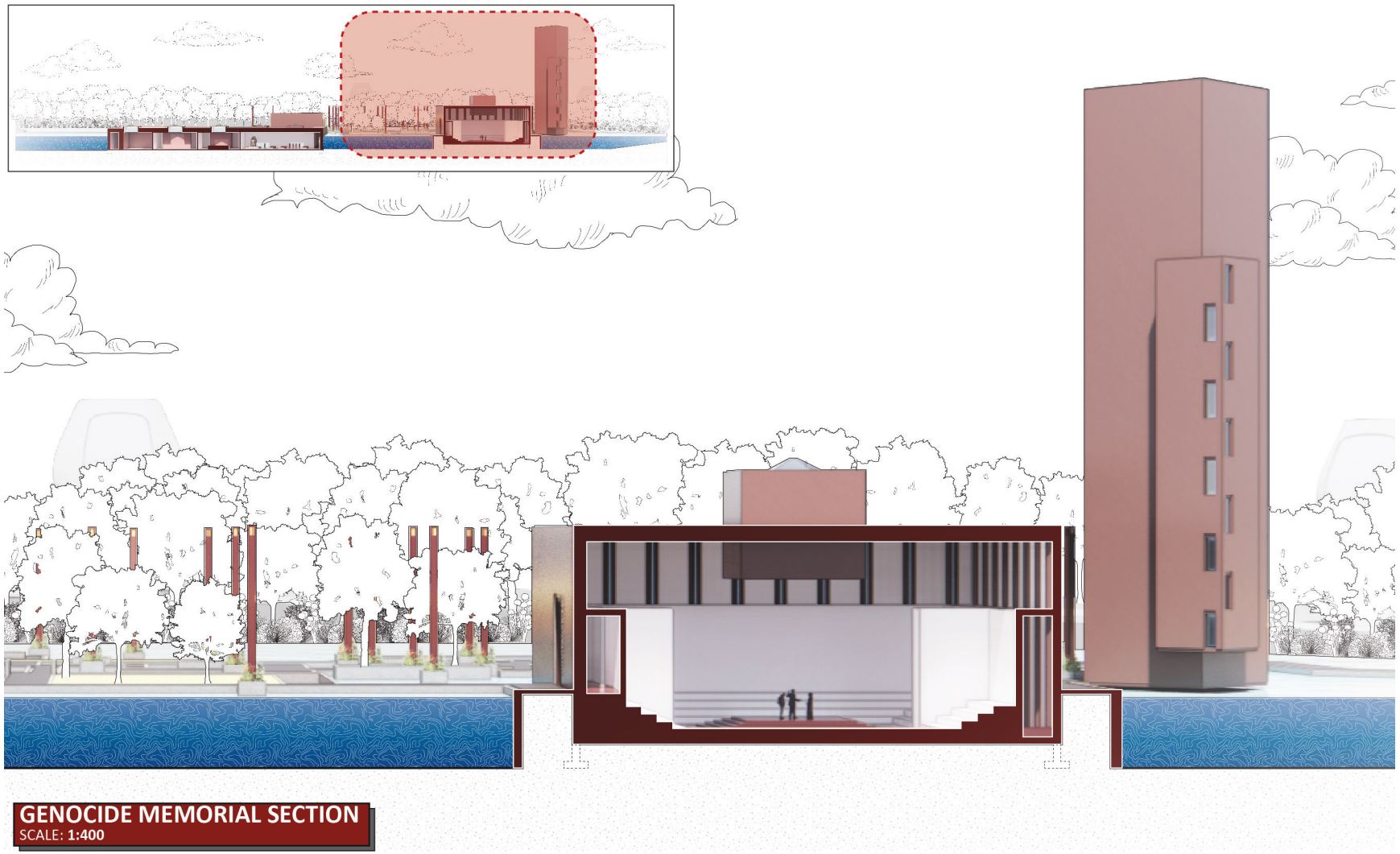



Figure 63: Right side section of the Memorial Landmark showing the connection between outdoor public spaces in the landscape and indoor community spaces.

## The Transformative Experience

The memorial takes people on a contemplative and healing process through a journey within the landscape and the architecture. The process starts with an educational exhibition that showcases the history of the Genocide and concludes with the main exhibition hearth, a room called the “Hall of Tombs” where people remember, mourn the dead, and finally let go of the past. By being underground, the exhibition portion symbolizes the idea of entering the world of the dead and metaphorically resurrecting to life when coming back above. The second part of the memorial includes an indoor social space called the “Reconciliation Hall” used for gathering, sharing stories, and reconciling as a nation creating opportunities to forgive one another and heal as a collective. The outdoors includes a garden acting as an in-between space allowing for the subtle transitioning between exhibition and public spaces while still bringing moments of reflection as you go through the remaining journey. The final portion is a soaring tower that allows individuals to have solitary moments gazing at nature and the growing city in a secluded space allowing for moments of deep individual reflection. The memorial is the transformative threshold because it is made to inwardly renew the people’s minds and bring a sense of purpose and hope for the future.


Figure 64: A comic panel depicting the journey through the Memorial Landmark's spaces from the entry to the end of the Hall of Tombs.


Figure 65: A comic panel depicting the Memorial Landmark's spaces for healing, socializing, and contemplating.

## The Tech Center

The final phase of the campus's development is also the culmination of the University's goals to provide the necessary ingredients to create a Utopian model for living. Appearing as a Tech Center, the last cultural landmark of the university promotes a new national identity as being innovative and pursuing technocentric development. The Tech Center expresses the nation's ambitions for the future and the desire for economic development emphasizing social attributes rather than capitalist intentions. By bringing tech education to students and locals, the Tech Center aims to inspire the future generation of Rwandan youth to the endless possibilities of technology and promote the Utopian love for knowledge.

