

Urban Agriculture in Cities of Tomorrow

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“To all who come to this happy place, welcome. Disneyland is your land. Here age relives fond memories of the past, and here youth may savor the challenge and promise of the future. Disneyland is dedicated to the ideals, the dreams, and the hard facts that have created America, with the hope that it will be a source of joy and inspiration to all the world.” It is with these timeless words that Walt Disney dedicated Disneyland on July 17th, 1955, and ever since, Disneyland has served as both a cultural icon and a pinnacle of theme park innovation. When Disneyland first opened it revolutionized the concept of an amusement park, but beyond Disneyland, Walt had his sights set on something bigger. For Walt, the promise of the future was seen in a continuing optimism for ingenuity and new ideas, and this was the basis for what was at the time known as the Florida Project. Walt Disney and his associates purchased 27,433 acres of land (around 43 square miles) in Florida to develop into the Experimental Prototype Community of Tomorrow, or EPCOT for short. This isn’t the Epcot we’ve come to know today, but rather an experimental city meant to be—in Walt’s words—a “living blueprint of the future,” and a place “that will never be completed, but will always be introducing, and testing, and demonstrating new materials and new systems” (Disney 1967). Unfortunately, the EPCOT of Walt’s dreams never became a reality; after Walt’s death, the company was left without the guidance and vision to accomplish such a monumental task. However, parts of the original EPCOT ideology live on in Walt Disney World in today’s Epcot, with Future World themed around the technology and innovations of tomorrow, and the World Showcase embodying the international theme originally meant for EPCOT’s urban center. In particular, there’s one attraction focused specifically on agriculture: Living with the Land. Living with the Land is a fifteen minute boat ride with a dark ride portion bringing you through various landscapes featuring diverse ecosystems, followed by a narrated tour through the four greenhouses of Epcot, all of which feature various sustainable agriculture techniques, including hydroponics, aquaponics, and integrated pest management. Beyond providing education and entertainment, Living with the Land provides over 27,000 pounds of vegetables and herbs for restaurants yearly in the Walt Disney World resort (Braun 2003), in addition to serving as an active research facility, with collaborators including the USDA, NASA, and the University of Florida. However, before we delve deep into the world of tomorrow, we first need to step back into the world of yesterday.

In 1901, Walt Disney was born in Chicago, but soon moved to Marceline, Missouri where he became interested in drawing at a young age. To make a long story short, Walt made his way to Hollywood, and after a few rough starts, Mickey Mouse eventually came along. Inspired by time at Griffith Park with his daughters, the lack of a clean, family friendly amusement park, and the success of the animation studio, Walt conceived Disneyland. After just under a year of construction, Disneyland first opened its gates on July 17th, 1955 to a rough start—the day would eventually come to be known as Black Sunday. It was an unusually hot day for July; what was originally meant to be an invite-only crowd of 15,000 turned into over 28,000 due to counterfeit tickets, attractions broke down, concession stands ran out of food and drinks, and as legend goes, high heels were sinking into the freshly paved asphalt of Main Street (Gennawey 2014a). As issues were resolved, special guests (particularly press) were invited back for a proper experience, overcoming initial criticisms and sending Disneyland was on its way to becoming the world renowned theme park it is today. But even after things started going smoothly, Walt was never satisfied sitting still. As Walt described during a 1956 interview, “the park means a lot to me in that it’s something that will never be finished. Something that I can keep developing, keep plussing and adding to—it’s alive” (“In Walt’s Own Words: Plussing Disneyland” 2014). Examples of Walt’s attitude for plussing in Disneyland include the 1959 opening of the Matterhorn Bobsleds, Dis-

neyland Monorail, and Submarine Voyage, as well as various other additions later down the line. However, for Walt's next big idea, Disneyland wasn't enough: with the rapidly developing urban sprawl surrounding the park, there wasn't much room to expand, so instead, he turned to Florida.

