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Neo-Medieval Urbanism: Timeless Urban Design Strategies Gleaned
from Lasting European Cities

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Neo Medieval Urbanism: Timeless Urban Design Strategies Gleaned
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by

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Report

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This project has been many years in the making. My inspiration began in the streets of Siena, Italy in 2009, and was initially explored in as an undergraduate paper on urban renewal in medieval Siena. I had little awareness of planning or urban design at the time, but upon hearing my interest in the form of the city, a Sienese professor procured Nevola's "Siena: Constructing a Rennaissance City," a seminal text that offered direction.

Thank you to Vincent Snyder, my professor in Munich, Germany who recognized the value in a paper on the sustainability of medieval German cities and encouraged me to continue pursuing the project. I also owe credit to the UTSOA travel scholarship for allowing me to study Italian medieval urban form in the summer of 2014.

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The most foundational part of my gratitude is to the cities themselves for enchanting me, the 11th to 14th century city planners who organized these cherished places, and the many generations who have lived in and preserved them.

Abstract

Neo-Medieval Urbanism: Timeless Urban Design Strategies Gleaned from Lasting European Cities

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The University of Texas at Austin, 2015

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Neo-medieval urbanism is the proposal to build urban villages in larger metropolitan areas by mimicking the design of medieval European cities. This development type is modeled after German and Italian medieval towns that existed as independent city states from the 11th century. This method for designing new communities is consistent with the high demand for walkable urbanism and the trend toward transit-oriented development.

Neo-medieval urban design has the potential to create human and ecological value through an architecture that restores pedestrians as the principle users of the city and builds community. Neo-medieval features such as scale, aesthetics, context-sensitivity, and natural relationship come together in a comfortable place for people. Such design would achieve environmental objectives including using less fossil-fuel energy and lower aggregate resource consumption. Quality of life improvements when coupled with an inclusionary housing policy, would enable a variety of income groups to live well. Furthermore, neo-medieval urbanism could be a tool for local economic resilience.

Neo-medieval neighborhoods need not break much from their lasting European counterparts and thus could be home and workplace to some 5,000-50,000 people. Site

studies of Bologna, Siena, Lucca, and Venice in Italy and Bamberg, Rothenberg, Regensburg, and Freiburg in Germany grounded this project. Methods for producing Neo-medieval urban villages include discussion of design features, a process for designing a neo-medieval neighborhood, and a model neo-medieval zoning code. Additionally, the conceptual design for the Lakeline TOD in Austin, Texas serves as a visualization. This paper concludes that neo-medieval urbanism could achieve many local policy objectives and is the ideal form for transit-oriented development and urban villages within cities.

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Chapter 1: Introducing Neo-Medieval

> We have forgotten how these cities (Medieval Communes) were made in the past and we are therefore unaware of how we might make our own cities as compelling today.[1]

STATEMENT OF PURPOSE

I propose using medieval urban design as a model for creating high-quality sustainable urban villages. I assert that German and Italian medieval cities offer an important and under-studied example of quality urbanism. I show how this model achieves both environmental and social improvements by restoring pedestrians as the principle users of a city. I also illustrate how design features such as scale, aesthetics, context-sensitivity, and natural relationship of the medieval city offer a qualitative improvement from high-rise urbanity. I will demonstrate that neo-medieval neighborhoods need not break much from their historical counterpart. After all, these lasting European cities remain useful and inhabited. The size of the global population and of metropolitan regions does, however, necessitate adaption of the medieval model in light of larger urban contexts. Thus, the neo-medieval is a typology for a transit-oriented urban village within a metropolitan area, home and workplace to some 5,000-50,000 people. My project is rooted in architectural history and progresses to planning policy and design recommendations.

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[1] Mayernik 2003

The design and policy guide section of the paper includes neo-medieval features, the process for designing a neo-medieval neighborhood, and a model neo-medieval zoning code. Additionally, a conceptual design for the Lakeline TOD in Austin, Texas serves as a visualization. Neo-medieval developments promise a high quality of life that is community oriented, accessible, and ecologically conscious. Let us move to a sustainable future by modeling our urban neighborhoods after the "greatest Town-building age in the Western World."[2]

METHODOLOGY

The northern and central Italy and southern Germany were home to self-governing republics in the medieval era.[3] These cities boasted advanced urban design which I believe is most applicable to today's design challenges. City plans were reflective of a community approach to local economic and social structures.[4] I conducted site studies to assess urban features and functions in cities including Bologna, Siena, Lucca, and Venice in Italy and Bamberg, Rothenberg, Regensburg, and Freiburg in Germany. Additionally, I used secondary sources based on historical records which illuminate their planning politics, maps which show urban patterns, and used contemporary tools such as Google-earth to allow near-measurements to replicate their design. Representations of the medieval city rarely date to the time itself, because printing evolved in the Renaissance. When compared to medieval city ordinances and the style of still-existing buildings, these later maps can be

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[2] Hiorns 1956, p. 207
[3] Braunfels 1988
[4] Braunfels 1988

authenticated. After all, these were cities built to last. [5] Through the study of these medieval

cities I have developed methods for creating neo-medieval neighborhoods.

CONCLUSIONS

I conclude that the neo-medieval model is the ideal urban form for transit-oriented

development and urban villages within cities. I illustrate how a medieval-inspired model

would improve environmental and social function in cities. I further identify how such

design would achieve environmental objectives including using less fossil-fuel energy

and lower aggregate resource consumption. I also focus on social objectives, hinged on

providing access, which when coupled with an inclusionary housing policy, enables a

variety of income groups to live the high quality of life that comes from a well-connected

design. I show how the neo-medieval model could be a tool for local economic resilience.

Most importantly, I demonstrate the methods planners could use to enable neo-medieval

development, and show what a neo-medieval village could look like in a real location.

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[5] Hiorns 1956

Chapter 2: The New Transit-Oriented Urban Village

MARKET-READINESS

The desire for transit-oriented development and urban village communities illustrates a demand for neo-medieval neighborhoods. The National League of Cities' Sustainable Cities Institute argues that transit-oriented development is a response to the current conditions of: *rising energy prices, road congestion, climate change, shrinking household sizes, increasing demand for urban living, interest in green building and walkable neighborhoods*.[6] Studies have also shown an increase in young adults who prefer more compact urbanism. By 2001, over 50% of young people preferred small-lot housing and felt an easy walk to stores was extremely important in housing choice.[7] The demand for walkability has continued to increase. In *The End of the Suburbs*, Leigh Gallagher explores trending interest in walkable urban development and concludes that there will not be enough places that satisfy the current demands for access. Her assertion is made based on market realities such as walkable neighborhoods rising in price, home prices rising more quickly in cities than suburbs, building activity focused in urban cores, a booming multifamily housing market and the fact that 77% of Millennials prefer to live in an urban area. This demand for access has resulted in affordability issues and gentrification of inner-city neighborhoods.[8] Neo-medieval communities could fill this gap in production of inclusive walkable places.

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[6] Transit Oriented Development. Sustainable Cities Institute, homepage
[7] Dittmar 2004
[8] Gallagher 2014

Vacation choices also indicate a demand for the neo-medieval. Heritage tourism is an important reason for travel. While only 20% of tourists who visit a European city mention culture as the main reason for their visit, a majority of these vacations include one or more cultural activity.[9] Medieval city centers, some of which are UNESCO World Heritage sites are popular tourist destinations. Several of the sites in this study are UNESCO World Heritage sites including Siena, Venice, Bamberg, and Regensburg.[10] The desire to visit and experience these quality walkable environments indicates a preference for this type of urbanism.

TERMINOLOGY

The terminology for a neo-medieval development may vary depending on local preferences. I use neo-medieval because I find it to be the most specific term to describe the conditions. However, cities may decide to give neo-medieval attributes to zoning designations such as TOD, car-free TOD, pedestrian overlay districts, pedestrian oriented development, town center, or urban village. Each of these terms is currently in use. As an example, The City of Charlotte's *Pedestrian Overlay District Ordinance* contains remarkably similar language to many TOD ordinances— a reduction of parking, a mix of uses, wide sidewalks, and eliminating auto-centric uses such as drive-throughs.[11] The benefit of choosing an existing term is perhaps making the zoning more palatable to the

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[9] Pahos 2010
[10] United Nations Educational, Scientific, and Cultural Organization 2015
[11] Charlotte Pedestrian Overlay District 2015

community; the risk is that without specifically calling out the medieval influence, its essential structure may be lost.

PRECEDENT

I am not the first to suggest that medieval towns are a foremost model of sustainability. Copenhagen's renowned urban planner and architect, Jan Gehl, after being trained in high modernism, studied the street life of medieval towns of Italy. His study of public life, notably in Siena, Italy's Piazza del Campo, inspired Gehl on his lifelong pursuit of making cities livable, including his recommendations in his book *Cities for People*. [12] Gehl remarks,

> We found that if you make more road space, you get more cars. If you make more bike lanes, you get more bikes. If you make more space for people, you get more people and of course then you get more public life. [13]

Architect Richard Levine, in "The Future Medieval City" identified the elements of medieval cities that should be used to inform future sustainable cities.[14] Levine created physical design models for his "city-as-a-hill" concept, which was about "synthesizing design features from the medieval hill town with ecological principles promoting social and ecological sustainability."[15] Rather than direct copying of medieval design, Levine strove to incorporate technological advances resulting in strangely futuristic design models.[16]

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[12] Montgomery 2013, Gehl 2010
[13] Quoted in Montgomery 2013, p. 151
[14] Levine 2011, originally in Levine 1987
[15] Levine 2011, p. 25
[16] Levine 2011

I believe remaining truer to the urban form of medieval cities is a more promising idea both in quality of the result and cost-effectiveness of a less engineered solution. Lasting cities have proven their worth and I therefore believe that alterations of medieval form should be minor; For example, modern utilities, trees, and new technologies such as renewable energy may be included. J. H. Crawford, author of "Carfree Cities" (2000) and "Carfree Design Manual" (2009) comes close to proposing replication of the medieval model. In the *Carfree Design Manual* Crawford directly names medieval cities as the source of inspiration. In addition, his designs conceptualize a carfree city as a collection of walkable circular neighborhoods connected by transit.[17] This inspired my conception of neo-medieval transit-oriented development (TOD).

