The Netherlands and Belgium

RESILIENCY & MOBILITY TOUR
November 11-21, 2023

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Tranter-Leong Fellowship

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Netherlands and Bruges Study Tour

LEARNING OBJECTIVES:

- **Resiliency Challenges**: See how a country that sits below sea level has adapted.
- **Best Practices**: To confirm that our current plan aligns with research and experience.
- **Public Transport**: Understand and see the return on investment on pedestrian and cycling infrastructure investments.
- **Multi-Modal Transit**: Making connections to microtransit to reduce cars on the road.
- **Funding**: Learn about innovating funding strategies and how the Dutch have avoided the politicization of resiliency projects.
- **Historic**: Looking at how to facilitate resilience and alternate transportation in a historic cities.
Resiliency Study Tour
Netherlands, November 13-17 2023

Video shot and edited by Julien Jacques
Itinerary: Sat., Nov. 11
Itinerary: Sun., NOV. 12:

Waterways Exploration of Amsterdam

750,000 People

1.5 Million Bicycles
Itinerary:

MON., NOV. 13: THE HAGUE

- Netherlands Water Partnership (Ministry of Infrastructure & Water)
- Dutch Cycling Embassy
- Dutch Cycling Tour to Scheveningen
- Bosch Slabbers

“Den Haag”
- 7 miles of coastline
- Home to the UN International Court of Justice
Itinerary

TUE., NOV. 14: ROTTERDAM

- Arrival by train, walk to municipality
- Dutch cycling tour with stops at water storage parking garage, Central Station, and Urban Water Square Bentemplein

Rotterdam
- Second largest City (after Amsterdam)
- Major shipping center since 1602
Itinerary

WED., NOV. 15:

**DELFT**
- Arrival by train at Central Station
- Visit to Hoogheemraadschap Delft and IHE Water Institute
- Visit to TU Delft Campus/Flood Proof Holland
- Dutch Cycling Tour Delft
- Alt: Walking Tour

Delft
- Part of the Rotterdam-Hague Metro area
- Popular tourist destination
Itinerary

THU., NOV. 16:
THE HAGUE

- International Cycling Safety Conference
Itinerary

FRI., NOV. 17: ZEELAND

- Maeslant Barrier - Storm Surge Barrier
- Noordwaardpolder
- In-Dune Parking Garage Katwijk aan Zee
- Visit to Van Nelle Factory

“Zuid-Holland”

- Southernmost province in the Netherlands
- Large parts are below sea level.
Itinerary
FRI., NOV. 17 - 21:
Bruges

- Mobility coordinator presentation on 15 minute city
- Cycle tour of city cycling infrastructure
- Meeting with City Manager
- Resiliency presentation on Blue-Green City
- Walking tour of resiliency infrastructure and related projects
- Tour of North Sea dune restoration

“Bruges”
- World Heritage Site
- Over 1000 years old
- 20,000 residents in historic center
Itinerary: Tue., Nov. 21
Biking & Alternative/Sustainable Transportation
INTEGRATED TRANSPORTATION SYSTEMS

- Trains
- Trams
- Bikes
- Buses
- Scooters
EXAMPLE: HOFPLEIN SQUARE, an intersection where pedestrians, bicycles, cars, buses and trams all safely interact.
Bicycle Parking and Garage

The holistic approach to urban planning requires convenient and adequate storage for users.
Holistic Planning - Parking of Bicycles and Cars

Parking - Too Much or Too Little?

- We often hear complaints in Annapolis about a lack of parking. We do not have a lack of parking - we have a parking complex. People want quick and easy access and convenience.
- Effective rates: parking access closest to downtown should be the highest price.
- Street parking should be for short, quick in-and-out trips, moving longer parkers (1 hour +) to garage and surface lots.
In the Netherlands, they have been working on a 20 percent increase of bike use since 2010.

They added convenient bike parking areas, close to public transportation and businesses.

Auto parking garages are often for visitors and tourists.

Public transportation is convenient, cheap and easy to find/use and integrated.

Cars are always liable in bike accidents, by law.

The Dutch Have Built Communities Where Bikes, Trains & Cars Co-Exist
Bikenomics

The social cost-benefit analysis

- Traffic congestion: -20 €/km
- Air pollution: +14 €/km
- Noise: +24 €/km
Permeable bricks in parking spots

ADA, bike parking, bike lane, shared lane (bricked)
Pavement to Nature

SPACE MAKING & CONSERVATION

- Pavement to pathways
- Conserve habitat and link parks and forests
- Bring people to the water & parks
- Swimming in canals
- Vegetation EVERYWHERE
On Day 5 we visited Kawijk aan Zee, an underground parking garage built into the sand dunes. Users mainly tourists, some local residents. Street parking = residential parking.