When announcing his plans for the large swath of land now owned in Florida, Walt Disney declared "I don't believe there's a challenge anywhere in the world that's more important to people everywhere than finding solutions to the problems of our cities" (Disney 1967). This sentiment originated in a tumultuous period of time in the 1960s rife with civil unrest. Even at the 1964 New York World's Fair—the same place where several Disney attractions were exhibited (including It's a Small World, Great Moments with Mr. Lincoln, and the Carousel of Progress)—civil rights protests took place. Needless to say, it was a time where civil rights were front and center in the American mind, with the Civil Rights Act of 1964 and the Voting Rights Act of 1965 just being signed into law. At the time, President Lyndon B. Johnson had an initiative referred to as the Great Society, which was meant to "demand an end to poverty and racial injustice." In the Demonstration Cities and Metropolitan Development Act of 1966, Congress declared that "improving the quality of urban life is the most critical domestic problem facing the United States," and to mitigate such problems, would provide financial and technical assistance for "new and imaginative proposals" that involve things such as urban renewal, expanded access to housing and jobs, improved education and "generally to improve living conditions." While ultimately Walt and company did not benefit from the act—primarily due to reluctance over relinquishing a degree of control (Gennawey 2014b; Mannheim 2002)—the problems of urbanism were clearly being thought of far and wide. So what made Walt so steadfast about maintaining control over every last detail?

For one, Walt's vision was very specific about the ideology for his city of tomorrow. As alluded to previously, Walt's plans for EPCOT involved "an experimental prototype community that will always be in the state of becoming." It was meant to be "a showcase to the world of the ingenuity and imagination of American free enterprise," in addition to serving as "a blueprint of the future where people actually live a life they can't find anyplace else in the world" (Disney 1967). In order to accomplish these goals, what did Walt's city of progress look like? Much like Disneyland, the plan for EPCOT involved a radial design. However, instead of a central plaza hub with various lands emanating outwards, EPCOT had a dense urban core with residential areas fanning out in various petals (Figure 1). The urban center was meant to be an enclosed and climate controlled space, with a hotel and convention center, offices, as well as themed shopping and entertainment venues to "recreate the character and adventure of places 'round the world" (Figure 2). The entire area was meant to be pedestrian centric, with motor vehicles relegated to tunnels beneath. At the transportation lobby, the WEDway PeopleMover and monorail—two modes of mass transit powered by electricity—came together to provide access to both the nearby residential areas and further destinations (Figure 3). Between the dense urban core and residential areas was a broad greenbelt, which the Florida film stated as providing both greenery and recreational facilities (Figure 4, Disney 1967). Outside the city (accessible by monorail) were the industrial park and theme park, both located in nearby parts of Disney World. The industrial park was meant to be a major source of employment, helping create the new ideas and new technologies to be used in the city, while simultaneously allowing visitors to look behind the scenes, showcasing the innovations of tomorrow (Figure 5). However, while the concept of EPCOT was new and unique, from an urban planning perspective, Walt didn't simply pull this design out of thin air.

As previously mentioned, many minds were thinking of the problems of cities. While there were numerous works that influenced Walt Disney's plans for the design of EPCOT, one notable

source of inspiration was Ebenezer Howard's *Garden Cities of To-Morrow* (1902). In *Garden Cities of To-Morrow*, Howard presents the idea of "The Three Magnets" (Figure 6), stating "there are in reality not only, as is so constantly assumed, two alternatives—town life and country life—but a third alternative, in which all the advantages of the most energetic and active town life, with all the beauty and delight of the country, may be secured in perfect combination" (Howard 1902). This introduces the idea of the Town-Country, which Howard's Garden City embodies. Howard's Garden City was proposed as a circular area of 6,000 acres, divided radially by six boulevards (Figure 7), with—going from the center outward—a central garden/park, the "Crystal Palace" (an enclosed shopping region), housing, and finally agricultural land. Of the 6,000 acres, the city was to occupy 1/6 of the land, and the remaining 5/6 was meant for agricultural use (Figure 8). While the city structure is different, the radial design and use of greenery in Howard's Garden City clearly served as inspiration for the layout and greenbelt of EPCOT. Regarding the aforementioned sentiment of mixing urban and rural spaces, in "Food Sovereignty in the City", Samantha Noll notes that in the nineteenth century, "the shifting contextual landscape culminated in drastic changes to urban agriculture and animal husbandry practices," further saying that "urban areas were re-conceptualized as places of civilization and thus no longer acceptable habitats for many non-human animals classified as 'wild,' or at least not 'tame' enough for civilized spaces" (Noll 2017). This is seen in Howard's Garden City through the relegation of agricultural areas to the outermost ring, and this is perhaps a reason why—well into the twentieth century—the Florida film doesn't explicitly mention any agricultural uses of the greenbelt. However, that's not to say that agriculture didn't have a place in Walt's EPCOT.

