FROM SEGREGATION TO INTEGRATION
Planning and Designing for the Enhancement of Socio-spatial and Ecological Integration in Haizhu District, China

Adaptive Landscape Transformation Graduation Lab
Landscape Architecture MSc 2020
P5 Presentation

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Fast Developing Delta
Urban Fabric

Modern Urbanization

City Diversity

In Fact...

Introduction

Understanding

Principles

Exploration

Conclusion
TWO WORLDS
Fascination

Experience in two different living environment

1. High-dense area
2. Messy, noisy, crowded
3. Lack of sunlight
4. Mix-use of public space

1. Comfortable living environment
2. Independent garden and management
3. Sufficient public space
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Since I moved to Guangzhou 20 years ago to earn money, I have been living and working in the urban village. Although the environment is super messy, the rent price is cheap and I can put my work place in the public space along the street instead of paying extra money for renting a place.

I was borned in Guangzhou and live with my whole family in the modern community. I enjoy the facilities provided by the community very much, including some fitness instruments, tennis court. I know that there is an urban village located just next to the community, but I have never been there before because I think it is not safe and noisy there.

Ms Chen
Augur
56 years old
Immigrant
Salary: 1.5k-2k yuan/ month
Activity: Dance, watch tv

Ms Li
Teacher
52 years old
Local
Salary: 8k-12k yuan/ month
Activity: Shopping, sport, gym
Introduction

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Understanding

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2. Messy, noisy, crowded
3. Lack of sunlight
4. Mix-use of public space

1. Comfortable living environment
2. Independent garden and management
3. Sufficient public space

Principles

ENCLAVE
Residential spaces, residents, activities...

Exploration

SOCIO-SPATIAL SEGREGATION

Conclusion

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I was born in Guangzhou and live with my whole family in the modern community. I enjoy the facilities provided by the community very much, including some fitness instruments, a tennis court. I know that there is an urban village located just next to the community, but I have never been there before because I think it is not safe and noisy there.
Urbanization

1950

Land Reclamation
Decreasing Green and Blue Spaces

2019

Development of Settlement

- rural villages
- land reclamation
- population growth
- arcade buildings
- preservation

Diversity of Neighborhood

- population growth
- demolition
- more floors
- future trend
- preservation

(Source: Liang & Nijhuis, 2019)
Chosen Site - Haizhu

On the edge of the city
Industry developed
Real estate boomed
Immigrants moved in
Exhibition center finished
Transportation developed
More macro public projects ongoing

Introduction
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Conclusion
Problem Statement

SOCIO-SPATIAL SEGREGATION

discrimination, unequal access to public facilities, social exclusion, etc.

DECREASING AND FREGMENTED GREEN AND BLUE SPACES

flooding, pollution, threat to natural habitats
How can we address the socio-spatial segregation & fragmentation of ecological space using urban-landscape strategies?
Objective & Research Questions

SBQ1: What are the existing conditions of socio-spatial segregation in Haizhu district and what are the factors contributing to segregation?

SBQ2: What are the existing conditions of ecological fragmentation at different scales?

SBQ3: How to create the socio-ecological network based on the current conditions and resources?

SBQ4: What principles and strategies can be put forwarded to improve the socio-spatial integration and reconnect the fragmented green and blue spaces on different scales?

SBQ5: How can these principles be implemented in a specific complex area with social and ecological problems?

SBQ6: How to evaluate the result of socio-spatial network and design implementation at different scales?

SBQ7: What lessons can be learned of creating the social-ecological network to improve the integration?

Create an integrated and comprehensive socio-ecological network in terms of corridor and node at multiple scales that can improve the socio-spatial integration and reconnect the fragmented green and blue spaces for Haizhu district.

