regenerative patterning for
the inner south east PORTLAND - OR
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INTRODUCTION:1

This project is an exploration of patterns that can produce resiliency after a disaster. The following describes patterns that will be considered and utilized in my graduate thesis work. According to the ODOE, OPUC, and DOGAMI, Portland has great vulnerability for an earthquake.

Portland’s LEAP 2011 (M)8.0 scenario (Department of Energy) predicts major bridges will be inoperable except for the Burnside Bridge. The Marquam Bridge, Sauvie Island Bridge, Steel, Hawthorne, Ross Island, Abernethy, Broadway, and Morrison Bridges would be damaged. The Fremont Bridge ramps wouldn’t be standing. The Sellwood Bridge would mostly be in the river. The I-5 Bridge across the Columbia River, the I-205 Bridge and the Boone Bridge would be damaged and none of the ramps would be stable enough to use. The Northwest Industrial Area would be an island; Kitteridge and Yeon overpasses would collapse, St. Johns Bridge east side ramp collapsed and there’d be landslides on Hwy 30. I-84 connection from I-5 have failure at 12th Ave. Reserve resources of fuel are still being calculated.

The Portland Office of Emergency Management knows of 1,900 buildings (~1 in 100) that are constructed from unreinforced masonry. It is hypothesized that unreinforced masonry buildings’ failures and other debris from other more substantial structures would block MAX lines and street access. Infrastructure would be severely damaged especially connecting West to East Portland. Shipping lanes on the Columbia River would fill with sediment. Portland International Airport may not be usable, since the runways are built on a floodplain that would liquefy during the quake.

One of the beautiful aspects of Portland are the many self defined neighborhoods that could potentially all have their own life supporting aid centers post-disaster. This project will concentrate on making patterns within the urban framework that could provide for this development. I want to explore how to develop strategic key points that are evident places for the public to go to find loved ones, receive supplies, and aid, but that will also provide for positive, green urban development post-disaster. Plans for recovery and rebuilding could abide by reassessing the right of ways, making room for bike lines and increased walk-ability. Despite being one of the most livable cities in the US, there would be room for improvement where older buildings codes existed. Also reevaluating the homeless population and including low income families’ interests would be an improvement to conditions today.
CONTEXT:2

My thesis research has shown the land in the NorthWest to be very vulnerable during the predicted earthquake. This could leave a large portion of downtown in disrepair. Looking at the surrounding areas, the South East is an area that could benefit from regeneration now and would be in close proximity to the majority of the damage from an earthquake. The study area is located in the inner south east area on Portland’s Willamette River. This area is an area which could benefit from urban regeneration because it is currently a large corridor for traffic as well as a source for many service jobs in Portland. According to studies conducted in 2003 by the PDC, it is a prevalent industrial area with a little under a quarter of all of Portland’s industrial jobs. The area is broadened by large highways which make parts of it isolated from the water and the city. In the event of a disaster such as an earthquake, most of the infrastructure will be in need of repair. This leaves room for design consideration to improve the livability of the area as well as the opportunity to reconnect this area with the rest of Portland.
There are 837 sites on 626 acres which translates to 4% of Portland’s industrial land. This supplied 21,761 jobs in 864 different establishments in 2002 which averages to 37 jobs per acre. The average size of a site is .75 acres and the land value is at $9.42 psf (Portland’s average is $4.34 psf). According to Multnomah County Assessment and Taxation, 21% (about 130 acres) are under utilized properties and about half of these are in an urban renewal area and would have access to finance tools. The character of the area is unfriendly to street life and dominated by cars and low density older warehouses. The land value is high and the area is in a great location in relation to the downtown. The urban makeup of this area has inhibited its growth in livability.
MALES
population 622 census in 2009
avg age 34
25% work as sales and office occupations
18% work in service industry
11% work in transportation and material moving