Having grown up in the small town of Marceline, Missouri, Walt once said "I feel so sorry for people who live in cities all their lives and don't have a little hometown. I do. I'm glad my dad picked out a little town where he could have a farm ...". Steve Mannheim notes that "Disney believed that, unlike the small railroad towns of his youth, the bigness of cities kept people from knowing one another. Disney's yesteryear featured an agricultural community, not suburbia." (Mannheim 2002). This rural setting likely influenced Walt's perception of urban spaces and sparked his affinity for the homey town square of yesteryear, in addition to giving him roots in—or at least familiarity with—agriculture. However, if we step back, we'll again see the clash between urban and rural areas from a broader context. During the Progressive Era, around the turn of the nineteenth to twentieth century, people were looking at "garden projects as an antidote to industrialization and rapid urbanization," eventually leading to initiatives such as the US School Garden Army (USSGA) during World War I (Reynolds and Cohen 2016). Rose Hayden-Smith notes that "[p]rogressive reformers, holding an idealized view of rural life, saw its [USSGA] potential for healing urban ills," going on to explain that "[t]he USSGA provided an opportunity to instill a traditional American 'producer' ethic in an urban population that was increasingly influenced by mass culture and consumerism, and increasingly removed from its food system" (Hayden-Smith 2006). The attitude progressive era reformers took towards the USSGA exemplified connectedness to the land, not just in function or proximity, but culture. Furthermore, in *Beyond the Kale*, it's stated that gardens were seen as a way to "teach agricultural and life skills to a growing urban populace alienated from its rural roots" (Reynolds and Cohen 2016). So when we go back to EPCOT, it's not surprising that in an excerpt from the book *Walt Disney and the Quest for Community*, "Marty Sklar [an Imagineer who worked with Walt on the original plans for EPCOT] recalls that living systems and new ways of growing food were 'absolutely the kind of things that Walt was trying to do with EPCOT'" (Mannheim 2002). Furthermore, an inventory of Walt's office indicates that

he had a copy of *Our Margin of Life* (1964) by Eugene M. Poirot (Mannheim 2002); this book was noted as an early work on soil restoration and sustainable/organic agriculture (Gates and Gold 1988; Etingoff 2017) and is contemporaneous with Walt's plans for EPCOT. This goes to show that even in the midst of a city of tomorrow, you'll still find agriculture when you scratch the surface.

However, as Walt noted in the Florida film, "a project like this is so vast in scope that no one company alone could make it a reality" (Disney 1967), so combined with a lack of vision and guidance after Walt's death, it's understandable that the original plans for EPCOT never came to fruition. Despite the city of tomorrow being shelved as a dream, we still find bits and pieces of the original EPCOT ideology present in Walt Disney World today. In particular, if you visit the Epcot theme park, you'll find the planned multicultural urban center reflected in the World Showcase, and the ideas and new innovations of the future in the aptly named Future World. Both the World Showcase and Future World are comprised of several pavilions, and one particular pavilion in Future World retains the ties to agriculture: The Land Pavilion.