Problems
- Socio-spatial Segregation
- Decreasing green and blue spaces
- Fragmented green and blue spaces

Goals
- Socio-spatial integration
- Spatial transformation into urban ecological space
- New green and blue infrastructure network
UNDERSTANDING

The diversity of neighborhoods
**Typology**

**Classification**

- **Historical Village**
  - Built in 1400, has historic and cultural value, cultural reserve, located in agricultural area based on agricultural economy, low rise, waterside villages

- **Traditional Community**
  - Built in 1800, located in old city town, including old residential work units since 1900, has many traditional buildings (arcade-house), poor building quality, multi-storey

- **Urban Village**
  - Used to be a farmer's residence, poor building quality, multifunctional buildings, multi-storey

- **Modern Community**
  - Built after 21st century, good building quality, high rise

**Time**

- **Historical Village**
- **Traditional Community**
- **Urban Village**
- **Modern Community**

**Legend**

- Traditional Community
- Modern Community
- Urban Village
- Historical Village
Spatial Configuration

- Historical Village
- Traditional Community
- Urban Village
- Modern Community

Satellite
Building
Transportation
Water
Open Space

Understanding Principles Exploration Conclusion

ZOOM OUT
Understanding

Settlement Layer
understand the factors contributing to socio-spatial segregation in terms of urban patterns, activities.
M/S scale

Transport Layer
understand connection and accessibility of settlements
L/M scale

Landscape Layer
understand the existing territory and landscape features
L/M scale

Identify Elements
CHALLENGES
1. Uneven distribution of green space between west and east part of the Haizhu
2. Fragmented green spaces lacking connection
3. Uneven distribution of open space between communities

POTENTIALS

Regional Scale

Local Scale

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**Introduction**

**Understanding**

**Principles**

**Exploration**

**Conclusion**

**CHALLENGES**
1. Truncated canals
2. Water flooding and pollution issues
3. Lack of recreational activities along water

**POTENTIALS**

**Regional Scale**

**Local Scale**

**Traditional Community**

**Modern Community**

**Urban Village**

**Historical Village**

**Water issues**

**Blue Spaces**

Cruise on the canal

Living along canal

**Landscape Layer**

**Intangibles**

**Potentials**

1. Truncated canals
2. Water flooding and pollution issues
3. Lack of recreational activities along water

**Challenges**

**Water issues**

**Intangible**

**Blue Spaces**

Cruise on the canal

Living along canal

**Landscape Layer**

**Intangible**

**Blue Spaces**

Cruise on the canal

Living along canal

**Landscape Layer**

**Intangible**

**Blue Spaces**

Cruise on the canal

Living along canal
Introduction

Understanding

Principles

Exploration

Traditional Community

Modern Community

Urban Village

Historical Village

Freeway

Main road

Metro

Regional Scale

Local Scale

POTENTIALS

CHALLENGES
1. Lack of connectivity to historical village on the south-eastern part
2. Unconnected pedestrian and cycle path
Settlement Layer

Local and Neighborhood Scale

Residential Differentiation

Spatial Distribution

Boundary
Settlement Layer

Residential Differentiation

Historical Village

Traditional Community

Urban Village

Modern Community

Housing Pattern

Road Pattern

Context

Spatial feature

Introduction
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Conclusion
Settlement Layer

Spatial Distribution

- **Historical Village** (historical buildings with commercial value)
- **Urban Village** (public space in mix use)
- **Traditional Community** (community park)
- **Modern Community** (independent garden)

Special spatial uses in each typology
(Source: author)
Settlement Layer

Spatial Distribution

Historical Village
- Aging/Villagers-dominated
- Activities along the river
- Outdoor gathering
- Different kinds of cultural activities e.g. opera
- Outdoor sitting

Traditional Community
- Aging, local residents
- Pocket garden with seats
- Informal open market
- Cultural activities with stage
- Waterfront leisure area
- Historical buildings & attraction

Urban Village
- Low-income/immigrants-dominated
- Informal open market
- Commercial street with informal occupying street space
- Outdoor activities e.g. mahjong
- Informal street vendors

Modern Community
- High-income/well-educated
- High quality of facilities e.g. gym facilities & sport courts
- Sufficient resting area and informal retailing
- Independent kindergarten
- Independent swimming pool and children's playground

POTENTIAL
Spatial uses and elements could be a potential quality to promote integration.
Physical boundary acts as linear feature to isolate spaces from both sides. Spatial boundary in terms of spatial quality restrains interaction.