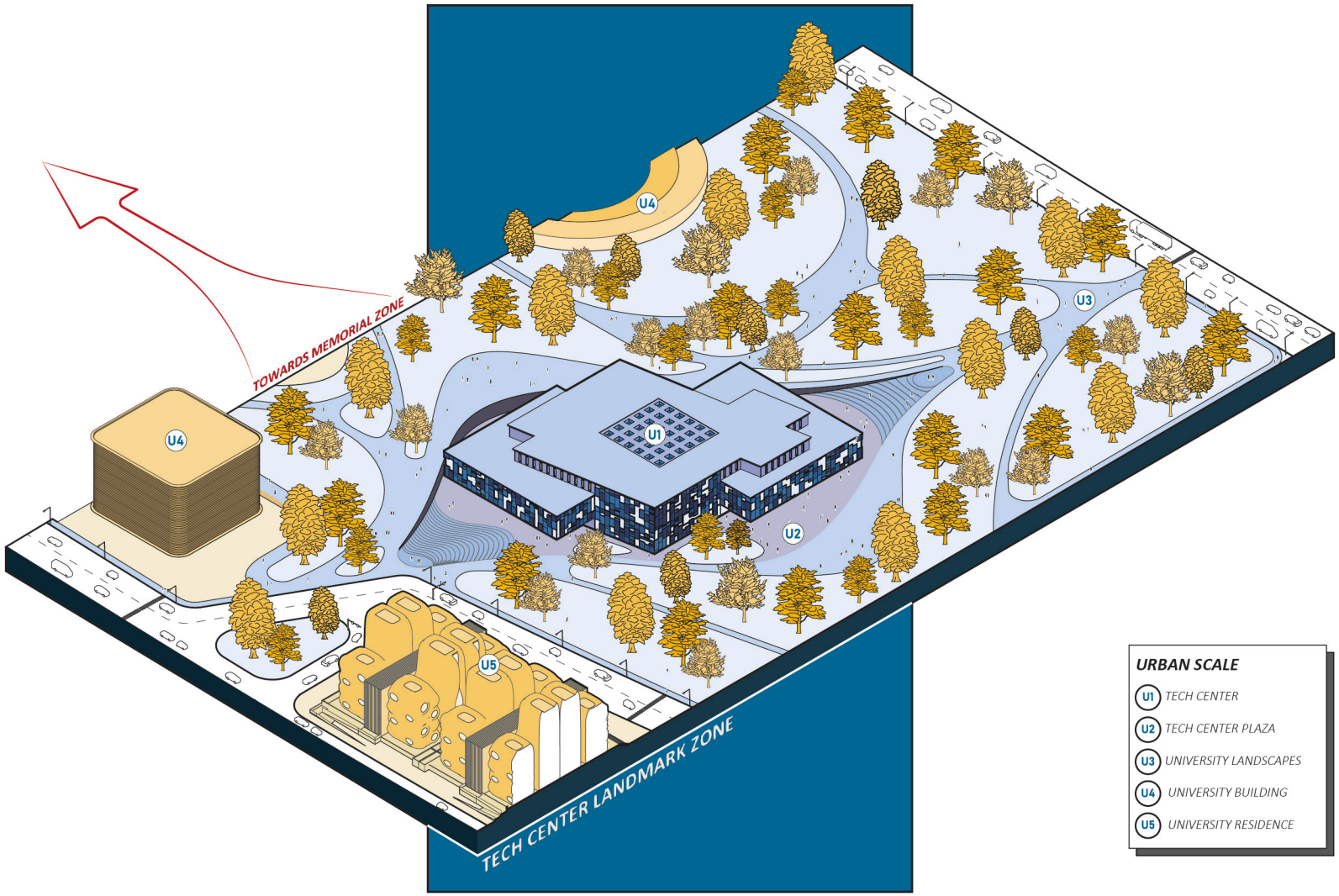



Figure 66: Diagram of an urban scale axonometric of the Tech Center Landmark Zone in relation to the developing city and the campus masterplan.

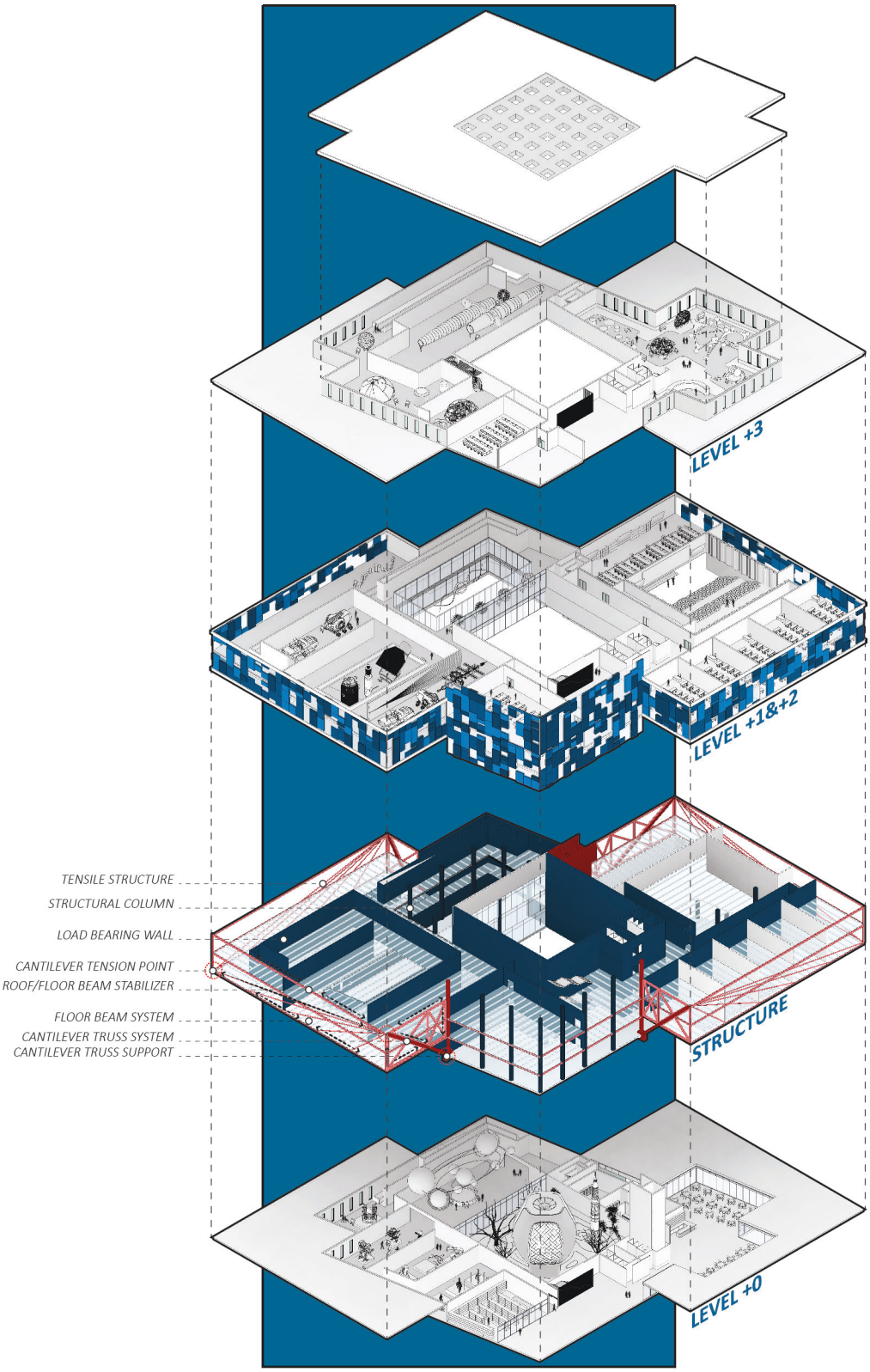



Figure 67: Blown-up axonometric diagram of the Tech Center building showing the public and institutional spaces, structural qualities, the hearth, and the envelope.