TRANSIT-ORIENTED TO NEO-MEDIEVAL

Transit-oriented development (TOD) is an area plan or zoning designation around a transit stop. Its application varies greatly based on the local goals and context.[18] The medieval example is in line with the Sustainable Cities Institute's definition of what a TOD typically contains: *a mix of uses, moderate to high density, pedestrian orientation/connectivity, high quality design, transportation choices, and reduced parking.*[19] However, the potential value of TOD is depreciated by including the automobile in the transportation choices and focusing on reducing parking, often not by a significant amount.[20] Additionally, it is problematic that TOD has been used in different municipalities

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[17] Crawford 2000, Crawford 2009
[18] Dittmar 2003
[19] Transit-Oriented Development. Sustainable Cities Institute 2015
[20] Dittmar 2003

to attain a variety of goals of which a sustainability and livability often rank low. Some cities focus on the economic development aspects of TOD (e.g. Dallas), while many others focus on reducing traffic congestion. Today, TOD at best represents a "complete streets" model that incorporates transit, pedestrians, cyclists, and cars. At worst they are simply stations and buildings that are transit-adjacent, meaning they are under the same zoning standards such as parking ratios as other development.[21] Either way, they are not maximizing the sustainability and livability benefits such a special district could provide.

To maximize environmental and community benefit, the primary TOD objective should be creating a walkable neighborhood. Currently, walkability in TOD means including wide sidewalks along with other New Urbanist pedestrian proscriptions such as smaller blocks and pedestrian crossings. The medieval city pushes this element much further. People are the primary users of the street and are not relegated to sidewalks. TODs are often defined by a ¼ or ½ mile walkshed— the walking distance from a station. In medieval cities we see that a ½ mile walk is very reasonable if the design is amenable to people. It is remarkable that the measurements of many medieval towns from central public space (piazza) to exterior wall was so often nearly ½ a mile. An entire medieval town, with all the functions residents need can fit in a TOD! In current practice, we rarely make an effort to put all of the ingredients of a self-sufficient community in our TODs. The particular mix of uses and community spaces could greatly benefit from mimicking the medieval model. A key distinction between traditional TOD and neo-medieval is that

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[21] Dittmar 2003

traditional TOD typically places transit at the center. However, existing medieval cities illustrate that transit around the outer ring of a pedestrian development functions well without disrupting the pedestrian realm. Bus transit along a ring road just outside the wall is demonstrated in Bologna and Lucca, Italy for example. Train connections to other cities are also always outside the wall, as seen in Siena and Bologna.

Density is a prominent consideration in TODs, derived from the fact that it drives transit ridership (more people=more trips).[22] TODs in the United States often have minimum height requirements of 2 or 3 stories and maximum requirements allowing up to 8 while medieval cities typically are built to between 3 and 5 stories.[23]

TOD in America has been tied to building new urban rail lines, when in fact walkability and overcoming parking are more important determinants of success than rail. A study called "Does TOD need the T," indicates that "the lower auto ownership and use in TODs is not from the T (transit), or at least, not from the R (rail), but from **lower on- and off-street parking availability**; better bus service; **smaller and rental housing; more jobs, residents, and stores within walking distance**; proximity to downtown; and higher sub-regional employment density."[24] The author concludes that "housing developments of smaller rental units with lower on- and off-street parking

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[22] Dittmar 2003

[23] Transit Oriented Development Overlay District Model Bylaw, MA Dept. of Energy and Environmental Affairs 2015

[24] Chatman 2013 p. 28

availability, in locations with better bus service and higher subregional employment density" should be incentivized.[25]

While critical TOD planners are currently focused on lowering parking requirements or alternative models such as shared parking and parking district planning, they have neglected the possibility that perhaps TOD should not incorporate the automobile at all (with the exception of emergency and delivery vehicles). In addition to the above-mentioned increased transit-ridership, eliminating cars in TOD could increase affordability:

> Because parking is so expensive to provide, parking ratios and pricing policies strongly influence developers' ability to provide affordable housing. Most of the (TOD) projects surveyed provided little affordable housing, despite this issue being high on the priority list of many cities and regional agencies. TODs' location efficiency should be carefully worked into minimum parking requirements and other parking policies to ensure that savings on parking are realized and are passed on to residents.[26]

Pedestrian priority planning is gaining visibility, albeit slowly. The recent discussions on this topic at the World Economic Forum illustrate that climate leaders understand the momentous importance of car-free cities.[27] The topic is trending as several other recent news articles explore the possibility of car-free cities with titles like "Can a City Really Ban Cars from its Streets" and "What Will Be America's First Car-Free City."[28] In Europe, many medieval city centers are car-free or nearly car-free because the

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[25] Chatman 2013, p. 29
[26] Willson 2005, p. 87
[27] Edwards 2015
[28] Laskow 2015, Stewart 2014.

streets were not designed to accommodate cars. European cities have planned car-free zones beyond those necessitated by narrow streets; a notable example is Vauban, a neighborhood in Freiberg, Germany.[29] People are intrigued by the idea of car-free cities, and the neo-medieval urban village provides a proscriptive method of achieving this aim.

NEO-MEDIEVAL: AN IDEAL URBAN VILLAGE

The urban village concept implies that instead of a singular urban metropolis, urban areas are redefined to be composed of smaller districts with distinct identity and public life. The term urban village feeds people's desire to live with the benefits of both urban and village lifestyles without the shortcomings associated with either.[30] The pitfalls of what we modernly call 'urban' are a well-documented call to urban villages. Alberto Magnaghi, author of *Urban Villages* believes that our urban areas no longer deserve to be called cities, instead, he condemns the modern metropolis saying,

> The gigantic ecological footprints of the large metropolitan areas—with their urban sprawl, huge energy consumption, high concentration of pollutants and squandering of non-renewable resources—plus the widespread reproduction of poverty in the South of the world, and the social gap in the metropolises of the north are increasingly being revealed as the major joint causes of the local and planetary ecological crises.[31]

The urban village concept is widespread in urban design but has also been introduced as a counter-movement to the globalized economy and a method of more participatory democracy. David Sucher argues that urban village design is defined and measured by

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[29] Thorpe 2014
[30] Sucher 2003
[31] Magnaghi 2005

comfort and neighborliness.[32] His design parameters are similar to neo-medieval design, for example, his call to build to the public right-of-way. Sucher also calls out the importance of public space:

> We speak constantly of neighborhoods and community. But without the third place—the commons outside home and workplace, where people stumble into each other and where your name is known— we do not have a neighborhood but simply an area.[33]

The urban village is a solution to the "new poverties," both human and environmental, created by the metropolis. It is a new development model at a finer scale which reinserts human relationship into an urban fabric.[34] Neo-medieval development is an archetype for a successful urban village.

BUILDING LASTING TRANSIT-ORIENTED URBAN VILLAGES

The neo-medieval neighborhood is congruent with the urban village and transit-oriented development. Neo-medieval urbanism is untested in the American market; however, tourist-targeted medieval cores in Europe coupled with market preferences for accessible urbanism allow me to deduce that this would be a popular development type. In addition, city sustainability and livability/affordability goals validate the role of neo-medieval neighborhoods. As noted at the World Economic Forum, car-free cities have a potentially powerful role in adaptation to climate change.[35] The scale of environmental and social issues calls for bold action by planners to create cities that supply first-world

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[32] Sucher 2003, p. 7
[33] Sucher 2003, p. 26
[34] Magnaghi 2005
[35] Edwards 2015

comforts and social equity without the corresponding resource intensity. I believe that the

future sustainable city must source materials locally, be accessible to people on foot, and

be built to last. Put simply, they should express a neo-medievalism.

Chapter 3: Medieval City-States in History

Medieval towns, especially larger cities, many of which were granted free political status, have an urban form that has functioned for people for nearly 1,000 years. Tested by plagues, new political systems, and the advent of new technologies, the settlements that remain inhabited are truly sustainable. Not all settlement forms from the medieval period have survived, and this is in fact helpful. Lasting cities showcase materials and forms that are sturdy and functional.

MEDIEVAL DISCONTENTS: FACTS AND FICTION

In order that neo-medieval urbanism be treated seriously, several biases against the term medieval must be addressed. I informally asked many friends and acquaintances their impressions of the term medieval in the process of completing this project. Common responses included feudalism, torture, knights, and the plague-- none of which are particularly desirable in the modern city. It is to be freely admitted that not everything associated with the medieval time period is to be lauded. This is an argument for urban design, not the Inquisition! Besides, is our modern world so exceptionally free of misery? Consider that in 2013 alone 584,881 Americans died of cancer, 33,804 Americans died in a car crash, and a similar number 33,636 died from a firearm. All time periods have their problems.[36]

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[36] FastStats CDC 2015

Even so, many misconceptions about the term medieval persist. I believe that they arise for three primary reasons, (1) confusion between the dark ages and the late medieval (2) affiliating all medieval settlements with British history (3) assumption that medieval urban form happened because of chance.

The terms Middle Ages and medieval are often used synonymously. The Middle Ages has been used to refer to everything from the decline of the Roman Empire (5th century) to the Renaissance (16th century). To characterize this extensive time span across the whole geographical area of Europe is clearly an oversimplification. A more useful distinction is drawn between the dark ages which occurred after the Roman Empire until the beginning of the 11th century, from the high middle ages or medieval which occurred from the 11th century to the end of the 15th with the start of the Renaissance.[37] Alternative definitions push the term forward a century and define it as approximately 1100 to 1500 ad.[38]

The distinction between the dark ages and the medieval is particularly important for the areas of Europe such as northern Italy and southern Germany which are presented here and underwent an important transformation to independent town-hood. In England and much of France the distinction is less notable because power was more tightly held by a few in feudal systems.

Finally, based on responses I observed, most people deduce that medieval cities occurred because of happenstance and thus have a randomness that is not worth study.