Located within The Land Pavilion is the Living with the Land attraction. Living with the Land is a fifteen minute boat ride that starts out as a dark ride that brings you through various landscapes featuring diverse ecosystems, then transitions to a narrated trip through the four greenhouses of The Land Pavilion. Additionally, there's the Behind the Seeds tour, where a cast member guides guests on a one hour walking tour of the greenhouses. As part of the Living with the Land attraction, The Land Pavilion features the aforementioned four greenhouses, an area dedicated to aquaculture, as well as a biotechnology lab and integrated pest management lab, with a total growing area of two acres. As guests travel through the four greenhouses, different techniques are highlighted: the tropics greenhouse demonstrates intercropping with tall coconut palms and shorter shade tolerant cacao trees, the temperate greenhouse demonstrates drip irrigation with cotton plants, the string greenhouse features peppers, cherry tomatoes, cucumbers, and lettuce all grown with hydroponics, and the creative greenhouse demonstrates the new and innovative techniques (such as aeroponics) (Schon 1990). The article "Food Crop Culture in The Land Greenhouses at Epcot" goes into more depth, explaining several hydroponics techniques in use, including sand culture, bag culture, floating raft culture, as well as vertical aeroponics (Fan et al. 2004). To handle the difficult situation of pests—as crops are grown year round and the attraction is open to guests daily—Disney utilizes integrated pest management. Pests have included the vegetable leafminer, broad mite, silverleaf whitefly, two spotted spider mite, western flower thrips, and the cotton aphid (Fan et al. 2004). An example of IPM often cited on the Behind the Seeds tour refers to a common pest, the leafminer fly, to which Disney breeds and releases beneficial parasitoid wasps ("Behind the Seeds Full Tour - The Land Pavilion - EPCOT - WDW - 2018" 2018). Additionally, since 1999, Disney has been experimenting with aquaponics (Fan et al. 2004), which combines aquaculture with hydroponics; similar techniques are used in a comparative case study of community-based aquaponics ventures in Milwaukee and Melbourne, which also notes the use of aquaponics as a tool of education (Laidlaw and Magee 2016). "Food Crop Culture in The Land Greenhouses at Epcot" also refers to the use of intercropping and crop rotation, mentioning that "legume demonstrations have included an intercropping of clover (*Trifolium repens*) with sorghum, and peanut in rotation with rice" (Fan et al. 2004).

While less visible to the public, the biotechnology laboratory in The Land is run jointly with the USDA Agricultural Research Service and works on plant tissue culture research (Stanley 1996). In addition to the USDA, collaborations at The Land have also involved Controlled Ecological Life Support System (CELSS) research with NASA at the Kennedy Space Center (Haggerty

1990) and space plant growth research at the NASA Ames Research Center (Gonzales et al. 1996). Collaborations with the University of Florida have ranged from research on integrated pest management (Blank 2013) to moonshot lunar base life support systems (Easterwood et al. 1992). These research endeavors embody the original ideas of EPCOT, serving as a place where hard work and ingenuity lead to the innovations of tomorrow.

Additionally, as tens of millions of guests pass through Epcot yearly (“Global Attractions Attendance Report” 2017), and with Living with the Land carrying up to 2,500 guests every hour (Schon, Gerdes, and Forehand 1992), it’s safe to say that many people are exposed to the ideas of sustainable agriculture at Walt Disney World. However, the visible success of Living with the Land (operating since the Epcot theme park’s inception in 1982) contrasts with the findings of “Socially Acceptable Urban Agriculture Businesses”, which suggests (for the surveyed participants in Berlin) “urban agriculture with connotations of intensive or high-tech agriculture (e.g., agroparks, aquaponic and vertical farming) is less accepted” (Specht et al. 2016). However, the same study does note that “[t]he large number of participants expressing indifference regarding ‘aquaponic farms’ might be explained by a general lack of knowledge about that type of production system,” which makes a promising case for outreach, as the study also notes that “higher public acceptance can be obtained for projects that have recreational or educational functions and that ensure public accessibility” (Specht et al. 2016). There’s also an added benefit: the same study notes that higher tech systems are also “more promising from a business perspective,” potentially making it a win-win scenario (Specht et al. 2016). Furthermore, there’s some additional merit to this approach, as the idea of edutainment in agriculture isn’t just limited to Disney. As Rebecca Nelson and John Pade note in “Agri-Tourism”, “increasingly, tourists, school groups and the general public want to experience rural life, meet and interact with individuals involved in agriculture and learn more about how and where their food is grown,” where they cite a handful of examples (including Disney’s Living with the Land) and encourage other agricultural businesses to follow this trend (Nelson and Pade 2005).

Ultimately, Living with the Land represents a successful vision for sustainable agriculture as it can be used in urban environments. The attraction is one example that follows through on Walt’s original idea for the Experimental Prototype Community of Tomorrow, and is not only successful in research and productive in harvest, but also—and arguably most importantly for the theme park—both entertaining and educational for guests. With alluring Disney magic, Living with the Land is able to get people interested in agriculture in a way that no other organization or attraction can, and does so on a large scale that can affect change. Additionally, with the many children passing through Walt Disney World, some may even take an interest in sustainable agriculture in the future. By showing aquaponics, hydroponics, aeroponics, crop rotation, intercropping, integrated pest management amongst many other techniques, people can see the possibilities and advantages of sustainable agriculture, and take these ideas help build urban gardens in cities of the future. In this scope, Living with the Land certainly embodies the original sentiment of EPCOT and effectively serves, as Walt Disney once said, as a living blueprint of the future.