FEMALES
population 1018 census in 2009
avg age 30
37% work as sales and office occupations
18% work in service industry
25% Percentage of population below poverty level
$26,733 Median income
Developing a cohesive, preemptive strategy to incorporate design into disaster (earthquake) mitigation in Portland, Oregon. First exploring pre-disaster urban design solutions that could prepare Portland, and then providing regenerative post-earthquake urban design solutions that could seamlessly fit into existing rehabilitation efforts. The design will then focus on a space that can serve as a communication hub and seismically safe home for displaced victims. Integrating this into an over-arching pattern of bridging communications between the people and the City responders, between the east to the west, and between Portland to the rest of Oregon.
NEW PATTERNS: RE-GENERATIVE, RE-NATURALIZING, RE-COGNITIVE, SUSTAINING, COMMUNICATION BRIDGING, INFORMATION MAPPING
If there were to be mass destruction to infrastructure and countless losses to the built environment around us here in Portland, then there would be a need for quick action, in which a preemptive plan regarding regenerating and redesign could facilitate greater resiliency and recovery.

A theory articulated in *Fast-Forward Urbanism* is that in this world, something is never made from nothing. But when disaster strikes, our constructed reality may seem in ruin, as we have nothing left in the sense of familiarity. However, what is to say that we don’t mare to work with than before? There is never nothing left, even if our built environment has transformed it’s state. There is obviously something left in that rubble that keeps people coming back to rebuild time and time again. So what if disaster could leave room for redevelopment by the people for the right reasons. It is important that the regeneration of cities post-disaster be open to public input. Often local resources and interests are not the primary concern in the chaos of post-disaster redevelopment. Local resource ecologies should also be integral to the processes of regeneration. I see regeneration as an on going pattern. It needs to be a pattern and a way of thinking now and then if disaster strikes the process of regrowth is healthy, natural, and well integrated with the needs of the people.

Currently the south east industrial area could fit into this pattern of regeneration. This is an area that could welcome opportunity to be re-discovered and re-populated. Currently the area is heavily dominated by one use and this creates a one dimensionality to the space that may seem unpleasing and discourage growth. The redevelopment of the south east industrial area could bring new energy and community to an area where there need for regrowth and user interest. Because this site could benefit from regenerative growth currently, this could be an ideal location for such a pattern to be started for pre-disaster planning. This must be an overall large framework that participation on all scales, so people can have a direct causal relationship to their environment.
Neighborhoods in cities (on the grid) could not sustain themselves without cities utilities such as piped water, gas, and electric. Natural disaster could therefore provide unsustainable living conditions for urban dwellers.

City dwellers for the most part are not going to be able to sustain a quality of life if their amenities are all of a sudden cut off. In the case of disaster, this is exactly what would happen. Most people are so detached from nature that they would not know how to find the resources needed to live without the infrastructure which is in place. Cities do not facilitate a back up plan for this other than to stock up on canned food, bottled water, and flashlights. One would think that within such resource rich environments in the US, the people could find more local solutions to this problem.

If a central locations within each community had resources such as an urban farm or rain water storage, then this could provide for additional resiliency post-disaster. This obviously couldn’t be an overall solution for all the shortage of amenities, but people would have a growing awareness of other options. Urban voids left by the earthquake could also be used for as places for planting foods or resources such as the Seattle example from TerraFlux. The diagrams show efforts already initiating this pattern in Portland.
How can we design to sustain communications between neighborhoods in the city after an earthquake? If there is a lack of a physical connection East to West in Portland, this will hinder communication across the river, and will create dissonance in rebuilding efforts. Again this is a pattern that should be implemented within the urban fabric before any such disaster strikes.

My opinion is that Portland does not have a strong, central pedestrian and biking connection from the east to the west side of the river. The Hawthorne Bridge and the Steel Bridge are the friendlier bridges to use, however there is still a disconnect between the eastern neighborhoods, the river, the bridges, and downtown Portland. This would be accentuated in the event of an earthquake when the bridge systems would be rendered unusable to the public. This would divide the city, and create difficulty in recovery efforts. Rebuilding After Disasters emphasizes the need for communication amongst communities in order have greater resiliency if disaster should strike. Many times government and city officials cannot meet the influx of needs of every citizen and this leads to frustrations as well as slow recovery. Two success stories in resiliency involve communities taking matters into their own hands in order to enact change. These examples include the Lakeview community in New Orleans post-Katrina and the citizens of downtown Mexico City post 1985 earthquake.