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[37] Hiorns 1956
[38] Middle Ages 2014

However, this myth is being challenged.*39* Scholars are increasingly writing about medieval urban planning by focusing on city structure and historic documents such as city planning ordinances and maps.[40] In addition, medieval urban design has been found to have specific geometric proportions.[41]

In brief, the 11th century crumbling of the feudal system and increase in trade[42] bolstered the importance of towns. As centers of commerce, they thrived in areas outside the control of overlords. In the German region, the Holy Roman Empire was a loose affiliation and cities of a certain size were often granted free-imperial city status. These towns were self-ruled by town councils.[43]

In northern and central Italy, cities were even further removed from a central power. Many towns, initially controlled by wealthy families, transitioned as merchants became an important voice and a more egalitarian form of government was formed. In 13th century Italy, urban planning moved from a private to a public enterprise. [44] In independent city-states, the advancement of urban design was tied to civic pride and citizenship. Citizens, with a voice in government, demanded cohesive living conditions and orderly public spaces. [45]

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[39] Lilley 2014
[40] Lilley 2014
[41] Lilley 1994
[42] Hiorns 1956
[43] Braunfels 1988
[44] Braunfels 1988
[45] Hiorns 1956

Size was an important factor in the effectiveness of medieval cities. Small towns are not treated in this study; they were not independent city-states and were less likely to be built of enduring materials. It was common for Italian cities to have between 10,000 and 50,000 inhabitants. [46] In 13th century Italy, there were 23 towns with more than 20,000 in population. German towns tended to be smaller with a town of 5,000 being average.[47]

CASE STUDIES

Rothenburg Ob Tauber, Germany

Rothenburg had 6,000 inhabitants in 1400 and has 11,200 today. Many tourists visit each year to see the medieval walled city and its famous Christmas museum. Strict preservation of Rothenburg allows visitors to walk along the medieval wall and to walk through the winding streets of half-timbered houses.[48] Rothenberg is small in area and density compared to the other case studies. It serves as a good example of artfulness, especially in small landmarks such as fountains.

Rothenburg is a former free-imperial city, granted this status in 1274. In 1802 it was annexed into Bavaria. In this protestant town, the gothic St Jacob's church is a major landmark. Its holy blood relic (a cross with encapsulated drops of Christ's blood), attracted many pilgrims in former times.[49]

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[46] Hiorns 1956
[47] Braunfels 1988
[48] History: Rothenburg 2014
[49] History: Rothenburg 2014

Bamberg, Germany

Bamberg is larger and more lived in than Rothenburg. This University town's charm, is in part determined by geography. Distinct parts of the city are divided by the river and prominent points on the hills. Its history begins when a bishopric was established in Bamberg in 1007 by the Holy Roman Emperor Henry II. His goal was to create a "new Rome." He expanded upon his ancestral castle on the hill and the fisherman village below. This gem of a city feels less touristy and more lived in than Rothenburg. It is a great example of medieval urban design creating a coveted place to live, which is also environmentally friendly.[50]

I spoke to locals in Bamberg who also gave me a tour of the city, explaining the architectural history and urban form. We followed the former location of the walls on the low side of town—they no longer exist today. A circular road exists in place of a former moat. However, the wall did not circumvent the entire city as in many medieval cities. On the other side of the river, a steep uphill topography is where the power was concentrated. The old monastery is at a prominent watch point with an excellent view of the city, woods, and farmland below and a little lower in the hill-country the public palaces sit.[51]

Regensburg, Germany

Regensburg is a city that exemplifies medieval urban form, but whose history begins much earlier. Regensburg was a stronghold at the outskirts of Roman territory. Because of its position near enemy lines, the camp was fortified with a massive stone wall.

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[50] Town of Bamberg 2014, A day in Bamberg 2012, Braunfels 1988
[51] A Day in Bamberg 2012

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The Roman wall was the original boundary of the medieval city as well. It was expanded to include more area by the 1300s. Small segments of Roman wall are still visible today.[52] By the 11th and 12th centuries, Regensburg was the wealthiest merchant city in southern Germany. Its importance continued until the middle of the 14th century. Its population was between 6,000 and 10,000.[53]

The geography of Regensburg contributed to its power in the Middle Ages. Traders traveled down the Danube to the Black Sea on their way to Constantinople. Thus, Regensburg found itself on a path to the orient. Salt, spices, and silks were traded here. This fortuitous geography lent itself to Regensburg's power and independence. It was a free-imperial city from 1245 to 1803. The city had towers for wealthy families as in Italy, and the cathedral was begun in 1275.[54] Regensburg was an important center for leaders from other imperial cities to come for the Imperial Diet. The Imperial Diet began as a collection of princes but as cities grew in power, leaders from the cities convened. After 1250, cities met separately from princes; these meetings which were intermittent in the medieval, became a permanent session in 1663 which was held in Regensburg.[55]

Freiburg im Breisgau, Germany

Freiburg is unique among the German case studies because a large modern city has grown up around the medieval core. In addition, Freiburg was destroyed in World War II and so unlike the other examples its medieval core had to be rebuilt. This city, while less

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[52] Old Town of Regensburg 2014
[53] Braunfels 1988
[54] Old Town of Regensburg 2014
[55] Diet: German. Encyclopedia Britannica Online 2015

historically significant, illustrates how modern cities may be built in medieval form and that the street pattern and basic structure is the most important aspect. The medieval core of Freiburg has inspired its modern development as an environmental mecca. Today Freiburg has a population of 220, 000.[56] Freiburg was thriving in the Middle Ages, in part due to silver deposits in the adjacent Black Forest. This is different than many medieval cities in that it was extraction not local production that determined the city's early economy. The city was founded at the end of the 11th century and in 1120 it was granted the right to hold markets. The original medieval walls were built around 1200, and were expanded several times thereafter to meet the demand of the city's prosperity.[57]

Freiburg's planning director immediately after World War II, Joseph Schlippe, decided to rebuild using the medieval street pattern rather than to impose a modernist grid like many other German cities.[58] The medieval core has inspired other pedestrian development in eco-districts. Freiburg prioritizes pedestrians over cars and the city also considers itself a "city of short distances" where a mix of residential and commercial activity in proximity encourage walking and biking.[59] The Freiburg Charter, a reaction to being designated the Academy of Urbanism's "European City of the Year 2010", outlines principles of urban development in Freiburg. The goal of the charter is to spread these principles to other cities.[60] Several of the principles are exemplified in medieval urban form.

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[56] Freiburg: City of Vision 2013
[57] On the Tracks 2014
[58] Eberlein 2011
[59] Freiburg: City of Vision 2013
[60] Eberlein 2011

Lucca, Italy

Lucca, together with its countryside was independent up until the unification of Italy in the mid-1800s! Lucca was the second richest free municipality in Tuscany in the 12th and 13th century. Lucca's Roman origin is retained in its street pattern and public spaces. It is exceptional in the cases presented here because such a large proportion of the medieval city is on the Roman grid. Hiorns explains "the Roman towns which held closely to the chessboard and wall, suffered somewhat from the rigidity of plan... This conflicted with the free, anti-feudalistic spirit of medievalism."[61] This is one reason that I consider Lucca a finer example of landmarks than street pattern. Its current and famous wall-turned-promenade replaced the medieval one and was begun in 1504. Interestingly, Lucca is regarded as one of the most famous medieval cities in Italy, but is actually fairly evenly a combination of Roman, medieval, and renaissance improvements.

Bologna, Italy

Bologna has many exceptionally well-preserved elements of the medieval city, and remains vibrant and lived in today. While Bologna does have the remnants of a Roman grid, much more of the street layout is medieval than that of Lucca. The center city's primary urban form and structures date from the medieval. The city is famous for its porticos and towers— both features arising in the 13th century. The porticos, also called arcades, are a both useful in inclement weather and provide an artful and grandiose frame for the streets.[62]

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[61] Hiorns 1956, p. 97
[62] Museum of the History of Bologna

Bologna has characteristic circular shape and radial road system. Portions of its wall and gates are intact and the gates are still the entrances to the medieval city. Bologna's primary public space is of a grand scale in accordance with population size and are still used for community events such as movie-screenings.

Siena, Italy

Siena is exemplary for its records of medieval and Renaissance building programs. It is also the only hill-town presented here and serves as an example of how medieval planners responded to topography. It is additionally exceptional in that it did not have a Roman past but instead was created nearly from scratch during the medieval period, rising to a population of 40,000 around 1300. Siena's government was decentralized and delegated tasks to (at times) over a thousand of its citizens.[63] This government of merchants and artisans reached its peak from 1289-1348 in the government of the nine. The following illustrates the strength of Sienese medieval planning policies:

> Siena developed the most precise building code that has been handed
> down from the Middle Ages, which was incorporated into the city's
> statutes. From the 13th century onward, the city council met regularly in
> May to issue numerous decrees for the building of walls, streets, fountains,
> churches, public buildings, and last but not least, private dwellings. On 10
> May 1297, twenty-six such decrees were on the program, among them the
> new code for the building of the city square and its palace, as well as for
> further building work on the cathedral, and one for the dismissal of the
> leading cathedral architect, Giovanni Pisano.[64]

Another example is the 1339 appointment of native architect, Landro di Pietro:

> as its superintendent of public works, well versed in the arts, the building of
> churches, and 'the construction of palaces, houses, streets, bridges, and

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[63] Braunfels 1988
[64] Braunfels 1988, p. 61

fountains,' and who was especially needed to deal with proposed new cathedral.[65]

Siena, like many medieval European cities, saw its darkest hour during the plague (Black Death) when its numbers decreased dramatically. Beginning in 1398, following the plague, the Sienese government gave ten year tax exemptions to immigrants to the city. The office of the *Petroni* was, beginning in the 1420's in charge of creating new laws for the purpose of renewing old and ruined buildings, under the understanding that people living outside the city would prefer to live within the walls if buildings were renovated. More than 200 buildings were put on the Petroni's list of buildings that needed to be upgraded between 1448 and 1500. Once identified, they would contact the owners of these buildings who had the choice to remodel themselves or to sell the building to the Petroni who would repair and sell them.