Appendix A List of Figures

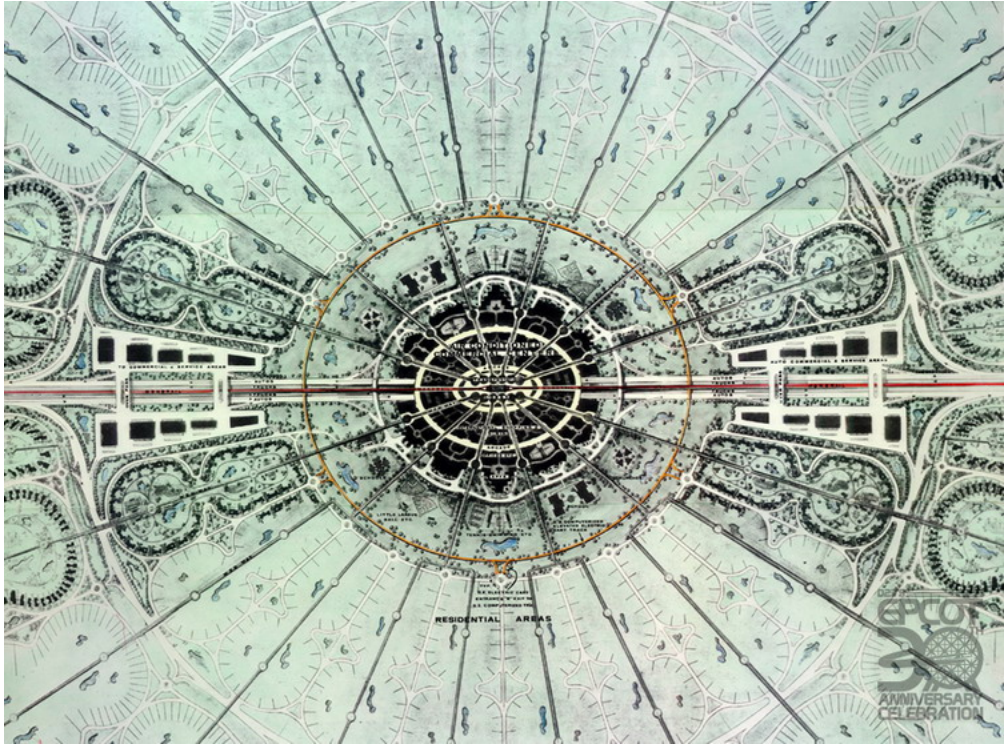


Figure 1: Radial plan of EPCOT.

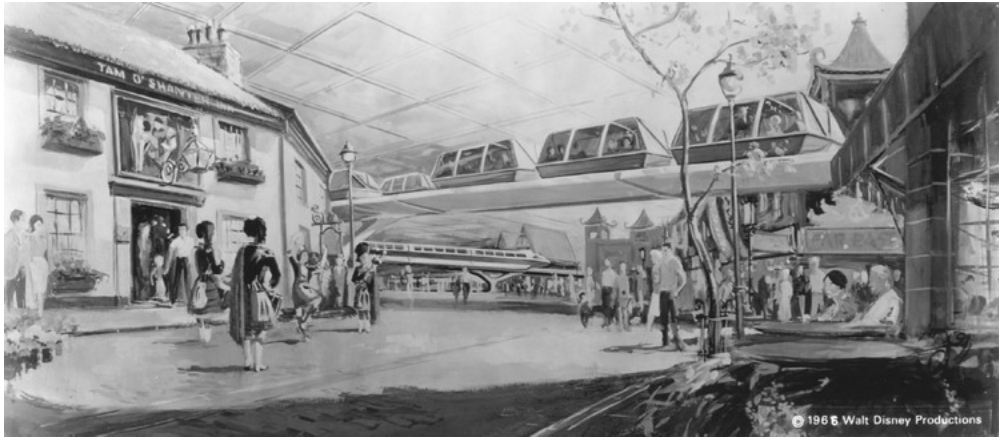


Figure 2: EPCOT urban center and shops.