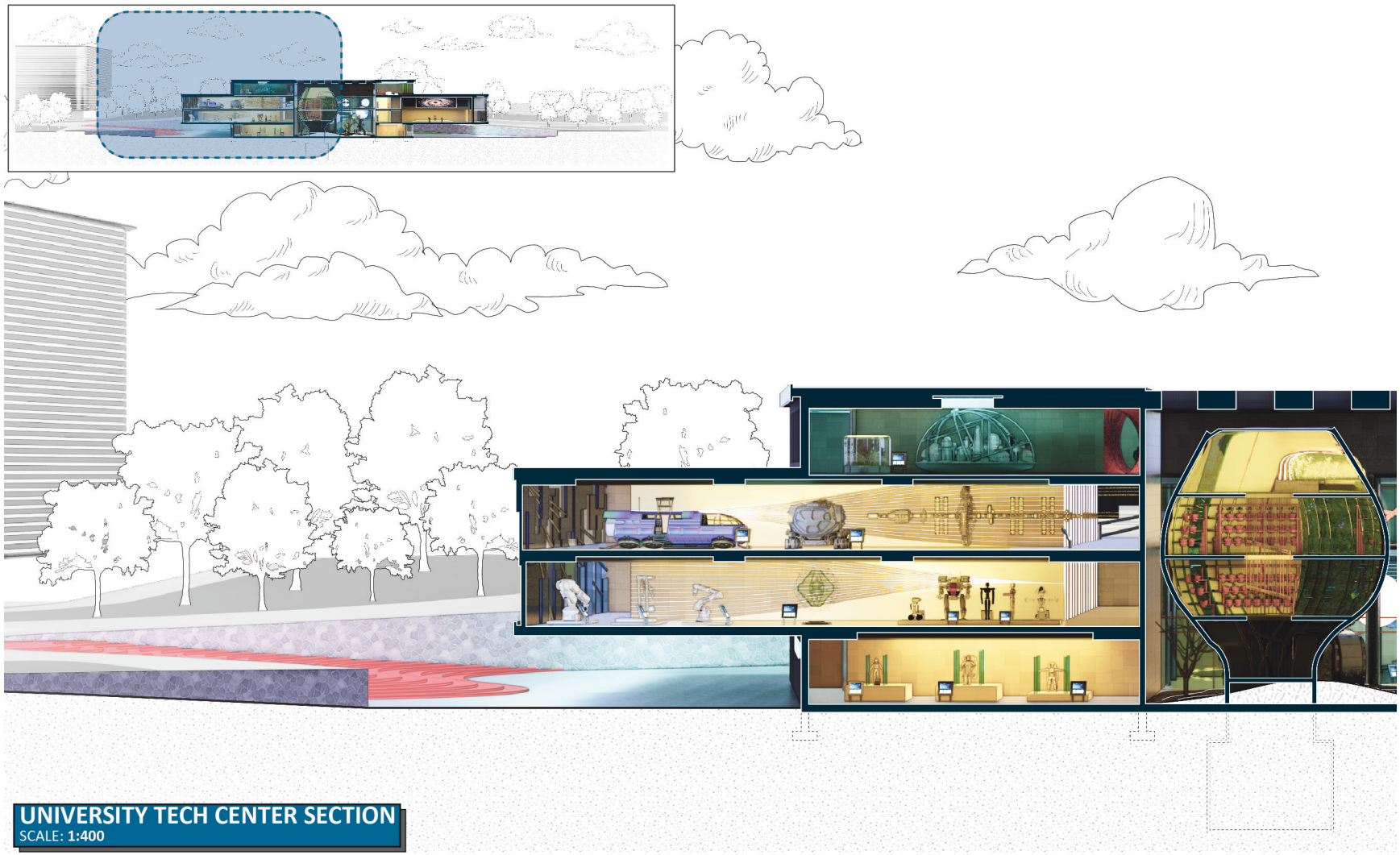



Figure 68: Left side section of the Tech Center Landmark showing the tech exhibition spaces and the central hearth with the Future Systems Pod.

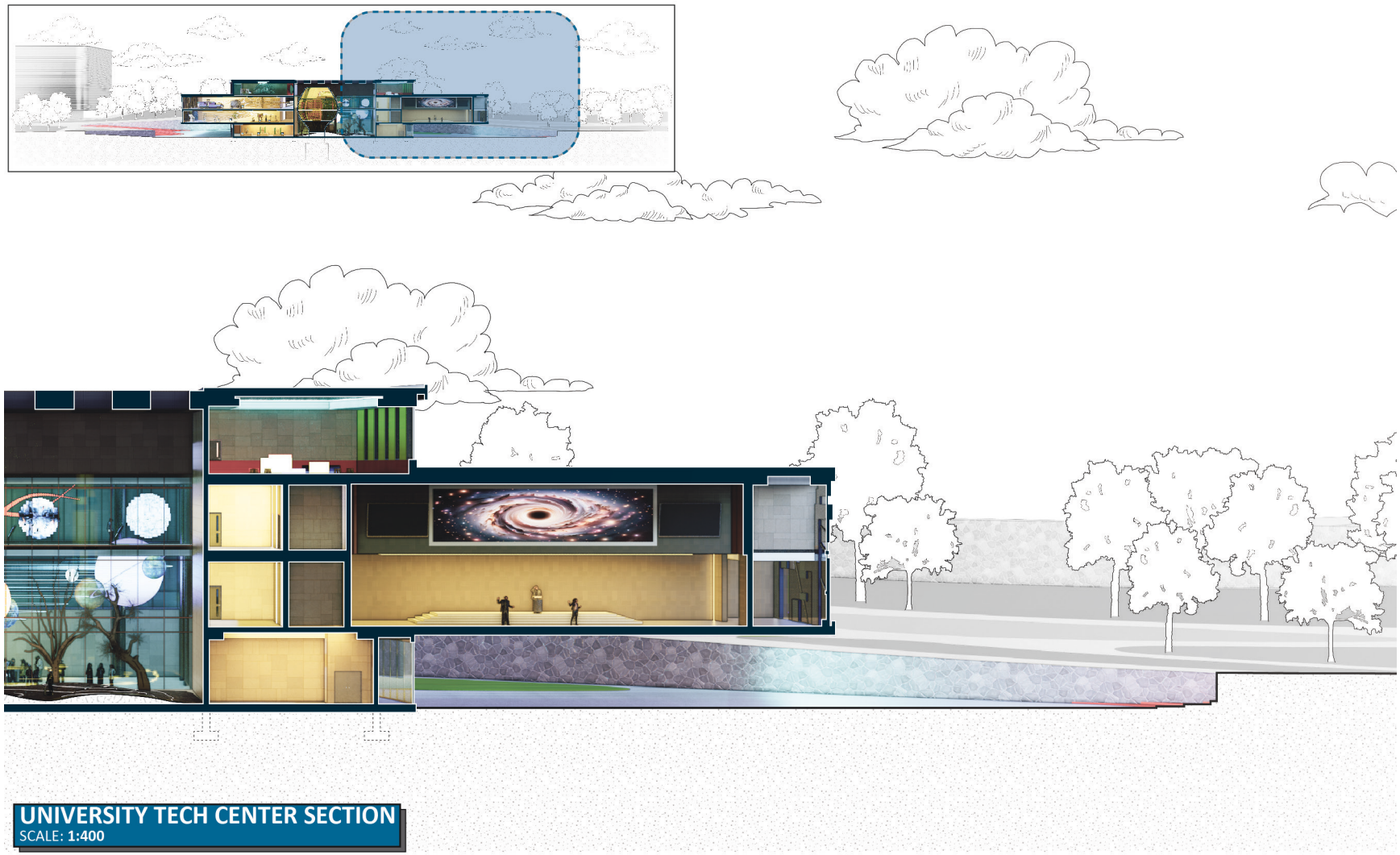



Figure 69: Right side section of the Tech Center Landmark showing the institutional and public spaces in relation to the central hearth with glimpses of the main exhibition space.