Spaces should be designed with communication in mind. If an urban design framework is already established to effectively connect person, to neighbor to neighborhood to city to county, then this could support recovery initiatives. During re-building, there would be a pattern developed where connecting the city became central to design. This pattern would be important on all scales, and could provide for a central community space that literally and figuratively connects the broken ‘bridges’ that could bring disparate groups together. This could be a place for earthquake seminars, informational sessions on community development, and in the event of an earthquake, a place where authorities could gather people to make announcements about missing loved ones, updates on safety, and progress in re-growth. This bridge physically could be something the people build collectively while communicating ideas for reconnecting their cities resources post-disaster.
Main gateway:

There is lack of transition to the east of Portland from downtown. One is instead greeted with highways, traffic, and industrial warehouses.

As travelers through a space, we are always looking for landmarks in which to remember our way and use the built environment as a way-finding device. We look for characteristics that tell us if we are entering a new area and what that area’s purpose is. The built environment in south east Portland offers very few way-finding cues and much of the businesses look just as defunct as the next. Not too many landmarks standout, even the Portland Dance Company sits back hidden behind parked cars. It adds additional stress to inhabitants and passersby when there are no clues as to what type of space they are entering.

Add a pattern of main gateways to signal a change in neighborhoods. These gateways can be simple and of different scales. Something symbolic of the communities they represent. An example could be the painted intersections seen in Portland in some neighborhoods. Currently two main gateways opportunities across the river that do not exist (Morrison and Burnside). In the event of a disaster, these could represent areas to gather or help in journey through the city whose typical landmarks might no longer be standing. Obviously these gateways should be designed with seismic durability in mind.
Industrial ribbon:

Zoning has created a hard line of industry along Portland's eastern waterfront. Freeways and roads carrying heavy traffic have easy access to this area, which has created a noisy and seemingly dangerous area to be a pedestrian. This neighborhood is characterized by few people outdoors and is seemingly forgotten when it should be incorporated into back into the city.

One of the safer areas, geologically speaking, is also one inhabited by fast moving cars, trucks, and trains and is avoided by many residents of Portland. The area is not pedestrian friendly, kid friendly, or environmentally friendly. There are few connections through this area to be able to access the river. For those living in the South East this acts as their gateway going to and from the city. The area appears dead, as most business is internalized within large warehouses. This problem extends all the way along the rail access into north Portland.

Create a ribbon of industry where there are safe crossing paths. Bring industry to a type of store front, emphasizing more of a workshop atmosphere than a closed off area unwelcome to the public. Make the industry part of life, because it is how we live. Compact blocks so that communities can grow on either side. The rail line will remain the back bone, as well as one strong interior road. Access to the highway is important. Create positive outdoor space and building fronts on the outer industrial fronts facing the community. Provide spaces for workers to enjoy the area and connect with the community. Allow both communities to benefit from each other.
Currently there are long main roads with scattered street activity. There are few stores and conveniences for the surrounding communities and nothing to draw one to this area to simply walk around and enjoy the space.

Again this area is divided by fast moving cars, trucks, and trains. This area is not pedestrian friendly, kid friendly, or environmentally friendly. There are few attractions drawing people to this area, or perhaps they go unnoticed do to the rapid traffic moving through the area. It is simply a crossing for those living in the South East going to and from the city. The area appears harsh and unappealing. There are no visual cues of what lies ahead or leads on into the city. The available public life in this area is spread thin and only seems to have a negative impact on the surrounding community. A large problem contributing to the current decentralization of activities within this study area are the current networks paths and cars. The speed at which people are traveling through the area create this sparse density which only supports traveling by car and not at slower speeds. The activity on street level therefore suffers.

*A Pattern Language* suggests creating nodes where existing community action tends to locate itself, and then creating a network of paths that allow community members to reach them with ease. This could be achieved in the inner south east by creating new urban densities, changing one-way streets to two-way, and by increasing walkability of the area.
Local transport

areas: 13

The south east industrial area is sandwiched in between two primarily non-local, fast moving traffic which severs this area from the surrounding neighborhoods and river.