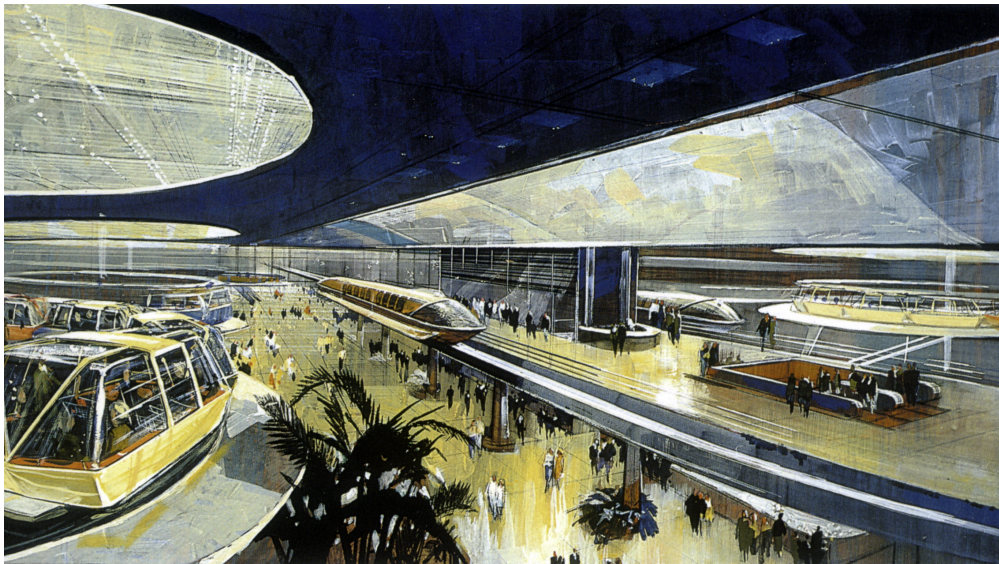


Figure 3: EPCOT transit center.



Figure 4: EPCOT greenbelt overview.

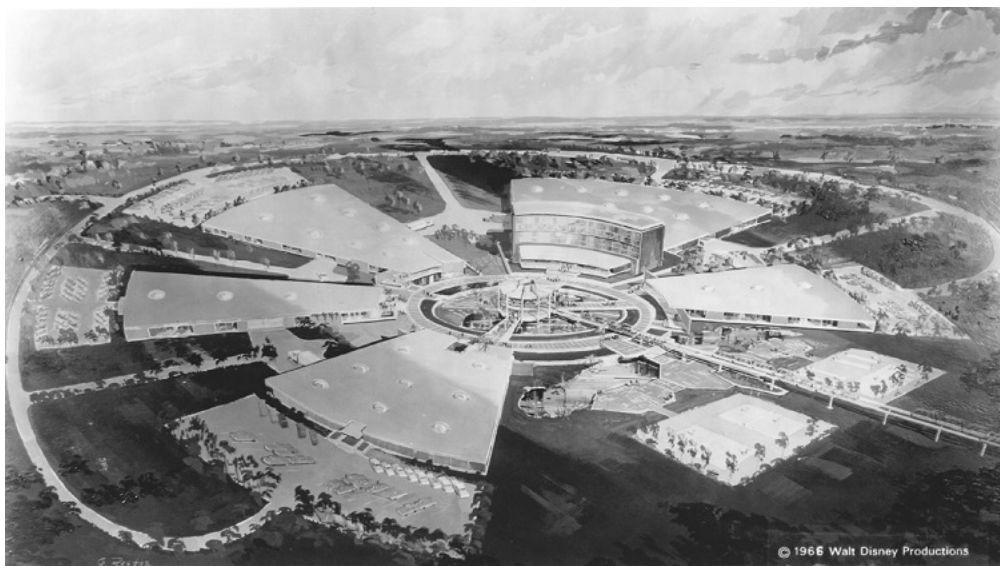


Figure 5: EPCOT industrial park.