Tiered system of permitting: 1st car: $25, 2nd car: $45, 3rd car: $450. Purchase a bank of visitor parking funds ($550) to use for guest passes, any amount of time.

A garage, built 100 yards from the sea, is underground and landscaped into the surrounding dunes.

- On Day 5 we visited Kawijk aan Zee, an underground parking garage built into the sand dunes.
- **Users**: mainly tourists, some local residents
- Street parking = residential parking.
Key Takeaways:
- Mixed Use
- Mixed Income
- Integrated into the Neighborhood
“Social Housing” makes up 29 percent of the total housing stock in the Netherlands.
GREEN Roofs

INTEGRATED COMMUNITY GARDENS
Stormwater Management:
- Multi-use facilities
- Integrated functions
- Water storage

Multi-use stormwater facilities
- recreation space when empty
- located near school
Rainwater is not led into the sewer but into the ZOHO letters where it is buffered and when necessary released into the surrounding garden. The built-in smart system looks at the weather forecast via internet. As soon as a heavy rain shower is expected, the tanks release water automatically and create buffer capacity for the coming rain. This sustainable system works on solar energy.
Mature trees in event spaces
Co-exist with parking
Serve as green “walls”
Provide ecoservices - stormwater filtration & capture, reducing temperatures, carbon capture
Preserves viewscape
Trees, Tents, and Outdoor Dining.

OH MY!
Demountable Systems: an Option for COMPROMISE STREET BULKHEAD

System not in place

System deployed
Hosts and coordinates **Flood Proof Holland II** (FPH II), a test and demonstration site (polder) where alternatives to traditional sandbags are tested for efficacy.

Civil, hydraulic and offshore engineering students often utilise the facilities to practically apply, providing a unique learning tools.

Professor for flood risk Matthijs Kok believes that FPH II allows students to “see what is at stake during floods; to discover how different measures are helpful in reducing the damage [of floods].”
IHE Delft Institute for Water Education - Box Barrier

- Can hold back 80% of water
- Folds for storage and quick deployment
Using Dredged Material for BEACH REPLENISHMENT

- Ostend, Belgium: suction hopper barge with floating pipeline
- Allows continuous work = almost 1 mile of beach restoration/7 hrs = 5 week project
- Bulldozers/excavators filter systems reduce fine dust and nitrogen emissions by 80%
Clean Energy - North Sea Wind Farm

487 MW SeaMade offshore wind farm - Ostend, Belgium

8 wind farms produce 13% of Belgium’s electricity needs. Goal is 50%

Goal to provide all Belgians with green power
A motorway that you do not hear, see or smell
Biesbosch National Park & Deliberate Floodplain

Private land converted into public space for downstream flood control
Maelstom Barrier:

- Storm Surge Barrier
- Two 689-feet gates with two 777 feet steel trusses holding each
Bruges/Brugge, Belgium

Guide: Bart Slabbinck
Project coordinator
Mobility
City of Bruges

A World Heritage City
A Cycling City (in the making)

Population of downtown area: 20,000
City Hall, Bruges
Built in the 1300s (plaza was a parking lot)

Even the City Maintenance person uses a bike for his work.
BRUGE MOBILIT
City Squares to Parking Lots to Gathering Spaces

From Car Centric to Quality of Life Planning
Building to 40 minute bike commute
Bruges is now referred to as "THE 15 MINUTE CITY"

The City is planned to get riders anywhere in the city by bicycle in 15 minutes
Iterative process

- Space
- Traffic
- "Wishlines"

- Investigation by design

- Car-oriented policy
- Focus on the flow of traffic
- More traffic
- "Plumbing" solutions
- More road congestion
- People/city oriented policy
- Solutions fit to the city and its people
- More people
- More city life
Working with all stakeholders

KEEPING SAFETY IN MIND

Stop Komvest – Baron Ruzettepark

- Van 2 naar 1 rijspoor huisnummer 400 Komvest
- Gedeelde doorgaank van de middenberen
- Enkelrichtingsgezetpad van Baron Ruzettepark naar Walnewstraat of Komvest (uuwstraat)
- Enkelrichtingsgezetpad van Komvest naar Baron Ruzettepark + voetgangers overstek
- Nieuwe verkeersafritten bedrijf (IF (Graffabriek)
- Komvest (uuwstraat) wordt Fietstraat
- Bushaltes zoals voorgestemd in het nieuw busseplan

DESIRE LINES
WAITING TO BE FOUND
Build to Design
Creating an integrated City
Takeaway

Meet with Suppliers

Investigating New Technologies

Attend Educational Sessions

Bring Knowledge Back

Building Networks and Resources