Primary roads in this area are the main car traffic for those commuting South and North or East and West. A Pattern Language states how by driving, we increase our distance from another human being by 10 times. This is possible because of the speed at which we travel when driving. The streets then are based on the large number of users that are traveling at high velocity past businesses or sidewalk dwellers. The current systems creates difficulty by bike even on back roads. Despite Portland’s bike friendly and livable cities reputation, this is an unpleasant area to travel through. As a biker, I feel threatened by cars daily on my commutes downtown. There needs to be considerations for increased safety traveling across these busy thoroughfares.

Promoting local traffic to be pedestrian or bike users only and restricting cars to main arterial roads may stimulate the area for regrowth. The back streets could have a quiet front that would help make the area more residential friendly. Currently the back roads get little use except for local access and through roads. This pattern could be connected to site repair and could bring about paths to activity nodes.
**Water connection:**

I-5 creates a hard line along Portland’s eastern waterfront which prevents inhabitants from easily accessing the public land along the waterfront. Freeways and roads carrying heavy traffic have easy access to this area. In the event of an earthquake, access across the river might be difficult.

Water is something that humans on a very basic level relate to and understand. It is an important symbol of the city and should also be the main wayfinding device of the city. There seems to be a problem when access to the water is blocked by high retaining walls and high velocity cars. The few connections through this area that enable access to the river and downtown are not aesthetically appealing or easy to find. For those living in the South East, these few points act as their gateway to and from the city. There is potential to re-invision the discovery of the waters edge. The public space already exists on the east bank, however connections to and across the river are still dominated by traffic and dead ends.

An increase to connections to water will increase the value of the land lying adjacent. This pattern of connections to the water would provide positive infill in the current defunct areas close to the water. There is potential for I-5 to be incorporated into waterfront and allow increased accessibility. The hope is to make the area more integrated with the surrounding community or to establish a distinct community within.
Necklace of community:

Post-earthquake Portland may need a place to go to for community regrowth projects. The chaos of the event may leave officials overwhelmed and unresponsive to public’s immediate needs.

Post-disaster areas could provide an environment where the public could group and organize themselves in order to increase efficiency and communications of re-building. In the event of an extreme earthquake in Portland, downtown will most likely take much of the focus of the rebuilding efforts. Having other voices from all parts of the community would be essential to have a complete, positive regrowth of the Portland Metro. An increase in public awareness and participation during rebuilding efforts could result in a better Portland than before the quakes. The Resilient City describes how the inhabitants of Mexico City were able to form their own change through community organization. There rebuilding efforts would have fared much worse for the people if they hadn’t taken the responsibility themselves.

If there is a focal area around a crossroads within the pre-existing public realm, the create a space for civic engagement. Small compact spaces would provide ability for any small organization or group to be able to have a presence and voice and chance to be seen by all the public passersby. If communications become difficult, there would be a central location where people would know to go for assistance from other citizens or to be heard by the city of Portland. This would support grounds up movements for recovery to be able to connect with efforts taken from the top down.
Re-naturalizing: 16

Current study area (inner SE industrial) is dominated by industry and hard surface with little connection to nature. The proximity of the river is far from integral to the surrounding buildings and landscape.

We as humans have an instinctual need to be connected to the environment we live in. There’s some evident discomfort in the psyche when we are completely removed from our natural environment, whether or not we are consciously aware or not. Therefore, cities can have many negative impacts on psychological health. As designers and planners, this must be accommodated for within our urban environments by providing natural connections.

If an urban site is revitalized with green ways and sustainable architecture, then people will be re-naturalized. Their interactions day to day will be connected to the landscape and natural cycles. Architecture and urban development can articulate the importance of nature by respecting it and calling out its importance. Transformation of the physical reality produced by human beings, on the basis of the fundamental principles of natural phenomena and natural processes.
There is no identifiable spatial unit to which people could belong in this area except for workers in warehouse businesses. The character of this area spans the mid portion of the city's eastern boarder along the river. Once within this area it is easy to be disoriented due to the similar low story, nondescript building types of the area, and lack of wayfinding landmarks. The area is quiet large and has no distinctive features to distinguish one backstreet from the next.