In 1458 the Ufficiali Sopra L'Ornato was founded in Siena in order to beautify the city. It was the job of the nine men in the office to enforce policies to improve the urban fabric and to encourage private property owners to maintain and beautify their properties. One of the major projects was the destruction of overhangs that people built above the streets.[66] Much of the work done by the office can be seen today including the current form of the Piazza del Campo and the Loggia del Mercanzia which is on the corner of the Francegena by the Campo. [67] The longstanding work shows the quality of craftsmanship

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[65] Hiorns 1956, p. 119
[66] Nevola 2007
[67] Nevola 2000

that went into these buildings. The medieval Sienese desire for strict order of urban form

on challenging geographical conditions created the enchanting city one visits today.

Venice, Italy

Venice like other waterfront cities, has unique urban design because rather than the

market-heart of the city being in the center, it is located on the waterfront, the primary

entrance to the city. The same basic form can be seen in Genoa and Amsterdam. In Venice,

traders landed at Piazza San Marco before proceeding into the canals. Venice formed land

to build on by "consolidating sandbanks in the lagoon and finally succeeded in reducing

the water surfaces so much that only the canals remained."[68] The waterways in Venice

meander in a natural organic form mimicking other medieval city streets.

Venice was founded in 421 AD and took thousands of years to materialize, unlike

the relatively quick assent of Siena. Venice grew to about 150,000 by its high point in 1500.

Parish churches were formed, the last dating to about 1100. Districts grew around these

churches, each with its own marketplace and bell tower. These districts were consolidated

in 1169 from 30 to only 6 *sestieri.*[69] The first pontoon bridge across the Grande Canal was

built in 1181, followed by a wooden bridge in 1250. Saint Marks square is a medieval

creation that was amended and adorned in the following centuries with the spoils of war.

In the baroque period, when cities such as Paris were undergoing demolition of medieval

streets in the name of renewal, it was impossible to penetrate the network of small streets

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[68] Braunfels 1988, p. 81
[69] Braunfels 1988

and canals in Venice to build larger roads, fortunately for the city's famed medieval

waterways.[70]

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[70] Braunfels 1988

Chapter 4: Neo-Medieval Design

CONTEXTUALLY ADAPTED CITY DESIGN

Most medieval cities have roots prior to the 10th century and many underwent ornamentation in future periods but the cities chosen in my study owe their greatest spaces, buildings, and primary form to the medieval. Medieval planners worked with natural features and existing buildings to compose the city. This "elacticity of arrangement...based town design around a problem to be solved and the merits of the case."[71] For city planners today, interested in retrofit and adaptation of underutilized existing spaces, medieval planners should be an inspiration. They were not creating towns from scratch, but improving composition to better their cities. Medieval cities also set a positive example for cities to incorporate natural features:

> Natural features and physical potentialities were invariably used to the best advantage—whether of hill, valleys, rivers, opportunities for vine growing, canalization, and so on—the strategic, scenic, and orientation benefits obtainable were rarely neglected.[72]

Medieval planning was a process, not a blueprint.

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[71] Hiorns 1956
[72] Hiorns 1956, p. 91

Figure 1: Reproduction of Fresco Map of Bologna[73]

The basic layout of medieval cities is exemplified in this frescoed map of Bologna.

The central public space is paired with public buildings and other landmarks. The primary

radial roads lead toward this space from gates in the wall. Lesser, primarily residential,

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[73] Reproduction of Fresco Map of Bologna in the Sala Bologna in the Vatican as seen in the Museo della Storia di Bologna, at the Palazzo Pepoli Vecchio.

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streets parallel those main avenues. The radial roads are intersected, web-like, by connecting roads. Space is carefully allocated as either built or agricultural. [74]

In Bologna, the terrain is largely flat, as is characteristic of most towns with Roman heritage. Cities with Roman heritage such as Bologna and Lucca, have a central grid. They also boast a clear linear medieval radial-concentric layout, whereas, their counterparts on more complex terrain adapted the pattern.[75] Of the Italian hill-towns, Hiorns asserts, "No country developed urban settlements on sloping ground to such advantage, or related them so fittingly to their scenic setting, as if a part of nature." [76]

Figure 2: Map of Siena (1640)[77]

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[74] Saalman 1968
[75] Hiorns 1956
[76] Hiorns 1956
[77] Merian Map of Siena 1640

Siena is a preeminent case of adaptation to geographic conditions. The town is built on three hills. Medieval planners connected these once separate towns into a superbly ordered and engineered civic accomplishment. The most important public space in Siena is the Piazza del Campo. The Campo is in a central location and is bordered by all three *terzi* (thirds) of the city. These are further divided into neighborhoods (contrada) with unique identities and pride.[78] It seems that no matter how you enter Siena and no matter where your intended destination, you will stumble upon the Campo. This is no accident. The three main roads proceed from the gates of the city and converge just above the Campo.

The convoluted appearance of streets on maps of some medieval towns seem to the novice to be a disorderly maze to be lost in. However, in walking these towns, it becomes apparent that finding ones way is typically easy, as moderate sized roads always lead to landmarks in key public spaces. The landmarks themselves help in way-finding as they can be seen from much of the city. Medieval cities received foreign traders and thus their logic is easy to follow on foot.

DESIGN CONSTITUENTS

Design constituents are the physical forms and structures that compose a city. The following constituents are the building blocks of medieval and thus neo-medieval

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[78] Braunfels 1988

urbanism: wall (and gates), narrow organic streets, landmarks, public space, flexible use row buildings.

Wall and Gates

       The wall, originally a necessity for medieval defense, can be adapted for modern sustainability objectives. It divides the town from the agricultural countryside, transferring nutrients and maintaining homeostasis within the city. Urban-rural balance, sorely lacking in most of America, can be maintained through a modern interpretation of the wall, the urban growth boundary. Having a strict border encourages resource-efficient density and protects valuable agricultural lands. In a large metropolitan region, medieval sized neighborhoods should also be bounded with green space including community gardens. Moderate density is very attractive when paired with access to nature. The boundary serves the additional role of solidifying community identity. Gates concentrate the visiting population along main arterials, giving birth to active main streets and preserving quieter spaces on residential areas that do not lead to a gate. Rothenburg's intact medieval wall defines the city's relationship to green space to this day. Just outside the wall, citizens can relax among an encompassing park with trails

Figure 3: Medieval Wall in Rothenburg[79]

Human Scale Organic Streets

Medieval planners knew that streets should bring one to destinations and also be reactive to geography and existing buildings. The result is a network of streets that are both efficient and at the same time picturesque and beautifully curvilinear. Medieval streets convey a hierarchy of purpose according to size. Pedestrians are prioritized over other forms of transport which increases safety and equity. Narrow streets create comfortable space for people. Most streets leave room for four people walking together or two couples passing, approximately 8-12 feet wide. For comparison, this closely parallels the width of a single car lane. Shade from nearby buildings has a cooling effect in warm months.

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[79] Credit: Angela Bagnasco

Figure 4: Medieval Street in Bamberg[80]

Landmarks

       Landmarks serve to create a strong sense of shared identity. Tall landmarks such as medieval Cathedrals may also serve as compasses to guide citizens and visitors through the city. Landmarks' beautification value should not be overlooked. Medieval landmarks include buildings such as public buildings, cathedrals, towers, mendicant orders, hospitals, and universities. Smaller micro-landmarks decorate public spaces and remind citizens of their history and values. Some micro-landmarks tell specific stories about sustainability; for example, fountains may serve as meeting spaces but are also a symbol of the value of water. Some important landmarks for the neo-medieval city or neighborhood may be a

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[80] Credit: Angela Bagnasco

civic or cultural activity center, a museum, a courthouse, or a church. Micro-landmarks such as statues should reflect the history and cultural values of the inhabitants.

Figure 5: The Two Torre (Towers) of Bologna[81]

Public Space

Public Space is a crucial aspect of medieval cities. I chose to use the Italian words for public spaces-- piazzas and the smaller piazzettas—because Italy procures the finest examples of these spaces in the medieval. In addition, I do not like the English term 'square' because it connotes a single shape in a grid rather than the varying shapes of more fluid and welcoming medieval public spaces. Markets in these piazzas distribute local produce. Piazzas are a part of daily life-- to pick up groceries, to hear news, for

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[81] Credit: Angela Bagnasco

gathering in celebration, and leisure. Public space allows people to live at higher densities comfortably. While medieval cities contained a primary piazza as a meeting space, they also contained many minor Piazze (piazzetta). These serve as neighborhood centers, a sort of shared front yard. Public space is a key to happiness and a key component of a sustainable society.[82] The market in Bamberg is a particularly good example of a functional public space. The market street that is wider than others to make room for the stalls. The street is lined with shops that benefit from the market.

Figure 6: The Piazza del Campo in Siena[83]

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[82] Montgomery 2013, Hiorns 1956
[83] Credit: Angela Bagnasco

Flexible Use Row Building

  The flexible use row building is a compact and livable typology, adaptable to residential, commercial, or mixed uses. In some medieval cities, buildings were embellished at later points in history, however, it is the structure rather than the façade that is of upmost importance. The model of attached 3-5 story row-buildings in line with the street makes the medieval walkable and orderly. Some buildings have internal courtyards and further from the center, block size increases leaving more room internal to the blocks. Row buildings are sustainable in functionality, adaptability, and considerate use of indoor and outdoor space. These buildings were built for permanence. Shops on the ground floor of some buildings are compatible with residences. Some residences may be the home of a single-family while others are divided into apartments. In medieval cities, apartment living is viable for people of all stages of life.

Figure 7: Mixed-Use Row Buildings in Lindau, Germany[84]

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[84] Credit: Angela Bagnasco

DESIGN ATTRIBUTES

Design Attributes are qualities rather than physical structures. These are no less important than design constituents in defining the medieval city for replication. The pertinent design attributes are: human scale, context sensitive materials, aesthetic harmony, and relationship to nature.