## Tech Center Form

The Tech Center merges public programs and institutional programs separated by a central core which acts as the building hearth also. Similar to the city, the idea of the fractal is also embedded into the building form where the central hearth connects different programs as they overlap and intersect. The central hearth showcases the main exhibition but also acts as a separating space for the public section and the institutional section. The public portion of the building includes a curated exhibition exposing technology where students and locals can visit, learn, and discover the limitless wonders of technology. The institutional portion is mostly catered to students and educational purposes such as classroom spaces, IT labs, and workshop spaces. Some spaces are hybrid because they function as both public and institutional such as the auditorium which can be used for expositions or lectures, a children's discovery center, a tech shop, and a café. On the upper levels, the two sides are flanked from the center creating a large winged form with overhanging cantilevers making the building seem like a hovering spaceship and giving the impression that it is floating over the landscape. In the spirit of IT, the façade uses parametric PVC panels evoking the idea of pixels and are visible from the outside and inside. Overall, the built form of the Tech Center expresses the ideas of the future and displays them aesthetically and pragmatically through form and function.

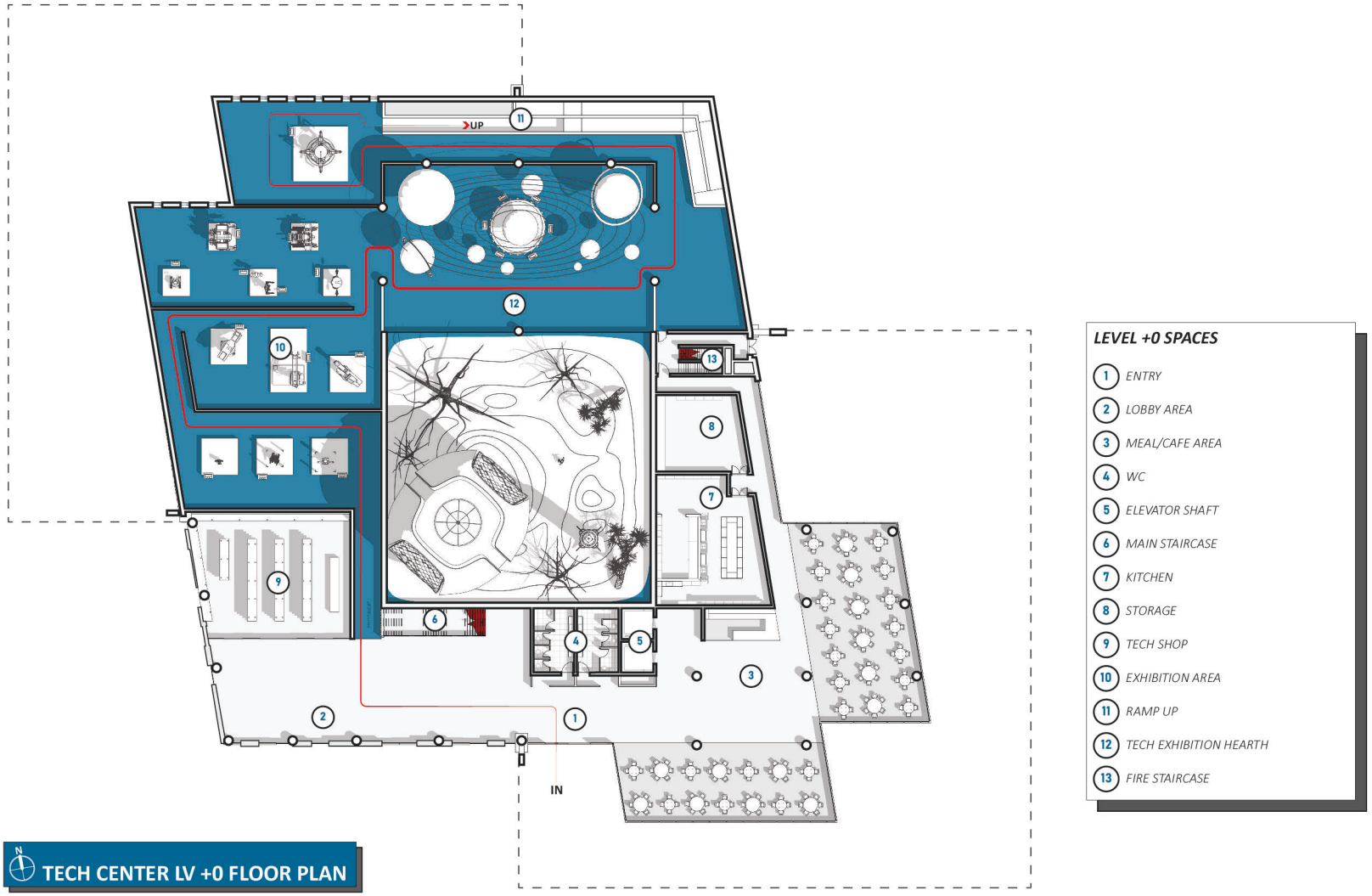



Figure 70: Ground-level floor plan of the Tech Center with the different programs and circulation path of the exhibition from the entrance to the building.


Figure 71: Level 1 floor plan of the Tech Center with the different public and institutional programs and the circulation path of the exhibition space.