A Pattern Language suggests that neighborhoods be no more than 300 yards in diameter with less than 500 inhabitants. This may enable the inhabitants to have the needed autonomy of their land and would allow the area to develop the character needed. Developing a pattern to allow for neighborhoods to develop within this large low density area could breathe life to these harsh streets. There's potential for post-disaster relocation to this area as well as increased livability and increased potential for Portland's urban growth within the city.
The working environment in the study area is isolated and unpleasant. It’s emphasis is on industrial, car heavy corridors, and not on community.

*A Pattern Language* emphasizes that citizens should not have to dread going to work or to feel isolated from communities surrounding or within the area. The industrial south east is isolated from open/positive spaces where workers can enjoy themselves on breaks. Amenities are far from the area, making it difficult to run errands or take breaks to local food shops. Perhaps no communities have developed here because disconnected work environments from there environment as well as the lack of being able to reach all amenities for living within 20 minutes.

*A Pattern Language* suggests forming work places around small public squares, which contain shops or lunch counters. The area in this study contains a strong backbone of transit- the train access. Community elements such as quick places for food and other amenities can be encouraged by place making and increasing bringing the connection of the surrounding communities into the work areas. The increase of people and amenities into the area will decrease isolation and increase quality of life for people working most of their days in these areas.
Currently, the land West of SE 12th Ave extending to the water has high publicness as a result of heavy traffic.

There’s a high degree of publicness along main artery roads, however no higher density protecting the areas surrounding. Most spaces within this area seems to be relatively close to heavily trafficked roads, which is good for the convenience of business and industry but not great in supporting street life. People in general would not want to live in these areas, as there is low density development and little attention to the street scape.

Varying degrees of publicness would make the fabric of the area appear diverse and attract many different types of people to the area. Denser public fronts facing main roads would allow for quieter neighborhood to develop behind. There would be opportunity to make some of these interior areas nice place to stay and could connect better to surrounding communities.
**Positive space:**

20

The area consists of low story business and very few high rise buildings with a proliferation paved surface parking. This sharp contrast makes the area feel uncomfortable and not planned well.

The planning of positive outdoor space would bring about a mindfulness of the existing fabric. New development should be encouraged to be denser, however such densities as 12 story corporations would be a problem for the identity of the neighborhood. *A Pattern Language* states the damage done to societies with too many high buildings, increasing crime and discouraging families to move to these areas. The urban fabric should promote positive outdoor activities and not function as void space. This connects with the pattern of different densities and gradients of publicness.

If the urban fabric has a pattern to create positive outdoor spaces and has guidelines in which to grow, then this would encourage people to feel comfortable walking in the area and provide for activity nodes. Building fronts could be developed to shelter less dense development on back streets. This smaller scale will allow for the community to have a closer connection to their streets and public spaces. European cities have this feel and the streets can bring about excitement and inspiration. These empty spaces and low densities in this study area could provide opportunity for growth towards positive space and community enhancement.
The typical urban public user tends to have a memory of space in terms of product rather than its architecture. Capitalist ventures have been the focus of a lot of urban developments over the past century and this is how most of our living environments are shaped. Speaking generally, in most American cities, the public has no real cognition for the built environment other than from a consumerist point of view. Our buildings many times are just boxes that house the products we want as consumers. Perhaps I am exaggerating the problem, however I hardly hear someone commenting on the spaces that buildings create or on the styles of the architecture themselves. Creating positive space is an important aspect that is normally not considered by developers. There is a need for greater agreement between adjacent land owners to discuss how their building might affect the surrounding environment. There need to be compromises to make the urban environment an experience to be remembered.

Every building within a neighborhood needs to be a part of the greater vision of that neighborhood. The architecture should shape to fit the needs of the people and should provide for the memory of that place. Post-disaster or catastrophe, the people need a reason to want to rebuild a place. A collective, cultural memory of the built environment we live in will produce the energy in rebuilding efforts. Without cognizance of an area, how are the people going to know what to rebuild. I believe that this would increase the resiliency of a town or city facing the trauma of a disaster.
If there is a high possibility that most utility lines will be damaged in the event of the Cascadia earthquake, then cell phones may be the main source of communication until infrastructure is replaced.