Human Scale

Without the need to accommodate automobiles, urban design is compact and comfortable for those on the street or inside buildings. In medieval cities, it is rare to see buildings above five stories. This dense but not too dense height means there are enough people on the streets, but not so many as to necessitate a subway or other transportation mode. Building at human scale also means that there will be a mix of residential and commercial use in the city. People need this mix to walk to their needs. This is different from zoning in many American cities that separates uses and makes it impossible to reach destinations without an automobile. Density also decreases the cost of infrastructure such as water pipes, electricity lines, and emergency services. Moderate density will be a necessary feature of future cities.

Figure 8: Pedestrian Scaled Portal Archway[85]

Aesthetic Harmony and Richness

       Architectural details, interesting paving, and portal archways that beckon you through are all reasons that people love to live in and visit medieval cities. Neo-medieval cities should combine this aesthetic richness with an organized and simple urban form. Beauty through simple composition and intriguing detail will help lure people in a dispersed society back into a more sustainable compact urban framework. Views are another aspect of the neo-medieval that should not be overlooked.[86] As we build sustainable places we must make sure they are

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[85]
[86] Hiorns 1956

worthwhile places. Places that are appreciated are places that will last. Freiburg's

street mosaics and "little stream" water features are a noteworthy example.[87]

Figure 9: Ornate Ironwork and Architecture in Freiburg[88]

Context Sensitive Materials

Building a neo-medieval city with context sensitive materials has two dimensions:

(1) using materials of local origin, following the medieval model and (2) using materials

that minimize heating and cooling costs dependent on local climate. Places built of local

materials and in local style exhibit a strong sense of place. In Italy, medieval cities were

primarily made of stone, while in Germany wood and plaster (stuffed with straw in some

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[87] Freiburg, City of Vision 2013
[88] Credit: Angela Bagnasco

cases for insulation) prevailed. Interestingly, many of these wood buildings endure today

due to craftsmanship. The thickness of medieval walls is much greater than in most

contemporary buildings, insulating against weather and providing durability. To be

sustainable, we must build with the intention of permanence.

Figure 10: Traditional German Wood Frame Construction[89]

Relationship to Nature

Relationship to nature has multiple expressions. It is not simply proximity to

agricultural lands. Nature is brought into the city through market-places with produce,

through appreciation for water in fountains. This relationship is also seen in building with

context sensitive materials and in response to topography. While the traditional medieval

[89] Credit: Angela Bagnasco

model only included green space in the form of agriculture or unusable sloped land, the

neo-medieval model can more comprehensively bring nature into the city. Plants are

useful in cities to clean the air, provide shade, reduce heat, and for psychological benefits.

In Rothenberg, Germany, street trees and green roofs were added into the medieval city.

Small parks can also be compatible with the model. Even thin gardens against buildings

are possible, while retaining the narrow, human scaled street. Deep front yards are not

compatible. Neo-medieval cities may have greenery in courtyards, or as in Bamberg,

farms can be located in interior blocks closer to the outside of the town.

Figure 11: Street Trees in Rothenberg[90]

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[90] Credit: Angela Bagnasco

OUTCOMES OF NEO-MEDIEVAL DEVELOPMENT

Neo-medieval development would address three broad challenges: environmental sustainability, livability, and local economic resilience. Sustainable development has been defined by the Brundtland Commission as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[91] This kind of intergenerational thinking requires responsible use of resources at all phases of development from harvest, to transport, to use. It is clear that current development patterns do not meet this definition because the 20th century saw an 8-fold increase in use of energy and materials.[92] Human impacts on the planet are reaching a tipping point which will negatively affect social and economic development.[93] These impacts include "the rapid depletion of the ozone layer, a continued exponential rate of biodiversity loss, degradation of air quality, land and freshwater, aerosol loading and chemical pollution at regional scales, climate change, and unsustainable appropriation of such finite natural resources as oil and phosphorus."[94] In the light of these effects, I believe voluntary societal contraction (of space and materials consumed) is a necessity.

Reduction in Energy Use and Greenhouse Gas Emissions

Land use and urban form, especially the scale of streets, blocks, and parcels, has a strong influence on energy efficiency, and when optimized can result in a 2-4 fold reduction in energy use.[95] Urban sprawl is responsible for high energy needs for transportation, while

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[91] Our Common Future 1987, pg. 41
[92] Krausman et al 2009
[93] Rockstrom 2011
[94] Rockstrom 2011
[95] Planning Energy Efficient and Livable Cities 2014

walkable historic European city centers with a large number of narrow streets and a mix of functions are energy efficient.[96] In addition, these walled finer-grained cities have higher densities than sprawl. Denser cities have a smaller per capita infrastructure length including water and wastewater pipes and road length which results in a smaller cost through the infrastructure's lifestyle per capita.[97] Finally, more fine-grained urban textures such as those in medieval cities, result in less energy use for heating needs.[98]

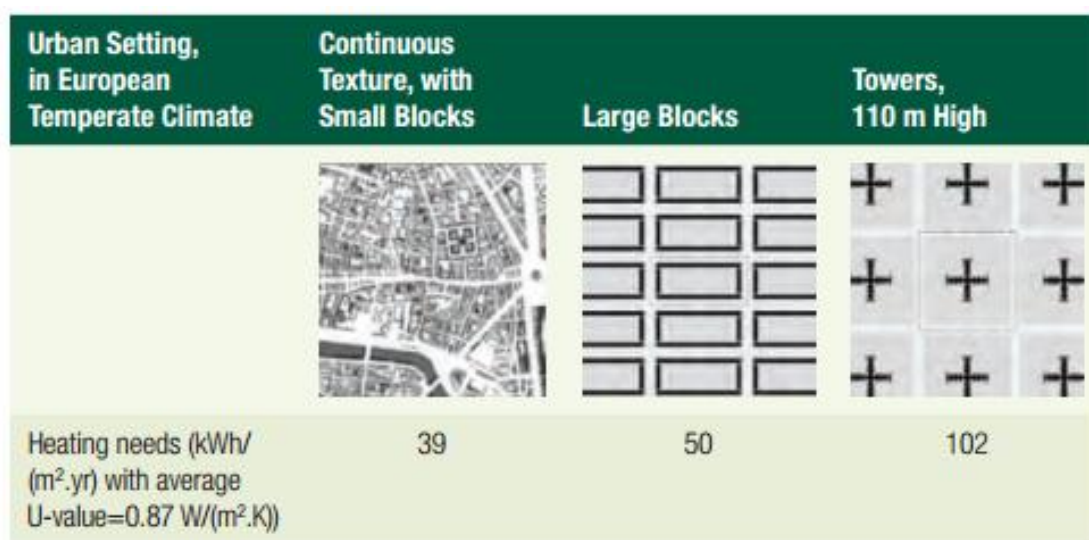| Urban Setting, in European Temperate Climate	Continuous Texture, with Small Blocks	Large Blocks	Towers, 110 m High
Heating needs (kWh/ (m².yr) with average U-value=0.87 W/(m².K))	39	50	102

Figure 12: Energy Consumption for Space Heating in Three Urban Textures[99]

Energy use in buildings is the most cost-effective sector for reducing greenhouse gas emissions, according to the Intergovernmental Panel on Climate Change (IPCC).[100]

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[96] Planning Energy Efficient and Livable Cities 2014
[97] Planning Energy Efficient and Livable Cities 2014
[98] Planning Energy Efficient and Livable Cities 2014
[99] Adapted from Planning Energy Efficient and Livable Cities 2014
[100] Buildings and Climate Change 2009

Medieval buildings were built of **materials** that had good insulation and the **narrow organic street network**, brings buildings close together and creates shade in warm months, reducing the need for energy intensive heating and cooling. Additional greenery such as trees and green roofs incorporate **relationship to nature** while reducing energy requirements for heating. Having a fine-grained street pattern and buildings built for the climate mean inhabitants will have to use less energy to be comfortable.

Livability through Access and Inclusionary Housing Policy

Livability is "the sum of the factors that add up to a community's quality of life--including the built and natural environment, economic prosperity, social stability and equity, educational, entertainment, and recreation possibilities."[101] Luckily, livability principles such as *community, personal autonomy, intergenerational solidarity, cooperation, free time or leisure, happiness, ingenuity, artistry, and beauty of the built environment* can be improved while we undergo a societal shift toward a less resource intense society. [102] Community is fostered in the neo-medieval example because of the small size and public gathering places. Personal autonomy may seem contrary to community and compact living, but is achieved in one respect because all people regardless of age, ability, or income are able to access their daily needs on foot.

Charles Montgomery, in "Happy City" also indicates that quality of life can be increased through quality urban design that corresponds to less environmental damage.[103] In essence

[101] About Us. Partners for Livable Communities 2011
[102] Heinberg 2014
[103] Montgomery 2013

he agrees with Jeff Speck, author of Walkable City, that a walkable city is the key to happiness and living lightly on the planet. Speck proposes four main conditions necessary to encourage walking. A walk must be "useful, safe, comfortable, and interesting".[104] These conditions work in concert to bring people into the streets.

Walking in a medieval city is useful because of the **human scale** and residences co-located with shops. It is safe because the **narrow organic streets** bring people out on the street and automobiles do not rule the streets. They are comfortable because of the **human scale**, and interesting because of the **aesthetic richness** of texture and vistas. **Landmarks** also add to the aesthetic interest and comfort of a walk serving as destinations.

Medieval cities were not the mega cities of today. In order to gain access to opportunities in a larger metropolitan area, I believe neo-medieval centers must be urban villages connected by mode choices including public transit. Relevant diagrams of groups of pedestrian friendly centers connected by mass transit can be found in J.H. Crawford's book, Carfree Cities (see image below).[105] Any public transit internal to the neo-medieval area should be underground. Above ground transit can be on the periphery, just as many medieval cities today relegate busses to exterior ring roads.