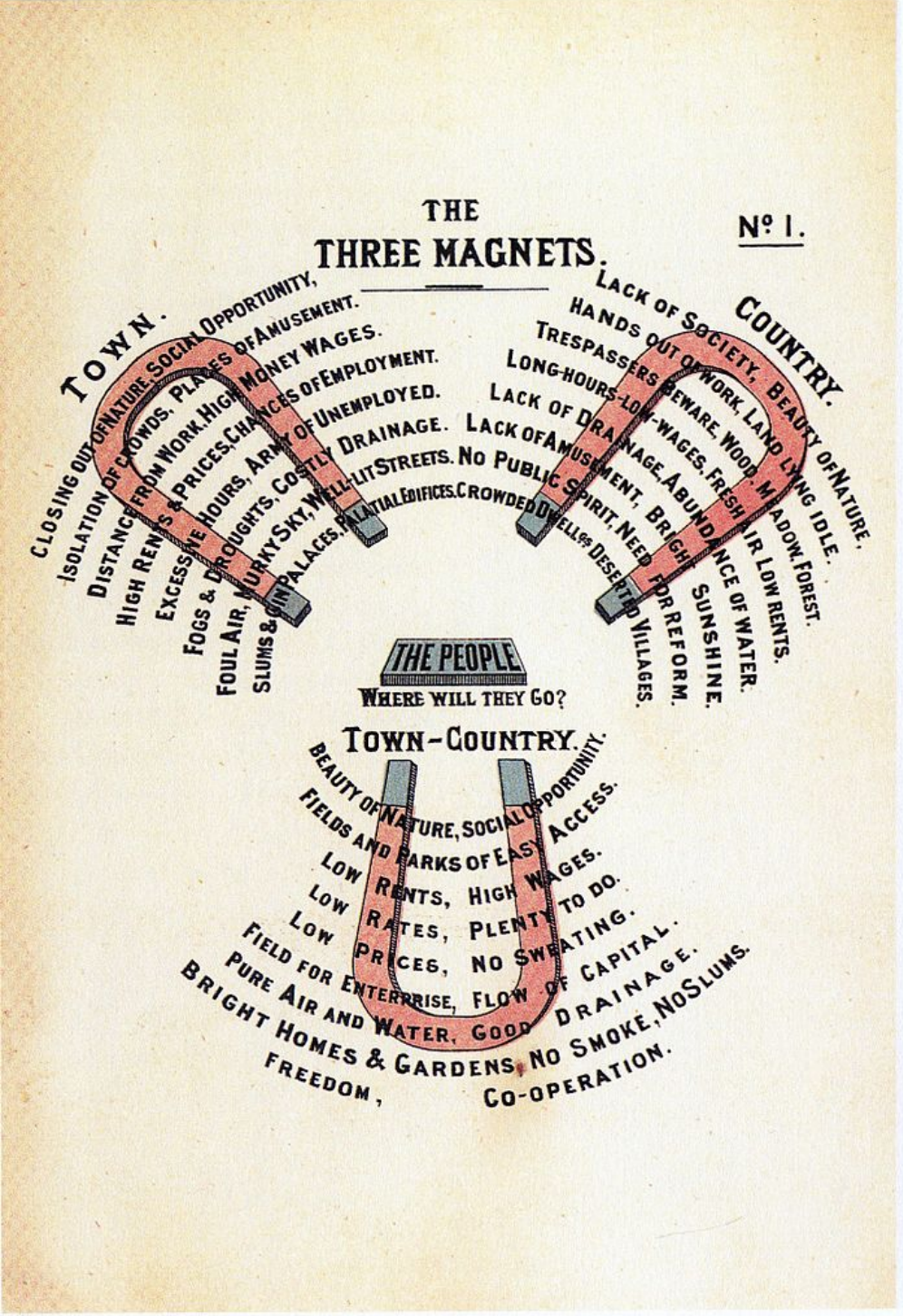


Figure 6: The Three Magnets (Howard 1902).