CHALLENGES
Physical boundaries and spatial boundaries
Introduction

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Settlement Layer

Typology Conclusions (Local scale)

Traditional Community:
Lack of recreational public space
Insufficient public facilities
Lack of social commercial activities

Modern Community:
Enclosed community
Lack of relation with water

Urban Village
Lack of recreational public space
Mix-use of public space
Poor living environment
Lack of relation with water

Historical Village:
Lack of recreational public space
Unconvenient transportation
Insufficient public facilities
Lack of social commercial activities

Close to the main river
Historical value and identity
Liveable street life

Sufficient open space
Comfortable environment
Sense of security

Affordable living space
Good accessibility to urban functions

Dense water system
Historical value and identity
Regional Socio-Spatial Segregation

- **Traditional Community**
  - Pocket garden for recreation
  - Historical attractions

- **Modern Community**
  - Independent garden & swimming pool
  - High-quality public facilities

- **Urban Village**
  - Informal market
  - Outdoor social activities

- **Historical Village**
  - Cultural activities
  - Waterfront activities

Settlement Layer

Settlement Conclusion
Introduction
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CHALLENGES

SETTLEMENT LAYER
Regional Scale

TRANSSPORT LAYER
Regional Scale

LANDSCAPE LAYER
Regional Scale

CHALLENGES
1. Uneven distribution of green space between west and east part of the Haizhu
2. Fragmented green spaces lacking connection
3. Uneven distribution of open space between communities
4. Truncated canals
5. Water flooding and pollution issues
6. Lack of recreational activities along water

CHALLENGES
1. Limited interactive spaces
2. Uneven distribution of public and commercial spaces
3. Different physical and spatial boundaries

CHALLENGES
1. Lack of connectivity to historical village on the south-eastern part
2. Unconnected pedestrian and cycle path

LOCAL SCALE

Boundary

Neighborhood Scale
PRINCIPLES & STRATEGIES
**LANDSCAPE LAYER**

Mobilized Infrastructure

Ecological Space

**SOCIO-ECOLOGICAL NETWORK**

*Strategies*

- Enhance the accessibility and interconnection to social and ecological spaces
- Create multifunctional ecological spaces and services
- Regenerate more diverse and integrated public spaces for inclusive use

Spatial Features composite the network

Corridor as Connector

Node as Interactive Space
**PRINCIPLES**

**ECOLOGICAL**
- Ecological Corridor as Connector
- Continuous Greenway as Connector
- Waterway as Connector (Multifunctional waterfront space)
- Recreational/Ecological Parks as Interactive Space
- Community Public Gardens as Interactive Space

**SOCIAL**
- Sustainable Public Mobility as Connector
- Commercial Street as Connector
- Commercial Hub as Interactive Space
- Activity Hub as Interactive Space (Urban farming, flea market etc.)
Regenerate more diverse and integrated public spaces for inclusive use
Enhance the accessibility and interconnection to different social and ecological spaces
Create multifunctional ecological spaces and services

Resilient & multifunctional ecological corridors 
   e.g. riverfront
Diverse healthy ecological services for purification and storage
Abundant recreational and resilient public parks in the community
Improve the water management in the existing agricultural area and orchard

CREATE MULTIFUNCTIONAL ECOLOGICAL CORRIDORS (e.g. riverfront)
DIVERSE HEALTHY ECOCORRIDORS FOR PURIFICATION AND STORAGE
ABUNDANT RECREATIONAL AND RESILIENT PUBLIC PARKS IN THE COMMUNITY
IMPROVE THE WATER MANAGEMENT IN THE EXISTING AGRICULTURAL AREA AND ORCHARD