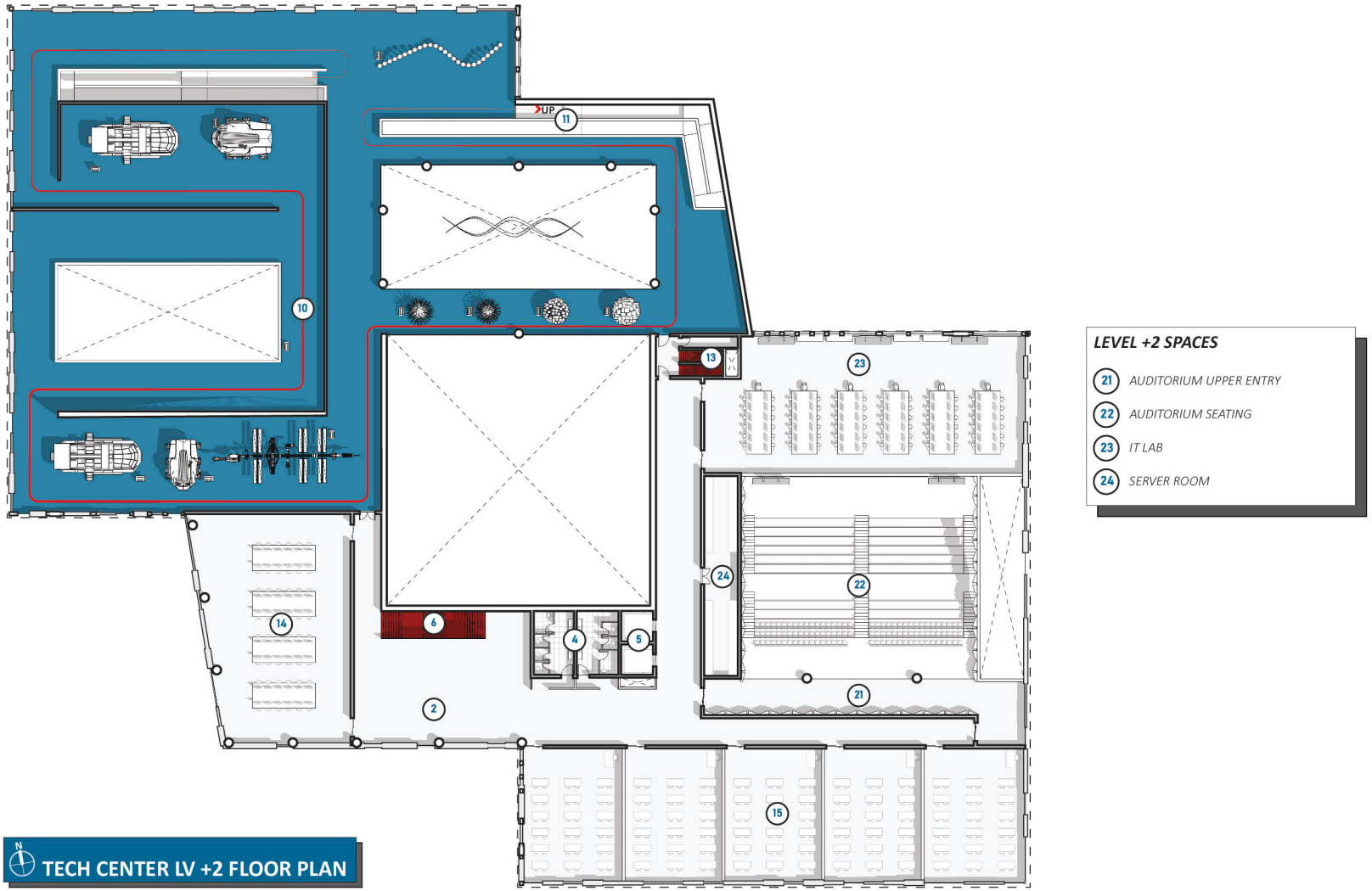



Figure 72: Level 2 floor plan of the Tech Center with the different public and institutional programs and the circulation path of the exhibition space.

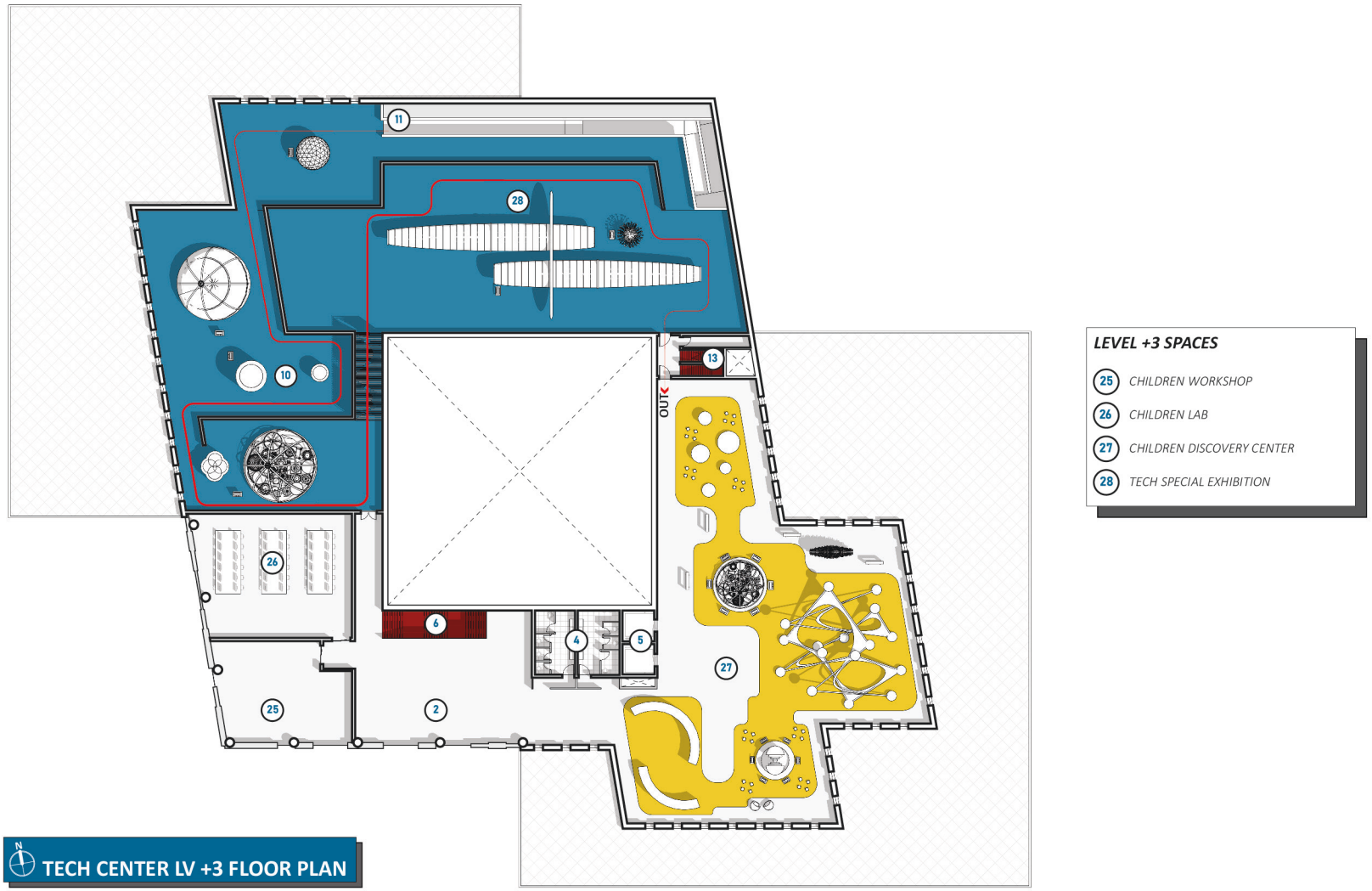



Figure 73: Level 3 floor plan of the Tech Center with the different public and institutional programs and the circulation path of the exhibition space leading to the end of the exhibition.


Figure 74: A comic panel depicting the Tech Center's public, educational, and hybrid spaces.


Figure 75: A comic panel depicting the Tech Center's technocentric spaces showcasing the different innovative ideas of the university.

## 6.3: Systems of the Future

To better showcase the university's ambitions and achievements, as part of the Tech Center hearth, the Future Systems Pod is the first hydroponic prototype that symbiotically merges Rwandan agricultural traditions with biophilic technology that can be applied to everyday vernacular architecture. The Future Systems Pod educates students and locals on hydroponic systems and their potential for efficient farming technology. Through interactive participation and observation, people can learn and understand the relationships between urban systems and building systems providing new ways for man, nature, technology, and architecture to engage. Because of the large campus landscapes, multiple pods are scattered across the campus allowing for maximum interaction from the city. The pods also interact with the urban systems through BioUrban design methods such as the memorial landscape acting as a retention pond that supplies water to irrigate the plants within the controlled environment of the pod.