The problem of responsive and accurate communication can be quite difficult to resolve during emergencies. Priorities are not predictable and therefore information will not always be readily available to the public. In order to return to some normalcy after a crisis, coordination of emergency help and city/government aid, as well as replanning efforts need to be heard by the public. Countless examples in disaster areas tell accounts of frustrated citizens being forgotten by rehabilitation efforts. In New Orleans, the bureaucracy was so complicated that citizens felt at a complete loss when it came to controlling their cities regrowth and recovery. The success story of the Lakeview community as told in Rebuilding After Disaster was contingent on communication and connectedness of neighbors.

Provided many people have smart phones, or are in proximity to someone who has one, Portland could have the potential of experimenting with live GIS mapping of the publics needs. Central locations could display the live feed of this information as well as attempt to show graphically where people need help or where help can be located. This could also aid in recovery efforts as establishing central locations where the public could go for critical information to their newly changed environment. Hopefully this could promote human safety post-disaster. There are many examples of GIS information mapping used for information analysis, but its application in crisis could be the tool needed for more accurate communications within a population.
Upon researching patterns and reading *A Pattern Language*, I have come to the conclusion of the importance of creating a project language. Defining the specific problems and analyzing a pattern version of a solution was really eye-opening. Design solutions are then given so much more depth and meaning and are connected to the greater whole of the city. One theory I appreciated was Christopher Alexander’s idea that one building can make a difference within an urban environment as long as it and other fit within the greater patterns of the city. These ideas are directly inspired by natural order and scalar design, and this to me could be the key to making livable cities.

When examining my site, I realized how much potential the area could have if the urban fabric was giving new guidelines/patterns for growth and regrowth in case of the big earthquake. There are still many more opportunities to be explored, new patterns to connect, and new solutions to be found.

A majority of the pattern discussed are my own re-interpretation and application of Alexander’s patterns. I find most of them to be irrefutable truths and enjoyed trying to connect the different patterns within my own project language.


This book was very helpful in describing the urban dilemma, describing modernist theories, post-modern, and currently New Urbanism. I enjoyed the chapter on disaster urban planning because of the positive points addressed instead of the negative. They addressed the frustration of the architect and planner in the urban dilemma and elaborated on their views for future development and growth.


This is the summary of a conference in Seoul, which addresses how architecture and related fields can bring stability to the tumultuous and changing world. I focused on what was said regarding urban continuity and transformation. The conference discussed Kobe’s amazingly quick recovery from a devastating earthquake in which recovery was so interconnected to national pride.


This book was an inspiration for creating my own patterns. The book breaks down each project into patterns that are more closely tied to geometries. In this book logic is closely related to nature and addresses how this with architecture can bring about transformations of urban spaces, social organizations, and the digital world.


Portland Online was a great resource for statistical information on the area of study. From this information, I was able to get a more accurate understanding of the population and dynamics of the area. There were summaries and maps from PDC as well as the Bureau of Planning.


This source has many case studies of resilient cities which are broken down into examples of politics, symbolisms of trauma, and narratives of the people of that place. The example I took away from this work was the example in Mexico City when the people brought about their own resiliency and were able to bring more democracy to their government in the process, for the earthquake brought about an awakening for change.


This source also addresses how to not only recover from disaster but also emerge as from this with new sustainability and awareness. They address the wicked problem of recovery to sustainability and emphasized the participation and activeness of the public. The example I took from this was the success story of the Lakeview community in New Orleans after Katrina.

Schuler, Douglas. “Choosing Success: Pattern Languages as Critical Enablers of Civic Intelligence.” Current Challenges for Patterns, Pattern Languages and Sustainability.

This article touches on the catastrophic human errs that await via environment destruction, war and economic collapse or societal collapse. “…warfare has not been abolished, intolerance is high, and economic injustice has been globalized.” He addresses a universal urban problem as one of “current institutional/cultural infrastructure include political turfs, academic silos, and the universalization of profit-taking and the ‘free market’ as the sole motivation and legitimizing orientation.”