ECOLOGICAL SPACE

RESILIENT & MULTIFUNCTIONAL ECOLOGICAL CORRIDORS
ECOLOGICAL STRUCTURE
BLUE STRUCTURE
GREEN STRUCTURE
NODE
CORRIDOR

PRINCIPLES

SUSTAINABLE MOBILITY SYSTEM TO ADAPT TO THE FAST DEVELOPMENT
CONTINUOUS GREENWAY AS SLOW MOBILITY
DIVERSE MEANS OF PUBLIC MOBILITY TO RESPOND TO THE DAILY NEEDS FOR TRANSPORTATION

RESILIENT & MULTIFUNCTIONAL ECOLOGICAL CORRIDORS
E.G. RIVERFRONT
DIVERSE HEALTHY ECOCORRIDORS FOR PURIFICATION AND STORAGE
ABUNDANT RECREATIONAL AND RESILIENT PUBLIC PARKS IN THE COMMUNITY

IMPROVE THE WATER MANAGEMENT IN THE EXISTING AGRICULTURAL AREA AND ORCHARD

STRATEGIES
Enhance the accessibility and interconnection to different social and ecological spaces

Diverse means of public mobility to respond to the daily needs for transportation

Sustainable mobility system to adapt to the fast development

Continuous greenway as slow mobility

Regenerate more diverse and integrated public spaces for inclusive use

Enhance the accessibility and interconnection to different social and ecological spaces

Create multifunctional ecological spaces and services

Several city hubs of urban functions as core zones for residents

Diverse activities in public space for all levels of people

Sufficient public spaces in communities

Diverse means of public mobility to respond to the daily needs for transportation

Continuous greenway as slow mobility

Sustainable mobility system to adapt to the fast development

Resilient & multifunctional ecological corridors e.g. riverfront

Diverse healthy ecological services for purification and storage

Abundant recreational and resilient public parks in the community

Improve the water management in the existing agricultural area and orchard

STRATEGIES

MOBLIZED INFRASTRUCTURE

Main road structure

Slow mobility structure

Tram system

Corridor
Introduction

Regenerate more diverse and integrated public spaces for inclusive use

Enhance the accessibility and interconnection to different social and ecological spaces

Create multifunctional ecological spaces and services

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Conclusion

Understanding

Principles

Exploration
Vision

Regional Socio-Spatial Segregation

Regional Socio-Spatial Integration

Ecological Corridor as Connector
New Settlements as Buffer Zone
Continuous Greenway as Connector
Social Public space for Interaction and Interconnection
Circular Tram System as Connector
Vision

Spatial quality improvement in community
Historical Village

Public Facilities + + +
Mobilized Infrastructure + +
Ecological Spaces

Urban Village

Tradional Community

Public Facilities + +
Mobilized Infrastructure + +
Ecological Spaces

Modern Community

Public Facilities + +
Mobilized Infrastructure + +
Ecological Spaces

Conclusion
DESIGN EXPLORATION
Problems Identified

**ECOLOGICAL**

- Disconnection between ecological spaces and built environment
- Lack of green spaces for ecological value
- Poor water quality
- Lack of sustainable techniques of space confronting climate change

**SOCIAL**

- Lack of spatial and functional connection between urban village and modern community
- The connection between communities is blocked by certain boundaries
- Lack of public space where residents can contact with each other
- Limited interaction between immigrants and local residents in the living hub
- Lack of activities along the waterfront area
INTEGRATE THE THREE HUBS AND INCREASE INTERACTION BY INTRODUCING CORRIDOR AND NODE AS SOCIAL ECOLOGICAL NETWORK
**Design Strategies**

**CORRIDOR AS CONNECTOR**

- CONNECT

**Elements**
- Infrastructure
- Waterway
- Roads
- Greenway
- Different experience routes

**NODE AS INTERACTIVE SPACE**

- ACTIVATE

**Elements**
- Large Open Space
- Commercial Space
- Ecological Space
- Recreational Space
- Pocket Space in Community

**Improve interconnection and accessibility to social and ecological spaces**

**Make use of the existing vacant areas to regenerate new public activities and vitalize the communities**
Design Strategies

Ecological Value

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacant land/ Parking lot</td>
<td>Transform into ecological / recreational space</td>
</tr>
<tr>
<td>Abandoned Factories</td>
<td>Keep the existing structure Transform factories into new functions as urban farming, cafe, etc.</td>
</tr>
<tr>
<td>Water</td>
<td>Create multifunctional waterfront area Walking bridge for connection</td>
</tr>
</tbody>
</table>

Before: Vacant land/ Parking lot

After: Transform into ecological / recreational space

Keep the existing structure Transform factories into new functions as urban farming, cafe, etc.