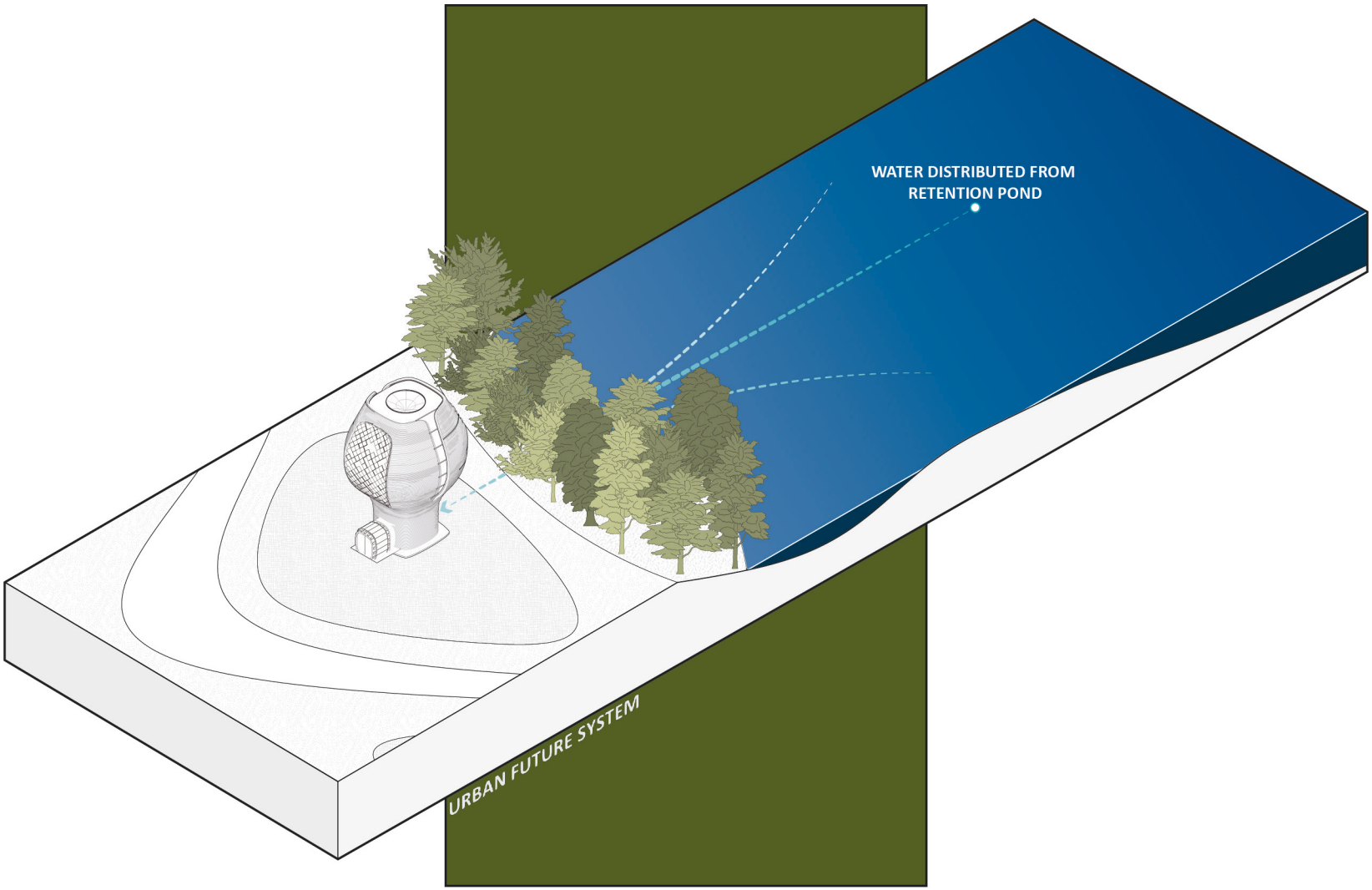



Figure 76: Diagram of an urban scale axonometric of the Future Systems Pod in relation to the ecological environment within the university landscapes.

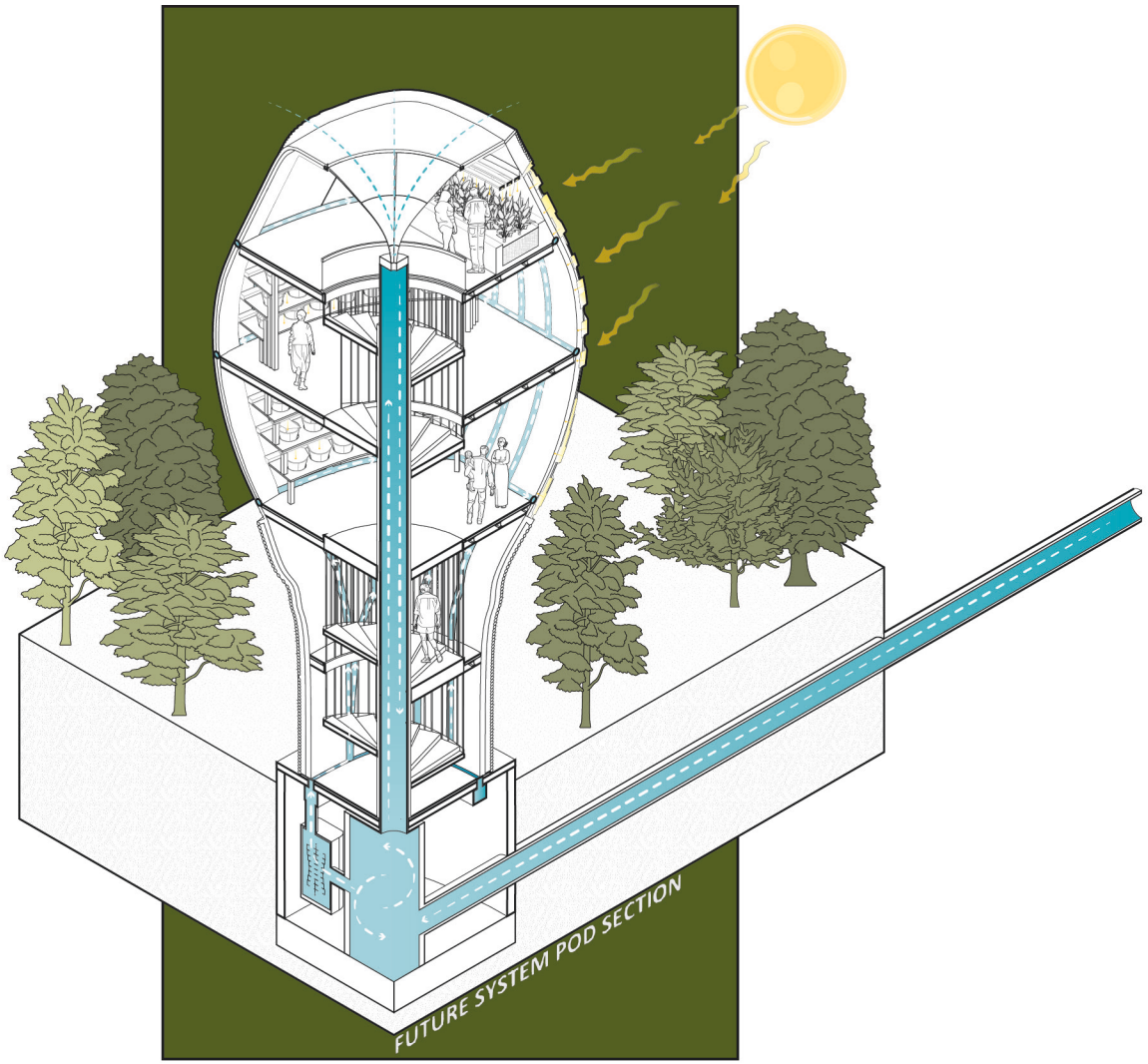



Figure 77: A sectional axonometric diagram of the Future Systems Pod showing the different biophilic design integration to operate the hydroponic farming systems.