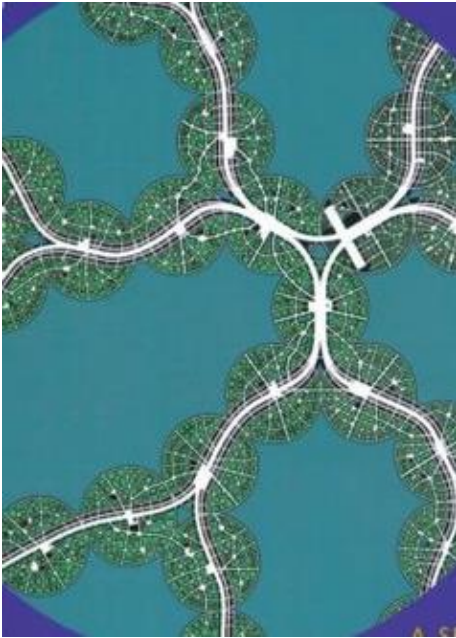
[104] Speck 2012
[105] Crawford 2000

Figure 13: J.H. Crawford's Conception of Transit Oriented Car-Free Development[106]

As mentioned in the definition above, livability must include a social equity component, ensuring that people at a variety of income levels have their needs met. Otherwise the development is likely to become an expensive enclave like many non-deed restricted new urbanism projects today. This misses the mark because a neo-medieval development offers benefits that are particularly useful for households that cannot afford an automobile. This concept is gaining attention in TOD planning, through equitable TOD, which establishes a metric for achieving an eTOD score.[107] I believe the best way to ensure a neo-medieval development is mixed income is make neo-medieval developments subject

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[106] Crawford 2000
[107] eTOD Score 2012

to inclusionary housing policies. Inclusionary housing is a policy which asks developers of market rate housing to include a percentage of affordable units at a certain AMI (percent of area-median income) level. In some cases it may be more politically feasible to include a voluntary inclusionary housing policy in which the city gives benefits such as density bonuses, fee waivers, and expedited review to projects which include affordable housing.[108]

Economic Resilience through Community Connections and Local Production

The term resilience was adapted from its ecological definition to be defined as "the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions"[109] While it is often used to speak to community response to climate change, it can also refer to perseverance of an urban economy.[110]

Resilience to change requires creative community collaboration. Communication among inhabitants provides a system of feedbacks that allow for adjustment of behavior and leads to resilience.[111] **Landmarks** create community identity, pride, and hopefully a sense of shared fate. **Public Spaces** give the opportunity for exchange of ideas.

Local craft production, prominent in medieval cities, would be a key component of neo-medieval villages. Studies show that local businesses send more money back to the local

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[108] Hickey 2014
[109] Jabareen 2013 Introduction, originally quoted in UNISDR, 2010, p. 13
[110] Jabareen 2013
[111] Davidson-Hunt 2003

economy than chain stores do, and increase a community's social capital and ability to act together for mutual benefit.[112] In addition, local businesses recover more quickly after a catastrophe and serve as community amenity during difficult times, for example after Hurricane Katrina.[113] Small producers and stores will be able to remain marketable in this setting because of the proximity of shoppers on foot. Higher walkability is correlated to better economic performance.[114] Local products are able to be distributed easily and cheaply because of markets in **public spaces**. The neo-medieval development should incentivize craft production to mirror one the primary points of relevance of the medieval city. This could ensure transparency of working conditions and methods of production. In a globalized world, affordability of local products adds an additional layer of complexity. The policy methods for achieving equitable local production in a globalized economy will not be able to be fully treated here.

Neo-medieval urban villages have the potential to improve environmental sustainability, especially through energy reduction, as well livability and economic resilience.

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[112] Blanchard 2011
[113] Campanella 2007
[114] Leinberger 2012

Chapter 5: Neo-Medieval Design and Policy Guide

RECOMMENDATIONS

I advise local governments to reevaluate policies to allow for neo-medieval development. Land development codes are a primary tool of local governments that likely inadvertently prohibit neo-medieval development at present, but could be revised to incentivize it. I believe cities should adopt a neo-medieval form based code for new developments and urban neighborhoods. If the city currently has a TOD policy, it should allow for car-free TOD, with design guidelines that mirror neo-medieval zoning designation. Some areas of the city may be difficult to make fully consistent with neo-medieval design but could be hybridized to include key elements. For example, zoning could allow for flexible-use row buildings (townhouses) and accessory dwelling units by allow moderate height increases compatible to existing development, removing barriers limiting the number of dwellings on a property, and removing side yard requirements. Another compromise leaning toward neo-medieval is adopting a shared streets model by painting shared streets insignia on street (e.g. Freiburg) in residential areas.

In areas where it is not politically feasible to allow commercial uses throughout a neighborhood, neighborhood centers could be zoned so that every resident is within walking distance of commerce. These centers could allow mixed use and contain a neighborhood piazza or park. Cities have a host of incentives they wield and could take advantage of them to promote this beneficial type of development. For example, they could create incentives for developers to build neo-medieval districts and use public-private partnership to develop on public land. They should create incentives for affordable housing

developers to build in neo-medieval zoned areas. To improve access, I advise increased pedestrian connections in all areas of the city, especially to connect new neo-medieval centers to each other and activity centers. Cities could also consider targeting key downtown streets for pedestrian use only, considering a neo-medieval downtown if current development enables it, and boosting transit service between neo-medieval centers and activity/work centers. I also recommend the city-wide preservation of historic resources that serve as landmarks, city-wide building standards encouraging efficient insulation and enduring structure, and greenspace consideration through the creation of greenbelts around the city and new neo-medieval districts.

NEO-MEDIEVAL DESIGN PROCESS

Neo-medieval centers can be created through the following process, which replicates the historical process of medieval land-use development.

1. **Choose a center point and design the central public space.** In a neo-medieval retrofit, assess area assets. Is there a public meeting space or prominent landmark that could become the neo-medieval center? The length of the space should be between 70 and 110 m depending on population and anticipated visitor traffic. Its shape need not be a rectangle: look at medieval piazzas as an example.

2. **Delineate the boundaries.** A half-mile radius is a good starting point but the size will vary depending on physical parameters and goals. The boundary should be a consistent walking distance (between .25 mi and 1 mi depending on desired population) from the central piazza, making it roughly circular if on flat ground. The development may house between 5,000 and 50,000 people and should

contain jobs for a comparable number. The boundary will serve as the planning area. The border should be identifiable. If possible surround the district with a ring of green space.

3. **Identify entrances to the district** that are spaced fairly evenly apart. There should be enough gates so that a walker would have easy access to the district, 8 is consistent with medieval cities. These gates should have strong connectivity to the surrounding area. Gates should have some kind of symbolism or signage to welcome people to the neighborhood.

4. **Identify the main routes from the gates to the central piazza.** The route should be as direct as possible. If you are working with an existing grid, the grid may be left in many parts of the district but it is crucial to add direct main connections from gates to the piazza. These will transect any existing roads.

5. **Complete the neo-medieval street network.** This is achieved by creating parallel roads to the main arterials and ring roads for connectivity. Plan roads to be 2 lot depths apart. Neo-medieval streets should strive to be in keeping with the narrow organic nature of their medieval counterpart. Pedestrians will be the primary mode on these streets. The main arteries should allow delivery and emergency vehicles to enter.

6. **Identify other open spaces.** This will include piazzas, piazzettas, parks, and marketplaces that will not be built upon. Any space that is not a road or a building becomes a public space. Piazzettas may be small (outdoor space for a single fountain and a little seating or seating for a restaurant or two. Delineate one

market space within the district. This can come in numerous shapes such as a wider road or the area circumventing a landmark. Ensure that public spaces are surrounded with buildings with active ground level uses such as restaurants.

7. **Delineate lots.** Lots may be varying sizes but should be deeper than they are wide.

8. **Adopt a Form Based Code.** The code should include building design standards and use standards.

CASE STUDY: LAKELINE TOD AUSTIN, TEXAS

The following is a conceptual design for a neo-medieval design as transit-oriented development in Austin, Texas. As a conceptual design, this is not an architectural blue-print. Instead, it shows how a neo-medieval neighborhood fits in a metropolitan area. It gives an idea for what a neo-medieval development could look like in a real location, outside Capital Metro's Lakeline TOD. Development around the site is primarily single family residential with some apartments at its southwest corner. Putting a neo-medieval center here would create a destination for residents of surrounding neighborhoods and bring commercial activity to the area. It would be an ideal location because of its proximity to Austin's metro-rail system and multiple bus lines. It is primarily a greenfield site in which a pure neo-medieval form is able to be applied.

Capital Metro (CapMetro) is the transit agency for the Austin Metro area. They run numerous bus routes and a single urban rail line, the metrorail. The metrorail line runs north through the Lakeline station, which is the station furthest north while still within Austin city limits. The urban rail has been the focus of CapMetro's transit-oriented

development policy. Capital Metro approaches TODs as joint development to boost ridership and increase value on CapMetro-owned land. The City of Austin approaches TODs as a regulatory urban design and planning strategy which maximizes public assets for new development around station areas. These two approaches share the fact that they delimit a specific area near a station for new development that is not a full ½ mile around stations. The efforts of these two agencies are beginning to be more closely linked through their participation in the Housing+Transit+Jobs Action team which put forward a recommendation to develop a comprehensive TOD strategy.[115] The design concept presented here would bring the city and transit agency closer to their goal of creating walkable centers. Cap Metro's states:

> Transit-oriented development (TOD) creates transit-friendly walkable communities with a mix of people, jobs, and services…Implementing the CAMPO 2035 Activity Centers plan depends on focusing growth in walkable urban places served by transit.[116]

Neo-medieval designs such as the concept presented for Lakeline, should serve as an example of next generation TOD planning. Capmetro's Lakeline TOD, is a joint development opportunity on the land of their park and ride site. The neo-medieval proposal is for adjacent land to the west. It would not supplant but be connected to any development on the transit agency's property.