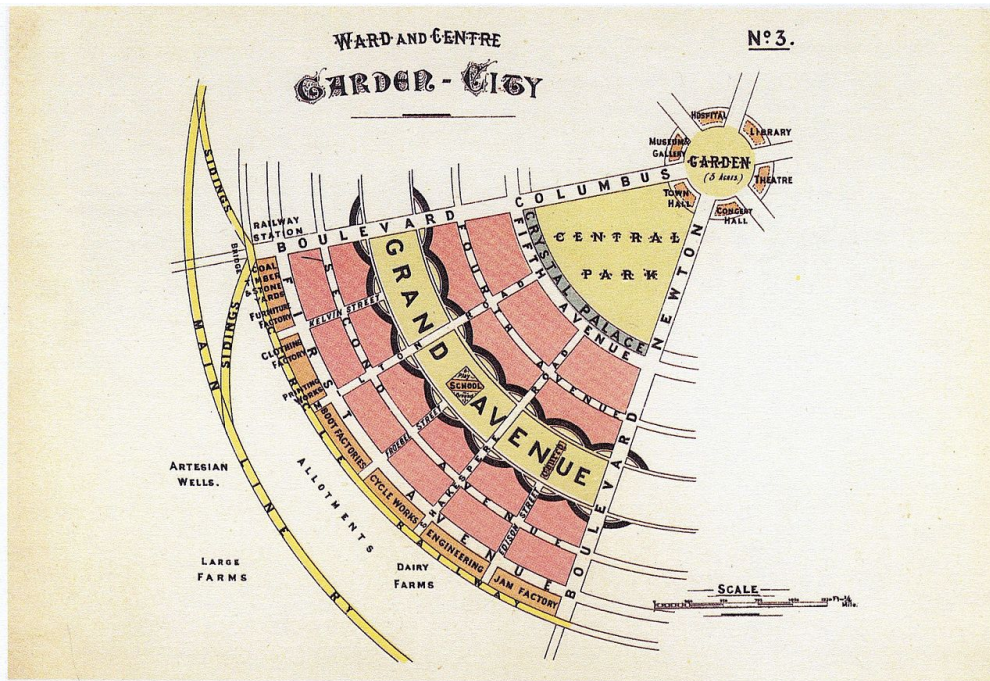


Figure 7: Close up of Garden City radial plan (Howard 1902).

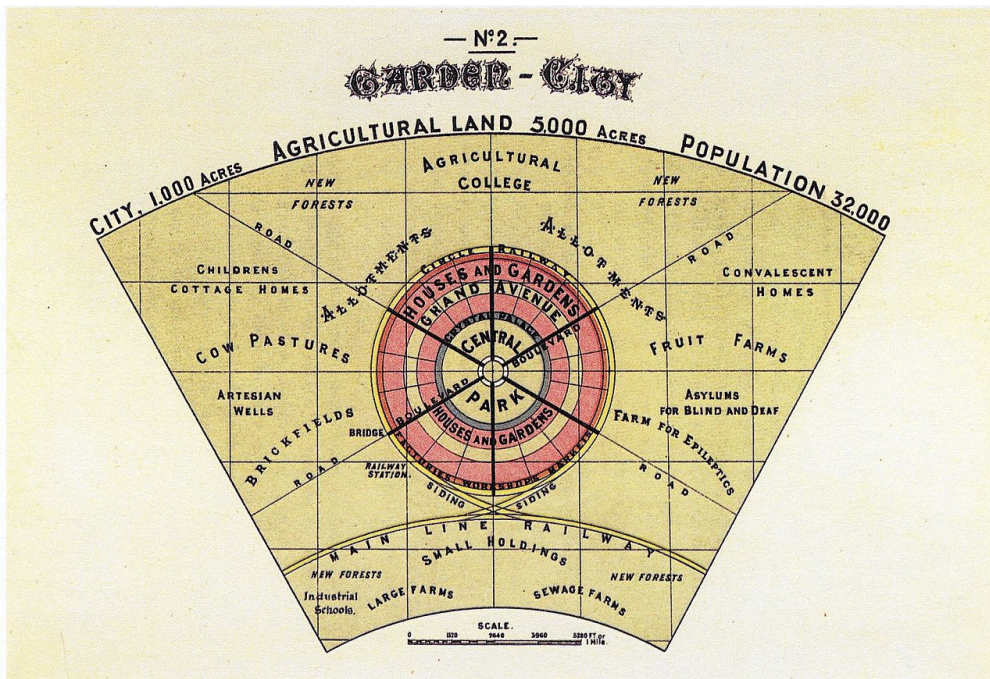


Figure 8: Overview of Garden City plan (Howard 1902).

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