## Form and Urban Relations

The Future System Pods take the traditional African hut form with a radial layout and a central core to preserve cultural forms but adapt them to the contemporary world. The building uses a wood frame skeleton and prefabricated panels that act as structural elements that can be easily assembled. The interior spaces expose the hydroponic systems with pipes made of thick opaque glass allowing people to see the water's movement in the pod going through its cyclical loop making its way to the plants. In the center above the vertical circulation shaft, the roof connects to the interior pipes with a rain-collecting compluvium that becomes a part of the system highlighting the importance of water as the source of life which will be the most valuable element in the future. Finally, one portion of the façade is made of 3D-printed earth which is widely available locally, and the other portion uses a parametric PVC panel system similar to the Tech Center which provides light for the plants and the pod. Overall, the Future System Pod symbolizes the nation's goals of innovation while retaining a sense of identity and creating new ways for people to experience social and educational activities within a biophilic and technophilic environment.

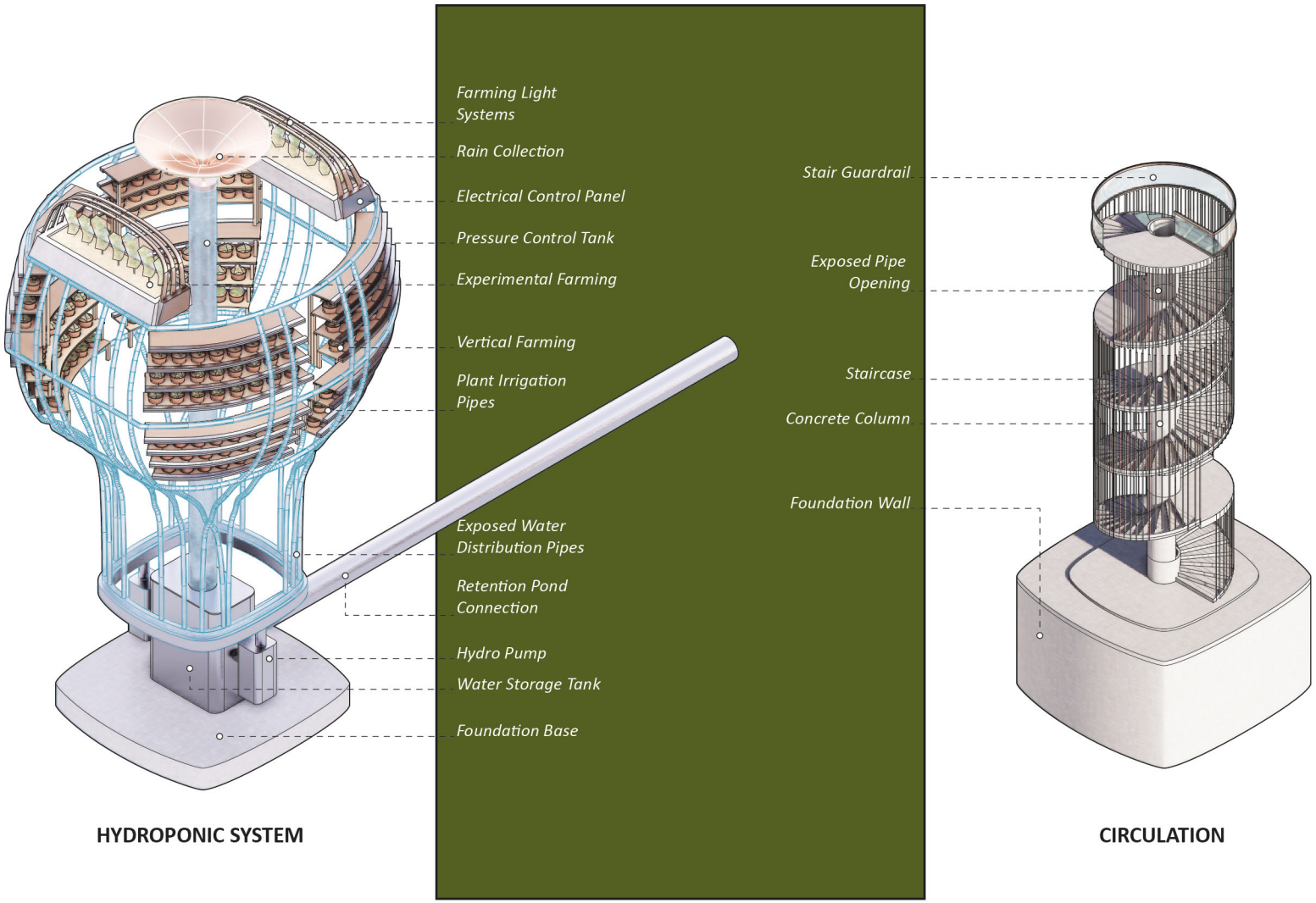



Figure 78: Axonometric diagrams of the Future Systems Pod showing the mechanism of the Hydroponic system and the vertical circulation core.