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[115]Housing +Transit+ Jobs Action Team 2014
[116] TOD Lakeline Development Review Plan Overview 2015

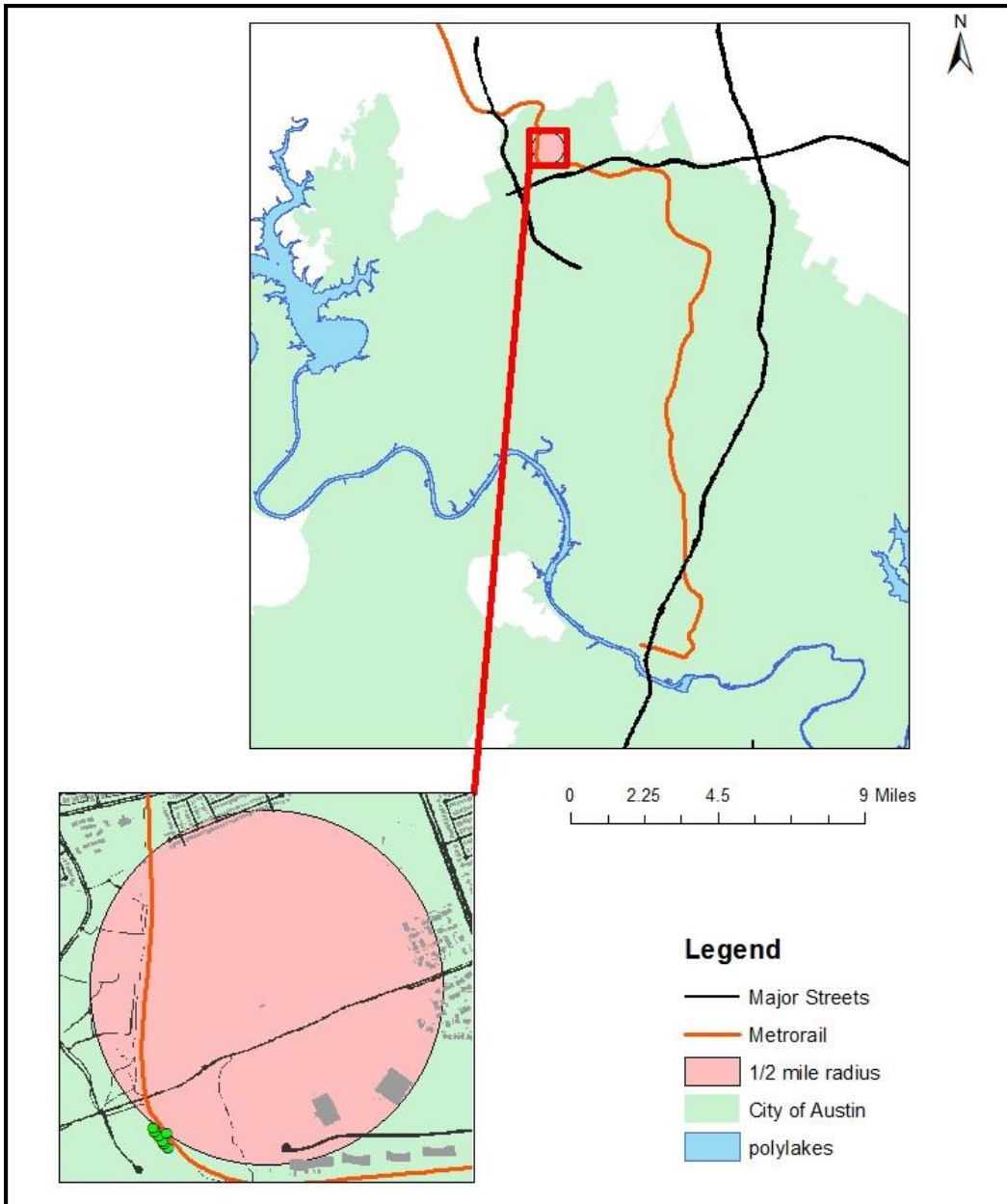Figure 14: Map of Capital Metro Lakeline TOD[117]

Figure 15: Lakeline Village Context Map

I am calling the concept Lakeline Village. It is located so that residents can ride the

Metrorail into downtown Austin. It would become a destination that would bring also bring

downtown residents up the line. The smaller context map above shows existing building

footprints and streets within the study area. The study area is a circle with a ½ mile radius.
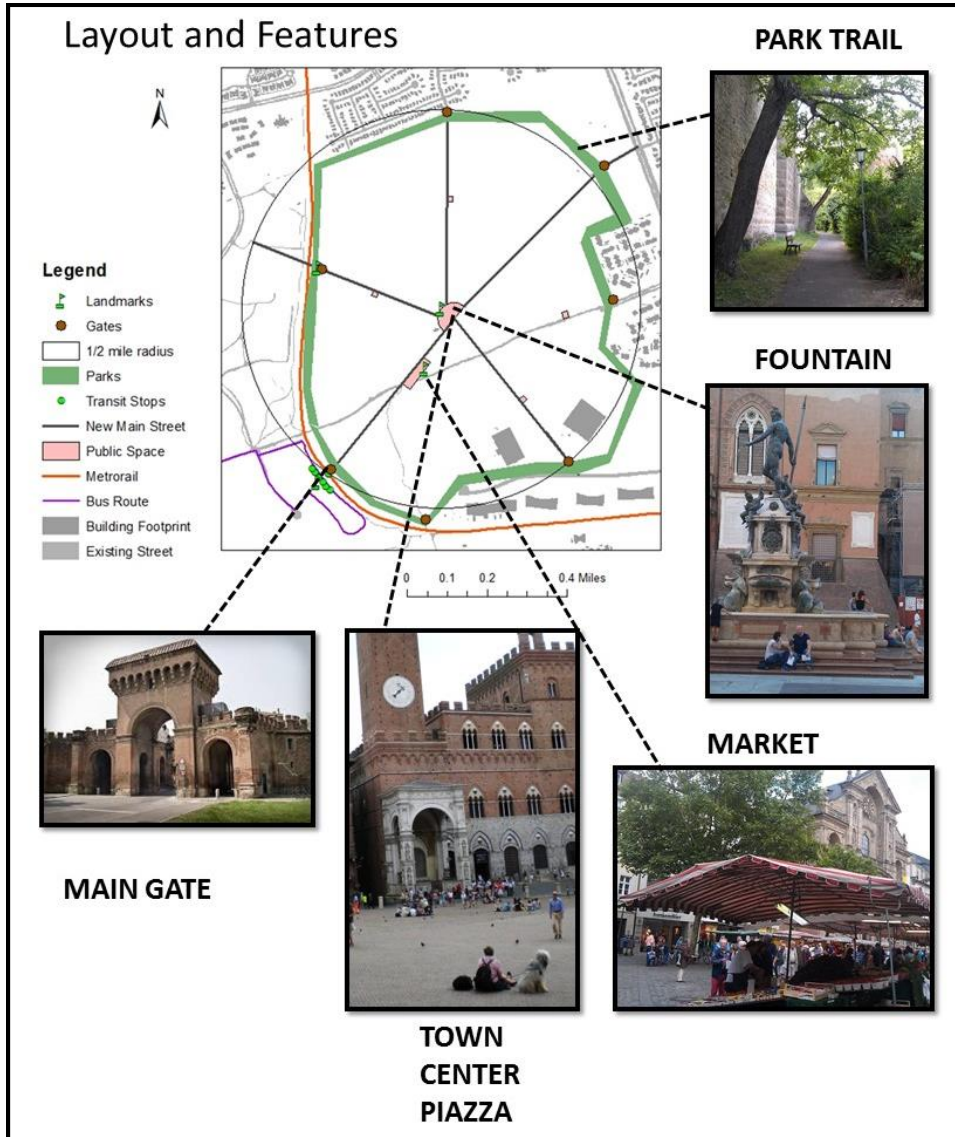

Figure 16: Lakeline Village Layout and Features

Lakeline's conceptual design was created through the steps given in this paper. Its

central public space is ½ mile from the transit stop. The rest of the development is laid out

concentrically around this piazza, which is modeled after the Piazza del Campo in Siena. Some pieces of the ½ mile study area were eliminated based on accessibility and prior buildings. A linear park buffers the entire development and would include a complete walking/biking trail. Additionally, the park would contain community gardens, trees, and playgrounds. This ring park was inspired by the city of Lucca. The second largest public space is the market which would be host to farmers and craft vendors daily. A linear space of this type was observed in Bamberg. Smaller piazzetas are found on all the main arterials. These measure approximately 70 ft^2. Micro-landmarks would be found in all piazzetas and piazzas. The largest of these would be a fountain in the main piazza. Piazzas would also contain places to rest and public water fountains. The arterial roads were placed for maximum connectivity with surrounding neighborhoods.