Create multifunctional waterfront area Walking bridge for connection
Design Strategies

Social Value

Before

Quality of space

Wall

Fence

Building in bad quality

After

Renew public space with multiple uses & functions

Remove the wall

Improve the connection

Relocate the fence

Open certain area for public

Renew the facade & rooftop

Create new building typology as open community

Design Strategies

Social Value

Before

Quality of space

Wall

Fence

Building in bad quality

After

Renew public space with multiple uses & functions

Remove the wall

Improve the connection

Relocate the fence

Open certain area for public

Renew the facade & rooftop

Create new building typology as open community
Connect commercial and living hub

Create open public space inside the urban village for sharing, communicating, sports, etc.

Extend the existing canal and create livable waterfront space

Integrate ecological value from the ecological hub to the living hub and build up interconnection

Purify the water from the living hub and activate the site as a recreational park where residents can have social activities and the ecological value can be strengthened and realized

Remove the road and create connection between ecological spaces between both sides

Extend canal for better water management in the ecological hub

Create more room for the water, reactivate the space with floodable islands and floating housing for future sustainable development

Improve the integration and decrease the negative effect of boundary between the modern community and urban village

Ecological Hub

Spatial Concept

Exploration

Conclusion
**Introduction**

- **Understanding**
  - Master Plan
  - Water System
  - Green Network
  - Mobilized Infrastructure
  - Public Facilities

**Principles**

1. purification park
2. retention ponds
3. pedestrian path
4. flower field
5. playground
6. waterfront space
7. open community
8. urban farming
9. community park
10. pocket park
11. water square
12. waterfront park
13. commercial building
14. floating houses
15. public space
16. floating pier
17. urban plaza

**Conclusion**

**Exploration**
Toolbox

Public Facilities
- open square
- kid's playground
- outdoor seating
- informal settlement
- outdoor gaming

Mobilized Infrastructure
- slow tram
- greenway
- experience route

Ecological Space
Green Space
- waterfront park
- community park
- pocket park
- green roof
- urban farming

Blue Space
- water square
- singel
- permeable pavement
- retention basin
- water storage
- soft edge

Introduction
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Experience Route

ECOLOGICAL ROUTE
Design Intervention

Ecological Route

Before

Small Retail Store
Parking Lot
Physical Wall

After

Roof Garden
Biking Path
Linear Park
Exerice Zone
Skateboarding
Open Ground Floor
Tram Station
Slow Tram
Tea House
Sunken Lawn
Public Plaza
Design Intervention

Community Garden

- Ecological Route
- Green roof
- Open floor
- Cycle path
- Outdoor seating
- Tea house
- Outdoor platforms
- Retention basin
- Retail store
- Linear park
- Public plaza
- Tram station
- Cycle path
- Community Garden

Introduction

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Urban Farming Area

Modular urban farming area
Design Intervention

Ecological Route

Purification Park

Main Path

Heavy Metal Removal

Boardway

Gentle Slope

Steep Slope

Clean Water Impoundent

Sand Filter

Water Stabilization

Biological Purification

Nutrient Removal

Bio-Purification

Heavy Metal Removal

Subsurface Filtration

Bio-Purification
Active Route

1. Mix traffic in the main road
2. Truncated canal lacking activities
3. Polluted and bad-quality industrial factories
Active Route

Waterfront area

- Cruise
- Viewing Platform
- Open Ground Floor
- Retailing stores
- Livable waterfront corridor
- Viewing Platform
- Public Square
- Outdoor seating