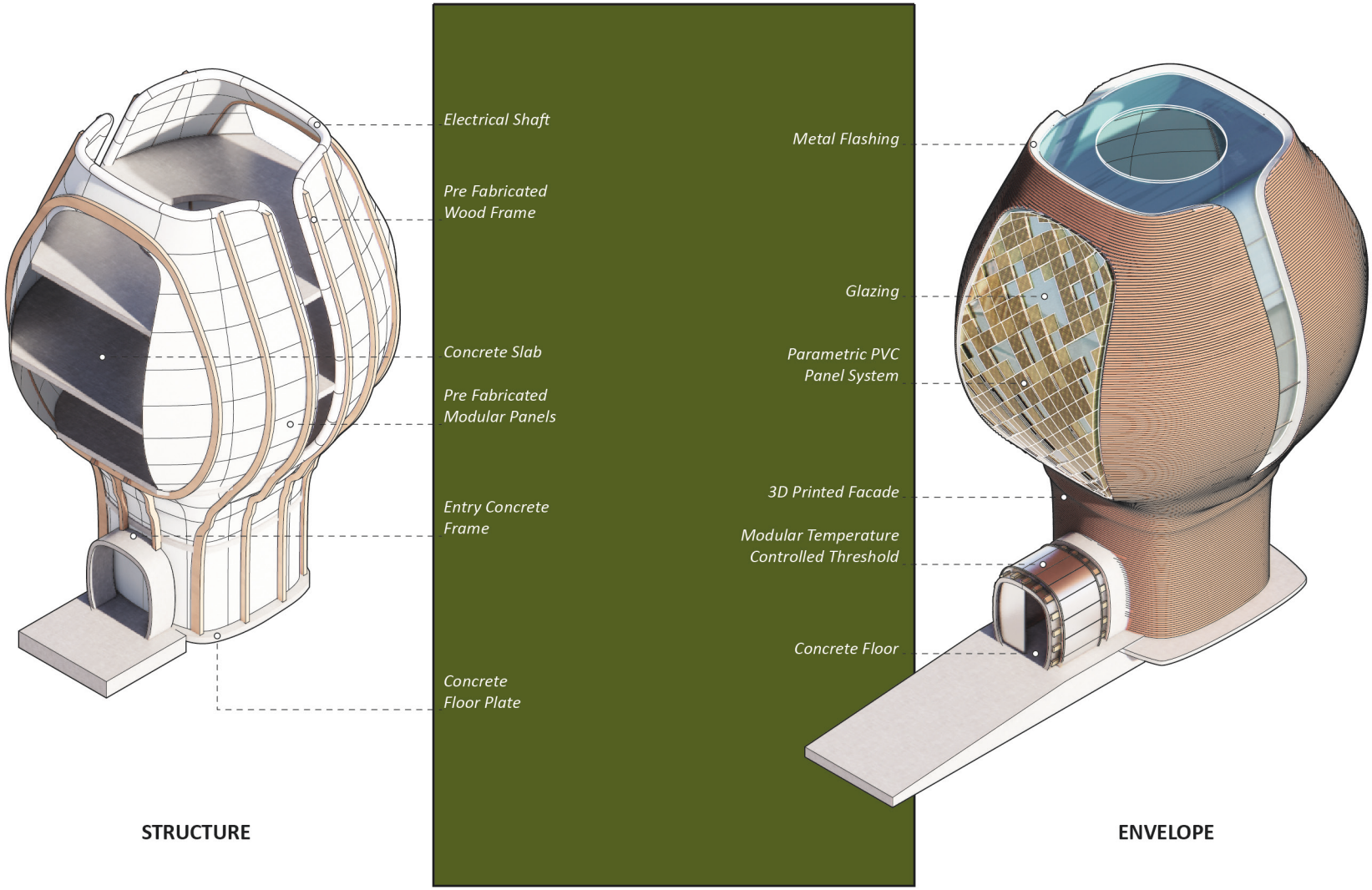
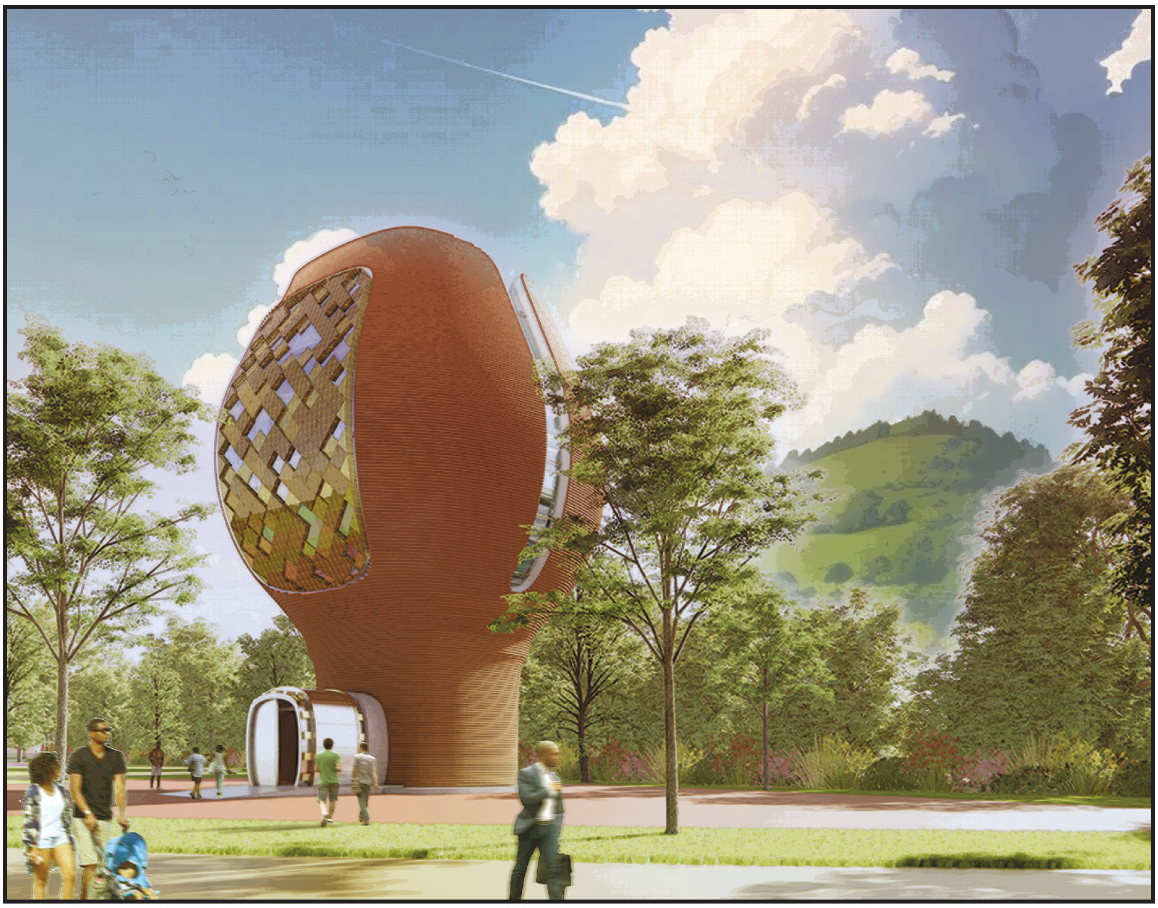



Figure 79: DAxonometric diagrams of the Future Systems Pod showing the structural systems and the facade/envelope systems.



*The Future Systems Pod was the perfect instrument to interact with the students and locals while showcasing the capacity of technological innovation integrated with traditional agricultural practices. People from all over the nation and surrounding countries came to see and interact with the pod increasing their knowledge and eventually it would become the model home that all those who wanted could obtain.*

Figure 80: A comic panel depicting the Future Systems Pod interior spaces and the pod immersed in the landscape of the university campus.

# Chapter 7: Conclusion

One’s birth is the beginning of a battle known as living. As a person moves across time and space in search of purpose and identity, it is experiences in places and key moments that shape one’s understanding of themselves. Everyday urban experiences have become a subconscious part of life and often enough people are influenced by their environmental conditions. As modern-day life is still susceptible to the many global challenges, utopian visions in architecture are fundamental to bringing hope to mankind by providing a vision of a future that is beyond reach but can incite a zeal to fight for a better reality. The Rwandan people for decades have been in a spiritual battle facing poverty, limited opportunities, and the loss of their noble identity. The IDP goals set by the Rwandan government are an attempt to reach something better but still lack the inclination to integrate the cultural identity of the past, present, and future. Therefore by using urban design principles embedded with cultural qualities, social transformation can be achieved by bringing opportunities for people to share urban experiences elevated by the intentional use of nature and technology. In this thesis, the campus called Ushindi University is the utopian seed that uses education and cultural landmarks to incite the minds and hearts of people becoming a transformative catalyst for socio-economic development. Ushindi, which means victory, is the name given to the university because it becomes a place where people collectively overcome all of life’s challenges healing their hearts and inspiring their minds to make the impossible possible.


Figure 81: A comic panel depicting the conclusion of the campus's development and the beginning of the Utopian goals of Ushindi Univeristy.

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