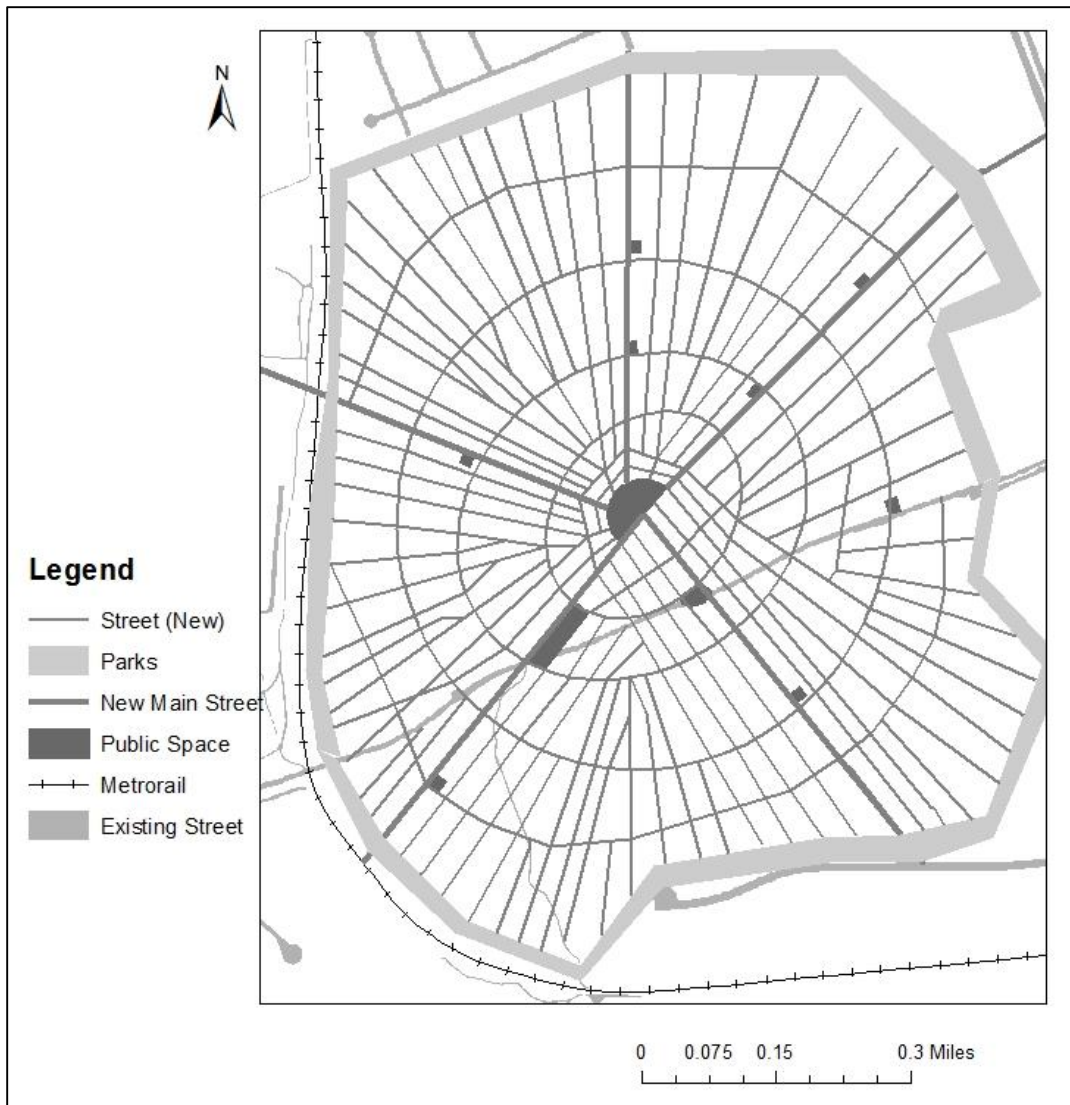Figure 17: Lakeline Village Rough Street Layout

A more detailed illustration of streets and public spaces is found above. The main arterials will be busy with foot traffic and commerce while streets deeper in the fabric will be quieter residential areas. All areas that are not streets are 3-5 story row buildings(white). Some, especially toward the exterior of the plan, may contain courtyards. All greenery

internal to the development will be along the streets. A development of this size would contain at least 20,000 residents and jobs. Since Austin's average household size is 2.37, if an inclusionary housing requirement of 15% was initiated, 1,265 affordable units could be created on site, meetingapproximately 3.2% of Austin's total affordable housing shortage of 39,000 units. Additional Neo-medieval developments could also alleviate this need while providing vibrant economic centers with a high quality of life and a sustainable lifestyle.

NEO-MEDIEVAL FORM BASED CODE

This code could be applied to the neo-medieval centers such as the Lakeline Village. It was created by modifying the Transit Oriented Development Model Bylaws created by Massachusetts Department of Energy and Environmental Affairs. These bylaws were developed using zoning codes from around the country including: Abington, MA; Needham, MA; Somerville, MA; Concord, MA; Canton, MA; Ashland, MA; Woburn, MA; Lower Merion, PA; Hartford, CT; Columbus, OH; Minneapolis, MN; Seattle, WA; Salt Lake City, UT; Atlanta, GA; Sacramento, CA; Tempe, AZ; and Phoenix, AZ.

This is not an exhaustive document. An actual ordinance should also include legal language with sections on Background and Authority, Purpose, Definitions, A Map of the the overlay area(s), severability ect.

Section 1.1 Allowed Uses

The uses listed below are allowed by right in all buildings in the Overlay District, except where additional specifications are given. There are not distinct residential and commercial areas.

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- Townhouses

- Apartments (with a single entrance on the street)

- Service-oriented office uses

- Non-service oriented office uses on upper floors only

- Mixed uses with ground floor retail, personal services and/or service-oriented office

- Banks

- Retail

- Government buildings

- Healthcare

- Hotels

- Restaurants (except fast food establishments)

- Civic, cultural and community facilities

- Theaters

- Day care facilities, schools

- Bars and evening entertainment (along main arteries only)

- Nontoxic, non-noisy industry which may include food and beverage processing, handmade textiles ect.

Section 1.2 Prohibited Uses
- Auto oriented uses including, auto sales, auto service and repair, auto storage and auto rental uses Gasoline sales

- Heavy equipment sales and service

- Heavy industrial uses

- Commercial laundries with dry-cleaning operation on site

- Warehousing, storage and distribution facilities

- Uses/buildings that take more than two lots

- Detached buildings

Section 2.0 Parking and Transit Requirements

- Parking structures are located only outside the (appx ½ mile) perimeter of the district, spaces are available for purchase for residents and additional spaces may be rented by visitors. These parking structures must include ground level retail along all streets and sidewalks. Parking structures shall be designed to be compatible with adjacent buildings and architecture. All parking lots and structures must provide pedestrian access to a main gate and street.

- Temporary parking spots are publicly provided within the district for handicapped vehicles, delivery and emergency vehicles.

- Bicycle racks shall also be provided outside of the development along the greenway.

- Bicyclists are permitted in the overlay district but must yield to pedestrians.

- Transit stops may only be provided internal to the district if they are underground (subway). Otherwise transit should be easily accessible at the edges of the overlay district, near the gates.

Section 3.0 Building Dimensional Requirements

- Building Setbacks- A building shall have a minimum front yard setback of 0 feet and a maximum setback of five feet from the front property line. If the 5 feet is taken it should be used for attractive landscaping. A setback may be increased to 25 feet from the front property line if a courtyard, plaza or seating area is incorporated into the development adjacent to the public street. Limited setbacks help to create a pedestrian-friendly environment.

- The allowable setback for a side yard shall be zero feet.

- The minimum setback for a back yard shall be 0 feet, the maximum may be increased if the space is productively used for example for a day-care play yard or outdoor seating area.

- Building Height Requirements. The minimum height is meant to encourage density and create an aesthetic appeal throughout the TOD area.

	Height Requirements	Definitions
All Buildings	The minimum allowable building height is 3 stories. The maximum building height is 5 stories by right, basement allowed.	All buildings except Special Purpose Buildings and Landmarks
Special Purpose Buildings (Planning Commission Review)	Up to 8 stories, basement allowed	80% or greater affordable housing development, an educational use such as a school or museum, or an exemplary green building that produces energy and manages storm water on site
Landmarks	Height based on individual planning commission review	May include Historic Buildings, prominent buildings on public spaces

Table 1: Building Descriptions for Neo-Medieval Form-Based Code

Section 4.0 Streets and Public Spaces

	Definition	Uses	Street Width
Main Arterial	Active streets from gates to center	All building must have commercial ground floor use	24 feet
Residential Street	Parallel to main arteries	No evening entertainment uses permitted(eg bars)	16 feet
Alley	Connections between main arteries and residential streets	Promote Connectivity	8 feet
Piazza	Public space surrounded by active uses and at least one tall landmark	Markets, festivals, community gathering	
Piazzeta	Smaller public space with seating and sometimes fountains, play spaces ect	Eating, resting, playing	

Table 2: Streets and Public Space Use Descriptions

- Pedestrian scale lighting fixtures no greater than 15 feet in height shall be provided along all streets, alleys, and public spaces to provide ample lighting during nighttime hours.

- All streets shall meet ADA requirements.

- Street trees may be planted along some main arteries and piazzas, given that emergency vehicles can still access the area. Tree species shall be selected that require minimal maintenance and are of native origin.

- Pedestrian amenities such as benches, public art, planters, trash receptacles will be located in piazzas, piazettas, and some streets.

- Public water fountains will be located in piazzas and piazetas

- All new utilities shall be placed underground

Section 5.0 Building Design Standards

The design standards included in a TOD overlay district bylaw are intended to create a pedestrian friendly environment.

- Buildings should be designed with context sensitive materials

- Buildings shall have the following green features: solid walls that will last, provide insulation for temperature control and noise control, well-insulated windows, green roofs that reduce storm water run-off, efficient HVAC systems and appliances

- Building Facades. All buildings must provide a main entrance on the façade of the building facing the street.

- The ground floor of a front commercial façade shall contain a minimum of 50 percent glass. The purpose of specifying glass is to allow for views into the interior of the building, providing interest for pedestrians. Clear glass that permits a clear view into a building is preferable to tinted or reflective glass that prohibits views into a building

- All buildings shall articulate the line between the ground and upper levels with a cornice, canopy, balcony, arcade, or other visual device.

Section 6.0 Procedural Requirements

Those buildings wishing to qualify for landmark or societal benefit status to exceed

the 5 story height limit may be taken up with the Planning Commission.

Section 7.0 Exemptions and Exclusions

This bylaw shall apply to all new construction in the TOD District. It shall apply to

reconstruction or redevelopment when the redevelopment will result in an increase of

property value of 50% or greater of the assessed values of the existing property.

Chapter 6: Conclusions

The neo-medieval is a timeless yet innovative urban design strategy. Lasting European cities show us that walkable communities can thrive in the 21st century. Neo-medieval design is a typology for a transit-oriented urban village within a metropolitan area, home and workplace to many thousand people.

It is remarkable the public benefit that could be derived from restoring pedestrians as the principle users of a city by mimicking 12th century urban forms. This is a simple solution for environmental sustainability goals, livability issues including equity, and a resilient local economy. I hope I have demonstrated specific methods planners can use to enable neo-medieval development, and show what a neo-medieval village could look like in a real location. In the spirit of the Brundtland Commission's definition of intergenerational sustainability, let us once again build lasting cities!

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