- Soft Edge
- Single
- Soft Edge

- Retention Basin
- Roof Garden
- Retention Basic

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Design Intervention

Active Route

Informal market

Water Square

Roof Garden
Welcoming square
Informal Market
Singel
Bioswale

Sunken Playground
Outdoor Seating
Stairs Playground
Exerice Zone
Elevated Corridor

Exploration
Experience Route

ORCHARD ROUTE
Design Intervention
Orchard Route

Before

After

Viewing Platform
Flooding Plain
Cycle Path

Collection Canal
Discharge Ditch
Bird Viewing Tower

Discharge System

Ditches
Collection Canal
Main canal

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Introduction

Understanding

Principles

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Conclusion

Design Intervention

Orchard Route

Retention Pond

Nandina domestica

Phragmites communis

Cyperus alternifolius

Pittosporum tobira

Alocasia macrorrhiza

Taxodium distichum

Salix babylonica

Sabina chinensis

Ginkgo biloba

Cinnamomum camphora

Elaeocarpus hainanensis

Nice place to walk my dogs

I love this peaceful path

Next Stop!
Design Intervention

Orchard Route

Retention Pond

Dry Season

- Jogging
- Dog walking
- Cycling
- Cruise
- Bird Watching
- Picnic
- Camping

Rain Season

- Running
- Fishing
- Swimming
- Cruise
- Education
Conclusion

Active Route
- Open market
- Resting area
- Commercial area
- Community park

Ecological Route
- Urban farming area
- Cycle path
- Tram line
- Cycle path
- Linear park

Community Route
- Cycle path
- Tram line
- Cycle path
- Resting area
- Public space (open theater)

Commercial Route
- Pocket park
- Commercial area
- Commercial area

Orchard Route
- Cycle path
- Retention pond
Objective: Create an integrated and comprehensive socio-ecological network in terms of corridor and node at multiple scales that can improve the socio-spatial integration and reconnect the fragmented green and blue spaces for Haizhu district.
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Detailed Application

Social and ecological connection

Improvement of mix spatial qualities in communities

Social Value

Ecological Value
Objective: Create an integrated and comprehensive socio-ecological network in terms of corridor and node at multiple scales that can improve the **socio-spatial integration and reconnect the fragmented green and blue spaces** for Haizhu district.

**Integration at Neighborhood Scale**

- **Modern Community**
  - High-income immigrants & Local people
  - Dance
  - Chat
  - Sit
  - Read
  - Shopping
  - Exhibition
  - Art
  - Eat
  - Sport
  - Entertained facilities

- **Urban Village**
  - Low-income immigrants & Local villagers
  - Work
  - Chat
  - Sit
  - Catering
  - Shopping
  - Eat
  - Chess, Mahjong
  - Fitness facilities

- **Tourist**
  - Shopping
  - Sightseeing
  - Eat
  - Rest
  - Exhibition
  - Art

- **Events**
  - Open market
  - Workshop
  - Sport activities
  - Recruitment day

**Integration at Local Scale**

**Integration at Regional Scale**
Research sets up a framework to lead the design explorations, providing tools and potential elements and information to support and realize the design.

The framework of the research is made up of three layers, settlement, transport and landscape, where the three characters of the network are created for building up a new comprehensive socio-ecological structure.

Further design explorations help to explain the research result with interventions that facilitate the objective under the framework.

The framework of the socio-ecological network is applied on local scale with specific elaboration based on the principles with corridors and nodes concerning about the social and ecological value related back to the problem field.

Limitation & Difficulties

- Limited practical implementation in a dense urban area due to the strict policy
- Complicated stakeholder’s system, especially in urban village
- Essential inclusion of other disciplines, urban planning, sociology, engineering etc.

Lessons learned

- Multiscalar working method
- Synthetic of landscape and urban environment
- Landscape as a complex system of different layers with dynamics
- Collaboration of social and ecological functions (flows & cycles)
- Mix spatial uses and experience of individuals towards socio-spatial integration
THANK YOU FOR LISTENING!